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The question of a permanent receivership for the Harney Peak Tin Mining Company was not decided at the hearing on July 11th, the court continuing the case until July 16th in order to give the defendants opportunity to answer some new evidence put in on behalf of the plaintiffs. Meantime affairs continue without change, and everything is under control of the court. Incidentally Judge Lacombe, before whom the hearing was had, took occasion to approve the conduct of Dr. Ledoux as temporary receiver in several matters to which reference was made.

The Tariff bill is now in the hands of a conference committee, the House of Representatives having voted non-concurrence with the Senate amendments with very little debate or delay. The committee will settle the form in which the measure will be presented to both Houses of Congress for a vote on its final passage. Of course, the settlement will be a compromise between the bill as it passed the House, and as it was amended by the Senate; but from the temper of the former body and of the committee it begins to look as if at least an approximate return to the original form would be insisted upon, and the main features of the bill as at first reported would be preserved. This is only conjecture, however, and predictions about the action of a conference committee are never very safe. How long a time the committee work will require is uncertain, but there is an evident disposition to delay as little as possible. This will be aided by the general desire to close the session of Congress, as the July heats make themselves felt in Washington and the fall elections draw nearer.

The mining companies of the Coeur d'Alene region, which have been suffering so severely during the past year from the low prices of lead and silver, and which have lately had their burdens increased by railroad troubles and flood damages, are now confronted by a new misfortune, in a renewal by the Miners' Union of the riotous outbreaks which disgraced the region two years ago. As recorded in our news columns, the new outbreak has been marked by the expulsion of a number of "black-listed" men and the murder of at least one of them, and by the wrecking of one of the largest mills in the district, that of the Bunker Hill & Sullivan Company. The immediate result has been the closing down of all the mines in the district which were still at work. The Miners' Union, at latest accounts, was in full possession, though forces have been sent to the district to restore order; but difficulties in the way of transportation have delayed their arrival. This new trouble, it seems probable, will result in the closing of most of the mines for a time, at least until prospects improve. Most of the companies have been working on a very narrow margin, hoping for better times, and they will not be disposed—probably few of them are able—to carry any additional load.

In our issue of June 30th last, page 601, we referred to a company calling itself the "Mound Park Mining and Land Company," which had published a list of directors including among them Mr. Geo. S. Scott, Western representative of the "Engineering and Mining Journal." We stated at the time that the use of Mr. Scott's name or that of the "Engineering and Mining Journal" was wholly unauthorized, giving our reasons for that statement. Since then a correspondent writes us as follows:

"A local prospector, by name Roberts, owned three claims, unpatented, a little south of Cripple Creek—the Mound Rock, the Volcano and Providence. He tried to make a deal with the Denver parties, who in turn were to hand them over to Chicago people, at about three times the price they were to give (the price I do not know). The Chicago people somehow ascertained that fact and refused to deal either with the aforesaid Denver people or even with Roberts and his colleagues of Cripple Creek, hence the deal is practically dead. It is not recorded at the El Paso county office. The claims themselves have no showing; the railroad grade exposed some decomposed granite in one of their cuts on the Mound Rock."

We stated in our former note that we knew nothing of the company or its property. The information furnished us above would seem to show that the whole affair was even more doubtful than the attempt to use the name of the "Journal" without authority would indicate.

The July reports of the blast furnaces show a considerable improvement over the June statement, though a much smaller one than had been expected. This is chiefly due to the railroad strikes, which have prevented furnaces from blowing in, or at least have caused them to delay until they could be sure of getting supplies of fuel without interruption. The July statement shows a total of 109 furnaces in blast, having a weekly capacity of 86,200 tons, which compares with 91 furnaces and 63,970 tons capacity on June 1st. The anthracite and charcoal furnaces show but little change; the chief alteration has been in the coke furnaces, many of which were closed down by the coal miners' strike, and have now started up again.

Notwithstanding the partial recovery, the furnaces still make a poorer showing than for any month this year except June. As the transportation and fuel supply difficulties are removed, however, we hear of more furnaces blowing in, and a much better statement may be expected for August.

The output of the active furnaces on July 1st was at the rate of only about 4,500,000 tons yearly, or less than half the output of a normal year. Stocks are very low, and the demand is increasing steadily.

The great value of armor-plate tests was shown at Indian Head on June 18th when a shell, representing a lot of 50 offered for trial under government specifications, was at 1,500 foot-seconds velocity driven completely through a Bethlehem plate which it is reported had previously passed all requisite tests for acceptance. The question arises as to the value of the previous tests, if a shell fired at lower velocity than that specified in the ballistic trial of plate will perforate, when the other is supposed not to penetrate. This further suggests the mistaken policy of having these tests held in private. In view of the grave questions which have arisen in armor-plate matters it would seem advisable to have all of the tests and investigations conducted openly. Even though there may be every reason to believe that such private tests are conducted fairly, the fact that only those who are directly interested—that is, the officers of the examining board—are admitted always gives ground for suspicion even though it be without cause. In the forthcoming tests of 18-in. Bethlehem and 17-in. Carnegie armor it is particularly desirable that other experts than the officers should witness them. In the former, the first test of 18-in. armor, at which were present a number of persons, proved a failure. A test of 17-in. armor made by the same company is reported as having been a success, but none other than the examining board were present. As to the Carnegie plates, the public is already so familiar with the reported frauds enacted there that it would be of particular interest to them to know exactly how the plates stand under fire.

The failure of the railroad strikes, which at first presented such a threatening appearance, was assured from the first. We referred last week to the absence of any just cause for these strikes, and the folly of the leaders in ordering them at a most unfavorable time and in at once beginning a resort to violence prevented the strikers from receiving any moral support from public opinion. The prompt action of the President in giving the support of the Federal forces to the suppression of violence and disorder has called out expressions of approval from all parties to an extent seldom seen, and the use of those forces has been of great assistance in restoring order in Chicago and elsewhere. The attempt of some so-called "leaders" to assist the railroad men by a general strike of all the trades proved a failure, as might have been expected under present conditions.

The strike is now practically over, and late dispatches say it is to be declared "off" at once. At no time has it extended to the Eastern lines, and even in Chicago, where the efforts of the managers were concentrated, it was drawing to an end. It is now evident that, while the troubles in that city were serious enough, they were much exaggerated by the sensational dispatches sent out to the newspapers elsewhere, and the same may be said of other points.

At present the worst state of affairs is found in California, where the strikers have been assisted by the great and general feeling against the company which substantially controls all the railroads of the State. The railroads there are still operated only in part, and the stoppage of traffic is almost complete. It is evident that the settlement there will be slow and difficult.

#### THE POORMAN CONSOLIDATED COMPANY.

We have learned since our last issue that the Idaho Milling Company of New Jersey, incorporated by Mr. J. C. Kemp Van Ee, with a capital of \$200,000, the company commencing business with \$100,750, was consolidated with the South Poorman mines on July 13th, 1893, under the title of the "Poorman Consolidated Mines, Limited," with a capital stock of \$1,150,000.

The Silver City Reduction Company, of London, was a stockholder in the Idaho Milling Company to the amount of 20,000 shares. What interest have or had the officers of the Poorman company in the Silver City Reduction Company? Was this also a "Little Joker" of the Poorman?

#### THE COAL PRODUCTION OF THE WORLD.

The accompanying diagrams, which we take from the article on Coal in Volume II. of "The Mineral Industry" for 1893, show in a very striking way the enormous growth which has marked the production and consumption of mineral fuel through the world during the last 40 years, and also the changes in that production in different countries. Starting with 1850 we see that Great Britain then produced more than all the rest of the world put together, its output being somewhat over 55,000,000 tons, while no other country could show a production of over 6,000,000 tons. The production of Great Britain increased rapidly and with but very few setbacks showing the rapid development of its industries, until 1890, when it reached its maximum at 188,000,000 tons, and commenced to decline with almost equal rapidity. The two years during which this decline has continued, as shown in the diagram, were indeed marked by strikes

and other exceptional circumstances, but it is extremely doubtful whether the maximum tonnage will ever again be reached, not that we are prepared to predict any rapid decline of prosperity, but simply because the expense of mining coal is increasing in that country and a large share of its export trade will inevitably go to others, a process which has already begun.

Next in order to Great Britain we find the United States with a far more strongly marked increase. Starting with a production of less than one-third of that of the United Kingdom in 1865, it has grown so rapidly that the diagram line is in places nearly vertical, and with a few checks, as in the panic years of 1873 and 1885, it reached a point last year but little over a million tons below that of Great Britain; and there is hardly any doubt that in a very few years the lines of the two countries will cross and that from that time on the United States will be the leading coal producing country in the world.

We find, however, that there is one marked difference between these two rivals. While the line of consumption for the United States is approximately the same as the line of production, for the United Kingdom it is far otherwise, and the diagram shows that the consumption falls below the production in a proportion which has for a number of years past increased in a very nearly uniform degree. Great Britain, in a word, is the great coal exporting country of the world, supplying in part other European countries and sending a heavy tonnage to its own distant colonies and to portions of Asia and Africa. The colonial and Asiatic demand for English coal, however, is rapidly decreasing as new sources of supply are found and coal mined nearer home comes in to compete with the English product. That such an export trade should have grown up is entirely a natural result of the position of England, not only as a leading coal producer, but also as a great maritime nation with commerce extending to every part of the world.

The third country in importance is Germany, which for a time kept very close in amount of production to the United States, but later

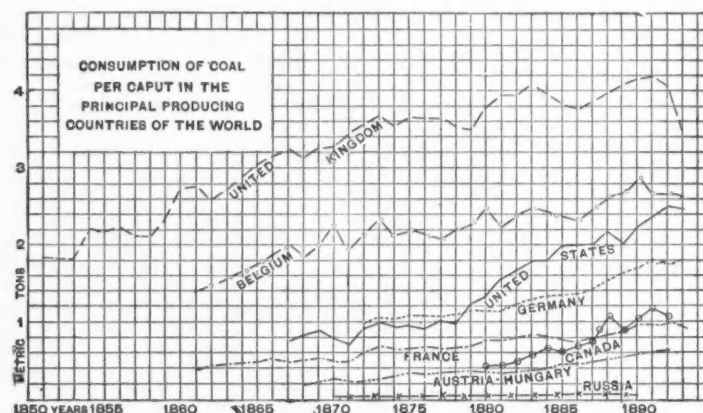


FIG. 2.

fell behind, owing to its more limited coal resources and slower growth. Like Great Britain, the German lines of consumption and production vary considerably, the exports being large, although, unlike England, they are made chiefly to the neighboring countries, such as France and Austria. Following Germany, we find the French lines of production and consumption, which show the important difference that the consumption is considerably above the output. The comparatively limited coalfields of France are pretty thoroughly worked, and large imports, chiefly from Belgium and Germany, are found necessary to keep up its supplies. Necessarily the French line has shown a less rapid increase than those of the more important producers, but its upward tendency has nevertheless been marked. In Belgium and Austria the output has also increased very steadily and, in the former country at least, has kept well up to the limits of its capacity. The probability is that while Belgian consumption may increase, its production line will, before many years, begin to fall, and like France it will be obliged to import a considerable portion of its supplies.

The smaller producing coal countries of the world all show an increased output, South Africa, Australia, India and Russia making notable advances. The growth of the Japanese mines has apparently experienced a check for the last two years, but this can hardly be expected to last in view of the determined efforts of the Japanese to push their product throughout the East; efforts which will be especially aided by the present conditions prevailing in the eastern money markets. While coal is found in many Asiatic countries, and is believed to exist in great quantities in China, there is no doubt that Japan will remain for a number of years the leading coal producer of the far East.

The growth in Russia has been steady, but not marked. That country, however, may be expected to show a more rapid increase within the next ten years, as the extension of its railroad lines makes accessible the large

are known to exist in southeastern Russia and in western

Siberia, but which are not at present being worked owing to the absence of transportation facilities.

A still more remarkable diagram than Fig. 1 is shown in Fig. 2, which gives the consumption of coal per capita in the chief producing countries. This diagram measures with great accuracy the growth of industry in any country. In this respect the United Kingdom leads, its consumption in 1851 having been about 1½ tons per capita and in 1892 4½ tons. This growth, however, as the line shows, has been subject to many fluctuations, and the general ratio has decreased in recent years. Its increase, however, has been greater and more marked than that of any other European country, although Belgium and Germany have very nearly equaled it, Germany of late years continuing to rise, while the United Kingdom has fallen.

NEW PUBLICATIONS.

CANADIAN INDEPENDENCE, ANNEXATION AND BRITISH IMPERIAL FEDERATION. By James Douglas. New York; G. P. Putnam's Sons. Pages 114. Price, 75 cents.

Mr. Douglas is especially well qualified to write on this subject, since he is a Canadian by birth and partly by education, and has for 20 years been actively engaged in the United States in the management, as metallurgist and mining engineer, of several important Western enterprises. His business has obliged him to visit almost every portion of the North American Continent, and constantly brings him into intimate intercourse with the people of its most distant sections. He has thus had unusual opportunities for learning the needs and opinions of the Canadian people as well as those of their neighbors. He has made a readable and also a fair and

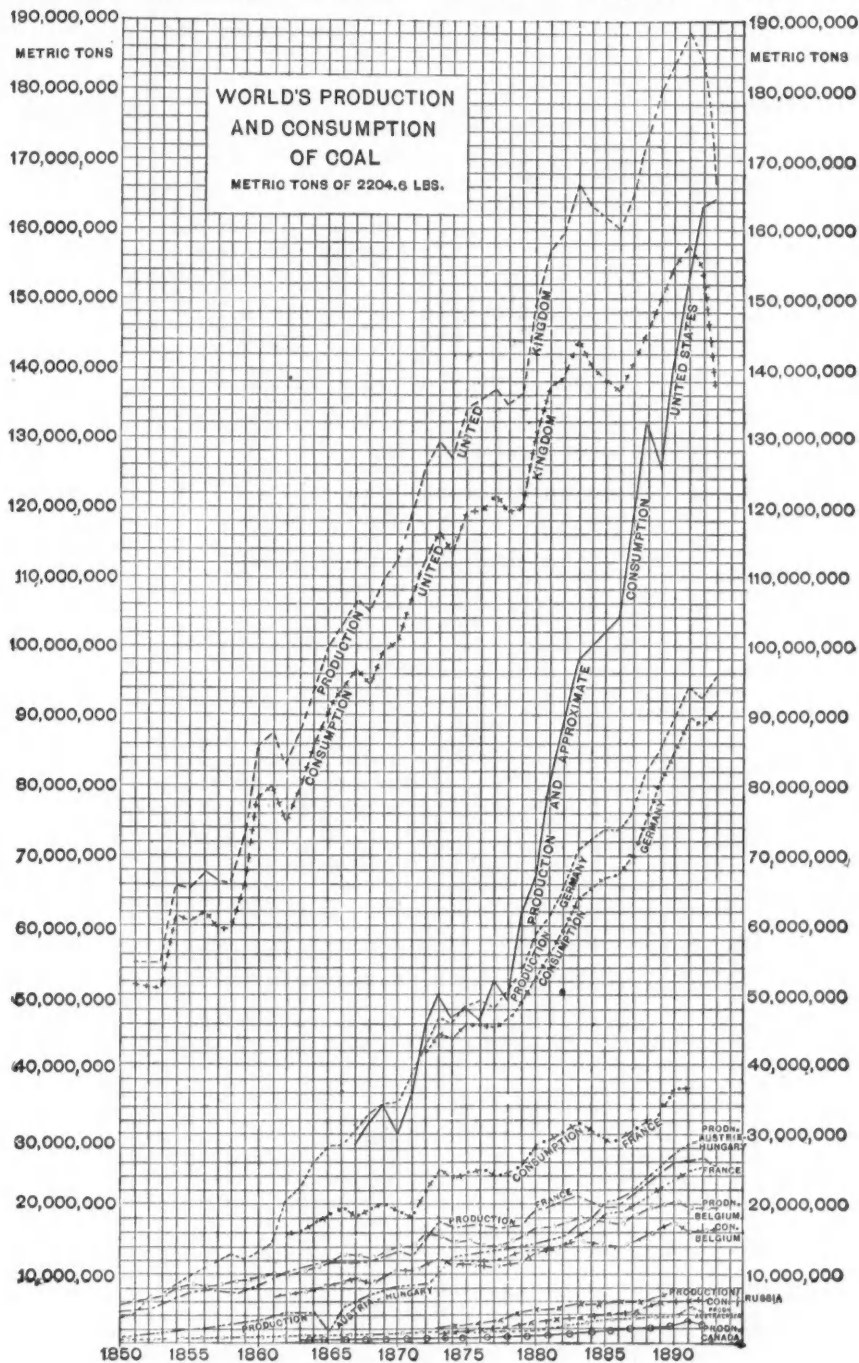


FIG. 1.

In the United States the advance in consumption per capita has been great and marked, having risen from a little less than one ton in 1870 to 2½ tons in 1890. In 1892 and 1893 it approached very nearly that attained by Belgium, and is now considerably above Germany. The present year, doubtless, will show a temporary drawback, but in the future the line may be expected to rise again and to reach, and perhaps cross, that of Great Britain within a few years.

These diagrams (which are accompanied in the volume of "The Mineral Industry" by the very full tables upon which they are based) are worthy of careful study, and should be very useful for reference, as they present at a glance the general course of business and form a condensed statement of facts which cannot be so readily seen and appreciated in any other shape.

thoughtful little book on the question. Mr. Douglas does not favor an annexation, believing that it would not be for the best interests of either Canada or the United States. Upon the whole he is inclined to imperial federation, which is already being discussed as an approaching probability. His book is well worth reading by those who want to study and understand the questions of the day.

EXPORTERS' HAND-BOOK OF MEXICO. Compiled by Phillip G. Roeder, Cleveland, O.; published by P. G. Roeder. Pages 64; price \$2.

This little book contains a list of bankers, merchants, professional men, landed proprietors and others in all the States of Mexico, forming a condensed business directory of that country. It appears to have been carefully prepared; its correctness, of course, can only be determined by long continued use. The idea is an excellent one, and the Hand Book ought to be very useful to American manufacturers and others who want to cultivate business relations with our neighbors to the southward.

## 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.

- Statistical Year-Book of the German Empire.* Fifteenth year, 1894. Berlin, Germany; published by the Imperial Statistical Office; pages 208.
- Die Fabrikation von Schwefelsaurer Thonerde.* Von Dr. Konrad W. Jurisch. Berlin, Germany; Fischer & Heilmann. Pages 114; illustrated. Price (in Berlin) 5 marks.
- Selected Papers of the Institution of Civil Engineers: Transporting and Dressing Iron Ore at Cabarceno, Spain; etc., etc.* By Frederic Kensington. London, England; published by the Institution. James Forrest, Secretary. Pamphlet.
- Geological and Mining Maps and Profiles of Idria: with Sections of the Quicksilver Deposits of Idria.* Prepared by Oberberggrath Wilhelm Göble. Vienna, Austria; published by the Imperial Royal Mining Department. Text, 44 pages, with 64 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.

"The Mineral Industry," Volume II.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: Volume II. of "The Mineral Industry" has just been received, and I am very much pleased with it. It will be indispensable, and in fact I could not get on without it. Permit me to congratulate you on the completion of such a great and important work.

WILLIAM P. BLAKE,  
Geologist and Mining Engineer.

SCHULSBURG, Wis., June 9, 1894.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: We beg to acknowledge receipt of a copy of the second volume of "The Mineral Industry," and in so doing we desire to say that we consider it the most valuable work ever published on the subject, and heartily commend it to the smelter, metal trader and miner. In that part of the work relating to our own industry, we find it replete with valuable statistical information, useful and most interesting to us. We shall advise our mining friends who are not in possession of a copy of your work, to obtain one immediately; and wish you all possible success with this, your second volume.

MATHISON SMELTING COMPANY,  
Smelters and Refiners of Antimony.

SAN FRANCISCO, Cal., June 9, 1894.

An Impostor.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: On June 9th we made an assay (our No. 11,688) for a man who traveled while in Pittsburg under the name of A. Greenwood, claiming to be from Portland, Oregon, near where he had some very rich gold mines, in which the Rockefellerers were interested. He called these mines "Ornament and Surprise, Greenhorn Mountain, Grant County, Oregon." In payment for the assay he gave us a bogus check, which, however, we did not discover until two or three days after he left Pittsburg. He also jumped his board bill at Monongahela House, and gave a liveryman here a bogus check in payment for carriage hire. We have just learned that he has been arrested in Providence, R. I., as a "hotel beat." After leaving Pittsburg he added the name "Heighton" to our report, so that it reads to "A. Greenwood Heighton." The word Heighton was written in a different hand and also in different ink. It was under this latter name that he was arrested. We have also had an inquiry from a hotel man in Cape May, and presume he worked the hotels there as well.

Will you kindly make a note in regard to this "sharp" in your paper to warn the public against investing on the strength of our report, as from the character of the man we have no doubt that the samples we assayed for him, which were apparently fair samples, although very rich, were picked samples, and do not represent any mines.

PITTSBURGH TESTING LABORATORY, LTD.

GEO. H. CLAPP, Chairman.

PITTSBURGH, July 10, 1894.

## THE MINERAL OUTPUT OF VERMONT.

We are indebted to Mr. G. W. Perry, State Geologist of Vermont, for the following statistics in relation to the mineral production of that State in the year 1893:

**Marble.**—There were 28 concerns which report as capital invested \$5,560,150. They employed 2,343 men, paying them in wages and salaries \$906,095. The output was 4,136,500 cu. ft., valued at \$1,569,148.

**Granite.**—In all 79 concerns report as capital invested \$957,914. They employed 1,911 men, paying them in wages and salaries \$874,630. The output was 1,191,040 cu. ft., valued at \$1,261,983.37.

**Slate.**—In all 14 concerns report as capital invested \$174,000. They employed 426 men, paying them in wages and salaries \$166,250. The output was 42,700 squares of roofing slate and 49,200 cu. ft. of millstock, valued at \$301,240.

**Lime.**—Nine concerns report as capital invested \$140,200. They employed 181 men, paying them in wages and salaries \$45,687.50. The output was 29,220 tons, valued at \$141,261.

**Brick.**—Nine concerns report as capital invested \$59,500. They employed 172 men, paying them in wages and salaries \$33,308.72. The output was 9,908,000 brick, valued at \$56,814.29.

**Copper.**—Two concerns report as capital invested \$550,000. They employed 12 men, paying them in wages and salaries \$5,000. No output given.

**Kaolin.**—Two concerns report as capital invested \$45,000. They employed 50 men, paying them in wages and salaries, \$7,800. The output was 1,950 tons, valued at \$14,700.

**Ochre.**—One concern reports as capital invested \$8,000. It employed

10 men, paying them in wages and salaries \$2,288. The output was 350 tons, valued at \$4,500.

**Soapstone.**—Two concerns report as capital invested \$18,500. They employed 21 men, paying them in wages and salaries \$8,000. The output was 1,000 tons, valued at \$12,000.

In all, the reports show that there were 146 concerns engaged in mineral industries in 1893, which report a total capital invested of \$7,513,264. They employed 5,126 men, paying them in wages and salaries \$2,049,060. The output was valued at \$3,251,647. This gives an average payment of \$399.74, and an average output of \$634.34 per man employed for the year.

## THE LATEST ARMOR TESTS.

The test of the 17-in. Harveyized plate representing the battleship "Oregon's" barbette, at Indian Head, July 12th, resulted, according to the dispatches, in as complete a disaster for the Carnegie Steel Company plate as by the failure of the Bethlehem 18-in. plate last May.

The test plate was one of 13 to be used over the ammunition hoists and hydraulic machinery beneath the forward 13-in. gun turret of the "Oregon." The group weighs 287 tons and is worth \$246,000. The company has made every effort to produce a successful group, especially as the doubts recently cast upon the reliability of thick Harveyized armor by the failure of the Bethlehem plate had placed it upon its mettle, and it was desired to follow the later successful test of the 17-in. plate for the "Massachusetts" by one equally as good, if not better, for the "Oregon." The plate, so far as the preliminary tests showed, was sound, homogeneous and free from flaws. The percentage of carbon being greater in the hard face than in the case of any other Harveyized plate, it was believed that the chill had penetrated deeper; indeed, after a portion of the face had flaked away under the first impact, it was found that the metal at a considerable depth broke down the edge of a tempered cold chisel without showing the slightest mark.

Nevertheless, under impact, the plate appeared soft, allowing the first shot to penetrate 13.6 in. and the second to perforate the entire target.

The plate was 15 ft. 1½ in. long, 8 ft. 8 in. wide, 17 in. thick, curved with a radius of 17 ft. 3½ in., mounted with its longer and straight side horizontal at a distance of 390 ft. from the muzzle of the 12-in. breech-loading rifle. The backing was 36 in. thick at the edges, and filled out to conform to the curve, making it 42 in. at the middle of the plate.

The surface of the plate had been left soft along three narrow vertical bands at the points where it was to be bolted to the deck beams of the ship. A soft strip about 3 in. wide also ran along the edges to permit the necessary machining for forming a perfect joint with the plates on each side in the barbette. This final machining, being unnecessary in a ballistic plate, had been omitted, so that the plate weighed fully 33 tons, representing a value of nearly \$21,000. It was secured by 24 bolts 3.2 in. in diameter.

For the first acceptance shot a Carpenter special No. 35 armor piercing shell, weighing 850 lbs., was employed, the charge being 253 lbs. of VY 7 Brown pierced hexagonal powder. The velocity was 1,410 foot-seconds, and the energy 1,729 foot-tons. A similar shot fired at the "Massachusetts" 17 in. Harveyized plate smashed on the surface with an estimated penetration of 7 in.

To the surprise of all, despite the supposed superior Harveyized surface, the Carpenter special burrowed 13.6 in. into the plate, and then rebounded, whole, 60 ft. to the rear. The entire surface of the shell appeared to have been fused and bruised off from a depth of ½ in. at the shoulder or bourselt to 6 in. at the point. Yet notwithstanding the enormous heat and abrasive force thus indicated, the shell was practically intact, and still retained its proper rotating band. The plate was uncracked, and the structure apparently as rigid as ever, yet the slight swell of the metal around the impact indicated that the plate was softer than any of the inspectors' tests, physical or chemical, had indicated. This bulge was 26 in. in diameter and 1.3 in. high, crossed by four radiating and equally spaced cracks, 4 in. long. The metal between the radiating cracks was crossed again by innumerable concentric cracks which seemed to show that the metal lacked life or cohesion. The impact was thus surrounded by a halo of fine cracks 4 in. wide.

For the second acceptance shot, which was located 37 in. to the left of number one, a Wheeler-Sterling 12 in. shell weighing 850 lbs. was employed, with 996 lbs. of the same powder used for shot No. 1. This gave an initial velocity of 1,858 foot-seconds, with an energy of 2,370 foot-tons. This was the first Wheeler-Sterling shell ever employed in the ballistic test of an armor plate. This shell bored through the 17-in. plate, through 42 in. of oak backing and 3 ft. of oak support, and plunged into the earth but beyond. After penetrating this 15 ft., it glanced upward and out over the hill and through the woods 300 ft. beyond. Its ogival and point had been fused and bruised away in the same manner as the first shot, while several spiral cracks on the surface reached half way down the body. The shot hole was surrounded by a bulge similar to that of impact number one, but containing only 27 radial cracks about 5 to 6 in. long. There was a trifle more of flaking, the indications being that the plate was slightly harder in the vicinity of the second impact. The bulge was 26 in. in diameter and 1.4 in. high. The test resulted decidedly in favor of the projectiles.

## RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

SUPREME COURT OF PENNSYLVANIA.

Reservation of Mineral Rights in Deed.

A conveyance of a full fee simple, reserving to the grantor, his heirs and assigns a free toleration for getting coal for their own use, does not reserve all the coal beneath the surface, but merely an incorporeal right, concurrent with the mining right of the grantee, to get and carry away such coal as the grantor and his assigns may personally need for fuel. When a stratum of coal has been conveyed separately from the surface and the grantee has recorded the conveyance and entered into possession, his title is not affected by any possession of the surface adverse to the title to the surface.—*Algonquin Coal Company vs. Northern Coal and Iron Company*, 29 At. Rep., 402.

IRON-MAKING AT BIRMINGHAM, ALA.—III. ITS COST.

Written for the Engineering and Mining Journal by Edmund C. Pechin.

Any statement that pig iron is being or can be made at Birmingham, la., at \$6.50 per gross ton will be received with more or less incredulity. In my former articles on the ores and coals, I said that the district as a whole could not do it, but that there were at least two important concerns that could.

In what is to follow two items must be excluded: 1. Any royalty on coal and ore. 2. Any interest on the capital invested. This latter item must be so variable that its introduction would be embarrassing and might be misleading. With these two exceptions all items ordinarily entering into pig iron making will be covered.

In what has been written heretofore the effort has been made to give a clear idea of conditions existing, and the cost of mining the ores and the making of the coke. To those engaged in iron making, the following burdens and the analyses of the materials used may not be uninteresting. Furnace 17 x 75 ft., brick stoves, 8 tuyeres 6 in. each, blowing 21,000 cu. ft. air per minute, and making 160 tons a day, over 80% foundry:

Burden—Coke (a).....	Lbs.	9,000		
Ores—Hard red (b).....	3,600			
Soft (c).....	5,000			
Brown hematite (d).....	2,500			
Silicious red (e).....	1,200			
	17,300			
Limestone (f).....	2,070			
Dolomite (g).....	2,070			
	4,140			

	(a)	(b)	(c)	(d)	(e)
Silica.....	8.17	16.62	8	42.84	
Alumina.....	3.47	5.05	4	4.03	
Carbonate of lime.....	32	1.92		4.79	
Iron.....	39.47	51.57	51	34.7	

The silicious ore (e) is used to dilute the alumina.

	(f)	(g)
Silica.....	3.78	1
Alumina.....	.75	1
Carbonate lime.....	86.26	55
magnesia.....	7.50	42.90

2. Furnace 18 x 75 ft., brick stoves, 8 tuyeres 7 in. each, 12 ft. hearth, 22,000 cu. ft. air per minute, averaging 193 tons a day of high silicon iron, over 80% foundry:

Burden—Coke (h).....	Lbs.	5,600		
Ores: Hard red (i).....	9,600			
Soft (c).....	2,650	12,250		
Limestone (f).....	620			

Furnace 20 x 75 ft., brick stoves—same number of tuyeres and blast as last, but 11-ft. hearth, averaging 200 tons a day, 85% foundry:

Burden—Coke (h).....	Lbs.	5,600		
Ores: Hard (i).....	6,800			
Soft (c).....	2,740	12,280		
Brown (d).....	2,740			
Limestone (f).....	1,320			

	(j)	(k)
Volatil matter.....	52	10
Fixed carbon.....	89.15	2
Ash.....	10.33	28
Sulphur.....	1.27	37

The coke burnt per ton over whole month was below 2,500 lbs.

As was shown in Article II., the cost of the coke at the different furnaces varies from \$1.75 to \$2.25 per ton according to location, and the limestone 90c. per ton. Responsible contractors are delivering the hard ore crushed f. o. b. mines at 60c. per gross ton; freight to furnaces, 15 to 25c., making a furnace cost of 75 to 85c. a ton. The contract price for a considerable quantity of soft ore, 37½c. f.o.b. mines, freight 17c., a total of 54½c. furnace. The Irondale soft (51% iron) is higher, say \$1.10 furnace; brown hematite (50% iron), \$1.15 furnace. All of these figures are actual, covering many thousands of tons. In consequence of closer management and of an enormously increased output, the labor cost per ton has gone down to a low figure. There has not been a furnace running during the last year, that has not greatly increased its daily output. The only published figures are those of the Tennessee Coal, Iron and Railway Company in its report of 1894 which gives: Output per furnace at Ensley for March, 1893, at 3,441 tons, and for March, 1894, at 6,091 tons. An unprejudiced furnace man noting the materials used, the ores not yielding over 40% iron, and a monthly yield of 6,000 tons per furnace, will be tempted to regard the furnace manager with business respect and admiration.

The most carefully itemized cost sheets I have seen were kindly shown me, and I was permitted to use the figures. The following for one month, covering a production of 12,000 tons from two furnaces, fairly represents the work since the first of this year:

Cost per ton—Coke at cost.....	\$2.313
Ores.....	2.147
Limestone.....	0.164
	\$4.624
Labor.....	\$0.795
Incidentals.....	0.940
	\$1.735
	\$6.359

The items making up incidentals were carefully noted—50c for renewal, and the balance covering oil, waste, taxes, insurance, office and general expense. For many months all of these items, including labor, have not exceeded \$2. One reason for the low labor cost is, there is little double handling of stock, and with its regular daily deliveries the fresh is always near the hoist making a short and quick wheel. At many furnaces there is not a pound of stocked coke. This is kept on the oven yards, and the cars bringing it in stand on the furnace floor and the coke is run directly into the barrows, thus saving one handling and much breakage.

The unloading gang is small and constantly employed. The iron yards are arranged for cheap breaking, piling and loading. As previously stated, shiftlessness and wastefulness have disappeared, and close management is seen on every hand. One important fact must be borne in mind—the furnaces are burdened and run for foundry iron, and forge is an off product. Formerly the furnaces made so large a percentage of this grade as to cause great inconvenience and loss, but improved practice avoids this. The low quotations, \$6.50, and even \$6.25, which cause so much public comment at times, are for this grade.

A declining market and low prices have proved a blessing in disguise to the Southerners, because it has shown them what they can do, and the chances are that when market conditions improve, as they surely must, they will not retrograde.

In their efforts to hold their place and improve their position, the operators have been ably seconded by the Louisville & Nashville Railroad Company. It was an unusual and positive pleasure to note the kindly and appreciative tone used by them in speaking of the company and its policy, and unless one is wholly mistaken, the helping hand will reap a due reward in the business future of the district.

My object in going to Birmingham was not to find out whether the furnace companies could make dividends on the stock, or even meet the interest on their bonded indebtedness. I wanted to satisfy myself how cheaply iron could be made and how long it could be kept up. I can unhesitatingly say that individually my curiosity has been gratified. Whether what has been said will satisfy other "doubting Thomases" can only be conjectured. One thing is certain, that an earnest effort has been made to get at bottom facts and figures.

ABSTRACTS OF OFFICIAL REPORTS.

De Lamar Mining Company, Limited; Idaho.

The report of this company for the year ending March 31st, 1894, gives the following table of work performed for the year: Wet tons crushed, 39,053.58; dry tons crushed, 35,053.67; assay value of the ore milled: gold, \$19.87; silver, \$11.93; total, \$31.80 per ton; percentage saved according to assay, 82.63%; according to bullion returns, 81.89%. The pure gold produced was 26,483.13 oz.; fine silver, 509,169.19 oz. The value of gold at \$20.67 per oz. was \$545,489; and for slags and residues, \$5,448, making a total of \$551,937. The value of silver at \$0.71085 per oz. was \$358,473; add for slags and residues, \$2,427, a total of \$360,900. The mill was in operation for the year altogether 335 days 22 hours. The average ore crushed per stamp per day of 24 hours was 3.48 tons. There were 210½ tons smelting ore sold, the returns on which were \$117,274; charges, \$38,166; profit, \$79,108.

The costs of mining, including prospecting and development work, and all other costs and expenses, direct or proportionate, amount to \$5.9295 per ton. The cost of milling, including all labor, supplies and all proportionate expenses, amount to \$5.9945 per ton. Total costs per ton \$11.9240, showing a decreased cost for the year on mining of \$1.1871, and on milling of \$1.5667; total, \$2.6938. In calculating the value of the ore treated, the price of gold and silver products was based on the average price realized by the bullion returns, \$20.67 per oz. for gold, and 71.085c. per oz. for the silver.

The total receipts for ore worked and sold were \$1,039,369; working expenses \$458,250; profit from working, \$581,119. The average amount realized was \$26.08 per ton worked.

The revenue account of the London office gives the following statement: Receipts at mine, £212,116; London office, exchange, etc., £1,524; total, £213,640. The charges at mine were £93,520; London office, etc., £4,954; total, £98,474, leaving a net balance of £115,166. From this there was used for purchase of claims, new machinery, hotel fire, suspense account, etc., £15,598, and for dividends £90,000; a total of £105,598, leaving a balance of £9,568. Adding £30,759 brought forward from previous year, leaves a net balance of £40,327 forward to current year.

The directors' report says: "The average price realized for silver was 71.085c. per oz., as compared with 84.450c. the previous year, the highest figure touched being 84.02c. and the lowest 59.13c. The price obtained for shipping ore suffered a similar depreciation. This fall in values represents a loss of about \$90,000 as compared with the previous year, or 4½% on the capital of the company. Compared with three years ago, when the property was acquired and all calculations were based on silver at \$1 per oz., the difference is \$200,000, and on the same basis the loss to the company on the three years' operations amounts to no less a sum than \$340,000. Under these circumstances it is gratifying to find that as the mine is developed in depth ores carrying a larger proportion of gold preponderate. For while the production of silver shows an increase of 22,032 oz., or say 4%, the production of gold has increased by 7,460 oz., or say 40%, as compared with the previous year. In values the ore milled has yielded 60.46% gold and 39.54% silver, against 52.09% and 47.91% in 1892-1893.

The mill has worked most satisfactorily during the year, and the additional and renewed pans and settlers have resulted in a capacity to treat a tonnage fully up to Captain Plummer's forecasts. The present plant is now doing the utmost that can be expected from it. The production of shipping ore was 210.24 tons, averaging \$557.81 per ton as compared with 365 tons the previous year averaging \$483 per ton. Owing to the disturbance in the silver market, the search for this ore was less vigorously prosecuted for a part of the time, but shareholders are again reminded that this department of the work is of a much more uncertain character than is the mining of milling ores. It was deemed advisable during the silver crisis last summer to curtail the expenditure on development work until the situation became somewhat cleared. Since November, full work has been resumed, and it will be the policy of the board to continue to spend money freely in this direction. Captain Plummer now estimates the reserves of first-class ore at 100,000 tons, of the value of 18 dwt. gold and 16 oz. silver per ton, an amount which would have been considerably larger but for the partial suspension of development work above referred to and the transfer of some 10,000 tons of ore from first to second class owing to the depreciation in the value of silver. No credit is taken for anything below the ninth level, the developments at the tenth not yet being sufficiently advanced to warrant a reliable estimate of what that level may yield. The second-class ore is estimated to amount to

108,500 tons, of the value of from \$5 to \$12 per ton. No conclusion has yet been arrived at as to a method of profitably treating this large quantity of ore, and no positive value can therefore be placed upon it as an asset."

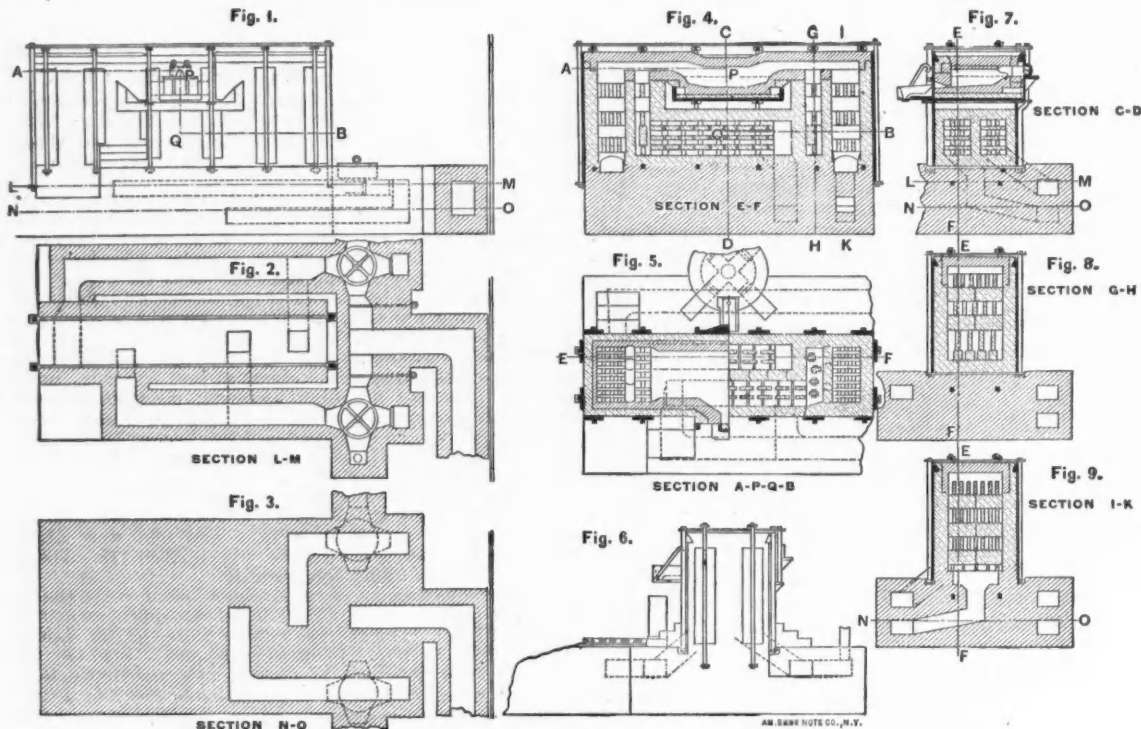
The report of Capt. J. W. Plummer, manager, says: "Two additional pans and one settler have been added to the milling plant. Six iron pans and three iron settlers have been replaced by wooden pans and settlers of larger capacity. The main mill building has been extended easterly 14 ft., by a width of 40 ft. Additional storage room has been provided by the extension of the present warehouse, and a bath-house has been built for the employees. A Pelton water wheel has been installed at the east end of the mill building. Its capacity is 1,024 cu. ft. per minute; fall of water, 185 ft.; and nominal horse-power developed, 197.6. It is used as an auxiliary to the steam engine—often doing the work alone. It is operated by the waters of Jordan Creek, which furnishes the necessary amount during the spring and early summer and the late autumn; the intervening period being the dry season. The average length of service during the year is about four months. A stream of water is being brought in from Louise Creek, a distance of five miles from the mill. It is estimated that it will develop an average of 18 to 19 H. P. during the year. This power can be advantageously utilized for running the dynamos. The ditch has been dug all the way, and wooden pipes have been laid for a distance of 6,800 ft. On December 29th, 1893 the hotel (the property of the company) and all its contents were destroyed by fire. The loss on the building and furniture was estimated at \$13,642; amount of insurance \$7,000. Temporary accommodations were at once provided, and the inconvenience, generally resulting from fires in isolated places, was reduced to a

OPEN-HEARTH STEEL IN SWEDEN.

By E. G. Odelstjerna.

The open-hearth steel process was first introduced into Sweden by Managing Director K. Styffe and Director L. Rinman, of the Jernkontoret, who had obtained a description of the process from Mr. P. E. Martin at Paris in 1867. Some experiments made at the Munkfors Works in Varmland showed that steel could be advantageously melted with our Swedish fuel, wood and peat, provided the Siemens regenerators and the Lundin gas-producers with condensers were used; and Director Rinman was called upon during the next year to build two steel works, one at Kilafors and one at Hellefors, and to commence also the working plans for two other steel works.

The first Swedish open-hearth furnaces were, as the drawings of the Kilafors furnace (Figs. 1 to 9 inclusive) show, very small in comparison with those of the present day, or even with furnaces in other countries at the same time. They were built for charges of about 470 to 500 lbs. only. In other countries the open-hearth steel industry was at that time specially based on the use of cheap scrap and pig iron, to produce a second-class soft steel, and also on the use of relatively cheap low-phosphorus puddled iron, with as small a proportion as possible of more expensive low-phosphorus pig iron, to produce hard steel for domestic consumption. The Swedish makers, however, are obliged to sell most of the iron product to other countries; and have always to hold the market by maintaining the very best quality, since the expensive raw materials and transportation



THE FIRST OPEN-HEARTH STEEL FURNACE IN SWEDEN.

minimum. Owing to the unprecedented stormy winter and depth of snow the work of rebuilding was postponed. Preparations are now being made to rebuild. Several bids have been received for the delivery of cordwood during the season of 1894. The bids include red fir, juniper, white fir and mountain mahogany. The prices, both for cordwood and mining timbers, are the same as prevailed last year."

Captain Plummer also gives the following detailed analysis of costs per ton of ore treated in the mill for the year:

Labor:		Supplies:	
Superintendence and foremen.....	\$0.3511	Chemicals.....	\$0.3239
Crushermen.....	0.1089	Lubricants.....	0.0182
Batterymen.....	0.1247	Illuminants.....	0.0191
Tankmen.....	0.1904	Fittings.....	0.0073
Pan-men.....	0.1660	Castings.....	0.2701
Pan-helpers.....	0.1449	Iron and steel.....	0.0087
Repairmen.....	0.0669	Lumber.....	0.0244
Retortmen.....	0.0440	Coal and charcoal.....	0.0442
Engineers.....	0.0834	Belting.....	0.0320
Firemen.....	0.0777	Quicksilver.....	1.2866
Machinists.....	0.0839	Salt.....	0.1752
Blacksmiths.....	0.0483	Fuel.....	1.1599
Watchmen.....	0.0581	Bolts and nuts.....	0.0024
Carpenters.....	0.0924	Tools and files.....	0.0025
Labor.....	0.0946	Iron pipe.....	0.0094
Wood and teams.....	0.0835	New pans.....	0.0538
Oil and old-iron scraper.....	0.0182	Grate bars.....	0.0064
Assayer.....	0.0462	Sundries.....	0.0855
Storekeeper.....	0.0478	Assay office supplies.....	0.0330
Office expenses.....	0.0478	Stable supplies.....	0.0265
Incidental expenses.....	0.0202	Office and incidentals.....	0.0089
		Freight and expressage.....	0.2645
Total labor.....	\$2.0028	Traveling expenses.....	0.0017
Supplies.....	3.9917	Stationery and printing.....	0.0047
		Telegrams and postages.....	0.0235
Total.....	\$5.9945	Legal expenses.....	0.0254
		Insurance.....	0.1081
		Total supplies.....	\$3.9917

The total amount of prospecting work done during the year was: Shafts 105 ft.; levels, 2,194 ft.; drifts and crosscuts, 1,898 ft.; winzes and raises, 846 ft.; total, 5,043 ft.

have made it impossible to make cheap iron. They have therefore to aim chiefly at the production of fine steel, the best tool steel and fine steel castings. They must do this in the most economical way, that is, with the use of as much pig iron and ore and as little wrought iron and scrap as possible, because they have pig iron, free from phosphorus and sulphur, a good deal cheaper than wrought iron and scrap; whereas, the opposite relation between non-phosphoric pig iron and puddled wrought iron has obtained in other countries.

Mr. C. A. Rettig, of Kilafors, and Director L. Rinman are really the gentlemen who established the Swedish open-hearth steel business, in that they employed with entire success charges of 60% of pig iron and 40% of wrought iron, and even with a greater proportion of pig iron. Director Rinman successfully used rich iron ore also for the process.

At the small furnaces first built, the fuel consumption was of course very great—from 375 up to 560 lbs. per 100 lbs. of steel produced in furnaces of 470-lb. heats. In 1869 a furnace was built by J. L. Sebenius, carrying one ton at a charge and running with a fuel consumption of about 275 lbs. per 100 lbs. of steel. After this, the dimensions of new furnaces were increased and their fuel consumption reduced, until at the end of 1878 there were seven steel works in operation, with 11 furnaces, the highest charge capacity being four tons, and the fuel consumption about 200 lbs. per 100 lbs. of steel. In that year the Bofors works started the manufacture of steel castings, and had found that by this process, without forging afterward, they could make, after the *Terre Noire* method, steel castings which would compete for strength, toughness and solidity with the best foreign crucible steel forgings. This increased the general faith in the open-hearth steel process, and additional works with larger furnaces were built.

In 1882 a great impetus was given to the process by the invention of several forms of gas-producers, by which gas could be made cheaply from wood or coal, greatly reducing the cost of fuel for the process. Some of these gas-producers will be described further on.

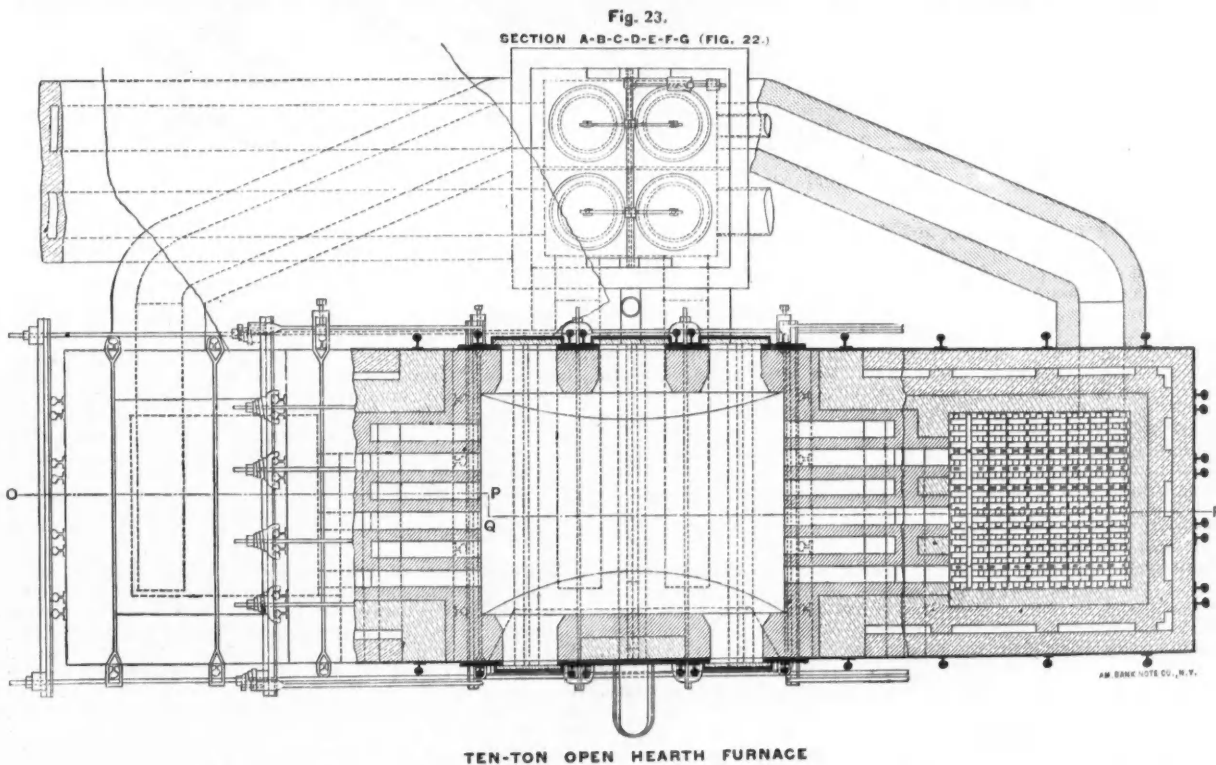
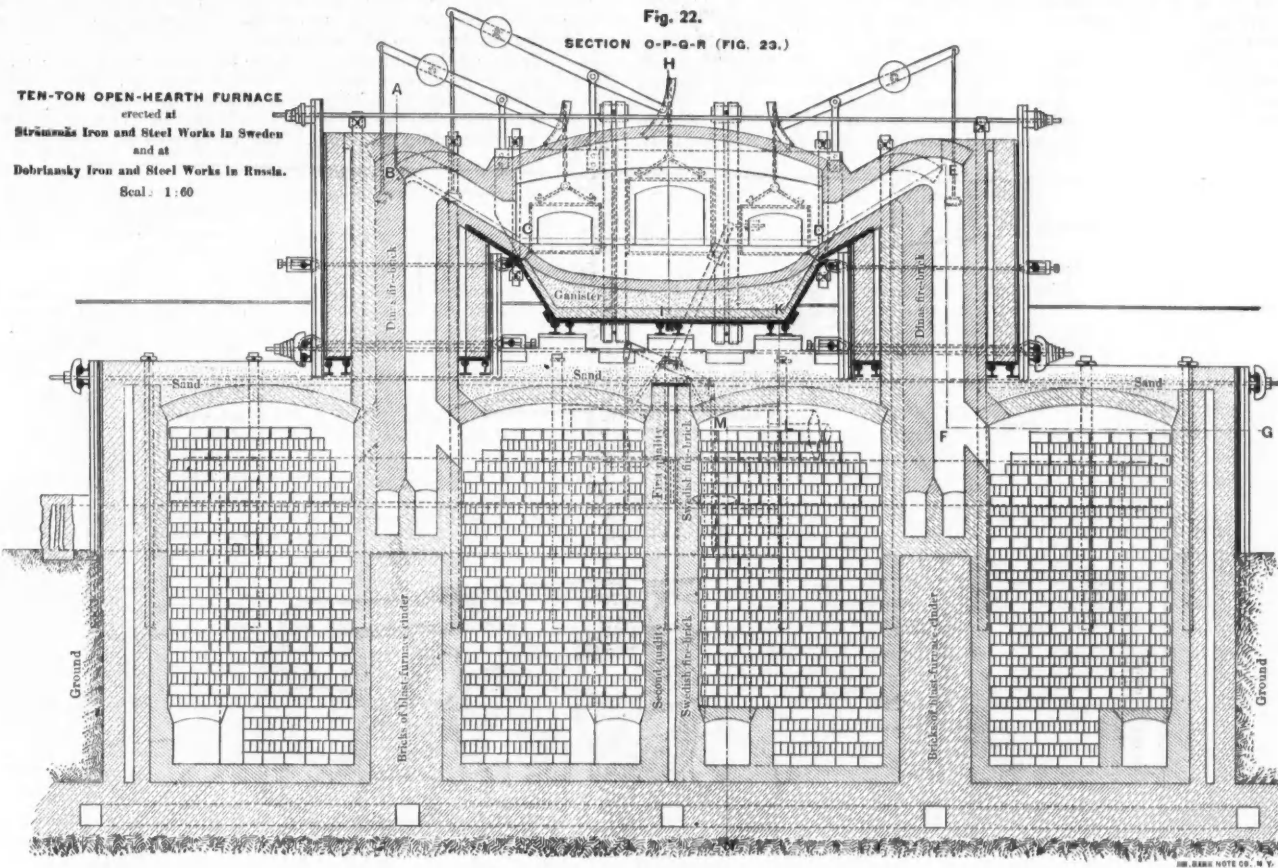
Almost all the newly built open-hearth furnaces are of the style shown

\* Abstract of paper presented at the Virginia Beach meeting of the American Institute of Mining Engineers.

in Figs. 22 and 23. Since 1883 we have, in Sweden, generally used very high roofed furnaces with dome arch and with alternating or so called "gallery-ports" for gas and air. We prefer, for two reasons, this kind of ports. In the first place, as we like to use the largest practicable percentage of pig iron, we desire that half of the charge should be melted in the hot air currents coming from the ports. In this way almost all the silicon and even a part of the carbon are oxidized during the fusion, so that the reactions in the bath can commence sooner. Again, a smaller part of the material is thus exposed to contact with the gas flame. In works

of the spray of slag which accompanies the products of combustion from the furnace.

We let the ports incline downward to the bottom of the hearth, preferring to be able to get the bottom sintered quickly after repairs between the charges. This, however, certainly occasions a loss (though a very small one) in fuel, by reason of the less perfect combustion of the gas just after a fresh cold charge has been added. The use of the gallery ports secures perfect combustion in the furnace as soon as the cold charge has become red-hot, and hence no smoke can be seen coming from the



where coal or peat containing sulphur are used to make the gas, it is an advantage to have the metal less liable to take up sulphur during the melting. That this is not an imaginary benefit is shown by the considerable reduction of the amount of ferro-manganese required in a furnace which, after having had the gas ports below and the air ports above, has been changed to the gallery type. The difficulty was, formerly, that the partition walls between the ports soon melted down; but we have overcome this by the use of fire-brick of more suitable dimensions and form. We have also been using for many years so-called dust pockets for the collec-

tion of the spray of slag which accompanies the products of combustion from the furnace.

The regenerators at our open-hearth furnaces are very large as compared with those of other countries. We provide in each regenerator 2.5 cu. met. (88.3 cu. ft.) of regenerator capacity per ton of steel, which the furnace is to give at each cast. That is, for a 10-ton furnace, each regenerator has a capacity of 25 cu. met. (883 cu. ft.), or, for all the four together, 100 cu. met. (3,532 cu. ft.). To prevent loss of heat we bury them as far as practicable in dry ground, and the portion of the regener-

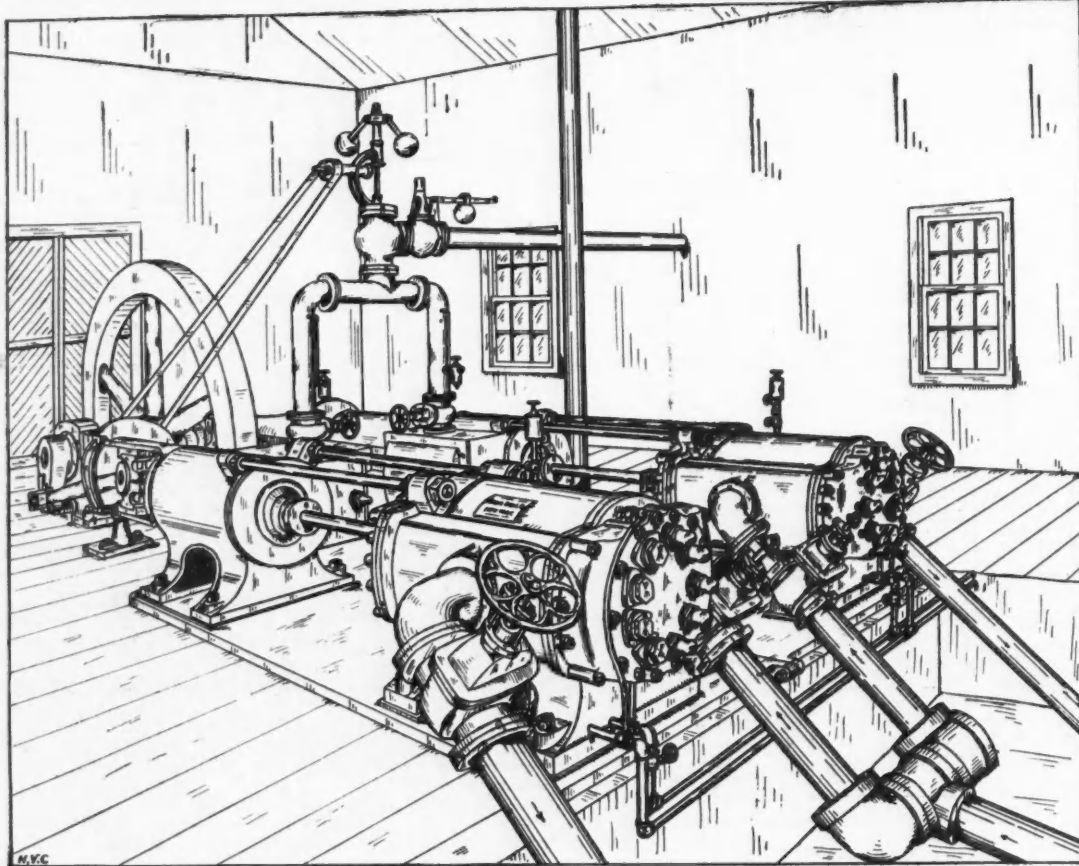
ator left above the ground is in most cases covered with asbestos, and this again protected with sheet iron. Over the roof is laid a cover of about 1 t. of dry sand. The object of all this is to save fuel. Only the walls of the furnace proper have not this covering, but the brick is protected by 1-in. cast iron plates.

The best valves we have are the so-called American lift-and-drop dish-valves, which rest against water-cooled rings and are easily adjusted so as to be always entirely tight. As the gas from wood and peat usually enters the furnace as cold as the air, or colder, the gas regenerators are made of the same size as the air regenerators. The products of combustion leave our best furnace regenerators at only about 200° Cent.

As the fuel is with us the most expensive item (coal, for instance, costing us at the works about \$6 per ton), we try, above all, to reduce the fuel consumption to a minimum by covering the furnaces and by driving the process as fast as is consistent with the best quality of the product. We have, nevertheless, not got below a fuel consumption (for coal) of 20 to 25% of the weight of the steel produced. But it must be kept in mind that,

to the surface and pumps became necessary. With the falling of the pressures of natural gas, the same remedy is now being applied, compressors being installed to take the gas as delivered by the wells, compress the same to the point required, and then deliver it to the service pipes at this higher pressure. The wide experience of the Rand Drill Company, of New York, in the building of air compressors placed them in a position to immediately respond to this demand for gas compressors. The accompanying engraving represents one of their standard duplex compressors as installed at the wells of the Lima Natural Gas Company, at St. Mary's, O.

The differences in compressors for gas and air consist mainly in the addition of a connection to the suction valves from the incoming gas main, and in the construction of the compressor valves themselves. Apart from these differences the machine is substantially the same as the standard duplex air compressors of the Rand Drill Company. The company has also supplied in numerous cases their straight-line pattern of compressor for the same purpose, the modifications in the air cylinders being similar to those for the duplex machine. The arguments as to the relative merits



RAND DUPLEX COMPRESSOR FOR NATURAL GAS.

partly for the lack of good soft scrap, and partly also because we believe that our product is better, the more pig iron and the less scrap we use, we work with a high pig iron percentage and consequently take more time to each heat than is customary in other countries.

We have, for instance, steel works here which use no wrought iron at all when they make the very finest qualities of steel, but work only with pig iron and ore. In such cases, however, the fuel consumption rises somewhat above the figures given above, which are for charges of 60 to 70% of pig iron and 30 to 40% of scrap respectively, melted in 10 ton furnaces, which is the usual size of our modern furnaces. The largest furnaces are of 15 tons capacity. It is the common opinion that the maximum advantageous size is reached at 10-ton charges, if strictly first-class tool steel and steel castings are to be manufactured. But few of our works make entirely soft open-hearth steel in quantities large enough to run 40 to 50-ton furnaces, and these works prefer, so far, to use three smaller furnaces instead of one large one, fearing to get an inferior and not entirely uniform product.

According to the reports of the Royal Department of Commerce, the production of open-hearth steel in Sweden was, in 1886, at 13 works, 22,460 metric tons, and, in 1892, at 22 works, 76,556 metric tons. This is (in proportion to the size of the country) a rapid growth, both in number of works and in aggregate product, the former having been nearly doubled, and the latter more than trebled in six years. At the present time, there are two new works under construction, with furnaces of 10 tons capacity.

(To be continued.)

#### COMPRESSORS IN THE NATURAL GAS FIELDS.

In the early history of natural gas the pressure at which the gas was supplied by nature was very heavy, and by its force it was distributed through long lines of pipe to distant centers of consumption. In the course of time, however, the natural pressures began to fall, and in many cases became insufficient to deliver the required volume of gas to the consumers. The case was precisely analogous to the corresponding fall in the pressure of petroleum. In the early days petroleum wells were, as a rule, spouting wells, but as the subterranean reservoirs were gradually drained, the oil no longer flowed

of the straight-line and duplex compressors for natural gas are substantially the same as those in the case of air compression and need not be entered upon here.

Improvement in the Manufacture of Briquettes.—Some experiments have been made in a quiet way at a Cumberland colliery with a view of making coal briquettes without admixture of pitch or lime, according to the London "Iron and Coal Trades Review." Part of the bind is a waste product, and the remainder costs on an average from 20s. to 28s. per ton, according to yield and demand. From 4½ to 5% of the bind is added to the coal, and a briquette is obtained which neither cracks or crumbles, but which burns freely in an ordinary fire or under steam boilers, either with or without forced draught, leaving no slag or clinker. The tenacity of the bind is stated to be such that it permits the molding of briquettes 4 in. by 2½ in. by 1½ in., a size which will doubtless prove very convenient for domestic purposes.

The Ventilation of an English Coal Mine.—A most powerful plant for ventilating mines has just been put down by the Waddle Patent Fan and Engineering Company, of Llanely, South Wales, at the South Moor Collieries, in the county of Durham, says the London "Colliery Guardian." The underground workings at these collieries it is calculated will ultimately extend over an area of several square miles, and in accordance with the original intention that the whole should be ventilated by one fan it was necessary that it should be exceptionally powerful. The ventilator which has been erected is the Waddle improved patent fan, and is 45 ft. in diameter. It is driven by a high pressure horizontal engine with a cylinder 40 in. diameter. Steam, at a pressure of 80 lbs. to the square inch, is supplied by three Lancashire boilers which are heated with a forced draught. The upcast shaft, to which the fan is connected, is 16 ft. diameter in the clear, and has been specially sunk for the ventilation. It is a very fine piece of work, and is walled throughout from top to bottom. The fan was put in motion a few days ago, and in a preliminary test made under the superintendence of Mr. James Fairley, the manager of the collieries, a volume of considerably over 500,000 cu. ft. per minute was obtained, whilst running little more than at half speed. When the arrangements are further advanced, and the whole of the boiler power is available, it is probable that much better results will be obtained.



SOME IMPROVEMENTS IN MINING MACHINERY.

The accompanying illustrations show some improvements in milling and mining machinery which have proved their value in actual work. All of them were devised by Mr. Henry Bolthoff, and are manufactured by the Hendrie & Bolthoff Manufacturing Company, of Denver, Colo. Fig. 1 shows an improvement in gold stamp mill mortars, patented March 6th, 1894. The improvement here consists in making the longitudinal surfaces below the feed and delivery openings, which are covered with amalgamated copper plates, of a curved form, instead of inclined flat surfaces, as in the old shape of mortar. This increases the surface presented to the pulp and better holds the gold until taken up by these copper plates.

The second improvement, also shown in Fig. 1, consists in the manner of securing in place the feed-apron, yet leaving it readily removable, and also holding in place the copper plate on that side of the mortar. The strip of wood, or other material, held in a groove in the back of the apron, serves as a buffer to prevent injury to the copper plate. The head of the copper table, outside of and below the delivery opening of the mortar, is also made of a curved form, thereby presenting more surface and giving a better delivery from the mortar.

Fig. 2 shows Bolthoff's improved hoisting engine, patented March 28th, 1893. The improvements in this consist of a simple and compact manner of adjusting the length of the links connecting the brake and reversing levers to their respective parts and in making the friction surfaces in four parts instead of two as in the older form of this class of friction hoisting engines. This admits of the use of two brake bands entirely encircling the brake surfaces of the drum and independent of the friction hoisting

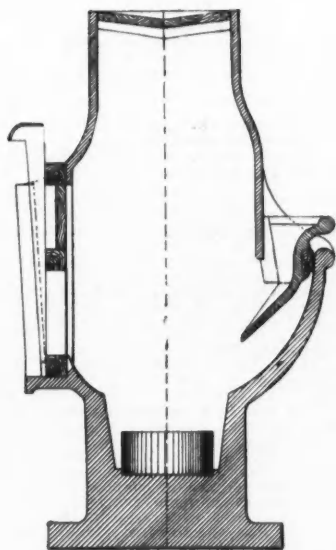


FIG. 1.—BOLTHOFF'S STAMP MILL MORTAR.

surfaces. In the older form the brake-bands are half-bands wearing against the lower half of the friction hoisting surfaces of the drum, which tended to groove as well as smoothing the friction surface, and when lowering loads to overheat the surfaces and thereby injure the friction driving pinions. This hoisting engine, up to the capacity of two 12 in. by 12 in. steam cylinders, is now widely used in the silver and gold mines of Colorado.

The indicator shown at the left of Fig. 2 was also patented by Mr. Bolthoff, March 28th, 1893. The improvements in this consist of an arrangement whereby a signal on the gong-bell, on its face, is given to the hoist attendant when the cage, bucket or bailing tank reaches the bottom or top of the shaft or any level in it, or if desired these signals may be given at any desired point above or below the levels. This is done by pins placed in a series of holes drilled in the periphery of the dial. These pins engage with the lever of the gong bell at the proper time when the cage is either descending or ascending. Another improvement covered by the patent consists in dividing the worm gear driving the dial into two lengths at the point which engages with the teeth of the dial. Between these two parts of the worm gear is placed a spiral spring which forces them apart, thereby taking up all possible back-lash in the gearing. This has been the great trouble with all past forms of circular dial indicators. There is also shown a throttle valve which is balanced against any steam pressure and which, therefore, always works easily. A patent for this is now pending.

Nickel Deposits of New Caledonia.—Out of an area of 2,000,000 sq. kilos.—768,800 sq. miles—in the French penal colony of New Caledonia there are, according to the report of the Belgian consul at Noumea, 800,000 sq. kilos.—307,500 sq. miles—in which nickel ore is found; and one-tenth of this last-named area has been conceded to mining companies, who are now actively working 20,000 sq. kilos.—7,688 sq. miles. The ore occurs in the state of hydrated silicate of nickel and magnesia, without the slightest trace of arsenic, and contains from 8 to 10% of metal, while some samples contain as much as 16%. The mean value of the ore delivered at the port of shipment is about 100 fr.—\$20—per ton. A large number of the mines are worked by former convicts, many of whom have acquired considerable fortunes,

CONCENTRATION OF COPPER ORES ON LAKE SUPERIOR.\*

By Fred. Fraley Sharpless.

The dressing of Lake Superior copper-bearing rock generally begins underground, and it is here that careful work is the source of considerable economy in producing the metal. The nature of the copper deposits is such that it is comparatively easy to keep the bed and the wall rocks separate from each other, to hoist them separately, and thus keep the totally barren rock from passing under the stamps and on to the jigs.

Again, large areas of almost barren ground are frequently found in the beds themselves; these are generally allowed to remain untouched, or, when partially removed by drifting and sinking, are kept separate from the metal-bearing portions, and if hoisted go immediately to the rock piles.

Upon reaching the surface the ore begins to undergo the first steps of the dressing operation in the rock-house. At some of the mines the rock and shaft-house form one and part of the same building, while at others the rock house is independent, and the ore from all shafts comes for treatment to one rock-house. Whichever method is followed, the ore is dumped from the skips or cars on to grizzlies. These are gratings built of iron bars, or timbers faced with iron. The bars are placed from 4 in. to 6 in. apart, and lie at an angle of 45° or less.

At the Atlantic mine the rock passing through the grizzlies falls upon a second screen made up of inclined iron bars 1½ in. in diam., placed 4 in. apart, and sloping in a direction at right angles to the first grizzlies. The rock passing between the small bars drops without further treatment into the ore bins; that passing over these bars is thrown by hand into a 14½-in.

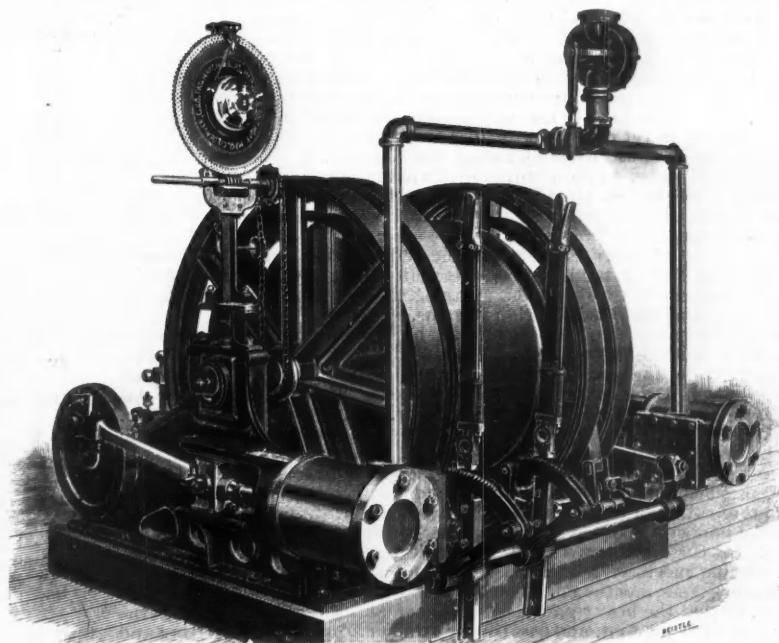


FIG. 2.—BOLTHOFF'S IMPROVED MINE HOISTING ENGINE.

Blake breaker, where it is reduced to pieces of about 3½ in. diam., dropping thence into the ore bins. The ore and rock passing over the first grizzlies is hand-sorted, the poor rock being thrown upon the dump, and the copper-bearing into 24-in. Blake breakers, which reduce it to about 3½-in. pieces and drop it into the ore bins.

At the new rock and shaft house of the Quincy mine the ore falls from the skips upon cast-iron gratings raised only slightly from the horizontal. The material passing through this grating goes direct to the underlying ore bins; that which is too large to pass through is drawn out on the floor of the rockhouse. The smaller pieces containing little copper are thrown into one of two jaw breakers standing on either side of the gratings.

Larger pieces are thrown into a larger breaker, which feeds to two smaller breakers standing below it. Pieces too large for the breakers are broken under a drop hammer on the same floor. At the Quincy mine mass copper is of such common occurrence that special provision is made for caring for large chunks. It is impossible to break these masses of copper and expensive to cut them up, and yet it is not economical to send them to the smelters without previous cleaning. The larger pieces that have not been cut up in the mine are cleaned under the drop hammer. Smaller pieces are treated under a steam hammer built for this purpose. The sorting of the mass copper must be done with care, for if allowed to get into the breakers they will clog or something will break.

At the Atlantic mine the ore passes from the bins at the rockhouse, through chutes, into cars holding about five tons each, and is then taken in trains of 20 cars to the mill on Portage Lake, a distance of about three miles. At the mill the cars are dumped into bins located under the track. These bins, in turn, discharge into small cars, which empty automatically into the ore bins in the upper part of the mill.

The method of feeding the ore to the stamps is the same in all the mills. The ore runs constantly from the lower edge of the pocket onto a shaking tray, the lip of which is above the mortar of the stamp.

By the side of this hopper a man stands constantly, breaking large pieces of the ore, picking out any pieces of mass copper that he may notice, and regulating the supply of ore as the working of the stamp may require.

\* Abstract of an article read at the meeting of the Lake Superior Mining Institute.

The following comparative table gives particulars as to four of the large mills in the Lake Superior district:

	Atlantic.	Tamarack.	Calumet & Hecla.	Quincy.
Number of stamps	5	5	22	5
Pattern of stamp	Ball	Allis	Leavitt	Allis
Foundations	Solid and spring	Solid	Solid	Solid
H. P. per stamp, about	140	.....	150	.....
Force of blow, in foot-tons, about	21	21.4	20	.....
Tons crushed per day per stamp	210	300	.....	.....
Character of rock	Amygdaloid	Conglomerate	Conglomerate	.....
Water used per ton	7,200 gals.	35-40 tons	.....	.....
Life of shoe	3,000 tons, or 14½ days	3-4 days worn from 700-200 lbs. 3-5 weeks	5-6 days	.....
Life of screen, about	8,800 tons, or 42 days	.....	1 month	.....
Character of screen	4 cast steel plates, 9¼ × 48 in. × No. 11; slot holes ¼ in. long	4 plates steel 9 × 25 × 1/16 in.; 2/16 punched holes	Steel plates; 2/16 in. round holes	.....

Three patterns of steam stamps are used at the present time—the Ball, the Leavitt and the Allis, the first being the oldest.

The character of the rock from the different mines varies so much that unless there were various stamps in the same mill, and working on the same rocks, a comparison would be valueless.

It will be noticed from the table that the capacity of the steam stamps is enormous, and that the amount of water that is required to remove the crushed rock from the mortar is also very large.

The rock is crushed to pass holes varying in diameter from ⅝ in. to ⅞ in., depending upon the character of the rock under treatment. Crushing this fine does not liberate all the copper from its gangue. In fact, it would be almost impossible to crush the conglomerate fine enough to do so. The size of the opening in the screens used at the various mills has been determined by experiment to be the most economical for that particular ore. Crushing finer would, of course, decrease the capacity of the stamp, hence it is best to use as coarse a screen as the ore will permit. The copper that yet remains attached to particles of rock is not lost. A large portion of this material, called the ragging, is caught on the jigs and either returned to the stamps or treated in some grinding machine.

The wear of the shoes, made of chilled cast iron, though it appears very rapid, is actually very small when compared with the amount of work done by them.

The amount of water used for washing and carrying away the tailings is so large that few of the mills are fortunate enough to possess a natural supply adequate to the demands. During the wet season a large portion can be supplied from neighboring streams.

As the ore passes through the screens of the stamp it is collected by a splashbox, and drops into a launder leading to the separators. This launder divides the ore stream into three equal portions, one portion being delivered to each of the three separators. The separator at the Atlantic mill consists of a trough about 15 ft. long, 18 in. wide and 18 in. deep. Near the bottom, and at the front of each separator, are four small pipes discharging upon the screens of four jigs just opposite them. In the axis of the separator and opposite to each outlet is a vertical 1½ in. pipe, supplied with water from above and opening downward about 2 in. from the bottom of the separator. Between each of these four pipes lies a bed of copper, deposited in the regular working, and allowed to remain there. As the ore enters the separator it passes over these beds of copper, coming successively in contact with the rising currents generated by the supply pipes mentioned. The head of water in each successive pipe is less, so that the heavy particles of copper and gangue will fall into the cavity around the first, and pass through the small opening in the front and spread themselves upon the roughing jig. In the second cavity less heavy particles will fall; in the third, still smaller grains. The ore which passes the fourth division of the separator is classed as slime, and goes to the settling tanks.

The separation accomplished by the device used is very incomplete, so that the size of the material coming upon the various screens cannot be given further than has been stated above. Following each separator are four so-called roughing jigs, each having two screens; thus the ore from each separator is treated from a set of eight screens, each set of eight doing exactly the same work. The hutch work from the roughing jigs passes to 12 finishing jigs, placed at a lower level, all of which do different work.

**Explosion in a Blast Furnace.**—A double explosion, heard for seven miles round, lately occurred in the hearth or crucible of the blast furnace of the Pont-a-Balques Works, Isbergues, in the Pas-de-Calais, France, owing to the water for keeping the hearth cool coming into contact, through infiltration, with the molten metal. The bricks flew in all directions, and a flock of pig iron weighing more than 200 kilos. was found at a distance of 200 meters. Fortunately no lives were lost, and the material damage has been repaired at a cost of about 6,000 fr.—\$1,200—with a stoppage of only 10 days.

**Electric Heating of Metals.**—At the Krupp Works, Essen, Prussia, experiments have been made with the process, invented by M. Lagrange and M. Hoho, for heating metals by the electric current, for welding, tempering or hardening. A tank, lined with lead, contains acidulated water, the positive pole of an electric battery being put in connection with the lead lining, and the negative pole with the tongs, the handles of which are made of a non-conducting substance. When a piece of iron is seized by the tongs and plunged into the water, the current decomposes the liquid, hydrogen forming at the end of the conductor connected with the piece of iron, and forming round it a coating of gas; and the resistance which is thus opposed to the current causes the heating of the iron.

**Internal Rusting of Boilers.**—An abstract of a paper from a German source on this subject has been published in the "Journal" of the Society of Chemical Industry. This report commences with an account of the physical and chemical phenomena which promote and cause the formation of rust upon iron. The internal rusting of boilers is dealt with under

two headings, namely, when the boiler is in use and when it is standing idle. The causes of rusting are first considered, the most important being the introduction of air with the feed-water. By properly placing the feed-pipe, namely, so that the feed-water enters the boiler near the low-water level, and thus meets the hottest layers of water, the air is quickly expelled, and passes out of the boiler with the steam, unless pockets exist in which it can accumulate. Such pockets are sure to rust rapidly; and it is recommended that they should be covered internally with a protecting paint or filled up with cement, provided they are not subjected to external heating. It is also recommended that the feeding should be completed before the withdrawal of steam ceases for the day, in order that the water left standing in the boiler over night may be as free from air as possible. An efficient circulation is also a means of preventing rusting, as it hinders the formation of air bubbles on the shell, which, if they remain clinging to it, cause rusting. The author is of the opinion that faulty construction is more often the cause of internal rusting than unfavorable conditions of working, and summarizes the means of preventing rusting as follows: First, whilst the boiler is working. (1) Removing air from the feed water before it enters the boiler. (2) Removing air from the water whilst in the boiler, and preventing its accumulation in pockets, etc. (3) Addition of chemicals to the feed water. (4) Protective coatings applied to the inside of the shell. Second, whilst the boiler is standing idle—(1) Removing all moisture from the boiler, (a) by blowing it off whilst hot, (b) by producing an air current through it, (c) by placing hygroscopic bodies inside. (2) Direct protection of the shells by painting with tar, varnish, etc., by covering with protective paints, and such an alkaline coating as milk of lime. (3) Protecting the shells from varying temperatures by keeping the draught in the flues constant, and so as to prevent moisture alternately depositing and evaporating on the shell. (4) Protecting the shell by completely filling the boiler with water from which all air has been expelled.

#### PATENTS RELATING TO MINING AND METALLURGY.

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, JULY 3D, 1894.

- 522,215. Furnace. Aaron Jay, Chicago, Ill. Boiler furnace with conveyor or traveling grate and combustion chamber.
- 522,228. Process of Renewing Old Steel Rails. Edward W. McKenna, Milwaukee Wis. The process consists in reheating the rails and rerolling to a smaller section.
- 522,232. Electric Safety Fuse. Joseph Sachs, New York, N. Y. Composed of a wire or strip to be melted by an excess of current, such wire to be surrounded by material which will combine with the metal and form a non-conductor.
- 522,236. Channeling Machine. Henry C. Sergeant, Westfield, N. J., Assignor to the Ingersoll-Sergeant Drill Company, New York, N. Y. Combination with the axle of the carriage of a movable drill shell and gearing.
- 522,238. Water Tube Steam Boiler. Albert W. Shearer, Omaha, Neb., Assignor of one-half to William S. Felker, same place. Combination of firebox, water drums and water tubes.
- 522,260. Method of Abstracting Gold and Silver from Their Solutions in Potassium Cyanides. William D. Johnston, San Francisco, Cal. The process consists in passing the solution through a series of carbon filters to arrest the gold.
- 522,271; 522,272. Steam Boiler. Michael H. Plunkett, Baltimore, Md. The boiler has water-tubes grouped around a series of steam-chambers.
- 522,273. Valve Mechanism for Blowing Engines. Edwin Reynolds, Milwaukee, Wis. Hollow rotatable valve with closed ends and gridiron ports.
- 522,325; 522,326. Gas Making Apparatus. Jeannot W. Kenevel, Chicago, Ill. Combination of generating chamber, mixing chamber and superheater.
- 522,340. Furnace. William Freakley, Stoke upon-Trent, England. Combination of flues and combustion chamber.
- 522,347. Manufacture of Bimetallic Plates. Edouard Martin, Paris, France, Assignor to the Oberschlesische Eisen Industrie Actien Gesellschaft für Bergbau und Hüttenbetrieb, Gleiwitz, Germany. The process consists in casting a covering of metal on a core of harder metal, then rolling and rerolling to the desired size.
- 522,357. Apparatus for Obtaining Ammonia. Lothar Sternberg, Jersey City, N. J. Combination of furnace with a series of vertical retorts, a discharge chamber and a receiver.
- 522,377. Pulverizing Mill. Fred. J. Judd, Jersey City, N. J., Assignor of one-half to William Henry Dittmar, same place. Combination of rollers and scrapers in a revolving pan.
- 522,380. Smokeless Boiler Furnace. John Myerscough, St. Louis, Mo. Combination of a firebox with a series of bridge walls and combustion chambers.
- 522,417. Forehearth for Smelting Furnaces. Malvern W. Iles, Denver, Colo. Iron bottom and side plates clamped together, with fire-brick lining and cover.
- 522,418. Carburetor. Malvern W. Iles, Denver, Colo. Combination of blower, delivery pipe, conduits and the necessary valves.
- 522,422. Apparatus for Deoxidizing or Oxidizing. Alfred B. Kittson, Boston, and Arthur B. Browne, Cambridge, Mass. An inclined rotating circular with feed and delivery, and also pipes for admitting gases.
- 522,446. Process of and Mechanism for Smelting Ores. Charles M. Allen, Butte, Mont. Combination with a rectangular furnace of a bell and hopper feed, the bell being A-shaped.
- 522,488. Amalgamator. Edward J. Powell, Sunny South, Cal., Assignor of one-third to H. T. Powers, same place. Pan with riffles and channels carrying quicksilver and device for feeding pulp in a thin sheet.
- 522,518. Rotary Pump. Stephen N. Eisler, New Orleans, La., Assignor of one-half to John D. Belton and Shakespeare & Swoop, same place. Combination of double casing, forming water-passages, with a central shaft and piston.
- 522,519. Counterbalance Mechanism for Chutes of Coal or Ore Docks. Richard W. Ericson, Aurora, Assignor to the Pettibone, Mulliken & Company, Chicago, Ill. Counterbalance weights carried by cables.
- 522,561. Mineral Fertilizer. Egbert Gulick, Starkey, N. Y., Assignor to Livonia A. Gulick, same place. Mixture of aluminous shale and wood charcoal.
- 522,574. Carburetor. George H. Burrows, Somerville, Mass. Combination of an inclosing tank, a series of passages containing volatile liquid and a receiver for the gas.

Great Britain.

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

WEEK ENDING JUNE 30TH, 1894.

- 8,964 of 1893. Desilvering lead by forcing it through molten zinc by means of centrifugal force in a continuous process. J. A. Mays, London.
- 12,903 of 1893. Coking and recovering the products of distillation; the oven is made closed with the heating fire in a trunkway up the center. J. Bowring, Tilbury.
- 13,511 of 1893. New form of wedge for breaking down coal slate, etc. R. E. Mellor, Chesterfield, and J. W. Ogden, Sheffield.
- 15,262 of 1893. Calcining furnaces, made in such a way that larger quantities of mineral can be treated at a time. C. Cochrane, Stourbridge.
- 5,233 of 1894. Smelting furnace for gold silver and copper ores. J. G. Storer, F. Martin and G. O. Eaton, Helena, Montana, U. S. A.

## PERSONALS.

Mr. Charles Kauffman, formerly of Wheeling, W. Va., is now in charge of the plate mill of the Birmingham Rolling Mill Company, at Birmingham, Ala.

Mr. C. Harwood Knight, late of Johns Hopkins University, Baltimore, has been appointed assistant in the Colorado Geological Survey. He will be stationed for the present at Pueblo.

Capt. J. R. De Lamar was recently at Boise City, Idaho, and also visited the mines of the De Lamar company. Captain De Lamar had spent some time in Nevada before going to Idaho.

Senor Marcelo Pena, mining engineer, has been appointed resident director of the mining enterprise known as the Negociacion de Concepcion y Anexas at Catorce, Mexico, in place of Mr. P. L. Monroe, resigned.

Mr. A. J. Muller, who has been connected with the Alaska-Treadwell Mining Company, at Douglas Island, Alaska, for five years past, has left that place and started for South Africa, where he intends to stay for some time.

Mr. Dion Martinez, of Pittsburg, recently returned to that city from a trip to South America. While in Columbia he obtained several mining concessions for a Pittsburg syndicate in a new district which is believed to be valuable.

Mr. John T. Jones, of Iron Mountain, Mich., who has been connected with iron mining properties on the Mesabi and Menominee ranges, has been busy for some time with experiments on a process of reducing iron ore by electricity. The work has been carried on at the machine shops of the Ludington-Hamilton property.

## SOCIETIES AND TECHNICAL SCHOOLS.

Civil Engineers' Club of Cleveland.—At the Chamber of Commerce Rooms, the regular meeting in Cleveland, O., June 12th, a committee was appointed to make necessary arrangements for a picnic to be held some time during July, the location, date and other arrangements to be left entirely with the committee. The tellers announced the election to active membership of Messrs. N. S. Crouch and W. S. Thompson. Prof. C. F. Mabery then presented an interesting paper entitled "The Investigation of the Composition of Ohio and Canada Petroleum." The paper was followed by a discussion by Prof. J. W. Langley, Prof. E. M. Morley and Messrs. Swasey, A. E. Brown, N. B. Wood, M. E. Rawson and C. M. Barber.

Boston Society of Civil Engineers.—A regular meeting was held June 20th. Messrs. Albert S. Crane, of Newtonville, Mass.; Loring N. Farnum, of Boston; Louis Hawes, of Wakefield, Mass.; Horace J. Howe, of Brookline, Mass., and Oscar H. Tripp, of Rockland, Me., were elected members of the society. The president announced the death of Hiram Nevins, of Cambridge, Mass., and a committee was appointed to prepare a memoir. Mr. Freeman C. Coffin read a paper entitled "Tests of Cement Joints for Sewer Pipes." The paper was followed by a general discussion of joints in sewer pipes in which Messrs. F. P. Stearns, E. S. Dorr, H. H. Carter, H. D. Woods and others took part. President McClinck then gave an account of the bicycle track recently constructed at Waltham, Mass., and upon which the fastest mile has been made.

Ohio State University.—The General Assembly of Ohio, during its recent session, authorized by special enactment the creation of a course of "Practical and Scientific Instruction in the Art of Clayworking and Ceramics" in the Ohio State University, and appropriated funds to establish and maintain such a course of instruction. The trustees of the University have taken prompt cognizance of this action and have proceeded to put the plan into execution by the election of Edward Orton, Jr., as director of the new work, entrusting to his hands the preparations for the opening of the department at the beginning of the ensuing college year. Inasmuch as the proposed course of instruction is a new departure in the educational field in the United States statements have been prepared for information of the clay working public and all others interested, the substance of which is given below. Those applying for admission must not be less than 16 years of age and of good character. Those between the ages of 16 and 21 years will be examined in arithmetic, geography, grammar and orthography. Those over 21 years of age will not be subjected to written examination, but are expected to have had the benefit of a good common school education. It is hoped in this course to afford to young men who are growing up among our brickworks and potteries an opportunity to gain in the period of two years as much knowledge of the principal scientific studies touching their craft, with as little expenditure of time on other branches of science not closely related to their work, as is possible. The work during the first year is wholly preparatory to the actual attack of the subject, comprising elementary instruction in mathematics, physics and chemistry. The second year is devoted to the continued study of chemistry, with the addition of geology, and the theory and practice of clay-working.

The elementary training in mathematics and

physics will be made most practical as far as it goes. The science of chemistry is the real backbone of a proper knowledge of ceramics, and great pains will be taken to make the training in this study thorough in the branches undertaken. In the second year the training offered in geology, both general and economic, is especially applicable to the work of the clay manufacturer. The chemistry in the second year will be practical laboratory work in the analysis of clays, limes, cements and feldspars during the first term; the analysis of pottery bodies and glass the second term; and the analysis of glazes, slips and enamels the third term. This work is so adjusted as to keep pace with the lectures and laboratory work in clay-working, and will be conducted in the same room. The special facilities offered for the study of clays and clay-working will comprise all the typical and common forms of machinery for the preliminary preparation of clays, for the mixture and temperature of clay bodies, for molding and forming all classes of wares. Models and drawings of drying apparatus, models and drawings of kilns, and several small kilns of different types arranged to burn test brick and pottery, to determine melting points of refractory clay, etc., will be provided. Also access has been promised to the large kilns of several Columbus clay works, for burning such work as cannot be properly executed in miniature. All machinery, though some of it will necessarily be on a reduced scale, will be mechanically perfect, and will be operated by electricity from the electric power-station of the University. Besides the machinery and kilns, pyrometers, manometers, barometers and all other instruments useful in burning clay, as well as apparatus for mechanical analysis and microscopic investigations, will be accessible to the students.

The mineral and geological museum of the university will be conveniently near, and special efforts will be made during the year to get together a fine collection of ceramic products of every grade. Tuition will be free and other expenses moderate; particulars can be ascertained on application to the University.

## INDUSTRIAL NOTES.

The Lime Rock Iron Company started its charcoal furnace at Lime Rock, Conn., July 10th, after a long idleness.

The Harrisburg Rolling Mill, at Harrisburg, Pa., has increased the wages of puddlers from \$2.50 to \$2.75 per ton.

The Carborundum Company, Monongahela City, Pa., has just received a large order from Hajal Mar Lofquest, Sweden.

The Monongahela Iron and Steel Company's plant at Hays Station, near Pittsburg, has partially resumed operations.

F. C. Roberts, of Philadelphia, has the contract to erect four large blast furnaces for the Johnson Company, at Lorain, O.

Jones & Laughlins, Pittsburg, have 47 furnaces in their puddling department running full, double turn, as is also the finishing department.

C. M. L. Meissner, Jr., C. A. Meissner and W. M. Spencer have incorporated the Southern Pump and Foundry Company, of Birmingham, Ala.

The Sterling White Lead Company has its plant in New Kensington, Pa., running full. The company will use the old Dutch method of corrosion.

The Montour Iron and Steel Company, Danville, Pa., which had been compelled to close a part of its works on account of the scarcity of coal, started on July 9th in full.

The Gillette-Herzog Manufacturing Company, of Minneapolis, Minn., is contemplating the establishment of a plant at New Orleans, La., to manufacture structural wrought iron.

The contracts for the rebuilding of the Poultney Foundry and Machine Company's plant at Youngstown, O., have been let. Work has already been begun and the buildings are to be ready in six weeks.

The Schultze Manufacturing Company, of Philadelphia, is making preparations to remove to Pottstown, Pa. The work of removing the machinery and other property of the company has been commenced.

After three weeks of idleness the puddling department of the Pennsylvania Bolt and Nut Works at Lebanon, Pa., resumed operation on July 9th with six furnaces in blast. The suspension was due to a lack of coal.

The Lockhart Iron and Steel Company has 10 puddling furnaces working double turn at its plant at Chartiers, Pa. The finishing department and bar mill are working single turn, while the guide mill is on double turn.

The following companies have signed the Amalgamated Association scale: Lake Side Nail Company, Hammond, Ind.; Atlantic Iron and Steel Company, New Castle; White River Iron and Steel Company, Muncie, Ind.

The proprietors of the White River Iron and Steel Works, of Muncie, Ind., have applied for articles of incorporation. The interested parties are: Emile C. Caheyron, Edw. R. Temple, Walter L. Ball, Vinton O. Foulk and Geo. M. Cobb.

All the iron works employees at Elwood, Ind., went out on strike on July 11th. The men claim they have not been paid for several weeks. The managers threaten to bring in foreigners to fill the strikers' places and trouble is feared.

W. C. Dewey, of Palmer, Mass., has sold the wire mill property there to Hermann Bauman and Jacob Mueller, of New York. The property consists of a large mill and 35 acres of land. Work has been commenced and the plant will soon be in full operation.

Work is progressing rapidly on the construction of the new rolling mill and tinning plant of the Montpelier Sheet and Tin Plate Company, Montpelier, Ind. The company hopes to be in operation by September 1st next, with a four mill plant and about 10 tinning pots.

The contract for furnishing 1,800 H. P. cross compound condensing engines for the Second Avenue Traction Company's new power plant, at Glenwood station, Pittsburg, was awarded to the Russell Engine Company, of Massillon, O., through its Pittsburg manager, F. G. Borden.

D. Howard & Company, of Bartow, Fla., are erecting a foundry and machine shop at that place, to repair and build new phosphate machinery. Tools have been ordered from the New Haven Manufacturing Company. The buildings are, machine shop, 40 x 60 ft.; foundry, 40 x 40 ft.; blacksmith shop, 15 x 15 ft.

The Baltimore & Ohio Railroad Company is building a bridge over Turtle Creek, Pa., near the Edgar Thomson Steel Works. The structure will probably be completed by October. Drake & Stratton, New York City, have the contract for the stonework, while the Youngstown Bridge Company will furnish the iron.

The mills at the following places resumed operations on July 9th: Canal Dover, New Philadelphia, Cambridge and the mills of Wallace, Banfield & Company, at Irondale, and the Falcon Iron and Nail Company, at Niles, all in Ohio. The United States Tin Plate Company at Demmer, also resumed, as did the plant at Ellwood, Pa.

The Mecklenburg Iron Works, Charlotte, N. C., are shipping a complete 10-stamp mill with all attachments and concentrators to San Francisco mine at El Oro, Durango, Mexico. The works are also finishing a Cornish pump and concentrator to the Rimes mine near Salisbury, N. C. Mining prospects are improving according to the company's report.

The annual meeting of the stockholders of the Burden Iron Company, of Troy, N. Y., was held recently and the following trustees were elected: James A. Burden, 1 Townsend Burden, John L. Arts, James A. Burden, Jr., and Nicholas J. Gable. The trustees met afterward and organized as follows: President, James A. Burden; general manager, John L. Arts; secretary, Nicholas J. Gable.

The Montana Iron Works, at Butte, Mont., are building a large hoisting engine for the Cousa-Parrot mine. The engine contains all the improvements introduced by this company which have heretofore been described in the "Journal." The valve gear is of the Corliss type, with improved releasing gear. The operating levers are so placed that all of them can be reached by the engineer without moving. The engine has a 16 x 30 cylinder and is intended to hoist from a 2,000-ft. level. The speed can be varied from 50 to 120 revolutions. At the highest rate it will hoist the cage at 1,800 ft. per minute.

Cofrode & Saylor, Pottstown, Pa., have received the contract to erect an iron viaduct 800 ft. long and 125 ft. high; also a three-span bridge over the Clinch River, in North Carolina, together with several truss bridges for the Cumberland Gap & Louisville Railroad. The contract for rebuilding the iron works of the Ellis & Lessig Steel and Iron Company, at Pottstown, Pa., to replace those destroyed by fire, has also been awarded to Cofrode & Saylor. The new mills will be iron, and are to be completed by September. The buildings include the nail plate mill, 150 x 60 ft., and nail mill, 250 x 60 ft., with boiler-house, lathehouse and merchant mill.

Pittsburg dispatches say that the W. Dewees Wood Iron Works, at McKeesport, will resume in full July 16th. The Duquesne, Pa., Tube Works are preparing to start up in full. About a month ago the 2,000 employees of the plant were brought out by the National Tube Works strikers at McKeesport. Work will be begun at once on the great addition to be built to the Carnegie Steel Works at Duquesne. It will be one of the largest in the world, and \$1,000,000 is to be spent. Dilworth, Porter & Company's bar mill and automatic machine plant in Pittsburg have resumed. The five Pittsburg factories of the United States Glass Company have also opened.

An extraordinary general meeting of Fraser & Chalmers, Limited, was held in London recently for the purpose of submitting for confirmation the resolutions passed June 8th, to the effect that (1) the capital of the company be reduced from £255,000 divided into 105,000 shares of £2.5 each, to £215,000 divided into 105,000 shares of £2 each, by cancelling to the extent of £2 per share the amount paid up in respect of each of the 105,000 shares, as being capital which had been lost or was unrepresented by available assets; and (2) that the capital of the company

be increased by the creation of 21,000 preference shares of £3 each, entitled to a fixed cumulative preferential dividend of 7½% per annum. Mr. J. C. Wernher presided, and moved that the resolutions be confirmed. This was seconded by Mr. R. English and carried unanimously.

The United States Projectile Company in Brooklyn, N. Y., is making extensive additions to its machine shop, and has placed the contract for this work with the Berlin Iron Bridge Company, of East Berlin, Conn. The St. Louis Railway Company, St. Louis, Mo., has placed the order for a new car barn with Berlin Company. The building will be 64 ft. in width and 185 ft. in length, with brick walls, the roof being of iron covered with the Berlin company's patent anti-condensation corrugated iron roof covering. It is the intention of the railroad company to make this station absolutely fireproof and thereby save insurance. There will be no woodwork used in the construction of the building, and it will not be necessary to carry any insurance whatever, as the danger from fire is entirely eliminated.

The strike at the National Tube Works at McKeesport was broken July 10th. The works have about 4,000 employees. The machinists and foundrymen returned to work. The firemen did not report for duty, but the yard locomotives were attached to the machine shop and foundry machinery and furnished sufficient power. The leaders of the strike claim that the laborers will stand out, but it is the general belief that the strike is broken. Assistant Manager Crosby said that the men could all come back to work when they chose. It would require some time for all departments to start up. The strike, which has cost nearly \$1,000,000, started eight weeks ago yesterday in the butt furnaces, where the laborers are nearly all boys. They got 65 cents per day. The other departments mainly went out from necessity, one branch of work depending on another. Some branches had work three weeks longer, until a mob demonstration forced them out. The rolling-mill hands, nearly 2,600 in number, quit because no more iron was needed. They never were on a strike and are anxious to resume. The blast furnaces and steel departments quit because the coal strike stopped the coke supply.

Mr. Earle C. Bacon, whose office is in the Havemeyer Building, New York, has issued a handsome illustrated catalogue of crushing machinery for ore and rock. It contains cuts and description of the Farrall crusher and a number of different patterns intended for different classes of rock and ore, including a new pattern known as the Farrell-Bacon duplex crusher. The latter named machine is made in various sizes, varying in capacity from 50 to 700 tons per day, according to size of product desired. The receiving capacity varying from 40 x 6 in. to 60 x 15 in., and the weight from 18,800 to 60,000 lbs. Other crushing machinery includes the Bacon high-speed rolls, the Bacon Cornish and Giant rolls, and a spiral coke crusher. The catalogue also includes revolving sizing screens of various patterns, bucket elevators and conveyors and road rollers. An excellent feature of this catalogue is a number of plans and sketches giving suggestions for the arrangement of ore and rock crushing and screening plants adapted for different kinds of service and different localities. These sketches include a number of plans from the small crusher arranged for the contractor's temporary work up to an elaborate plant for an extensive work. These will be found exceedingly serviceable to contractors and mill men. They have been prepared with much care as the result of an extensive experience with such plants. An additional catalogue of hoisting and mining machinery will soon be issued.

#### MACHINERY AND SUPPLIES WANTED.

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

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

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

#### GENERAL MINING NEWS.

The "Derrick" reports for June in the New York, Pennsylvania and West Virginia districts a total of 349 new wells completed, having a total daily production of 11,220 bbls. of oil. At the close of the month there were 640 new wells in progress. In the Buckeye field in Ohio there were 230 new wells with 6,391 bbls. production reported, and 215 wells drilling at the close of the month. In the Southeastern Ohio field 21 new wells, with a production of 223 bbls., are reported with 28 wells in progress July 1st. The Indiana field shows 107 new wells with 4,886 bbls. production. There were 91 wells under the drill at the end of the month.

#### ALABAMA.

##### Cleburne County.

(From our Special Correspondent.)

Annie Howe Extension Gold Mining Company Julius Houston, Lessee.—Ore recently mined on

this property by the lessee is being milled at the old Hicks-Wise mill, the results from which, though, will not be known until the first clean-up is made. While this vein is quite thin, yet the ore is said to be rich both in free gold and sulphurets. The vein has quite a shallow dip, and is of lenticular structure, being bedded between a pyritiferous slate hanging wall and talcose schist or slate footwall, which gives place to a hornblende slate as the permanent footwalling; the talcose material carries some little gold in the immediate vicinity of the vein, which is itself composed of kidneys of a somewhat decomposed white quartz highly sulphureted.

Arbacoochie Mining and Milling Company, of Arbacoochie.—This company has received the shafting and machinery from Cincinnati which has occasioned so much delay in commencing operations in treating the ore, consequently, in a short time the results by the treatment that company is adopting a modernized trastra will be known.

#### Walker County.

The coal miners' strike is finally at an end in this county. A meeting was held at Patton, July 7th, by miners representing all the mines in the county and it was unanimously voted to return to work.

#### ALASKA.

Across Bay.—A ledge carrying free gold and sulphurets was recently discovered on the mainland opposite the Mexican mine on Douglas Island, and was given this name by S. J. Anderson and others, who located the find.

Alaska-Treadwell Gold Mining Company.—This company, says the "Alaska News," is about to begin a series of improvements about its plant, which will necessitate the employment of extra shifts of men, and afford a market for the product of local sawmills. The cutting of timbers for the framework of the crusher tower, to be located over the Treadwell mine hoisting shaft, has already begun, under the supervision of A. Mackay. The dimensions of the tower are 50 x 50 ft. at the base, and it will have a height of 84 ft. Timbers having dimensions as large as 20 x 20 in. will be used in the lower framework. Near the top of the tower two No. 6 Gates rock crushers will be located, capable of crushing each from 50 to 60 tons of rock an hour. Self-dumping automatic skiffs will be constructed so that the ore will ascend from the shaft in cars, and the cars will dump the load over the rock crushers. The skiffs and crushers were purchased from the Fulton Iron Works. The contents of the crushers will be conveyed through a covered car track shed to the bins of the battery. In connection with the building of the tower, the Treadwell mine hoisting shaft will be sunk 150 ft. and the mine opened out extensively at this greater depth. The shaft will contain four departments, two for hoisting purposes and the remaining sections for the pumps and ladder way. A steam hoisting plant will replace the present machinery, a 14 by 16 compound condensing engine having been purchased. At the chlorination works the plant is run to its full capacity, and a new brick stack 80 ft. in height is to be built to replace the old one. It will be 15 ft. across at the base and 8 ft. at the top. The company is also getting in a large supply of wood.

Bald Eagle Mining Company.—N. S. Trowbridge, manager of this new company, has left Juneau, says the "Alaska News," for Sum Dum, to commence operations. He takes down with him provisions, tools, tents and 18,000 ft. of lumber. Twelve miners will go along in charge of Foreman Phil Maul. A boarding and lodging house will be immediately built, and a road constructed from the bay to the mine. Mr. Trowbridge has made arrangements to ship his ore to the Tacoma smelter. Later on the company intends building a mill and reduction works. Mr. Trowbridge formed a company and incorporated it in San Francisco under the above title. Its capital stock is \$100,000. The president is John W. Coleman, and secretary W. H. Payson. The directors are W. S. Gage, H. R. Mann, John W. Coleman, J. H. Jacobs and M. Martin.

Bennett Mines.—Runkle & Bonfield are putting up 400 ft. of tramway to connect with the Nowell tunnel, and will have the Nowell mill, under lease, running in a short time on ore from the Bennett mine.

Silver Queen.—A shipment of 200 sacks of ore from this mine has been made to the Tacoma smelter.

Thorp Mine.—The mill is now running 10 stamps on ore from the mine.

Wheelock & Company's ruby sand diggings, near Lituya Bay, says the Juneau City "Mining Record," are situated along an open sandy beach, and extend from four miles above Lituya Bay up the coast to Yakutat, or pay is found at intervals in that distance. They are deposits believed to have been formed by action of the ocean swells, the surf pounding the beaches and the waves rolling back and forth seem to separate the light and heavy materials and form alternate layers of gray and ruby sand, the latter streaks also being mixed with black sand. The ruby sand is minute garnets, which are born in the granite rocks of the ranges back. The garnet-bearing rocks carry no gold, as by testing none could be found in them. The origin of this gold is undoubtedly in the rocks bearing the black sand. No prospecting has yet been done in that section for quartz ledges, but the gold found seems to show the existence of gold-bearing

veins that, under the ceaseless grinding of the glaciers and the action of running water, are continually pouring their golden sands down to the sea, where they find a level, and the waves rock and pan them into the rich pay streaks as now found. These streaks are garnet-red in color, the garnets being larger than the grains of black sand and largely predominating. The pay streaks extend from low tide to high above high-tide mark, and in some instances for some distance back into the timber line. The mining now being done is just above high tide. A curious feature here is a creek running parallel with the beach from 100 to 200 ft. back, the bed of which is on a level with half-tide mark, and therefore the waters are too low to be brought to the claims. To get water for mining purposes it is necessary to go back into the foothills some hundred yards, tap one of the small glacial streams, and convey the water by flume erected on trestlework over the creek above mentioned, and onto the claims. The trestling where it crosses the creek is 21 ft. high. In places the beach is fairly red with a thin top layer of ruby sand, but the thickest streaks lie under the surface at depths from 1 ft. to several feet, and vary in thickness from 1 in. to 1 ft. The sand will yield 2½% to the pan and up, and exceptionally rich streaks have yielded as high as \$1 to the pan. The gold is fine (not flakey) and heavy and very clean and bright, and amalgamates readily. The regulation sluice box is used, but with steeper grade than for gravel washing, and only a small head of water. Copper plates and quicksilver riffles are used. The sands contain no rocks, not even pebbles.

#### ARIZONA.

##### Yuma County.

Harqua Hala Gold Mining Company, Limited.—The superintendent's report for May says: We have been sending to the mill daily about 13 tons of ore from the discovery vein above the 1st level, south, of an assay value of \$12 per ton in gold. From the discovery vein above the 3d level the daily output has averaged 16 tons of \$14 ore. The vein above the 5th level south, is 10 ft. wide and assays \$14 per ton. Above the 6th level two stopes are being worked, in one of which the vein is 9 ft. wide, and assays \$14 per ton in gold and in the other, 6 ft. wide, assaying \$8 per ton. The iron vein, above the 5th level, south, is 3 ft. wide, assaying \$11 per ton in gold. The stope under operation in this section carries a value of \$10 per ton, the vein being 3½ ft. wide. The iron vein, above the 6th level, south, is 4 ft. wide, assaying \$14 per ton in gold. In the Golden Eagle group, above the 1st level, the vein is 2 ft. wide, assaying \$14 per ton in gold. Above the main tunnel, south, a new stope has been started. The vein is 2½ ft. wide and assays \$12 per ton in gold.

The new incline shaft on the sixth level south is now down 62 ft. We are cutting a station for the seventh level preparatory to driving for the iron vein.

The drift in the iron vein, sixth level, has been advanced 25 ft. The vein is 2 ft. wide, assaying \$8 per ton in gold. No. 4 crosscut, sixth level, on the west side has been advanced to a total length of 100 ft. From its face the diamond drill has bored 100 ft. farther through porphyry. Fifty feet south of the new shaft station on the sixth level a crosscut has been run 50 ft. into the footwall of the iron vein. From the face of this crosscut a raise has been put up 23 ft., which has intersected the iron vein between the fifth and sixth levels. The vein here is 3 ft. wide and assays \$8 per ton. From the face of the south drift on the iron vein on the fifth level a crosscut has been started for the purpose of prospecting the ground west of the hanging wall shale of the iron vein. Thirty-eight feet have been drifted through shale.

The mill has worked with its usual regularity, the only stoppage being for a few hours to couple up the main line shafting and make water connections for the new battery of stamps, which commenced regular work on the morning of the 25th of May. The following figures represent the operations for the month: Tons crushed, 2,950; amalgam cleaned up estimated to yield \$32,500; miscellaneous revenue (profit from general store, estimated), \$500, total \$33,000. Expenses on revenue account, \$12,000. Estimated profit for the month \$21,000. Add surplus on bullion bar No. 7 account, April, \$1,047.84; total, \$22,047.84. Every department is in good working order.

#### ARKANSAS.

##### Marion County.

Cave Spring.—In this zinc mine near Buffalo City, recently, a shot opened up a body of carbonate ore. There appears to be a large amount of fine carbonate extending below the level of the cut and above as far as examined on both sides. The face of the ore deposit is about 70 ft. perpendicular and 40 ft. across, consisting of a high grade of crystalline carbonate of zinc. John S. Kellogg, of Buffalo City, is president of this company.

Lion Hill Zinc Mine.—This mine, situated 2½ miles from Buffalo City, has lately shown good prospects. The ore is a carbonate and runs high.

Morning Star.—This zinc mine, at Buffalo City, has now over 1,000 tons of carbonate zinc ore on the dumps awaiting shipment, which will be made as soon as the river is high enough to allow navigation. This property is the one that donated the huge block of zinc ore exhibited at the World's Fair to the Field

Columbian Museum. Mr. Geo. W. Chase is the general manager.

#### COLORADO.

**Denver Smelters.**—Owing to the railroad strike the managers of the Omaha & Grant and Globe smelting works, at Denver, have announced that these two big establishments would be closed down for an indefinite period, owing to the scarcity of coal. The coal pile at the Grant works is exhausted entirely. The Globe has a sufficient quantity of fuel to last a few days. Between 300 and 400 men are employed at both smelters. The Argo people fortunately laid in a large supply of coal and other necessary material, and the works will be kept running for some time to come.

#### Boulder County.

The Giant Camera company owns a group of mines well situated for mining through one main tunnel run on the course of the vein. The ore bodies in each of the separate lode claims are largely between walls yielding a good quality of milling concentrating mineral, while the smelting streak of ore increases in width as the tunnel enters the mountain, says the Denver "Republican." The company will soon have machinery of its own erected near the mouth of the tunnel to treat the ore, which will save great expense in hauling and in the price per ton for crushing and amalgamating.

The Gold Nugget mine started up again on July 7th, while the Prussian, Alamakee and others will follow.

The sale of the Struggler mine, a mere prospect, was consummated last week, H. G. Wolff, of Denver, being the purchaser and H. C. Mallor the vendor. Consideration, \$13,000.

**Dew Drop.**—This mine at Ward is producing a grade of ore that runs well in gold and silver.

**Giant Camera Gold Mining and Milling Company.**—At this property, in Left Hand, near the Prussian mine, Manager T. McCormack has a force of men at work cleaning out the tunnel, which had caved in through the large rainfall of last month.

#### Clear Creek County.

**Alice Mining Company, Yankee Hill.**—This company has made the connection between its lower and upper workings by means of a winze. This makes it possible to break anywhere from 200 to 1,000 tons of ore daily and deliver it at the concentrator. Prospectors and mine owners are turning their attention to the vacant ground on Lower Yankee, Sherman and Gold Hills. This portion of the camp, which lies on both sides of Cumberland and Washer gulches, east and west, and from the immediate vicinity of the town of Yankee to Wheeler's mill, on Fall River, north and south, has never been thoroughly prospected until this season.

**Yankee Hill District.**—Among the mines now working in this district are the Shellbark, which is working 4 men in sinking a shaft which is now down 50 ft. The mineral so far encountered runs 2 oz. gold and 10% copper per ton.

The Jennie Moore, owned by Smith & Hilton, is worked under lease by Moorhead & Co. There is a tunnel in on the vein 135 ft. and a shaft 25 ft. deep. Both workings show a 4-ft. vein of concentrating ore running from 2 to 4 oz. of gold per ton. Four men are at present employed in the development of this property. The Lombard & Polaris was started up last week by Central City parties, who have a three years' lease on the property.

Limscoff & Co. have leased the Anna May, situated on Alice Mountain, to practical miners from Silver Plume.

#### El Paso County.

**Ophir Mining Company, Cripple Creek.**—The Dead Pine lode, belonging to this company at Cripple Creek, has been placed under bond and lease for one year, the amount of the bond being \$100,000. Royalties will be 20% on smelter returns, to be paid every 60 days. The Carbonate Queen belonging to this company is also bonded for \$60,000. The agreements of the lease are that they shall work not less than 100 shifts per month, to start up at once.

**Sweet.**—A strike which has excited considerable interest in Cripple Creek is reported in this property. Rich ore was encountered recently, but it was confined to a narrow pay streak not over 4 in. wide. Following this streak north it has opened out until there is 5 ft. of ore in the face of the drift and 3 ft. in the stope. The country rock is granite, streaks of porphyry and quartz. Throughout the mass of the vein are found streaks and bunches of sylvanite and green and black tellurium. No shipments have as yet been made, but several tons of high grade ore have been accumulated. The Sweet property is located directly south of the city, not more than a quarter of a mile from the town limits.

#### Fremont County.

**United States Economic Reduction Works.**—This company continues to push work on its large plant at Florence. Six cars of machinery are awaiting the completion of a spur to the works by the Florence & Cripple Creek Railroad Company which will be finished this week. The railroad is taking from the Cripple Creek mines a great deal of high grade ore, which goes to the Denver and Pueblo smelters for treatment, the low grade mineral being held in reserve for the United States Economic Reduction Works and other similar plants to be erected at Florence. These works will treat refractory ores by the chlorination, amalgamation and roasting processes.

#### Gilpin County.

**Silver Creek Camp.**—In reference to the new mining camp on Silver Creek, five miles from Central City, a local paper says: It is a poor man's camp. Pay dirt is found from the grass roots. The ore is not high grade, but is found in great quantities. There are already several claims on which sufficient work has been done to insure success, notably the Reform. This mine has a crevice 20 ft. wide for a depth of 30 ft. which can be mined and milled for \$2 or \$3 per ton. The owners of this mine have erected a new 10-stamp mill down the hill 400 ft. from their shaft, and transport the ore from the mine to the mill on a surface tramway. Samuel Lesem, of Denver, has taken a bond and lease on the Old Kentucky, a property near the Reform mine and mill, for \$15,000. There is also said to be good placer ground in the camp.

#### Lake County.

(From our Special Correspondent.)

The production of iron ore at Leadville is quite limited, the miners complain that it is almost impossible to mine iron at the present price of silver. There is a good demand for such ore.

**Belle of Colorado.**—The shaft is down 354 ft. in porphyry. An exploration drill hole is being sunk.

**Big Evans Gulch.**—Maurice Starne has started a new shaft in Big Evans Gulch, near the site of the proposed shaft of the New Year's Combination. It was expected that it would be necessary to sink over 100 ft. to strike solid formation, but it has been met with at only 35 ft. from the surface. Diamond drill work is now going forward.

**Doris.**—Harry Mamlock is doing considerable development work, and is shipping some good gold ore.

**Henriette & Maid.**—John McCaul & Co. have taken a lease on a portion of the Henriette & Maid. A shipment of 50 tons has just been made.

**Louisville.**—The water in the shaft has been pumped out and drifts and stopes are being cleaned. There is considerable ore in the old workings and shipments will soon commence.

**Rondebush Bros.** have started a new shaft near the Doris and will push it to the contact.

**The Grey Eagle.**—Fifty tons daily of iron ore are being shipped. A new body of good ore has just been opened in one of the drifts near the main shaft. In the Campion lease a good chute of ore is being developed and shipments are regular.

**White Cap.**—Manager James Shrim is pushing work on this property. He recently made an excellent shipment of lead carbonate ore.

#### Ouray County.

**American Belle Mines, Limited.**—The annual meeting of this company was held in London on June 26th. The chairman said that Mr. F. P. Crowther had proceeded to Colorado, and perfected arrangements by which a company was formed for erecting a suitable smelter at Silverton, so that now they hoped to be able to work their low grade ores at a profit. The company were shareholders in this new concern, and the smelter had been started with every prospect of success. Mr. Crowther said he had just returned from the mines. The smelter started on June 9th, and the ore from the National Belle mine was now being shipped freely to it. The plan arranged was to ship 1,500 tons of ore per month to the smelter at an expenditure of about \$6,000, the cost of smelting from the north ore body being fixed at \$5 a ton, and the cost of freight at \$1 a ton. The lowest grade ore they had, he believed, would pay a fair profit.

**New Guston Company, Limited.**—The annual meeting of this company was held in London on June 26th. An abstract from the annual report will be found elsewhere in this issue. The old board of directors was re-elected.

#### San Miguel County.

The gravel bars of San Miguel river are beginning to receive considerable attention. For some time past these bars have been gradually coming into prominence as carrying gold in paying quantities.

**Belmont.**—The capacity of the Belmont mill will be increased to 80 tons per day this week by the addition of another 5-ft. Huntington. Sixty men are now employed on the mine. A 100-ton lot of ore from the Belmont galena streak will be tested at an early date at the San Bernardo mill.

**Pulaski.**—This group in Bridal Basin is owned by a Chicago company, of whom George Harmon is president, and will erect a stamp mill in the basin this season.

**San Bernardo.**—On account of the low price of silver and lead, this mine will not be worked on an extensive scale this year, and only one shift of miners will be employed. The mill will be run on about half time. Mr. Nelson Hallock will have charge of the property again this year.

**San Miguel Consolidated.**—The upraise of the Hamburg vein of the San Miguel Consolidation is now in 10 ft. of good quartz, and when the upper terminal of the tramway is repaired the mill will be kept constantly running on this ore.

**Scandia.**—A test run of ore from the Scandia and Aspen lodes, in Bear Creek, leased by Lou R. Smith, at the Marquis & Riley mill, yielded \$16 per ton in gold. This ore came from a depth of less than 50 ft. from the surface.

**Summit.**—A five ton lot of ore from the Summit was tested at the Marquis & Riley mill last week and gave encouraging results. The amalgam weighed 50 oz., and the retort was valued at \$400 or equivalent to \$80 per ton. The ore was an average sample. The Marquis & Riley mill is proving to be a success. A test run of ore from the Agnes, on Ballard Mountain, owned by E. J. Warner, treated at this mill, returned \$15 in gold. Mr. Warner contemplates erecting a Ballard-Riley process mill in La Junta basin, convenient to his property, inside of a month.

#### GEORGIA.

##### Lumpkin County.

**Battle Branch.**—This property is now leased to Hiram Gaydon and others who are actively at work upon it. This property has been noted in times past for its rich pockets and the lessees hope to find more of this at a greater depth.

**Creighton Mine.**—The new plant erected at this mine by the Mecklenburg Iron Works, of Charlotte, N. C., is now in full operation. The first week's run, it is said, gave 98% of the assay value of the ore. The plant consists of a 10-stamp mill, two roasting furnaces and a chlorination plant with a capacity of 5 tons per day. The process of chlorination used is the Thies process, as used at the Haile mine in South Carolina.

**Preacher Mine.**—Considerable ore is being taken out from this old mine, and is being worked at the Stanley mill.

**Singleton.**—A new turbine wheel is being put in in place of the old overshot wheel to run the mill at this mine.

#### IDAHO.

##### Owyhee County.

**De Lamar Mining Company.**—The manager's report for May says: During the past month we have made several changes and improvements too numerous to mention. These repairs and changes did not necessarily take up all the time the mill was idle, but a strike occurred among the miners, which prevented the mill from working for a period of seven days, in consequence of which the product of the mill was much less. The table of work performed for May is as follows: Number of wet tons crushed, 2,979; dry tons crushed, 2,665; assay value of the pulp, in gold, \$23.33; in silver (at 60c.), \$5.63. The assay value of the tailings was, in gold, \$3.92, and in silver \$0.76. The percentage saved of gold was 83.20%; silver, 89.50%. The pure gold produced was 2,276 oz., and the fine silver produced was 24,004 oz. The value of gold produced was \$45,525; of silver, \$14,403; ore shipped during the month, \$6,000; bullion differences, \$790; miscellaneous revenue, \$623, making the total \$67,341; deducting all expenses for the month, \$32,958, leaves estimated profit for month \$34,383.

**De Lamar Mining Company.**—At the annual meeting in London last week, the report, an abstract of which is given elsewhere, was presented and approved. The retiring directors, A. G. Brand and J. G. Smith, were re-elected.

##### Shoshone County.

The strike in the Coeur d'Alene district, where there has been so much trouble at different times, has assumed a very threatening appearance. In a recent issue we noted the trouble caused by the Miners' Union, which ordered out of the district a number of miners who were not acceptable to the Union. This was followed later by violence. In the town of Gem on July 4th a number of miners proceeded to drive out by force some of the black-listed men, and another party took out a blacksmith, named Kneebone, belonging in Wallace, into the mountains and shot him. This was followed by a warning to other men, and notices were also posted ordering all chinamen out of the district. The men driven out include Superintendent Neill and several men employed on the surface. In consequence of this violence all the mines in the Canyon district, with the exception of the Tiger, closed down and the sampling works at Wallace were also closed.

On July 6th, according to the telegraph, for no mail advices have yet been received, the Bunker Hill & Sullivan mill at Wallace, the largest in the district, was blown up by dynamite. Full particulars have not been received, but the destruction of the mill is said to have been complete. At latest accounts the miners were in full possession of the district and all the mines had been shut down. Governor McConnell, of Idaho, has ordered out the State militia and has sent a request to Washington for the assistance of Federal troops. Transportation for the troops has been difficult to obtain on account of the railroad strikes, but the State militia and possibly a Federal detachment from Fort Sherman were expected to reach Wallace by July 13th or 14th. The miners are all armed and a fight was expected. July 11th was the anniversary of the great fight at Frisco two years ago, and the present violent outbreak appears to have been a sort of celebration of this anniversary.

**Blue Bird.**—This property has been bonded to Frank Jenkins, who has a force of 12 men employed in developing the claim. He has a shaft now down 50 ft. in ore.

**Coeur d'Alene Silver and Lead Mining Company.**—Mr. Clark, general manager of this company, writes as follows, regarding an electric plant furnished that company by the General Electric Company, of New York: With respect to the relative merits of steam and electricity at our Poorman mine, I will say that the amount saved in fuel is

about \$100 a day. This, of course, is due to the fact that we generate electricity by water power. How electricity would compare with steam in the matter of cost, if the former were generated by steam power, I am not prepared to say, but I am of the opinion that where steam has to be transmitted a long distance underground, particularly where it is wet, that electricity generated with steam and transmitted to the pumps or other machinery will be found to be the most economical, the percentage of loss in transmission being so much less; in addition to this, the cumbersome steam pipes, with their destructive effect on shaft timbers, is avoided. We have 5 machines in use; two 174 K.-W. at the generating station 1½ miles distant from our works where they are operated with Pelton wheels under 800 ft. head; one 175 K.-W. to drive our concentrator; one 150 K.-W. machine for the pump, raising 500 gallons of water per minute 500 ft.; and one 175 K.-W. for the compressor. This system has been almost two years in operation.

**Gem Mine.**—The new hoist which has been under way at the Gem mine for several months past was completed recently, says the "Coeur d'Alene Miner." The water was turned on the Pelton water wheels and the machinery set in motion. Everything was found to be in perfect condition. The sinking of the shaft, which will gradually become the main outlet for the mine in the future, as development progresses, is now going steadily ahead. The shaft is reached through the main tunnel at a distance of 1,500 ft. from its mouth. The chamber excavated for the reception of the hoisting machinery is the finest piece of work of this kind in the Coeur d'Alenes and, doubtless, in the State. Its dimensions are 59 by 24 ft. and 47 ft. high. The whole interior is solidly planked and is braced securely by heavy timbers only 4 ft. apart from center to center. As soon as the timbers are dry it is the intention of the management to have it whitewashed, which will, by reflection, aid the lamps in lighting up the station. The hoist is of a duplex pattern, and is known as a Pelton water-wheel hoist. V toothed gear is used, and it is almost noiseless. Each half of the hoist is of 60 H. P. One part can run entirely independent of the other. The motive power consists of two Pelton water-wheels, each 6 ft. in diameter, which can be used either separately or jointly. The wire cables for the hoist are of the flat pattern, 3¼ in. in diameter and ¾ in. thick, and are each 600 ft. in length. The shaft has three compartments, two for the cages, each 4 ft. by 4 ft. 8 in., and one for the pump, which is 5 ft. by 4 ft. 8 in. The cages can be run entirely independent of each other or used so as to counterbalance, as may be desired. The shaft is now 30 ft. deep, and is being put down as fast as three shifts of men can accomplish the work. At present, pending the completion of the new compressor plant, it is being sunk by hand. A No. 7 Knowles pump takes care of the water without difficulty. This hoist, taken altogether, is the most complete and labor-saving piece of machinery thus far devised for the object for which it is intended. The water power has a head of 900 ft., and this gives a pressure at the station of 400 lbs. to the square inch. The water is brought from Bell Creek, where there is a never failing supply at all seasons of the year, and is carried through the workings of the mine to the station in an iron pipe which is gradually reduced in its course from a foot in the upper workings to 4 in. at the station. This settles the question of fuel for hoisting. A couple of Pelton water wheel indicators show the exact location of each cage in the shaft at any moment. The cages dump their loads automatically into a chute, whence the waste or ore, as the case may be, is run into the tram cars. The hoist is provided, also, with compound leverage brakes which instantly retard or stop the machinery at the pleasure of the engineer, and an air chamber prevents the bursting of the water pipe when stopping the hoist suddenly. The shaft, it should be mentioned, is being sunk in the country rock. It is anticipated that the vein will be reached on its dip at a depth of from 125 to 150 ft. All the machinery for the new 20-drill compressor is on the ground and in the hands of the machinists.

#### ILLINOIS.

##### Bureau County.

**Spring Valley Mining Company.**—On July 8th a mob of some 500 miners plundered and destroyed the stock of this company. The crowd was composed chiefly of Poles and other foreign miners. The riot was finally put down by the sheriff with the assistance of some militia from Peoria.

#### INDIAN TERRITORY.

**Osage Coal and Mining Company.**—This company attempted to resume work in its mines July 10th, but was stopped by striking miners, who threatened bodily injury to any one attempting to enter the mines. An offer has been made to arbitrate the differences, but the strikers refused to listen to anything except a restoration of the former scale of prices.

#### KENTUCKY.

##### Boone County.

**Ashland Coal and Iron Railway Company.**—The drum sheds at the mouth of mine No. 7 of this company at Grant were burned on July 9th by striking Carter County miners, owing to the announcement by the company that all men occupying their property and not complying with their terms would be evicted on that day.

#### MARYLAND.

##### Allegheny County.

**Consolidated Coal Company.**—The Ocean mine, which was recently closed down, is to be opened in order to give employment to a number of the men who remained steady during the strike.

#### MICHIGAN.

##### Copper.

**Kearsarge Mining Company.**—The production of this mine for the month of June is reported at 150 tons.

**Osceola Mining Company.**—The June output of this mine is reported at 325 tons.

**Quincy Mining Company.**—The new adit, to which reference has heretofore been made, has been driven about 270 ft. from the starting point, and the workmen expect to strike the solid rock in a few days. A pipe has been laid from the compressor plant on the hill to the adit, a distance of 3,000 ft., for the purpose of furnishing air to run the drills.

**Tamarack Mining Company.**—The production of this mine for June is given at 1,025 tons of mineral.

**Wolverine Mining Company.**—The production of this mine in June was 80½ tons copper.

##### Iron—Gogebic Range.

**Davis.**—Mining operations are about to be resumed at the mine. The boilers are being repaired and the work of unwatering the mine, which can be done in a week, will be commenced within a few days. This done, a limited number of miners will be put in. The ore has been sold to the Manistique Furnace Company.

##### Iron—Marquette Range.

The crusher at Cliffs Shafts are now working smoothly and satisfactorily, treating about 250 tons each per day, says "Iron Ore."

**Salisbury Mine.**—The miners struck last week and will not return, it is said, until some definite settlement of the question of wages is offered. This is not an extension of the Gogebic strike, but seems to be entirely an independent movement.

##### Iron—Menominee Range.

**Commonwealth.**—This mine has started up its boilers to furnish power for compressors and electric lights for the Badger, says the Norway "Current."

#### MINNESOTA

##### Iron—Mesabi Range.

Some of the steam shovel engineers and other workmen employed at the Mountain Iron and other mines near Virginia struck July 10th for higher wages, stopping the operation of the mine for the time being.

(From an Occasional Correspondent.)

The Canton mine of the Minnesota Iron Company is the only one now shipping from Biwabik. Stock-piles and shafts are yielding 2,500 to 3,000 tons daily. The Biwabik mine lies idle and in very bad shape. The extravagance and waste shown in its development are almost incredible. The neighboring Duluth mine shows a fine face of ore and is in excellent shape for work. Some promising developments await future work.

Virginia is the central town of the Mesabi range. The Oliver property is in the best location and is in excellent condition. Shipments are being pushed at the rate of about 3,000 tons daily. Much credit is due Captain Florida for its good showing. This mine and the mountain, now four miles distant, are in the best shape of the open cut workings of the range. The Minnesota Iron Company is shipping about 1,500 tons daily from the Franklin, and is also developing the adjoining Norman property both by open cut and stripping, but the shipments are not yet large. The same company is about ready for heavy work at the Auburn (formerly the Iron King) property, as a large shipping has been completed and a fine new shaft and hoisting plant constructed. Further south from Virginia prospecting shafts at the McInness location are showing a large ore body.

The Mountain Iron Mine, at the town of the same name, has its development in perhaps the best shape of all the mines, as it has been favored by its natural situation on a low hillside and by comparatively thin stripping. The ore trams run in at one end of the cut, pass along the working face and out at the other. A second cut to enter the first is also almost complete. Nearly half a mile of ore is exposed, and is of unknown depth.

Very extended ore bodies are being also developed at Hibbing, and considerable ore is being shipped.

##### Iron—Vermilion Range.

(From an Occasional Correspondent.)

**Chandler Mine.**—This mine is working a large force of men in No. 3 and No. 4 shafts, and is shipping from stock pile and from shafts. About 100,000 tons are in the former, which are being loaded with a steam shovel. Probably over 500,000 tons will be shipped this season. Shaft No. 4 is down to the ninth level, but no drifting is being done below the eighth.

**Minnesota Iron Company.**—A large force is working at this company's mines at Soudan, and some of the richest ore yet mined is being shipped. Cargoes have run 68 to 68½% iron. On the ninth level in shaft No. 8 the lense is 90 ft. thick of practically pure specular and runs 500 ft. with a slight taper. The stock-piles mined during the winter are being loaded with a steam shovel, and shipments are made as well from the daily output.

**Pioneer.**—On this, the next claim to the east, prospecting and developing work is being vigorously pushed, but no shipments are as yet being made.

**Zenith.**—On this property, still further east, a flow of water too heavy for the present pumps stopped the working this spring after some ore had been shipped.

#### MONTANA.

##### Jefferson County.

**Basin & Bay State Mining Company.**—This company was recently incorporated at Basin with \$300,000 capital stock. The property of the company consists of the Katie mine in the Basin district, on which considerable work has been done. The company will have its main office in Basin, and will also have an office in Springfield, Mass. The officers are: President, George A. Russell, Springfield, Mass.; vice-president, Fred H. Rice, Basin, Mont.; general manager, James Glass, Basin, Mont.; secretary, W. C. King, Springfield, Mass.; assistant secretary, H. G. Pickett, Helena, Mont.; treasurer, A. J. Glass, Basin, Mont.

**Elkhorn Mining Company.**—This company's report for May shows a total of 1,318 tons of ore raised. The mill ran steadily during the month. A new carrier wheel was placed under the roaster, and another dust chamber is being constructed to reduce further the loss from this source. The table of work performed in May is as follows: Ore on hand May 1st, 85 tons; raised from the mine, 1,318 tons; less smelting ore 187 tons, and waste sorted out, 121 tons, leaves 1,010 tons worked; add for salt, 151 tons, makes a total of 1,246 tons. Deducting 50 tons in stock June 1st, there were 1,176 tons dry ore panned. The average assay value was 40.85 oz. The salt used was 14%. The value of tailings was 3.43 oz., showing 92.53% saved. The product in fine silver was 42,572.91 oz., and in pure gold 27,519 oz. The batteries were in service 27 days 6½ hours, and the pans were in service 29 days. The estimated value of bullion shipped was \$26,035, and the actual returns for ore shipped were \$13,343, making a total of \$39,378. The current expenses, including salaries, labor and supplies, etc., were \$22,614; the balance, being profit for May, was \$16,764.

**Montana Mining and Development Company.**—On this company's Eva May mine, in the Cataract district, the shaft is now 350 ft. deep. At the 200-ft. level a cross-cut running on the vein is said to have developed some good ore. The company will shortly put up a concentrator. At present eight men only are employed, all on development work.

##### Lewis & Clarke County.

**Bald Butte Mining Company.**—This company on July 3d declared dividend No. 27 of 10% on its stock, requiring \$25,000. This makes the total amount paid in dividends \$245,000.

##### Missoula County.

**Chickamain Mining Company.**—This company is running an eight-stamp mill from ore on its property on Lolo Creek. The ore is concentrated and the concentrates shipped.

**Nine-Mile Mining Company.**—This company, in the Nine-Mile district, is now running 10 of its 20 stamps upon ore and is doing a good deal of development work.

**San Martina Mining Company.**—This company is making arrangements to put up a mill on its property in the Nine-Mile district. The Stedman Iron Works, at Helena, Mont., will furnish the machinery. Power will be furnished by a 3 ft. water-wheel running under 230 ft. vertical head. The mill is to be completed within 60 days. This company, it will be remembered, recently uncovered a vein 2 ft. wide in the main tunnel. Development work has been actively continued, and has shown an excellent vein varying from 2 to 6 ft.

##### Silver Bow County.

The following notes are from the Butte "Inter-Mountain" of recent date:

**W. L. Ledford,** who has the lease on the copper-saving process of the water from the St. Lawrence and Anaconda mines, was offered a large sum recently for his lease, but he refused to accept it, believing that he can do better by holding on to it. Most of the other leasers south of him are not doing much more than making expenses.

**Heinze Smelter.**—This mill is working on Gamba and Rarus ore principally, with occasional rich ores purchased from adjoining leasers. The Glengarry will be better equipped shortly for the extraction and shipment of its rich ore. The hoist formerly in use at the Mountain Consolidated, and more recently used at the Orphan Boy, is now being erected on the south side of the shaft and will be working in a few days. Ore is now being hauled from this property on cars with an engine from the Montana Union. Tracks have been laid from the mine to the smelter and concentrator, and this method of transporting ore is found to be much more economical than by the old method.

**High Ore No. 2.**—The shaft has now passed the 500-ft. mark and sinking is still actively progressing. A 22 x 40 hoist will shortly be placed in position to develop this property to the 2,000 ft. level. A station is cut at the 400, upon which pumps will be placed, but no crosscutting will be commenced until the 1,200 level is reached. This will be the top working level of this property. It is the intention of the Anaconda company to develop the shaft of this mine to the 4,000 ft. level before the work of extract-

ing ore is begun, and when completed it will be one of the deepest shafts of the world. The mine is on a sidehill, and in order that better dumping ground can be secured and a good grade for railroad track to the ore bins, the collar of the shaft will be raised at least 20 ft. above its present position and the ground adjoining will be filled in with waste.

**Jennie Dell.**—This gold mine has 4 ft. of a ledge which will average high in silver and gold. Ore is now being hoisted from this property through the Eveline's shaft, for which a royalty of \$500 per month is exacted. The shaft of the Jennie Dell is developed to the 240-ft. level. Water in large quantities has been encountered and occasions considerable trouble.

**Nora.**—This mine and adjoining claim, the Lucky Jim, owned by Messrs. Cassaday, Stapleton, Roach and others, and formerly worked by W. A. Clark and the Butte & Boston, is now under lease and bond to Pat Mullin. Mr. Mullin has erected hoisting works with the necessary machinery for its development at a cost of about \$10,000 and will at once begin work. The shaft will be developed to the 500-ft. level, at which level crosscutting will be commenced on the south side of the shaft to reach the lead. The Nora adjoins the Harris & Lloyd tunnel on the south.

**Original.**—This mine has ceased operations, the pump on the lower level having been pulled out. The shaft on this mine had been developed to the 800, and it was understood that there was an excellent showing of ore on that level, and that the shaft would be still further developed. The Gagnon is obtaining its richest ore at about the same level and below that. More dead work has been done on the Original than on any of the other Clark properties in the district.

**Rarus.**—About 30 miners are employed at this mine, which is now being operated by the owners. Additional development work here shows up larger and richer ore bodies. The present production of ore will average about 2,000 tons of ore per month, of which about 600 tons is first-class. The property can easily yield 250 tons of copper ore per day, and it is the intention of the owners, if the copper market warrants it, to put on a force of 60 or 70 men in a short time. The ore is being shipped to the Heinze smelter.

**Stewart.**—A new shaft house has been erected on this property about 100 ft. north of the old dump. Sinking is now in progress and an incline shaft is being developed. Work will continue until the 400-ft. level is reached. A skip is now being used to dump the waste, and when the shaft is completed this skip will be used to dump the ore direct to the ore bins. The collar of the shaft is now being filled in with waste to a height of 10 ft., and the hoist is so arranged that it can be enlarged at any time without inconvenience.

NEW MEXICO.

Santa Fe County.

**San Lazarus.**—A strike of high grade gold ore is reported at this mine in Golden. The extent of the ore body is as yet unknown, but from present indications it is taken to be larger than any discovered under the former management. Messrs. Ward & Boylan, who own the claim adjoining the San Lazarus on the east, in doing their first assessment work discovered a good sized lead of free milling ore which shows wires of gold running through it, and there is plenty of it.

Taos County.

**Cochiti District.**—Several new strikes are reported in the various camps in the district. One is on a claim adjoining the Bland townsite, and the ore is said to assay \$100 to the ton. In claims between Colla Canon and Bland, Wm. Stover and others, of Santa Fe, have opened a 12 ft. ledge of quartz that is reported to assay \$152 to the ton. In the Miner's Union claim, in the west fork of Pino Canon, a 12-ft. dyke of quartz shows up \$100 ore, says the Santa Fe "New Mexican." This latter claim is bonded for 30 days to Denver capitalists for \$10,000. The district continues to show steady growth.

NEW JERSEY.

Morris County.

**Hattacawanna Mining Company.**—This company began work July 2d on its new mine at Budd's Lake, the work being under charge of Colonel Evans as superintendent. We have before referred to the supposed discovery of gold-bearing ore at this point. The company purposes continuing work through the season with a view of ascertaining the actual value of the discovery.

NORTH CAROLINA.

Cabarrus County.

(From our Special Correspondent.)

**Concord Mine.**—This mine, in which Senator Jones is part owner, was closed down. The former manager says "plenty of ore with heavy sulphurets that cannot be worked to profit by amalgamation."

**Ishhour Gold Mine.**—The mill is in operation on a heavy sulphuret ore assaying about \$8 per ton and yielding \$3 to \$4, yet paying well.

**Nugget Gold Mine.**—At this mine they are hydraulic and finding nugget gold together with rich quartz giving evidence of close proximity to the source. Mr. H. B. C. Ntze, assistant State geologist, has just paid the mine a visit.

Rowan County.

(From our Special Correspondent.)

Several mining men have visited this county of late for the purpose of investigating the quality and quantity of ore. Mr. Kelly, of Leadville, Colo., in company with Dr. Lyle, of Springfield, O., when in Salisbury, the county seat, met several citizens and discussed the feasibility of the erection, at that place, of reduction works for the treatment of ores for the saving of gold, silver, copper, zinc, lead and sulphuric acid together with the manufacture of fertilizers and other chemicals. This would, it is thought, solve the problem of successful mining in this State, as it would make a market for ore. There are many deposits in the State that could be worked at a profit were it possible to receive 50% of the value of the ore. These central works could realize a profit from, while the same would be the case of the miner or mines. The Southern Mining and Metallurgical Company has been organized in Salisbury for this purpose. It is proposed to have the first capital subscribed for the purpose of building sampling works which will purchase ore on assay value pending the erection of a larger plant.

**Gold Hill.**—This mine is full of water and idle at present, with the exception of the 10 stamp mill, which is in operation two or three days each week on ore picked from the old dumps.

**Graf Mine.**—This mine is now being operated by the Beam Mining Company. They are milling small quantities of sulphuret gold ore, and making some rich concentrates which they are trying to find a market for.

Stanly County.

(From our Special Correspondent.)

Your correspondent saw at the office of the Salisbury Supply and Commission Company, a few days since, something near 50 oz. of placer gold from a new find in Stanly County. One nugget weighed 22 oz., another 14 oz., and there were several smaller ones together with some dust gold.

OHIO.

**Standard Oil Company.**—As a result of the closing of this company's refinery at Chicago, on account of the strike, notice has been given in some of the Ohio oil fields that the pipe lines will be unable to handle all of the oil as heretofore. A number of men have been thrown out of work in consequence.

OKLAHOMA.

Chickasaw County.

**Mr. G. F. Devereaux,** of Oklahoma City, is organizing a company to work the asphaltum deposits of this country. The beds are said to consist of a layer of asphaltic sand overlying a bed of bitumen, which is sticky and difficult to extract, but has only a very small proportion of earthy matter mixed with it. Several shafts have been sunk, varying from 15 to 42 ft. in depth, and it is said that none of these has reached the bottom of the deposit.

OREGON.

Union County.

**Oregon Gold Mining Company.**—The case of John Mitchell against this company, A. L. Schmidt and Geo. H. Dietz, was argued recently in the court at Louisville, Ky., where most of the stockholders reside. The court took the case under advisement, but no decision is expected before next fall.

PENNSYLVANIA.

Anthracite Coal.

**L. A. Riley & Co.** have found the Buck Mountain vein in good condition at their Germantown slope. The diamond drills have cut into a good vein of coal 9 ft. thick.

**Bear Valley.**—This colliery, two miles from Shamokin, which has been lying idle for repairs since January 16th, has started up again, with a largely increased capacity.

**Lehigh Valley Coal Company.**—The fire in Paeker colliery No. 5, belonging to this company, has not yet been extinguished, but is still giving the company a great deal of anxiety.

**Midvalley.**—The work of pumping the water from Midvalley No. 2 slope has been commenced, says the Mt. Carmel "Ledger." A railroad is to be built to take the coal to No. 1 breaker. Superintendent Clemens made a big record last month.

**Milnesville.**—This colliery, owned by Van Winkle & Co., near Hazleton, shipped during June last over 38,000 tons of coal. Daniel Levan is superintendent.

**Penn Anthracite Mining Company.**—This company has unearthed some good veins at points where coal was not expected.

**Silver Brook.**—Pumping operations at this shaft have been somewhat retarded by the giving out of the pump in the shaft. A gang of carpenters are now removing a powerful pump from No. 2 stripping, which will be placed in the shaft, and the disabled pump taken out. There was about 17 ft. of water in the shaft when the pump gave out, and it was expected that the process of drying would be completed in 10 days' time. The slope which is being driven a few hundred feet east of the shaft has attained a depth of 100 ft. It will be sunk below the old works and will serve as an outlet for all the coal that will be mined there.

**Susquehanna Coal Company.**—A fall of coal occurred in No. 4 slope at Nanticoke on July 7th. One man was killed and several others were seriously injured.

Bituminous Coal.

The men at several mines in the Pittsburg district have struck again, and other strikes are feared. In the Mahoning Valley the miners are on strike. They declare the operators must sign the scale before work will be resumed.

Meetings of striking miners were held near Houtzdale and Phillipsburg, on July 9th. At Houtzdale resolutions were adopted against returning to work for less than 45c. a ton, and at Phillipsburg a resolution was adopted that President McBride be requested to order a general strike in Pennsylvania unless the operators shall agree to pay 45c. a ton. The Berwind-White Coal Mining Company, on July 9th, ordered the miners to remove their tools, and the mines were placed under the protection of the Sheriff of Clearfield County.

The miners at the Eclipse and T. J. Wood mines on the Monongahela River, who decided to return to work on July 9th, were persuaded to remain on strike by their officials. The firms are willing to pay scale rates, but refuse to sign the scale. Meetings of second pool miners will be held during the week, and the officials will try to get out all who are working without a scale signature, even if they are receiving scale rates. The Manown miners returned to work on July 9th, although the firm has not signed the scale.

A despatch from Phillipsburg says that several mines, at which the compromise rate has been paid for a week past, suspended work on July 11th, and at Wigton's Troy mine the men went on strike until all the miners had been offered the same rate.

SOUTH DAKOTA.

Lawrence County.

**Ethan Allen.**—This mine in Poorman gulch is again shipping ore to the Cyanide works, says the Deadwood "Pioneer." The last run of six tons from this mine was very successful, over \$20 to the ton being extracted by the cyanide process.

UTAH.

Juab County.

**American Eagle Mining Company.**—The mining case of this company vs. V. F. Clays et al. is being tried before Judge Smith at Provo. The plaintiffs pray for an injunction to prevent defendants from extracting ore from the Mammoth 37, which joins the Champlain, both claims being in Tintic. They also ask for \$2,000 damages because of ores they claim have been extracted from their property. The defendants filed a cross-complaint asking that plaintiffs be enjoined from taking any ore from the Champlain, which, it is alleged, they have been doing for some time under the belief they were following the dip of the vein apexing on the Mammoth 37. Defendants hold that the strike of the vein and not the dip of it is being followed, and they deny that the ore vein of the Champlain apexes on the Mammoth 37. The defendants also ask for \$200,000 for the ore that the plaintiffs have extracted.

Salt Lake County.

**Salt Lake Copper Manufacturing Company.**—An extension of four months from July 1st has been granted this company in which to complete their works. The management of the copper plant stated that it will be in full blast in October.

Tooele County.

The miners of Camp Floyd district met at Mercur on June 25th and adopted a complete set of by laws.

**Cumberland & Susquehanna.**—Wigton and Smith have bonded J. Green's interest in the Cumberland & Susquehanna, and with C. L. Spiegel have already commenced work on the ground, says the Mercur "Mercury." These claims lie near the Little Pittsburg, where a good strike was recently made.

VIRGINIA.

Culpeper County.

**Powhatan Land and Mining Company.**—This company has just added 10 stamps of Fraser & Chalmers make to the plant, and started up on July 21. The ore being treated is from the 50-ft. level and is largely the "brown ore" variety. The company is putting Frue vanner concentrators in place, and will use them in working the sulphuret ores from the lower levels. The dirt and soft ore will continue to be treated by the Crawford mills. Mr. L. G. Johnson is superintendent of the mine.

WASHINGTON.

Okanogan County.

News has been received that Conconully, the principal town in the Okanogan mining district, was visited by a cloudburst on the night of July 5th. Nearly every building left standing after the cloudburst of May was washed away. Since the disaster in May many of the people have been living in tents. These were all carried away by the gale which accompanied the late cloudburst. The water in the canon rose to a depth of more than 20 ft. and carried away everything in its path. There is scarcely a building left in town to shelter the inhabitants. No loss of life is reported.

Snohomish County.

An appropriation has been made by the county commissioners for a wagon road from Index to Galena. This will enable the mines in the Silver Creek district to ship their ore which they have hitherto been unable to do.





week than the one which has just passed. The new business done during the past few days has been exceedingly small, even for this time of the year, when there is never any activity to speak of. Most of the coal moving is for deliveries on old orders, or stocks sent to producers' storage yards at various points.

It has pleased certain prominent producing interests to forget that the present year has been an unfavorable one to the majority of people in this country as well as to most industries. The talk of hard times is not merely talk, unfortunately it is founded on reality.

To take the case of the anthracite market in New York City and immediate vicinity. It has been the rule with thrifty consumers to commence to buy their winter's supplies in July and August in order to save from 30 to 50c. per ton. The producers sell their coal cheaper in the spring and the dealers offer a reduced rate to those of their customers who can buy early. This year very little such buying has been done, and there is every indication that people—the great mass of them—will continue to buy from hand to mouth. Dealers must necessarily follow this example to a greater or lesser extent. One of the biggest dealers in this city whose sales averaged 150 tons per day last year reports that one day this week he sold 5 tons.

As has been stated in this column the soft coal strike was chiefly the cause of the overproduction in June, the output for that month being the heaviest during any one month in the history of the trade. The New York Central and other railroads asked for lump coal to take the place of the bituminous, which they could not get. These orders went to a favored few. To fill them these few would have to exceed their allotted percentage of the output. They did this rather than turn a portion of the orders over to those not so favored. The latter naturally proceeded to mine as much coal as they could. The result was the enormous June output, a great proportion of which has not been sold.

On top of the unfavorable condition thus created came the advance. It is all very well for producers to talk big and to say that people must burn coal at any cost. But the higher it is the more economical will consumers be in the use of it. When the producers talk of losing money at May prices they might remember that few industries are in a better condition than their own. Last year, when everybody was losing money, the anthracite interests were an exception. But the chief point is, and we reason from the standpoint of a sensible producer, what is the use of making prices which the sales agents can't get? The talk of an advance now so that it will be easier to get it when the cold weather set in is virtually an admission that the sales agents do not tell the truth when they say that they are now "getting full prices," and almost every one of them says that.

We find that dealers in this market are well supplied with cheap coal—stocks purchased at even below May prices. Coal, to our positive knowledge, is being delivered to-day at 10c. below the net May rates. Not only that, but good coal, and almost any quantity of it, can be bought at this writing at May prices. By nominally advancing values the sales agents cannot deceive anybody, not even themselves. Had they been wiser—and such a thing is within the possibilities—they would have left prices alone at the last meeting and then ordered a great restriction for July; instead of 3,500,000 they should have recommended an output of say 2,000,000 tons. The market cannot take any more, perhaps not even as much as that.

To name prices which they cannot get and really do not expect to get is obviously a step toward the eventual demoralization of the trade. The agents of the big producers, the companies controlled by railroads, declare that they are accepting no orders at less than July prices. It is easy to believe them when one knows that they are accepting no orders at all, for they are not to be had. Again the companies can store their coal until the demand improves. But the smaller operators need money right along to work their mines, and they can get it only by selling their coal. It is of greater importance to them to dispose of their coal as soon as it is mined than it is to the big company. Of course, it is only natural that all producers should have learned by this time the disastrous effects of wholesale "cutting." But, if the sales agents advance prices when the demand is light, and at the same time do not restrict the production enough to render possible the maintenance of such prices, it is simply tempting some of the power operators to "shade" the nominal values. There is probably not a single dealer in New York City to-day, who cannot get all the coal he wants for delivery over August and perhaps over all of September at from 25c. to 40c. below the July circular.

Such a state of affairs is not conducive to the stability of the market, although if the public thereby is enabled to buy cheaper coal, it will not be altogether an unmixt evil.

The official circular of prices of the Philadelphia & Reading Coal and Iron Company is as follows for coal delivered on board of vessels at Port Richmond, Philadelphia, Pa.:

	Broken.	Egg.	Stove.	Chest.
Hard white ash.....	\$3.60	\$4.75	\$3.90	\$3.90
Free white ash.....	3.50	3.65	3.90	3.90
Shamokin.....	4.00	3.85	4.15	3.90
Schuylkill red ash.....	4.00	4.00	4.40	4.15
Lorberry.....	4.65	4.00	4.40	4.15
Lykens Valley.....	4.65	5.15	5.40	4.75

New York prices are 25c. higher.

The Reading Railroad reports that its coal shipment (estimated) for last week, ending July 7th,

was 105,000 tons, of which 10,000 tons were sent to Port Richmond and 6,000 tons were sent to New York waters.

NOTES OF THE WEEK.

The annual meeting of the Anthracite Coal Operators' Association was held in Glen Summit on July 11th, a large number of members being present. The meeting was called to order by the president, Mr. C. D. Simpson, of Scranton. Mr. Thomas L. Green, of New York city, was the assistant secretary. The meeting was informal, and ended with a banquet.

The total anthracite tonnage carried over the Philadelphia & Reading Railroad in June, 1894, which reached 1,247,297 tons, was the largest ever transported by it in any month, being 77.173 tons more than the tonnage of the largest previous month, which was November, 1893. A considerable proportion of this tonnage originates on other railroads, and is by them delivered to the Reading Railroad at various points. The anthracite tonnage originating on the Reading Railroad and carried by it during the last two weeks in June, was 557,290 tons. This was the largest tonnage so originating ever carried in the same period, and was 21.7% of the total anthracite production for the same time. During the early part of June 17 of the Coal and Iron Company's collieries were not working, principally because the heavy rainfall of the latter part of May had overpowered the pumps, preventing work at one time at all but 5 of the company's 52 collieries. During the last two weeks of June, in which all of the collieries were working except 6 the production of the Coal and Iron Company's collieries was about 24,000 tons in excess of the production of any previous period of two weeks.

Bituminous.

The demand for soft coal of course is much greater than the supply, and all sorts of efforts are made by outside parties to get prompt shipments of coal to themselves, but the companies are filling the orders in regular rotation as filed for precedence. Some of the companies which are working felt obliged to buy some outside coals at a slight advance over the figure ruling before the strike. The demand is very generally distributed over the territory usually covered, though the trade east of Cape Cod is reported dull. However, orders seem to be forthcoming from that district and it looks as if the trade this side of the Cape would be more staple and that it may last over until the usual fall trade commences, and with it the laying in of winter supplies. It would, however, not surprise the trade if a short period of dullness should occur between the end of the present demand and the beginning of the usual fall business.

Prices remain about the same as reported last week, or say, \$3 f. o. b. New York shipping ports. All-rail trade is taking a great deal of coal. Some of the consignees at their receiving ports are suffering to some extent from the confiscation of coal by the railroads over which they ship, thus losing a part of the benefits of their first shipments. However it is anticipated that this will soon straighten itself out. There are still some complaints of the mines of not being able to get the work out of the miners and horses that they did before the strike. Beech Creek and Clearfield are the only regions that have men still on strike; only portions at these regions are working. It is difficult to see what these men expect to gain from their prolonged strike, as the operators of the mines which are out can buy coal in the regular market at but a slight advance over the contract rate.

Vessel rates are unchanged from last week. Norfolk is 90c. @ \$1 to Sound ports and around the cape. This is on account of the long delay in loading to which we referred last week. It is a singular fact that Baltimore has to pay the same rates although quick loading is given to the vessels. We quote the following rates from Philadelphia: To Providence, New Bedford, New Haven, Boston, Salem, and Portland, 50c.; Portsmouth and Bath, 50@55c.; Newburyport, 60@65c.; Gardiner, 60c., and towage; Bangor, 50@60c.; Wareham, 70c.; Lynn, 60@75c., with vessels in good supply and seeking orders. The car supply is good, with fair transportation from mines to tide.

NOTES OF THE WEEK.

The Huntingdon & Broad Top Railroad Company has declared the usual semi-annual dividend of 3 1/2% (\$1.75 per share) on the preferred and 2 1/2% (\$1.25 per share) on the common stock of their company. The company did not earn the dividends, a fact that is admitted by its officials, but its present heavy tonnage and the prospects of its continuance for an indefinite period, was, the management believed, sufficient justification for the action taken, particularly as the company's surplus fund is of fair proportions.

The dividend of the Pennsylvania & Northwestern Railroad Company payable this week was passed, because, as one of the officials put it, it had not been earned. The road is strictly a coal road, and its business since April 25th, the date of the inauguration of the bituminous coal strike, has been very poor, in one month not a single car of coal having been moved. Nor has the change for the better yet set in, as few mines along the line have resumed, so that its tonnage is made up largely of shipments from connecting lines. The company was incorporated January 1st, 1890, by merger of the Bell's Gap Railroad Company and the Clearfield & Jefferson Railway Company. It extends

from Bellwood to Horatio, a distance of 63 miles. Its capital stock outstanding is now \$2,250,000 (par \$50), it having been increased by an issue of 5,000 shares last year. Its funded debt amounts to \$2,000,000. In 1890 it paid 5% in dividends, as it did also in 1891, while in 1892 the rate was increased to 5 1/2%. In January, of last year, however, it reached 3% semi-annual; but the rate has since declined to 2% in July, 1893, and a similar amount in January, 1894, and to nothing for the semi-annual period just ended. Officials of the company say the passing of the dividend is by no means permanent, as the road can earn its full rate with anything like a fair business; but under the conditions which have existed since April last, it was impossible to earn anything for the stockholders.

Boston.

July 12.

(From our Special Correspondent.)

The recent advance made in the price of anthracite coal by the companies has made what was previously a quiet market on the domestic sizes of hard coal still quieter. The retailers are buying only what they are obliged to, and that is very little at this season of the year. The larger sizes, such as egg and free broken, are less active than they were a week or fortnight ago, as bituminous is more plentiful, and it is being bought by the steam users in its stead. The companies are asking the following, f. o. b., prices at New York: Stove, \$4.15; egg, \$3.90; broken, \$3.75, and chestnut, \$4.15.

The situation in bituminous is much more satisfactory to both the consumer and shipper. There is no great scarcity at present, although stocks here are still light, yet not to that extent where consumers must mix pea and dust and buckwheat with their bituminous to make their coal supplies sufficient. Most of the soft coal coming forward goes to those who have contracts for a year's supplies. Very little coal is put on the open market. What little there is put on the market sells in the vicinity of \$4 per ton. If the mills and foundries of New England were running as they were a year ago, conditions might be very different.

Conditions in the freight rate market have changed considerably in the past few weeks. Rates from Philadelphia are but 50c. per ton, which is owing to the large number of vessels going there with stone for the extensive paving work being carried on in the Quaker City, that are only too willing to get a return cargo at anything like fair prices. New York rates are 50c. also. Baltimore rates are easing a little with free shipments of ice to that port. Rates to that port are from 85 to 90c. From Newport News and Norfolk they are from 80 to 85c.

Trade in a retail way is very quiet and prices are steady and unchanged.

Chicago.

July 11.

(From our Special Correspondent.)

The Chicago coal market yet remains in a condition bordering utter famine. The railroads have been making strenuous efforts to bring coal to this market, but up to the past few days have been unable to accomplish enough to make a showing. Large quantities of both hard and soft coal are sidetracked at various parts of the country, and now that the strike appears on the wane we may expect soon to have an abundance of fuel. The week has been a trying one to many manufacturing concerns. It has been a struggle for some to keep their fires going, but numerous ones had to suspend entirely, the largest being the entire plant of the Illinois Steel Company, throwing from four to five thousand men out of employment. The river traffic has been suspended to a considerable degree, and should not reinforcements appear soon it will cease altogether, for the supply on the docks is growing very limited. Coal continues to come in by the lake, though the quantity brought in through that means is not of sufficient size to make even an impression. Prices on hard coal are for grate \$5.40, and egg, stove and chestnut \$5.65. Soft coal sells from \$3.50 per ton up.

Coke is yet a scarcity, and is likely to be so for a week or so. Price, \$5.50.

Pittsburg.

July 12.

(From Our Special Correspondent.)

Coal.—The market is dull and unsatisfactory. Most of the mines in the Monongahela are in full operation; the barges in the pools will soon be loaded. Mr. Bunting, Joseph Walton & Co.'s manager, says that in 10 days all their barges will be loaded; their mines will then be closed until fall unless there is a rise. In the meantime these remarks apply to other works. The idle miners in the Fourth pool are growing more discouraged over the failure to bring the other operators into line, and at several mines are preparing to follow the action of Jutt's men in returning to work at Columbus rates regardless of scale signatures. The men at T. I. Wood's Eclipse mine voted to go to work at the stipulated price, the scale question not being considered. The men working at Vesta No. 1 are determined to work, scale or no scale, and so notified the union that they would not be interfered with.

Connellsville Coke.—The strikers, at least a portion of them, are still holding meetings and passing resolutions. The strike record has been broken: it is now on the fifteenth week. The struggles of 1887 and 1891 went to pieces at the end of 13 weeks. The labor leaders say they will remain idle the rest of this year rather than surrender; the men who talk

this way are drawing their salaries regularly, while the miners are in some cases starving. The operators have forced their end of the fight this week; fully 1,000 new men have been run into the region and almost as many new ovens fired up. July 9th large importations of men were made, one carload being taken up the Sewickly branch, four carloads to Morehead and one carload to Morrell.

Uniontown.—Advices say that President L. R. Davis has resigned, and Acting-President Barrett elected. President Davis leaves the coke region, as did Secretary Darby. The original strike leaders are now all out of the movement and new men are carrying on a warfare which their more sagacious predecessors abandoned as a lost cause. It will not be long until there will be no room for the old hands.

### IRON MARKET REVIEW.

NEW YORK, Friday Evening, July 13, 1894.

#### Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending		From	
	July 14, 1893.	July 13, 1894.	Jan., '93.	Jan., '94.
	F'ces.	Tons.	F'ces.	Tons.
Anthracite.	64	28,865	31	13,100
Coke.	125	120,646	55	69,209
Charcoal.	36	7,746	23	3,900
Totals.	225	157,257	109	86,209
				4,803,712
				2,873, 03

**Pig Iron.**—There never is much business doing in the middle of July, but this year the dullness is greater than usual, which is to be expected in view of the unsatisfactory condition of business generally. The iron market was in a bad enough state when the labor troubles came. Its condition has grown worse in that the difficulties alluded to cannot but retard the improvement which is bound to come sooner or later. In this market all the conditions which we have been reporting for some weeks past continue unchanged. Consumers report that there is very little demand for their goods, and they therefore are not in a position to buy raw materials at any price. In this vicinity those foundries which are running at all are working on reduced time. There is no possibility of higher prices until the demand improves. Quotations at tidewater are as follows: Northern brands, No. 1, \$12.25@13; No. 2, \$11.25@12.50; gray forge, \$10.25@11. Southern irons, No. 1, \$11.75@13; No. 2, \$11.75@11.50; No. 1 soft F., \$10.75@11.50; No. 2 soft F., \$10.25@11.25. Scotch irons are quoted: Coltness, \$21.50@22; Eglinton, \$19.50@20; Summerlee, \$20.50@21.50.

**Billets and Rods.**—The market for billets and rods is dull. No sales are reported this week. Quotations are nominally: Domestic billets, \$18@19; wire rods, domestic, \$27@27.50; foreign rods, \$39@40.

**Manufactured Iron and Steel.**—We do not hear of any sales of structural material this week. The market generally is very quiet. Prices are without much change from last week, and we quote: 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.**—This market continues without change either as to prices or as to volume of business. Quotations this week are: 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-heart machinery, 1'90@2c.; open-heart carriage spring, 1'90@2c.; crucible spring, 3'50@3'75c.

**Old Material.**—The market for old material is very quiet. Quotations are nominally as follows: Old steel rails, \$9.50@9.75; old iron tees, \$10.50@11.50 per ton; New York railroad scrap, \$11.50@12 per ton delivered at mill, and yard scrap at \$10; wrought turnings, delivered at mill, \$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, \$8@8.50 delivered at mill.

**Rail Fastenings.**—This market continues exceedingly dull. No business is reported and quotations remain 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.**—There is nothing of importance doing in this market. Quotations remain nominally: Spiegeleisen, 10@12%, \$21@22; 20%, \$25@26. Ferromanganese, \$51.50@53.

**Steel Rails.**—No sales of standard sections are reported this week, and the market is as dull as ever. Prices continue \$24 at mill and \$24.80 at tidewater.

**Tubes and Pipe.**—Business in this market continues very quiet. There is no change in prices. Ruling discounts are: On 1½ in. and smaller, 60, 10 and 5 for plain black pipe, and 50, 10 and 5 for galvanized; for 1½ in. and

larger, 70, 10 and 5 for black, and 60, 10 and 5 for galvanized.

#### NOTES OF THE WEEK.

R. Curzon Hoffman was, by consent, appointed receiver for the property and assets of the Pennsylvania Steel Company in Maryland by Judge Dennis this week. The receiver's bond was for \$50,000. The bill of complaint was filed in Circuit Court No. 2, Baltimore, by Jacob H. Taylor, trading as Taylor & McCoy. It is based on an indebtedness of \$27,699.61, for fuel supplies furnished prior to April 21, 1893, when receivers were appointed for the Pennsylvania Steel Company upon the representation that it was insolvent. At that time, the bill also states, the company had a large amount of property in Maryland, chiefly claims for money against the Maryland Steel Company, which aggregated \$6,125,855. After reciting the appointment of a receiver also for the Maryland Steel Company, the bill states that the property of that company at Sparrow's Point, which originally cost about \$6,550,000, is sufficient to pay its mortgage indebtedness of \$2,000,000 and leave a large margin for the payment of the claims of the Pennsylvania Steel company and other creditors. In conclusion the bill declares that it is for the best interests of all the creditors of the Pennsylvania Steel Company that its assets in Maryland, as well as elsewhere, be protected from dismemberment and devastation by separate executions and sales, and that a receiver should be appointed for this purpose. The answer of the Pennsylvania Steel Company, by Robert L. Preston, attorney, admitted the allegations of the bill and consented to the appointment of a receiver. The proceeding will prevent any non-consenting creditors of the Pennsylvania Steel Company from embarrassing the reorganization committee in its work.

#### Buffalo. July 12.

(Special Report of Rogers, Brown & Co.)

Business in pig iron during the past week has been practically at a standstill. The widespread disturbances have created a distrust of the future which stands in the way of figuring on prospective wants, while the same cause has cut down present requirements to a very small tonnage. The fact that there is little or no iron on the market holds prices firm at a slight advance, which was made about two months ago. 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 softener No. 2, \$11; Jackson County silvery No. 1, \$15.75@16.75; Lake Superior charcoal, \$14.25; Tennessee charcoal, \$15.50; Southern soft No. 1, \$11.50; Southern soft No. 2, \$11.25; Hanging Rock, charcoal, \$18.50.

#### Chicago. July 11.

(From our Special Correspondent.)

The disturbances resulting from the railroad strikes have affected the iron market to a great extent. A general quiet prevails in various lines, due to the fact that consumers, to a large extent, are following the policy of buying just enough for immediate use, and others have closed down their works either for the want of fuel or that business does not warrant them being kept open. Very few contracts in any line are being made, although had it not been for the labor troubles many good sized ones were expected to materialize about this time.

**Pig Iron.**—The Chicago pig iron market has taken steps backward during the week, the labor troubles, of course, being accountable for such conditions. A number of large contracts were expected with the week, but the uncertainty relative to the situation has kept such back, and it is doubtful whether any contracting will be done for some time. The sales of Northern iron have been in quantities of from 50 to 500 tons, and the total for the week will hardly go above 15,000 tons. In Southern iron the market is quiet, with the railroad troubles influencing the keeping back of orders similar to the northern. The increase of Southern freight rates has also caused a slackening in sales. Prices are, per gross ton f. o. b. Chicago: Lake Superior charcoal, \$14.50@15; Lake Superior coke No. 1, \$11.50@11.75; No. 2, \$10.50@11; No. 3, \$10.25@10.50; Jackson County silvers, \$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, \$10.50@10.75; No. 2, \$10.25@10.50; Southern car-wheel iron, \$17.50@18; Southern silvers 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.**—Sales in all shapes of structural material continue moderate with no perceptible chance for early improvement. Quotations are f. o. b. Chicago: Angles, 1'50@1'55c.; tees, 1'70@1'80c.; universal plates, 1'50@1'55c.; beams and channels, 1'50@1'60c.

**Plates.**—Business in plates in both mill and stove is decidedly quiet. Sales being few and for small quantities. Flange steel is quoted at 1'70@1'80c.; fire-box steel, 3'50@4'50c.; tank steel, 1'40@1'50c.; boiler tubes, 75% discount.

**Merchant Steel.**—Small orders in fair numbers constituted the week's business. Contracts have failed to appear, due entirely to existing conditions. Quotations are, carload lots: Smooth finished machinery, 1'80@1'90c.; tire steel, 1'70@1'80c.; Bessemer bars, 1'45@1'55c.; toe calks, 2'05@2'15c.; crucible spring, 3'40@3'65c.; tool steel 6½c. and upward; specials, 12@20c.

**Galvanized Sheet.**—Orders from stock have been fairly good with the week, while mill business continues slow. Prices from mill are 75 and 10% off.

**Black Sheet Iron.**—The week has shown up poorly in sheet iron, the uncertainty keeping back many orders, and the prices being against many of the mills accepting trade. Sheet steel has been in fair demand and will probably continue so for a few weeks. Bar iron prices are f. o. b. Chicago, 2'35@2'40c. for No. 27. Sheet steel, 2'40@2'50c.

**Bar Iron.**—No business worthy of mentioning has been transacted during the week, the market being especially quiet. The Valley Mills at Youngstown, Ohio, would have resumed this week had it not been for the railroad strikes. Quotations are: 1'05@1'15c. f. o. b. Chicago.

**Billets.**—The Illinois Steel Company has almost entirely suspended operations, having shut down the works at South Chicago and Joliet. The reason assigned for the shut-down is that it is impossible to have any coal or coke switched to the plants though they have large quantities on cars at various points.

**Steel Rails.**—Manufacture of steel rails by the local company has come to a stop by the closing down of the company's works. Orders for steel rails are not by any means numerous, and it is probable that the steel works will not start up for many days. Price remains \$25@27.

**Old Rails and Wheels.**—Business remains poor, with every prospect of continuing thus. Old iron rails are selling at \$9.50@10.00, and old wheels \$10.

**Scrap.**—The burning of the World's Fair buildings will throw an enormous amount of material into the scrap pile, as the iron and steel in the buildings burned has been twisted and melted into inconceivable shapes. The market for scrap is dull, no sales of any kind being made. Prices are: Forge, \$8.50@9; Cast borings, \$3.50@4; wrought turnings, \$4.50@5; axle turnings, \$6@6.50; mixed steel, \$5@5.50; tires, \$12.50@13; iron axes, \$14@14.50.

#### Philadelphia. July 13.

(From our Special Correspondent.)

**Pig Iron.**—Manufacturers in crude as well as finished irons are not so anxious for long running orders as a month or two ago. Pig iron makers believe that when business is resumed they can demand 25 cents a ton more and get it. There is no margin, they say, in good No. 1 Foundry at \$12.50, which is the price at which much of what is sold brings. No. 2 is very dull, quoted at \$11.50. Gray forge is dull at \$10.50, but two or three large consumers are in the market to-day, intending to make some arrangements for stocks for August and September.

**Steel Billets.**—As long as old contracts are open new ones will not be made. We are told this week that until fuel is more plenty no assurance can be given of faster deliveries. Delivery prices are now \$20. Parties who would like to buy will not consider a proposition at present prices.

**Merchant Iron.**—A few mills have fair work. Many are doing nothing. Eastern iron-makers are not just now taking a very hopeful view of the situation. The average price for refined is 1'30.

**Nails.**—Nails are firmer than two weeks ago, because of reduced stock of wire nails West. The actual demand does not improve.

**Skelp.**—Two large orders have been secured and one or two more are promised. Grooved is 1'25.

**Sheets.**—Two good orders were taken yesterday. Three or four inquiries are in to-day. Business is picking up better in this line than in some others, but prices do not improve.

**Merchant Steel.**—Further resumption in shops is helping tire, spring and crucible steel to a limited extent.

**Plates.**—Three orders of considerable size were booked since last week, and there is an increase in inquiries, but manufacturers do not feel sure of saving their full share of business from Western competition. Tank steel, 1'30; shell, 1'50.

**Structural Material.**—Representatives of manufacturers expect to be able to report definite orders in two weeks. Nearly all the work coming in is made up of small orders, even from concerns which have big improvements in hand. Angles, 1'40; beams and channels, 1'50.

**Steel Rails.**—No large orders for standard sections, \$24.

**Old Rails.**—No activity. Iron, \$11.

#### Pittsburg. July 12.

(From our Special Correspondent.)

**Raw Iron and Steel.**—The situation at present is very much complicated; dealers generally are very conservative. The unsettled condition of affairs at most places in the West has been the means of retarding business generally; many consumers are inclined to purchase nothing that is not absolutely needed. During the week a number of mills have started up, including the American Iron Works, one of the largest mills in the country; other mills not in operation are preparing to do so. The market is still bare of Bessemer pig and steel billets; we may soon look for a supply, as these products are in most demand. The amalgamated scale having been arranged to the satisfaction of both parties, no trouble is expected for the next 12 months. The mills that are non-union make their own arrangements with their men without regard

to the association. The past week in the iron trade circles exhibited but little change as compared with its immediate predecessors. There was some business done in both crude and finished products, but few of the orders placed were for material in excess of that actually required by consumers to meet pressing wants. We are now entering upon the period when under normal conditions the demand falls to small proportions, but it is doubtful if the summer months will show any greater dullness than that which has characterized the trade during the past few months. With money plenty there are many large consumers who would be willing to take advantage of the present low prices to buy heavily, were the outlook for the future sufficiently promising to warrant such a course. The depression in general business has been so severe that many of the largest consumers of iron and steel products will not be in a position for some time to purchase as freely as they have in the past. This is especially true of the railroads, a number of which are now meeting a further drain upon their resources through the extensive strike now in progress. Notwithstanding the lack of confidence on the part of buyers in the future of the market, the small rate of production, the small volume of business, the absence of any heavy stocks of material either in first or second hands, and the fact that prices were never so low plainly points to a greater activity in the market sooner or later.

COKE SMELTED LAKE AND NATIVE ORE.		SKELP IRON.	
Tons.	Cash.	Tons.	Cash.
5,000 Bessemer, August, September, \$11.90		400 Nar. gr'vd....1.30 4 m.	
3,000 Bessemer, July, August,..... 12.15		300 Sheared,.....1.40 4 m.	
3,000 Bessemer, next three months,..... 12.00		250 Wide gr'vd....1.30 4 m.	
2,000 Bessemer, July, August, September,..... 12.00			
2,000 Bessemer, July, August, Sept.,..... 12.00		SKELP STEEL.	
1,000 Bessemer, July, August,..... 12.10		500 Nar'w gr'vd....1.20 4 m.	
1,000 Gray Forge, July, 10.15		400 Sheared,.....1.30 4 m.	
500 Bessemer, July, 12.50		300 Wide gr'vd....1.20 4 m.	
150 Bessemer, prompt, 12.60			
100 Bessemer, July, 12.00		FERRO MANGANESE.	
50 No. 2 Foundry, 12.00		50 80% Domestic,..... 53.00	
50 No. 1 Foundry, 11.00		25 80% Domestic,..... 53.50	
50 No. 1 Silvery,..... 13.50			
CHARCOAL.		MUCK BAR.	
100 Warm Blast,..... 16.00		300 Neutral, July,..... 20.15	
50 Cold Blast,..... 23.75			
50 Cold Blast,..... 24.00		BLOOMS, BILLETS AND BAR ENDS.	
25 Warm Blast,..... 16.25		380 Tons,..... 11.50	
25 No. 2 Foundry,..... 16.50			
25 No. 1 Foundry,..... 17.50		STEEL WIRE RODS.	
BLOOMS, BILLETS AND SLABS.		500 Five gauge American, delivered,..... 25.25	
3,000 Billets, July, Aug., Sept., at mill,..... 18.65		300 Five gauge American, delivered,..... 25.50	
2,000 Billets, July, Aug., Sept., at mill,..... 8.50			
2,000 Billets, July, Aug., Sept., at mill,..... 18.40		SHEET BARS.	
1,500 Billets, July, at mill,..... 18.75		250 At mill,..... 23.00	
1,000 Billets, next three months,..... 18.50			
500 Billets, July, at mill,..... 18.25		OLD RAILS.	
500 Billets, prompt, at mill,..... 18.50		500 Steel rails,..... 10.00	
		500 Iron rails, valley,..... 12.50	
		300 Steel rails, mixed,..... 9.50	
		200 Steel rails, short,..... 10.00	
		150 Steel rails, long,..... 11.00	
		SCRAP IRON.	
		200 No. 1 R. R. scrap, net,..... 10.00	
		100 Soft steel scrap, net,..... 10.00	
		100 Cast scrap, gross,..... 9.00	
		100 Wrought turnings, gross,..... 6.00	

METAL MARKET.

NEW YORK, Friday Evening, July 19, 1894.  
Gold and Silver.

Prices of Silver per Ounce Troy.

July.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.	July.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in \$.
7	4.88	28 1/2	62 1/2	.484	11	4.88	28 5/8	62 1/4	.484
9	4.88	28 1/2	62 1/2	.484	12	4.88	28 5/8	62 1/4	.482
10	4.88	28 1/2	62 1/2	.485	13	4.88	28 5/8	62	.480

The market closes weak at current figures. It appears that the Eastern banks have halted for a time in making their silver purchases, and consequently, the chief buyers of bullion having stepped out of the market, a decline is the natural result. It was supposed that the suspension of supplies from the smelters owing to the strikes would have created an advance on the price of silver; but as the effect of the strikes was to check trading, the demand from the Orient was not good for our silver because the demand from us for their products was not good. A decline in international trading means a decline in the price of silver.

The United States Assay Office at New York reports the total receipt of silver at 93,000 oz. for the week.

Gold and Silver Exports and Imports at New York, Week Ending July 7th, 1894, and for Years from January 1st, 1894, 1893, 1892.

Week	Gold.		Silver.		Excess of Ex. or Imp.
	Exports.	Imports.	Exports.	Imports.	
1894...	\$2,205,800	\$1,120,536	\$179,700	\$3,970	\$1,560,994
1893...	67,944,813	10,794,231	19,134,515	787,651	75,493,416
1892...	68,874,842	7,716,389	16,915,295	1,318,222	76,755,526
1891...	43,861,263	6,522,415	11,994,628	876,621	48,455,855

Of the gold exported for the week \$350,000 went to Germany, \$750,000 to France and \$1,085,000 to Cuba. The silver went to London. The gold imported was chiefly French coin in transit to Cuba; the silver was from the West Indies.

During the five days ending July 12th the exports and imports of gold and silver at New York were as follows: Exports, gold, \$650,169; silver, \$354,900. Imports, gold, \$61,527; silver, \$13,836. Of the gold exported, \$50,169 was in Spanish coin and went to the West Indies. The remaining \$600,000 was in American coin and went to Germany. Of the silver exported, \$1,900 was in Peruvian coin and went to Brazil; \$32,200 was in Mexican coin, \$6,500 of which went to the West Indies and \$25,700 to London. The remainder, \$320,800 was in American coin and bullion, all of which went to London.

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

	Gold.		Silver.		Total excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
May	\$27,406,801	\$4,282,743	\$3,769,379	\$781,752	\$26,111,685
1894	47,639,955	1,552,425	20,332,271	3,152,262	33,614,539
1893.	71,006,712	10,749,361	15,535,377	7,086,461	68,706,267

The statement includes all United States ports, the figures being furnished by the Bureau of Statistics of the Treasury Department.

NOTES OF THE WEEK.

There is no doubt that the business outlook is better, and that a marked improvement has been shown during the past week, in spite of the trouble and derangement growing out of the railroad strikes. The evidently approaching settlement of the tariff question and the growing feeling of confidence in the future are making themselves felt in all branches of business. On all sides we hear of factories starting up and other evidences of the passing away of depression, and there is no doubt that these will continue to show themselves still more as time passes on.

The House of Representatives, as was expected, made short work with the Tariff bill. There was only a brief debate, and on Saturday, July 7th, the House voted not to concur with the Senate amendments to the bill. A conference committee was at once appointed and the bill is now in the hands of that committee, which will fix its final shape.

The railroad strikes are not over by any means, but their force is broken, and it is evident that the movement has failed, and that even the nominal and entirely unreasonable cause will not be removed. The strike has done much injury, but probably less than was generally anticipated. Based upon insufficient grounds and begun at an unfavorable time, its failure was certain from the start.

The statement of the New York banks for the week ending July 7th showed increases of \$13,709,400 in loans, \$2,400,000 in legal tenders, \$15,200,500 in deposits and \$646,700 in circulation; decreases of \$2,068,625 in reserve and \$1,263,400 in specie. The total reserve is \$219,284,300, being \$79,134,625 in excess of legal requirements. The increase in deposits follows the July interest payments.

The statement of the United States Treasury on Thursday, July 12th, showed balances in excess of outstanding liabilities amounting to \$116,032,149, made up as follows: Gold, \$64,892,786; silver, \$18,635,790; legal tenders, \$13,159,265; treasury notes, etc., \$19,344,299. Changes during the week were a decrease of \$1,128,913 in the total balance, and an increase of \$150,051 in the gold balance. Government deposits with national banks were \$13,235,258, a decrease of \$342,096 during the week.

The export of gold this week has not been large. On Thursday \$600,000 were shipped by steamer to Germany and \$100,000 were taken for shipment to Montreal. So far, no gold is reported taken for shipment by Saturday's steamers, so that the total for the week is \$700,000.

The following table shows the denominations of the three forms of Government paper in general circulation and also of the National bank notes:

Denomination.	U. S. notes.	Treasury notes of 1890.	Nat. bank notes.	Silver certificates.
\$1	\$3,052,444	\$12,829,457	\$357,050	\$2,281,229
\$2	2,470,403	10,346,375	174,282	15,366,373
\$5	52,781,74	33,819,185	61,510,485	87,651,885
\$10	84,094,285	41,240,891	66,096,800	104,611,711
\$20	95,123,750	20,110,660	48,685,320	68,849,576
\$50	14,133,400	1,018,990	10,274,550	13,156,510
\$100	23,990,950	11,627,000	19,680,800	24,276,220
\$500	12,079,000	.....	133,500	483,060
\$1,000	59,965,000	21,562,000	32,000	522,000
\$5,000	15.0 0	.....	.....	.....
\$10,000	10,000	.....	.....	.....

The general policy of the Treasury has been to reduce the amount of the smaller denominations of United States notes (legal tenders), and to furnish small notes in the form of silver certificates. All attempts to put standard silver dollars in circulation have failed.

According to the treasury statements already published the amount of money—coin and paper—in circulation in the United States on July 1st, 1894, was, in round figures, \$1,664,000,000, being \$70,300,000 greater than in July, 1893, but \$62,000,000 less than in December, 1893. The chief increase has been in gold and national bank notes.

We have heretofore stated our belief that the Treasury statements overestimate the amount of gold coin in the country, because they do not make sufficient allowance for several sources of loss of such coin, and we have seen no reason to change that opinion. The actual amount of loss is a very difficult matter to reach with any degree of exactness, but the aggregate is considerable. The actual amount of money in circulation is probably not over \$1,600,000,000; but this is an abundant amount.

The aggregate circulation secured by bonds of notes issued by the National banks was on June 30th last \$180,568,584. This amount was greater than in June, 1893, by \$28,667,655, but was \$7,447,644 less than in October, 1893, when the highest point was reached, many banks having taken out new circulation to meet the demand for currency which followed the panic. It will be seen that only about one-fourth of this new circulation has been returned.

The report of the Director of the Mint will give some interesting statements in relation to the price of silver during 1893. The highest price reached during the year in London for an ounce of British standard silver (.925 fine) was in January, when it amounted to 38 3/4 d., equivalent to \$0.84724 per fine ounce, and the lowest 30 1/2 d. for British standard, or \$0.66426 per ounce for fine silver. The highest average London price for any one month in the year was 38 3/8 d. in February, and the lowest 32 0/16 d., the average price in December. The highest monthly average price of fine bar silver in New York was \$0.84380 in February, and the lowest \$0.70250 in December. The difference between the highest and lowest monthly average price was greater than in any year since 1880, amounting to 16 7/8%. The average London price for the whole year, of bar silver .925 fine was 35 5/16 d., and the average price during the year of fine bar silver in New York was \$0.78219, a decline as compared with the average price in 1892 of over 10 1/2%.

The following table shows in the first column the average London price per standard ounce, .925 fine, in pence; in the second column the equivalent in New York of the London price, per fine ounce, the rate of exchange being also considered; and the third column the actual selling price per fine ounce in New York. The averages are for the month:

1893.	Average prices.		
	London standard oz.	N. Y. equivalent, fine oz.	N. Y. price, fine oz.
January.....	38 3/4 d.	\$0.8 217	\$0.84115
February.....	38 3/8 " "	0.84316	0.84380
March.....	38 1/8 " "	0.83255	0.83713
April.....	38 0/8 " "	0.83610	0.83735
May.....	38 1/8 " "	0.83856	0.84081
June.....	37 2/8 " "	0.81654	0.81302
July.....	33 0/8 " "	0.7 981	0.7 333
August.....	33 9/16 " "	0.74337	0.74851
September.....	34 1/2 " "	0.74709	0.75210
October.....	33 6/8 " "	0.73339	0.73711
November.....	32 2/4 " "	0.70390	0.70847
December.....	32 0/16 " "	0.70177	0.70250
Year.....	35 5/16 d.	\$0.77986	\$0.78219

The greatest range of London prices in any month was in June, when the quotations fell from 38 3/4 d to 30 1/2 d. The closing price in December showed a slight reaction from the fall which followed the closing of the Indian mints, but it was only a slight one.

The Bank of France on Thursday, July 12th, reported its specie holdings at 1,826,488,500 francs gold and 1,269,174,300 francs silver, an increase of 110,412,800 francs gold, and a decrease of 2,452,500 francs silver as compared with the corresponding date in 1893. Changes during the week were an increase of 14,300,000 francs gold, and a decrease of 475,000 francs silver.

The Bank of England on Thursday, June 12th, reported its total gold holdings at £38,506,347, an increase of £8,921,646 as compared with the corresponding date last year. The bank's reserve this week is 65 9/10% of the liabilities.

The accumulation of money in London continues, and rates have fallen to about the lowest point ever known. Call loans last week were placed at 0 1/2%, and three-months bills at 0 3/4% @ 0 1/4%. An issue of £1,300,000 in one-year Exchequer bills was placed at about 98%, making only a little over 1 1/2% for the year, and the applications amounted to £9,107,000.

The total amount of capital issues brought forward in London for the six months ending June 30th was £31,076,854. This was an increase of £5,527,854 over the corresponding half of 1893; due chiefly to the issue of the £6,000,000 India loan and some large amounts of municipal bonds. The capital applications are classed as follows: Foreign government loans, £2,378,510; Colonial and Indian government loans, £7,966,212; British corporation loans, £5,788,444; Foreign and Colonial municipal loans, £1,169,320; British railways, £2,054,000; Foreign railways, £1,350,500; Gas and lighting companies, £755,198; Mining companies, £924,083; Cycle, tyre, etc., companies, £287,200; Hotel, brewery and wine companies, £702,000; Miscellaneous companies, £7,701,387.

The Indian gold shipments have been slightly checked by the recent rise in exchange value of the



**Liverpool.**

July 4.

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

The depression in the chemical trade shows no sign of abatement, and the fresh business is confined within very narrow limits. Soda Ash is neglected, and for Leblanc makes the range is quite nominal, at about as follows: Caustic Ash, 48%, £3 15s. @ £4 per ton; 57-58%, £4 10s. @ £4 15s. per ton. Carbonate ash, 48%, £3 5s. @ £3 15s. per ton; 58%, £3 15s. @ £4 per ton, net cash. Ammonia ash, 58%, slow of sale at £3 10s. @ £3 15s. per ton net cash for tierces, 5s. less for bags. Soda Crystals are reported rather firmer on the Tyne, but no change has been made in quotations in this district, which remain at £2 12s. 6d. @ £2 15s. per ton, less 5%. Caustic Soda weak and lower. Quotations vary according to export market, and nominal range is about as follows: 60%, £7 10s. @ £8 per ton; 70%, £8 10s. @ £9 per ton; 74%, £9 10s. @ £10 per ton; 76%, £10 10s. @ £11 per ton, net cash. For parcels under 10 tons 5s. per ton extra is charged.

Bleaching powder is very quiet, but in spite of the substantial reduction at your side, no change has been made in prices here, which remain at £7 10s. @ £8 5s. per ton net cash for hardwood packages, according to export market. Chlorate of potash is nominally quoted by resellers at 6% @ 6% d. per lb. for prompt delivery, but in the absence of business it is difficult to test values. Bicarb. soda is in request at at £6 15s. per ton, less 2% for one cwt. kegs, with usual allowances for larger packages. Sulphate of ammonia is rather dearer, owing to scarcity, and £14 5s. @ £14 10s. per ton, less 2% for nearest spot values to-day for good gray 24-25% in double bags f. o. b. here as to quality. Nitrate of soda is rather inactive at £9 15s. per ton, less 2% for double bags f. o. b. here. Carb. ammonia: Lump 3% d. per lb.; powdered, 4d. per lb., less 2%.

**MINING STOCKS.**

[For complete quotations of shares listed in New York, Boston, San Francisco, Aspen, Colo.; Baltimore, Pittsburg, St. Louis, London and Paris, see pages 46 and 48.]

NEW YORK, Friday Evening, July 13.

The usual mid-summer dullness reigns supreme in the mining stock market. The volume of business done during the past week was very small and utterly devoid of features.

At the close to-day the Comstocks showed a little improvement in price. During the entire week, however, they were dull and neglected. Consolidated California & Virginia shows a solitary sale of 100 shares at \$3.20. This price, however, declined to \$2.70 yesterday. Of Crown Point 100 shares were sold at 90c., and of Gould & Curry 200 shares at 60c. Among other sales we note 100 shares of Ophir at \$1.75; 100 shares of Savage at 40c.; 100 shares of Sierra Nevada at 60c.; 100 shares of Yellow Jacket at 44c.; 300 shares of Alta at 25c.; 100 shares of Chollar at 29c., and 400 shares of Mexican at 65 @ 70c.

No other stocks were traded in during the week.

Mr. Theodore Sutro, president of the Comstock Tunnel Company, informs us that the responses to his circular of June 7th last, calling upon the stockholders and bondholders for subscription to a loan to the company have been so encouraging that the board of directors feel warranted in authorizing a second call upon those who have not yet subscribed to the loan, urging all such to subscribe and thereby insure the success of the effort to keep the property out of the hands of a receiver. The subscriptions so far received average about \$50 per 1,000 shares or per \$1,000 bond. If every stockholder and bondholder will subscribe at that rate, Mr. Sutro says, the company can be carried along for a number of years (or until it will again be self-supporting) and freed from all its obligations, including the claims of certain attorneys who have begun legal proceedings against the company by suit and attachment. The directors have taken steps to resist these proceedings, for the reason that the charges are deemed to be exorbitant. Mr. Sutro said that outside of these lawyers' claims of \$32,000, the company's debts all told did not exceed \$3,000.

**Boston.**

July 12.

(From our Special Correspondent.)

The volume of business in copper stocks continues light and prices recede very easily. In fact, in order to make sales concessions have to be made in nearly every case.

Boston & Montana sold at \$23 in early dealings, but later declined on forced sales to \$22, recovering to \$22½. Butte & Boston showed a slight degree of firmness, and recovered from \$8 to \$8½, with sales of 700 shares; \$8½ was best bid at close.

There was not a recorded transaction in Calumet & Hecla, but \$270 is bid for it.

Tamarack declined from \$156 to \$152, with latest sale at \$154, which was the bidding price at the close. Osceola was stronger on better reports from the mine and advanced ¼ to \$19 on small sales. There were no sales of Quincy, \$81 being best bid. The scrip declined from \$28 to \$27½, advanced to \$28½ and sold at \$28 at the close.

Franklin sold at \$8 for a single hundred shares, the same price being bid for it and \$8½ asked. Centennial sold at \$1, same as last sale; 75c. was the best bid at close. Wolverine sold at \$1¼ for 100 shares.

Napa Quicksilver declined to ¼ on sale of 250 shares.

This completes the list of transactions, the total sales for the week footing up about 3,000 shares.

**San Francisco.**

BY TELEGRAPH.

SAN FRANCISCO, July 13.—The opening quotations to-day are as follows: Best & Belcher, 98c.; Belle Isle, 10c.; Bulwer, 23c.; Chollar, 26c.; Consolidated California & Virginia, \$2.90; Eureka Consolidated, 25c.; Gould & Curry, 43c.; Hale & Norcross, 58c.; Mexican, 74c. (assessment delinquent); Mono, 30c.; Navajo, 10c.; Ophir, \$1.60; Savage, 30c.; Sierra Nevada, 52c.; Union Consolidated, 32c.; Yellow Jacket, 42c.

**London.**

July 5.

(From our Special Correspondent.)

The boom in Montanas is still being kept up, and those interested in the stock are making a very strong market. The price now stands at 11s. 3d. New Gustons are also being strongly supported by the same set, and the price remains firm in the presence of buyers. Jay Hawks are falling through neglect on the part of the public, and also because a leading holder is selling out a few blocks of shares. De Lamars and Harqua Halas have remained stationary, but Elkhorns have been weaker. The meeting of the De Lamar shareholders passed off without any new information being divulged as to the future prospects of the property, though the chairman defended their suspension of a prospecting work following the panic in silver, and showed that the suspension need give rise to no uneasiness. Altogether the week has been a very uneventful one. A great many brokers and merchants have taken advantage of the public holiday last Saturday the 30th, and of the American holiday on the 4th, so that generally there has been very little business done.

Four months ago I gave forward information in this column of the coming difficulties of the Mesquit del Oro Mining Company (Mexico). About \$45,000 of debentures fell due on March 31st, and there was no money with which to redeem them, so that a crisis was expected. The difficulties have now been tided over temporarily, but it would appear that the crisis has only been postponed and not averted. The debenture holders have agreed to refrain from demanding payment until September 30th, and some of the holders have also agreed to renew their debentures for another series of years, provided further working capital is raised to continue operations. This money is to be raised by the use of further debentures. Very little is said about the prospects of the mine and gold in sight. As far as can be judged, the quality of the ore has been decreasing gradually, and the gold contents now stand at from 8 to 10 dwts. per ton. In addition to the poorness of the ore, it is also very refractory. The future profits are anticipated to come more from economical treatment than from improvements in the ore, but the prospects do not appear to be encouraging.

The proposal for making the cyanide process a government monopoly in the Transvaal, to which we referred last week, has fallen through, and great satisfaction is felt throughout business circles. It was not to be expected that such a monopoly would ever be agreed to, for the reasons we then gave.

The De Beers Consolidated Diamond Mining Company has another gigantic profit to report for the year ending June 30th. The revenue for the year was £2,912,000, and the expenditure £1,678,000, leaving a gross profit of £1,234,000. After providing for the interest and sinking fund of the debentures, etc., a net profit remained of £1,308,000. Out of this a dividend of 25% was paid, which absorbed about £1,000,000. The amount of cash carried forward was greater than this time last year, and the stock of blue ground on the floors is greater by 600,000 loads than a year ago, and now amounts to over 3,000,000 loads.

Tolima Mining Company.—The annual meeting of this company was held in London on June 28th. We extract the following from the president's report: During 1893 we extracted 2,660 tons of reserve mineral, which has given us a balance-sheet profit of £59,795. During the winning of these 2,660 tons we did more than twice the amount of exploratory work done in 1892 with the result that we opened out compensating reserves to the extent of 2,033 tons. During 1892 and 1893 we have taken out of the mine 5,124 tons of minerals, which, after paying the cost of large exploratory works, ditch making, shaft sinking and other large improvement works, has produced in two years something like £135,000, and we have still left in the mine mineral reserves to the extent of 4,892 tons. We have about \$32,000 of reserve funds. Superintendent Russell wrote as follows: All is running well at present, and although we cannot expect to maintain quite such a good output as last year, I consider the future prospects of the mine very favorable. Our progress in the shallow adit was interrupted, a crosscut having disturbed the lode, but we have got over this, and are now driving on a well defined lode, and the direction looks favorable for Real del Frias. A telegram, dated July 27th, said: The bottom of the mine is looking encouraging, and good progress is being made in sinking the shaft and developing the lower levels. I estimate the profits for June at £3,500; silver at 29d. per oz. I estimate we have opened up further reserves of ore since the end of last year to the extent of 800 tons, or, say, £31,500. At Real del Frias the new machinery is working well, and we have resumed sinking the shaft. The developments promise well.

**Paris.**

June 30.

(From our Special Correspondent.)

In my last letter I expressed the hope that something would happen to agitate the market, but I little looked—as indeed no one did here—for the sad and terrible event which came on the following day. The letter writer is at a disadvantage in these days. The cable has long since informed you of the assassination of President Carnot and the train of events which followed it, and my comments now would come to you entirely too late. It is enough to say that the choice of M. Casimir-Perier as President is regarded as a most satisfactory one. He represents in a word law, order and stability, and is the leader of the great majority who believe in those ideas. He has consistently opposed the Socialist and Anarchist minority—a smaller one, after all, than most people believe, since they make a noise out of all proportion to their numbers.

Perhaps the most remarkable thing of all was the steadiness of the Bourse under the shock of the first news of the crime. Rentes, our financial barometer, fell only a fraction, and they soon recovered even that. The 3% Rentes have not been below par since they reached that point some time ago.

Well, if our contributions to history have not seriously depressed the market, they have not stimulated it, and I have still to report that matters are very dull, and there is but little speculation. Money is abundant, but confidence is lacking. The best securities have an abundant market, in fact there are not enough of them to meet the demand; but others are left alone.

The metallurgical stocks have been a little weaker, but on small fluctuations. The coal and iron stocks make a better showing, but on light sales also. Even the professional market makes no showing, and as to the outside buying, there is none. Most of the little speculation has been in the Transvaal gold stocks, and those have been generally a little weaker, Robinson, Langlaagte and Champ d'Or all falling slightly. De Beers shares have been fairly steady in spite of the report of heavy duties on diamonds from your side. Huanchaca silver is lower.

The copper stocks continue to decline. There has been some talk of a new combination of producers, but it is said that the big companies on your side of the water refuse to take any action to limit production; and nothing can be done without their aid.

An interesting case was decided here on June 28th, when the First Chamber of the Paris Court of Appeal gave judgment in the action brought against the directors of the Société des Métaux by the shareholders of the same company. According to the terms of the judgment, the directors' liability dates from March 10th, 1888, which is held by the court to be the day on which the management initiated the policy which led to the collapse of the company. The directors are, therefore, held jointly responsible for the injury inflicted on all persons who from the said date invested their money in the shares and bonds of the company, with the proviso that the directors' liability shall only extend over the period of time during which they acted in that capacity.

The negotiations for the formation of a new zinc syndicate do not make much progress. The plans, as I have heard them, provided for a combination consisting of 32 companies; nine of the Franco-Belgian group, ten of the Silesian, five of the Rhenish-Prussian, seven of the English group and lastly the Malfidano Company. All the companies demanded, it is said, that they should be allowed an increase over their present production, which is on an average 10% greater than the amount fixed by the syndicate of 1885 in the last year of its existence. It is on this point that the negotiations have stuck, and the probability now seems to be that they will fail altogether. Meantime the price of zinc continues to fall.

The new company to complete the Panama Canal has fixed its capital at 65,000,000 fr. Of this we are informed 5,000,000 fr. are reserved for the Colombian government, and 40,000,000 fr. have already been subscribed for by some stockholders of the old company. The remaining 20,000,000 fr. will be offered to the public, but a syndicate has agreed to take them if the public does not. The subscriptions and the guarantee represent, as some one has wittily said, the penance imposed upon certain sinners, who are relieved from punishment for their past transgressions on the payment of this fine in the form of new subscriptions. I do not believe that the public generally will take shares, nor do I believe that the new company will complete the canal; but the plan has caused a rise in the obligations of the old company. The new one must begin work before October 31st, or the concession will lapse. Panama helped largely in bringing about the present want of confidence which is killing speculation for the time. The sooner it is forgotten the better. AZOTE.

**DIVIDENDS.**

Huntingdon & Broad Top Mountain Railroad & Coal Company, 3% semi-annual on the preferred stock, and 2% semi-annual on the common stock, payable at the company's office in Philadelphia July 30th, to stockholders of record on July 17th.

Maryland Coal Company, 1% quarterly, on the preferred stock, paid July 11th.

Mine Hill & Schuylkill Haven Railroad Company, 4% semi-annual, payable at the office in Philadelphia, July 16th.

NEW YORK MINING STOCK QUOTATIONS.

Table with columns for NAME AND LOCATION OF COMPANY, July 7-13, SALES, and NAME AND LOCATION OF COMPANY, July 7-13, SALES. Includes companies like Belcher, Nevada; Am. Flag; and others.

\*E-dividend. †Dealt in at New York Stock Ex. Unlisted securities. ‡Assessment paid. §Assessment unpaid. Dividend shares sold 800. Non-dividend shares sold, 800. Total shares sold, 1,600.

BOSTON MINING STOCK QUOTATIONS.

Table with columns for NAME OF COMPANY, July 6-12, SALES, and NAME OF COMPANY, July 6-12, SALES. Includes companies like Atlantic, Mich.; Brecco, Colo.; and others.

Dividend shares sold, 2,185. Non-dividend shares sold, 1,000. Total shares sold, 3,185.

COAL AND COAL RAILROAD STOCKS.

Table with columns for NAMES OF STOCKS, July 7-13, Sales. Includes Am. Coal; Balt. & Ohio; and others.

Total shares sold, 43,455.

INDUSTRIAL AND TRUST STOCKS.

Table with columns for NAME OF STOCKS, July 7-13, SALES. Includes Adams Express; Am. Cotton Oil; and others.

Total shares sold, 286,819.

PENNSYLVANIA.

Table with columns for Philadelphia, July 12. Bid. Asked. Includes Cambria; Central Coal & C. Co.; and others.

UTAH.

Table with columns for Salt Lake City, July 7. Bid. Asked. Includes Alliance; Anchor; and others.

FOREIGN.

Table with columns for London Quotations, July 5, 1894. Buyer. Seller. Includes Alaska Treadwell; Alaska Ter; and others.

CALIFORNIA.

Table with columns for San Francisco, CLOSING QUOTATIONS, July 6-12. Includes Alpha; Aita; and others.

COLORADO.

Table with columns for Denver, July 7. High. Low. Sales. Includes Alamo; Amity; and others.

MARYLAND.

Table with columns for Baltimore, July 12. Bid. Asked. Includes Atlantic Coal; Balt. & N. C.; and others.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

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

G. Gold, S. Silver, L. Lead, C. Copper, B. Borax. \* Non-assessable. † The Deadwood previously paid \$275,000 in eleven dividends and the Terra \$75,000. ‡ Previous to the consolidation in August, 1884, the California had paid \$31,320,000 in dividends, and the Cons. Virginia \$12,300,000. § Previous to the consolidation of the Copper Queen with the Atlanta August, 1885, the Copper Queen had paid \$1,350,000 in dividends. ¶ Previous to this company's acquiring Northern Belle, that mine paid \$2,400,000 in dividends against \$435,000 in assessments.

COLORADO. Aspen. July 7. Price. Argentinum-Juniata \$0.52, Aspen Deep Mining .04 1/2, Rest Friend .06, Bi-Metallic .05, Bushwacker .11, Della S. .80, Gold Valley Placer .04 1/2, Little Annie .04 1/2, Mollie Gibson .1 27 1/2, Pontiac .04, Smuggler .04 1/2, St. Joe & Mineral Farm .04 1/2, U. S. Paymaster .04 1/2.

Colorado Springs. July 6. Cripple Cr'k (gold): High. Low. Sales. Anchoria Leland .09 1/2 .09 1,000, Argentinum Juniata .65 .61 1,600, Bob Lee .9 50 8.01 31,000, Calumet .02 1/2 .01 1/2 29,600, Columbine .01 1/2 .01 1/2 12,000, Cripple Creek Con. .02 1/2 .02 1/2 500, Creede & Cripple C. .01 1/2 .01 1/2 2,400, Fannie Rawlings (S. & G.) Leadville .07 1/2 .07 1,000, Golden Dale .3 50 3.00 57,000, Golden Eagle .16 00 15.00 31,500, Gould .06 1/2 .06 1/2 4,000, Jack Pot .02 1/2 .02 1/2 4,500, Mollie Gibson .1 17 1/2 1.05 1,600, Mount Rosa .06 1/2 .06 1/2 22,000, Mutual .02 .02 1,000, Ophir .04 1/2 .04 1/2 2,000, Pharmacist .09 .09 19,000, Summit .14 1/2 .13 1/2 5,500, Union .23 1/2 .22 9,250, Work .03 1/2 .02 1/2 17,000, World .02 1/2 .01 1/2 51,250, Miscellaneous sales .200,650, Total shares sold .574,350.

PENNSYLVANIA. Pittsburgh. July 12. Bid. Asked. Allegheny County Light .85, Bridgewater Gas .48, Chartiers Block Coal .35.

Chartiers Valley Gas .12 12 1/2, Fisher Oil .50 1/2, Hazlewood Oil Co. .15, Luster Mining Co. .12 1/2, Manufacturers' Gas .33, Monongahela Nav. Co. .67, Monongahela Water .25 1/2, Nat. Gas Co. of W. Va. .25, N. Y. & Cleve. Gas Coal. .48, Olive Valley Gas .23, People's Nat. Gas .25, People's Pipeage Co. .14, Philadelphia Co. .10 10 1/4, Philadelphia Co. .19 19 1/4, Pittsburgh Gas Co. .76, Pitteb. Plate Glass Co. .140, Stand. Undergr. Cable Co. .90, Tuna Oil .8, U. S. Glass Co., pref. .93 1/2, U. S. Glass Co., common .25, Westinghouse Air Brake .12 1/2, Westing'ase Elect., 1st prf .51, " " 2d .35, " " com .24, Wheeling Gas .18 18 1/2.

MISSOURI. St. Louis. July 10. Closing quotations: Bid. Asked. Adams .20 \$0.40, American & Nettie, Colo. .25 \$0.30, Bi-Metallic, Mont. .20 3.00, Elizabeth, Mont. .15 .20, Granite Mountain, Mont. .1 25, Hope .20 2.50, Leo .02 .01 1/2, Small Hopes .50 .50.

MONTANA. Helena. July 5. (Specially Reported by S. K. Davis.) Bid. Asked. Bald Butte (Mont.) .41 25 \$5.00, Benton (troup (Neilhart), Mont. .25 .04 @ .06, Combination (Phillips'g), Mont. .30 .50, Helena & Frisco .1 50, Helena & Victor, Mont. .25 .25, Iron Mountain (Missoula), Mont. .40 .50, Piegan (Marysville), Mont. .35 .50, Poorman (Coeur d'Alene), Idaho .25 .50, Whitlash Union & MacIntyre .25 .25.

MINNESOTA. Duluth. July 10. LISTED STOCKS. Par. Bid. Asked. Biwabik M. Iron Co. .100 \$20.00 \$24.00, Cincinnatt Iron Co. .25 .25 .30, Clark Iron Co. .100 .60 .60, Great Northern Min. Co. .100 2.75 3.50, Kanawha Iron Co. .100 .10 .20, Keystone Iron Co. .25 .40 .40, Lake Superior Iron Co. .25 .25 .50, Lincoln Iron Co. .100 14.00 17.00, Mesaba Moun. Iron Co. .100 .02 .15, Minneapolis Iron Co. .100 50.00 65.00, Mountain Iron Co. .100 .100 2.50 3.00, Shaw Iron Co. .100 2.50 3.00, Security Land & Exp. Co. 10 10.00 15.00.

UNLISTED STOCKS. Adams Iron Co. .10 \$7.00 \$9.00, Ashland Iron Co. .25 .40 .60, Buckeye Iron Co. .100 .25 .50, Buffalo Land & Exp. Co. 1 .20 .50, Chandler Iron Co. .25 20.00 25.00, Charleson Iron Co. .100 15 .30, Cleveland Cliffs Iron Co. .100 20.00 40.00, Chicago Iron Co. .100 .20 .30, Detroit Iron Co. .25 .01 .02, Elmira Land & Iron Co. .100 .05 .25, Great Western Mining Co. .100 1.90 2.25, Homestead Iron Co. .25 .00 1/4 .02, Internat'l Development .10 .22 .50, Jackson Iron Co. .25 .60 .00, Lake Supr. (Marquette) .25 20.00 27.00, McCaskill Mining Co. .10 .01 .03, Mesaba C. L. & Ex. Co. .10 .60 .00, Mesaba Chief Iron Co. .100 1.75 2.00, Mesaba Iron Co. .30 .20 .20, Metropolitan L. & L. Co. 25 50.00 70.00, Northern Light Iron Co. .100 .25 .50, Ohio Mining Co. .100 5.00 8.00, Ophir, gold .100 .04 1.00, Penn. Iron & Steel Co. .100 .04 1.10, Pioneer Iron Co. .25 .25 1.00, Pittsburg & Lake A. Co. .100 110.00 125.00, Putnam Iron Co. .100 .80 .80.

FOREIGN. Shanghai, China. June 11. (Special Report by J. H. Bisset & Co.) Tael. Sheridan Con., Colo .2.50, Punjom Mining, Ltd. .4.75, " Pre. .1.46, Jelabu Mg. & Trading, Ltd. .4.20, Raub A'lian G. Mg., Ltd. .2.92, Shanghai Gas Co. .215.00, Hong Kong Electric Co. .3.54.

Paris, France. July 2. France. Acieries de Creusot .2,105.00, " de Firminy .1,785.00, Acieries Fives-Lille .665.00, " de France .735.00, " de la Marine .892.50, " de St. Etienne .1,250.00, Aguas Tenidas .505.00, Anzin (coal) .4,455.00, Heimez, Spain .665.00, Callao .22.00, Callao Bis .31.25, Cape Copper .1,230.00, Carmaux .43.00, De Biers Consolidated .412.50, Dombrows .615.00, Golden River, Cal .128.95, " parts .1,500.00, Huanchaca .128.95, Huta-Bankowa .1,500.00, Jerez-Lanteira .16.00, " parts .5.00, Kebao .530.00, Laurium, Greece .578.00, Lexington, Mont .33.75, " parts .0.75, Malfidano .1,585.00, Mokta-el-Hadid .760.00, Nickel, New Caledonia .420.00, Ouro Preto .412.50, Phosphates de France .412.50, Placera Haute Italie .200.00, Pontgibaud .322.50, Rio Tinto, Spain .158.75, Robinson (Transvaal) .205.00, Soufres Romaines .107.50, Tharsis, Spain .17.50, Transvaal Coal .24.00, Urugua .480.00, Vieille-Montagne, Belgium .480.00.

ASSESSMENTS. COMPANY. No. Dlnq. in office. Day of sale. Amt. per sh're. Buchan'n, Mex 2 July 2 July 21 .124, Bulwer, Cal... 9 June 29 July 27 .10, Conlon, Cal... 2 June 30 July 20 .05, Mexican, Nev. 50 July 17 Aug. 7 .25, Occid'tal, Nev. 16 July 5 July 31 .10, San Martina, Mont... 3 June 16 .004, Segr. Belch. & Mides, Nev. 14 July 16 Aug. 6 .10.

CURRENT PRICES. These quotations are for wholesale lots in New York unless otherwise specified. Acid-Acetic, chem. pure .17 @ .19, Commercial, in bbls. and obys. .01 1/2 @ .02, Carbonic, liquefied, # lb. .18 @ .25, Chromic, chem. pure, # lb. .1.00, for batteries .40, Hydrochloric, dilute, U. S. P. .25 @ .30, Hydrocyanic, U. S. P. .45 @ .50, Hydrofluoric .20 @ .30, Alcohol-95%, # gall. \$2.30 @ \$2.40, Absolute .35 @ .40, Ammoniated .32 @ .30, Alum-Lump, # cwt. \$1.75 @ \$1.85, Ground, # cwt. \$1.85 @ \$1.90, Powdered, # lb. .04 1/2 @ .05, Lump # ton, Liverpool .65, Aluminum Chloride-Pure, # lb. \$1.25, Amalgamating solution, # lb. \$1.90 @ \$2.50, Sulphate, # cwt. \$1.90 @ \$2.50, Ammonia-Sal., in bbl. lots .07 1/2 @ .08, Carbonate, # lb., English and German .07 1/2 @ .08, Murate, white, in bbls., # lb. .08 1/2, Aqua Ammonia-(in cbyr) 2 # lb. .03 @ .04, 30 # lb. .04 @ .05, 36 # lb. .04 1/2 @ .05, Antimony-Oxymur, # lb. .04 @ .06, Regulus, # lb. .10 @ .11 1/2, Argoite-Red, powdered, # lb. .15, Arsenic-White, powdered, # lb. .03 @ .03 1/2, Red # lb. .06 @ .07, Yellow .06 @ .09, White at Plymouth, # ton .213 @ .26, Asbestos-Canadian, # ton \$50 @ \$300, Italian, # ton, C. I. L. Pool. \$18 @ \$20, Ashes-Pot, 1st sort, # lb. .47 @ .55, Pearl .05 1/2 @ .06 1/2, Asphaltum-Prime Cuban, # lb. .04 @ .05, Hard Cuban, # ton \$28.00 @ \$30.00, Trinidad, refined, # ton \$30.00 @ \$35.00, Egyptian and Syrian, # lb. .05 @ .07 1/2, Californian, at mine, # ton \$12.00 @ \$28.00, at San Francisco, # ton \$15.00 @ \$29.00, Barium-Carbonate, pure, # lb. .45, Carbonate commercial, # lb. .50 @ .10, Chlorate, crystal, # lb. .75, Chloride, commercial, # lb. .05 @ .10, Iodide, # lb. .40, Nitrate, # lb. .06 1/2 @ .07, Sulph., Am. prime white, # ton \$17.50 @ \$19, Sulph., foreign, floated, # ton \$21 @ \$24, Sulph., off color, # ton \$11.50 @ \$15.00, Carb. lump, f. o. b. L'pool, # ton .46, No. 1, Casks, Runocra, " .43 @ .15, No. 2, base, Runocra, " .43 @ .15, Bauxite # ton .35 @ .96, Bichromate of Potash-Scotts, # lb. .11 @ .12, American, # lb. .11 @ .12, Bichromate of Soda-# lb. .09 @ .10, Borax-Refined, # lb., in car lots. .06 @ .09, San Francisco, # lb. .07 1/2 @ .08, Concentrated, in car lots .07 1/2 @ .08, Refined, Liverpool # ton .22, Bromine # lb. .25 @ .35, Cadmium Miniou-# lb. \$2.00.

Cadmium Iodide-# lb. \$5.50, Chalk-# ton \$1.50 @ \$2.25, Precipitated, # lb. .22 @ \$2.10, China Clay-English, # ton \$13 @ \$18.00, Domestic, # ton \$9 @ \$11, Chlorine Water, # lb. .10 @ .10, Chlorine Yellow-# lb. .10 @ .25, Chrome Iron Ore-# ton, San Francisco, \$10.00, Chromalum-Pure, # lb. .35 @ .40, Commercial, # lb. .02 1/2, Cobalt-Oxide, # lb. \$1.00 @ \$1.70, Copper-Sulph. English Wks. ton \$20 @ \$21, Vitriol (blue), ordinary, # lb. .03 1/2 @ .03 1/2, extra .04 1/2, Nitrate, # lb. .40, Copperas-Common, # 100 lbs. .85 @ .95, Best, # 100 lbs. \$1.35 @ \$1.50, Liverpool, # ton, in casks. \$2 @ \$2.10, Cornutum-Powdered, # lb. .04 1/2 @ .08, Fluorite-Pow. # lb. bbl. lots .07 @ .08, Emery-Grain, # lb. (# kg.) .04 @ .06, Fluor, # lb. .02 1/2 @ .04, Epsom Salt-# lb. .01 @ .01 1/2, Feldspar-Ground, # ton .86 @ \$10.00, Crude, \$2.00 @ \$3.00, Fluorspar-Powdrd, No. 1, # ton \$20 @ \$30, Lump, at mine \$6 @ \$8, French Chalk-Fuller's Earth-Lump, # ton \$16 @ \$20, Glauber's Salt-in bbls., # lb. .01 @ .01 1/2, Glass-Ground, # lb. .09 @ .10, Gold-Chloride, pure, crystals, # oz. \$12.00, pure, 15 gr., c. v., # doz. \$5.40, liquid, 15 gr., g. \$5.50, Chloride and sodium, # oz. \$6.00, 15 gr., c. v., # doz. \$2.75, Oxide, # oz. \$27.25, Gypsum-Calcined, # bbl. \$1.25 @ \$1.50, Land Plaster, Iodine-Resublimed, # oz. .30 @ .33, Iridium-Oxide # lb. \$90, Iron-Nitrate, 40 # lb. .01 @ .01 1/2, 47 # lb. .02 @ .02 1/2, Kaolin-See China Clay, Kieserite-# ton \$9 @ \$10, Lead-Red, American, # lb. .06 1/2 @ .07 1/2, White, American, in oil, # lb. .06 1/2 @ .07 1/2, White, English, # lb., in oil. .08 1/2 @ .09 1/2, Acetate, or sugar of, white. .06 @ .06 1/2, Granulated, Nitrate .09 @ .12, Lime Acetate-Am. Brown .90 @ .95, Gray \$1.75 @ \$1.87 1/2, Litharge-Powdered, # lb. .05 1/2 @ .07 1/2, English flake, # lb. .06 @ .09 1/2, Magnesite-Crude, # ton of 1,015 kilos. \$14.75, Calcined, # ton of 2,240 lbs. \$22.00, Brick, # ton of 2,240 lbs. \$47.50, Manganese-Ore, per unit. \$23 @ .25, Oxide, ground, # lb. .02 1/2 @ .03 1/2, Mercuric Chloride-(Corrosive, Sublimed) # lb. \$30 @ .64, Powdered # lb. \$1.25 @ \$1.50, Marble Dust-# bbl. \$1.25 @ \$1.50, Metallic Paint-Brown # ton \$20 @ \$25, Red. \$20 @ \$25, Nics-In sheets according to size. 1st quality, # lb. .25 @ \$6.00.

Mineral Wool-Ordinary slag. .01 1/2, Ordinary rock. .02 1/2, Ground, # ton \$10.00, Naphtha-Black. \$10.00, Nitro Cake-# ton \$10.00, Ochre-Rochelle, # lb. .01 1/2 @ .01 1/2, Washed Nat Ox'rd. Lump, # lb. .06 @ .06 1/2, Washed Nat Ox'rd. Powder, # lb. .07 @ .07 1/2, Golden, # lb. .03 @ .05, Domestic, # ton \$12 @ \$20, Oils, Mineral-Cylinder, light filtered, # gal. .14 @ .16, Dark filtered, # gal. .10 @ .13, Extra cold test, # gal. .20 @ .24, Dark steam refined, # gal. .07 1/2 @ .12, Phosphorus-# lb. .50 @ .55, Precip. red, # lb. .80 @ .85, white, # lb. .85 @ .90, Platonic Chloride-Dry, # oz. \$7, Plumbago-Ceylon, # lb. .04 @ .06, American, # lb. .06 @ .07, Potassium-Cyanide, # lb., C. P. .52, 67 # lb. .40, mining. .28 @ .33, Bromide, domestic, # lb. .28 @ .32, Chlorate, English, # lb. .18 @ .18 1/2, Chlorate, powdered, English, # lb. .18 1/2 @ .19, Carbonate, # lb., by casks, 825 # lb. .05, Caustic, # lb., pure slick. .05 1/2 @ .06, Iodide, # lb. \$2.58 @ \$2.80, Nitrate, refined, # lb. .06 @ .08, Bichromate, # lb. .10 @ .11 1/2, Yellow Prussiate, # lb. .21 1/2 @ .22 1/2, Red Prussiate, # lb. .39 @ .45, Pumice Stone-Select lumps, # lb. .15, Original cks., # lb. .01 1/2 @ .02, Powdered, pure, # lb. .01 1/2 @ .01 1/2, Pyrites-Non-cuprous, p. units. 10 @ .11, Quartz-Ground, # ton \$6.00 @ \$10.00, Rotten Stone, Powdered, # lb. .03 1/2 @ .03 1/2, Lump, # lb. .06 @ .07, Original cks., # lb. .04 1/2 @ .05 1/2, Rubbing stone, # lb. .05 1/2 @ .06, Sal Ammoniac-lump, in bbls., # lb. \$0.94, Domestic, fine, # ton \$7 @ \$7.50, Common, fine, # ton \$4.50 @ \$5, Turk's Island, # bush .28 @ .28, Salt Cake-# ton \$10.00 @ \$15.00, Salt-peter-Crude, # lb. .03 1/2 @ .04, Soapstone-Ground, # ton \$6 @ \$6, Block and slab according to size, Sodium-Prussiate, # lb. .22 @ .24, Phosphate, # lb. .04 @ .05, Stannate, # lb. .06 @ .12, Tungstate, # lb. .30 @ .35, Hyposulphite, # cwt., in casks \$1.70 @ \$1.80, Strontium-Nitrate, # lb. .08 1/2 @ .09, Sulphur-Roll, # lb. .01 1/2 @ .02 1/2, Flour, # lb. .01 1/2 @ .02, Sylvinit, 27 @ 35%, S. O. P., per unit. 3.75, Talc-Ground French, # lb. .01 1/2 @ .01 1/2, American No. 1, # lb. .01 1/2 @ .01 1/2, American No. 2, # lb. .01 1/2 @ .01 1/2, Terra Alba-French, # lb. .85 @ .80, English, # lb. .00 @ .80, American, No. 1, # lb. .00 @ .80, American, No. 2, # lb. .40 @ .50.

Tin-Crystals, in kegs or bbls. .14 @ .15, feathered or flossed. .20, Murate, single. .07 @ .12, Double or strong, 64 # B. .106 @ .15, Oxymur, or nitro. .19, Vermillion-imp. English, # lb. .80, Am. quicksilver, bulk. .57 @ .60, Am. quicksilver, bags. .58 @ .60, Chinese. .85 @ .90, Trieste. .90 @ .95, American. .11 1/2 @ .13, Zinc White-Am., Dry, # lb. .04 1/2 @ .06, Antwerp, Red Seal, # lb. .06 1/2 @ .07, Paris, Red Seal, # lb. .07 1/2 @ .08, Murate solution. .08, Sulphate crystals, in bbls., # lb. .03 @ .03 1/2.

THE RARER METALS. The prices given below are the prices in Germany, and are per gramme except where otherwise stated: Arsenic (metallic), per kilo. \$0.25, Barium (ex amalgam). 2.12, (per electrol.). 7.75, Bismuth (metallic), per kilo. 6.25, (metallic). 2.75, Calcium (per electrol.). 5.25, Cerium (pulv.). 2.25, (fusum in globulis). 5.50, Chromium (fus.). .40, Cobalt (metallic), per kilo. 10.0, (pure), per kilo. 30.00, Didymium (pulv.). 10.00, Erbium-Xtrium (oxydat.). 10.00, Gallium (cryst.). 100.00, Germanium (fus.). 37.50, (pulv.). 35.00, Glucinum (pulv.). 7.00, (cryst.). 10.75, Indium. 5.00, Iridium (fusum). 1.25, Lanthanum (pulv.). 6.00, (per electrol.). 11.00, Lithium (in glob.). 5.00, (wire). 6.25, Manganese (fusum). .25, Molybdenum (pulv.). 12 1/2, Niobium (pulv.). 4.25, Osmium. 1.00, Palladium (wire). .06, (pulv.). 1.00, Potassium (metal), per kilo. 27.50, Rhodium. 1.63, Ruthenium. 2.50, Rubidium. 6.25, Selenium (cryst.). .50, (precipitates). 62 1/2, Strontium (per electrol.). 7.25, (ex amalgam). 3.25, Tantalum. 4.75, Tellurium (fusum). .50, (precipitates). 23 1/2, Thallium. .03 1/2, Titanium. 1.13, Tungsten (pure). 1.00, Uranium. 1.00, Vanadium. 4.00.



**RAILROAD MATTERS.**

The New York, Susquehanna & Western road will place orders soon for 600 freight cars and eight heavy locomotives.

On June 25th the car shops of McKee, Fuller & Co., at Fullerton, Pa., started up on an order for 1,500 gondola cars, after a year's idleness.

The Harvey Steel Car Company has received an export order for six steel box cars and six steel platform cars for the Cucuta Railroad, a meter gauge railroad in Colombia, S. A.

The mileage of new railway line constructed in the United States during the first six months of 1894, according to statistics collected by the "Railroad Gazette," is only 495 miles, or about one-half the mileage built during the same period of 1893. No State has built 100 miles of line, and only one State has built over 50 miles. This is South Carolina, which has built 54 miles.

The East Tennessee, Virginia & Georgia Railroad was sold at public sale in Knoxville, Tenn., July 7th, under foreclosure of mortgage. The property was bought for \$1,505,000 by Samuel Spencer, representing the new Southern Railway Company. It is understood that the sale will be confirmed by the court without delay, and that the new owner will begin to operate the road August 1st.

The Boynton bicycle railway promoters have come out of their long struggle in the Massachusetts legislature with a charter incorporating the Boston & Lowell Bicycle Railway Company to construct and operate an elevated and surface bicycle railway between Boston and Lowell under the Boynton patents. The company will be able to take land for its road in the same manner as other steam railways. Under this charter, if the promoters can enlist the necessary capital, there is nothing apparently to prevent the construction of the road.

A report from Anaconda, Mo., the headquarters of the Butte, Anaconda & Pacific Company, states that it is certain that this railroad will be built this season into Granite, Ravalli and Missoula counties in Montana, and that work thereon will be begun in July. The surveyors have been directed to finish the surveys to Missoula, which were begun last year. The railroad is now in operation for 26 miles between Butte and Anaconda. It is owned chiefly by Marcus Daly and J. B. Haggin. The route they have agreed upon is by Phillipsburg and down the Skalkaho River into the Bitter Root Valley, thence to a point south of Missoula, where it will cross the Bitter Root River to reach the town of Missoula. W. L. Hoge, of Anaconda, is president of the company.

The Southern Railway Company, purchaser of the property of the Richmond & Danville at foreclosure sale, assumed the operation of the roads formerly controlled by the Richmond & Danville on July 1st. The lines operated by the company are: Purchased, Richmond & Danville. Leased: Virginia Midland and leased lines; Washington, Ohio & Western; Piedmont; North Carolina; Western North Carolina and the Atlanta & Charlotte Air Line and branches. Under temporary agreements: Richmond, York River & Chesapeake; Northwestern North Carolina; Atlantic, Tennessee & Ohio; Richmond & Mecklenburg; Clarksville & North Carolina; Oxford & Clarksville; Oxford & Henderson; North Carolina Midland; Statesville & Western; High Point, Randleman, Asheboro & Southern; Yadkin; State University; Milton & Sutherland; Spartanburg, Union & Columbia, and the Asheville & Spartanburg. Executive order No. 2, issued by Samuel Spencer, as president of this company, announces the election of the following officers at a meeting of the board of directors held at Richmond, Va.: Samuel Spencer, president; A. B. Andrews, second vice-president, office, Raleigh, N. C.; William H. Baldwin, Jr., third vice-president, office, 1300 Pennsylvania avenue, Washington, D. C.; Francis Lynde Stetson, general counsel, office, 15 Broad street, New York; W. A. C. Ewen, secretary, office, 80 Broadway, New York; George S. Hobbs, auditor, office, 1300 Pennsylvania avenue, Washington. The following appointments have been made: Sol. Haas, assistant to the president; W. H. Green, general manager; John M. Culp, traffic manager; Harrie C. Ansley, acting

treasurer (vice John W. Hall, deceased). Their offices will temporarily be at 1300 Pennsylvania avenue, Washington, D. C.

The difficulties encountered in operating a railroad in a country subject to political revolutions are illustrated by the following extract from the statement of the president of the Rio Grande do Sul Railway Company, at the annual meeting of the company in London recently:

During the second half of 1893 our line was interrupted for about 130 days, the upper part of the line being practically out of traffic all the time. On July 1st the girders of the Candiota Bridge (Candiota being 138 miles from Rio Grande do Sul, that is, about 36 miles from Bage) were thrown into the river. Attempts were made by our staff to replace the girders by some which had been obtained from the government stores, which were originally intended for the line from Bage to Casiqui. Despite all the efforts they were unsuccessful in launching the girders, and at the end of 1893 the bridge was still down, so that the traffic from Candiota could only be carried on by the transshipment of goods, which was started on August 13th, and carried on during the few intervals that the whole of the line was in our possession, up to the end of the year. Other bridges were damaged. Three particularly had their girders destroyed, and the masonry pulled about, and they were altogether put into such a condition that traffic could not possibly be carried on over them. They were propped up with sleepers so as to enable trains to pass over them at a very slow rate. The moment the insurgents got hold of the district again where we had established this communication, they burned the piles of sleepers, and the bridges became useless, as before. Moreover, the burning of the sleepers buckled the girders, and it is doubtful to what extent they can be repaired. Rails were torn up; two of our engines were disabled by violence, and three were made useless by the safety valves being taken away. Some of our freight cars were burned, others were damaged. The telegraph wires were cut over and over again; the telegraph instruments were taken away, and now and then even our men who were working on the spot were impressed into the service of the insurgents, and had to go away with them. The situation was certainly a very trying one. On the one hand, the government by its representatives intimated that they needed our assistance to the fullest extent. The line, of course, was a valuable adjunct to military operations, for the purpose of carrying troops, horses, ammunition and supplies of food even to a distressed people, and we were constantly required by the government to put our line and rolling stock at its disposal. In the proportion that our line was useful to government operations it was disastrous to the insurgents, and naturally when there was a withdrawal of troops or any similar change in the game of war, our line was exposed to the action of the revolutionists, who would come in and destroy what we had made good. They openly told us that as we served the government, who were their enemies for the time being, they would do the best they could to prevent our serving them again by means of our line. Our men, particularly on the upper portion of the line, were harassed first by one side and then by another.

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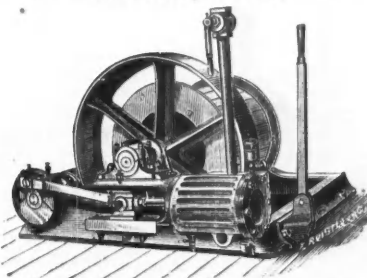
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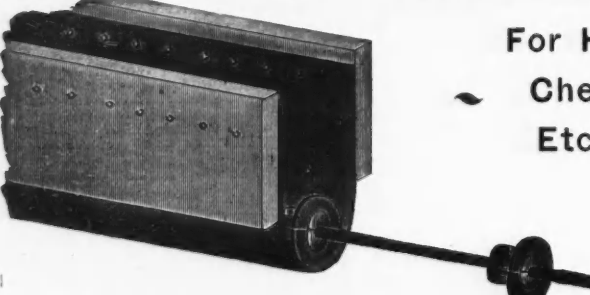
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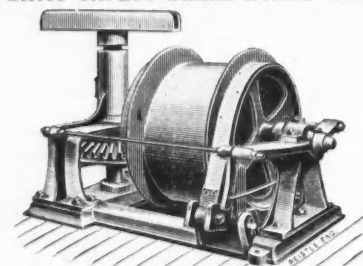
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**ASSAYER AND CHEMIST DESIRES POSITION;** is a graduate with many years' experience in Colorado and Mexico; speaks Spanish fluently and can give first-class references as to character and capacity. Address T. X. W., ENGINEERING AND MINING JOURNAL. No. 16,646, July 21.

**METALLURGIST AND CHEMIST OF** eight years' experience as assistant superintendent, superintendent and consulting metallurgist of lead refining, lead concentrating, pyritic smelting, copper smelting and copper refining works, will be at liberty shortly to take new position. Familiar with the latest metallurgical processes and improvements in the winning of metals from their ores, and the treatment of furnace and mill products. Terms reasonable. Address SMELTING AND REFINING, ENGINEERING AND MINING JOURNAL. No. 16,650, July 21.

**AN ALL ROUND MAN OPEN FOR ENGAGEMENT,** will go anywhere as a machinist or mine foreman. Practically experienced in both branches. Address TEMPERENCE, ENGINEERING AND MINING JOURNAL. No. 16,647, July 14

**A GRADUATE CIVIL ENGINEER AND** student of mining and geology wants position. Specially fitted for prospecting and exploring. A 1 reference. Address PROSPECTOR, ENGINEERING AND MINING JOURNAL. No. 16,648, July 21.

**METALLURGIST OF WIDE EXPERIENCE** in the building and operation of concentrating works, lead and copper smelting works, copper converting works, silver refineries, etc., will be at liberty in a few months to make new engagement. Should like to correspond with any company requiring a superintendent either for the construction of new works or the operation of existing works. Terms very moderate. Address CONSTRUCTION, ENGINEERING AND MINING JOURNAL. No. 16,649, July 21.

**AN AMERICAN OF MIDDLE AGE, WITH** scientific education and long experience in purchasing and smelting argentiferous lead ores, desires position as agent or superintendent of works. Speaks and writes Spanish; satisfactory references. R. M. T., ENGINEERING AND MINING JOURNAL. No. 16,646, July 21.

**A GERMAN MINING ENGINEER AND** chemist wants position. Has 15 years' experience in mining, milling, assaying and surveying. Familiar with treating gold ores. Speaks Spanish. References. Address MINERAL, ENGINEERING AND MINING JOURNAL. No. 16,736, July 21.

**Contracts Open.**

**ARC LIGHTS.**—Rome, N. Y.—C. A. Fowler invites bids until Aug. 6 for furnishing 150 arc lights for one, three or six years.

**ORDNANCE SUPPLIES.**—Springfield Armory, Springfield, Mass.—Sealed proposals, in triplicate, will be received until August 3, 1894, for furnishing forage, steel, iron castings, charcoal, lumber, hardware supplies, stationery, paints, oils, chemicals, soft soap, gasoline, black walnut gun stocks, etc., during the fiscal year ending June 30, 1895. All information furnished on application to COLONEL A. MORECAL, Ord. Dept.

**BREAKWATER.**—Newport, R. I.—Sealed proposals, in triplicate, for stonework at Stonington breakwater, Conn., will be received until July 17. Full information furnished on application. W. H. BIXBY, Captain Corps of Engineers, U. S. A.

**ROOFWORK, ETC.—TREASURY DEPARTMENT,** Office Supervising Architect, until July 20th, for all the labor and materials required for roof sheathing, slate and copper work of roof, down and drain pipe, roof skylights, etc., for the U. S. post office, etc., building at Worcester, Mass.

**IRON FURRING, ETC.—Office of Supervising Architect,** Washington, D. C., until July 27th, for all the labor and materials required for the iron furring, lathing, plastering, etc., for the U. S. court house and post office at Wilmington, Del.

**CONSTRUCTION.**—Office Chief Quartermaster, San Antonio, Tex., until July 19 for the construction at Fort Bliss, Tex., of work shops, coal shed and wagon shed. G. C. SMITH, Q. M., U. S. A., Chief Q. M.

**STONERWORK.**—U. S. Engineer Office, Newport, R. I., for stone work at Stonington Breakwater, Conn., until July 17. W. H. BIXBY, Captain Corps of Engineers, U. S. Army.

**WATER-WORKS.**—Sealed bids will be received by the Trustees of the Carey Water-Works, Carey, O., at their office until August 1st, 1894, for material and performing the necessary labor for the construction of a complete system of water-works. Specifications and forms for bidding can be had of the secretary after July 15th, 1894. Plans will also be on file in the office of the secretary after that date. H. F. GRAVES, President; GEORGE ASH; J. A. GIBBS, Secretary. Water-Works Trustees. J. S. HUMPHREY, Designing Engineer.

**ELECTRIC LIGHTING.**—Norwood, Pa.—Proposals are wanted until August 1st for electric lighting. Address C. H. SKELTON, Secretary.

**ELECTRIC LIGHTING.**—Rome, N. Y.—Bids for lighting the streets of the city with electric lights will be received until August 6th. Proposals must be for one, three and six years, for 150 arc lights, more or less, of 2,000 candle power, to be lighted every night from sunset to sunrise. Also for same lighted from one-half hour after sunset till one-half hour before sunrise and from one hour after sunset till one hour before sunrise. A preliminary bond of \$2,000 must accompany each proposal. For further particulars address A. D. CHARLES A. FOWLER, Chairman of Lamp Committee. K. S. Putnam, Chamberlain.

**BRIDGE.**—New Westminster, B. C.—Separate sealed tenders, properly indorsed, will be received by D. Robson, City Clerk, City Hall, until July 31st, for the construction of a combined railway and traffic iron bridge over Fraser River at New Westminster. Plans, specifications and forms of tender may be seen at the City Hall. A set of printed specifications and forms of tender and blueprints of plans will be furnished to any person applying on payment of \$20. Persons tendering may furnish alternate plans with tenders based thereon for the several parts of the work, but such plans must provide for a first-class combined railway and traffic bridge with steel and iron superstructure. A. M. HERRING, Chairman Bridge Committee.

**POWER HOUSE.**—Detroit, Mich.—Sealed proposals for power house and office building for the 800-ft. lock, St. Mary's Falls canal, will be received until July 28. Information furnished on application to O. M. POE, Colonel Corps of Engineers.

**WATER WORKS.**—Napoleon, O.—Bids will be opened July 24th for one brick building for the entire plant; one brick stack 75 ft. high; water-works machinery; two 1,000,000-gallon pumps; about 8 miles of pipe, 14 to 4; 72 hydrants, etc., and two boilers. JOSIAH KALLER, Secretary.

**ROCK REMOVAL.**—U. S. Engineer Office, Newport, R. I.—Sealed proposals, in triplicate, for removing ledge rock in Pawtucket River, R. I., will be received here until July 31st, 1894, and then opened. 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. Army.

**DREDGING STEAMER.**—U. S. Engineer Office, Wilmington, N. C.—Sealed proposals for building a dredging steamer will be received here until August 2d, 1894, and then publicly opened. All information furnished on application. W. S. STANTON, Major Corps of Engineers, U. S. Army.

**ELECTRIC LIGHTS.**—Shelbyville, Ky.—Sealed proposals will be received up to July 20th, for the engines, dynamos and apparatus, lamps, poles, wiring, etc., for the electric light plant. Plans can be seen at the office of Geo. C. Morgan, 49 Major Block, Chicago, or at the office of Shelbyville Water and Light Company. H. P. Poynter, Secretary. See Sealed Proposals.

**STONE WALLS.**—Decoria, Minn.—Sealed bids will be received up to noon, July 24th, for building two stone walls in section 10 and furnishing all material therefor, except such material as is on the ground. Said walls are to be 40 ft. long at the bottom, 20 ft. at the top and 4 ft. wide at the bottom and 2 ft. at the top (except that the middle 10 ft. is to be 1 ft. wider) and 15 ft. high. Stone are not to be less than 1 1/2 ft. wide and 1 ft. thick. N. JULIAR, Chairman Town Board.

**BRIDGE.**—Hamilton, O.—Sealed proposals will be received at the county auditor's office, July 30, for an iron and steel bridge to span Gregory Creek on the Hamilton and Middletown pike, near LeSourdsville, Lemon township, according to the plans and specifications on file at the county auditor's office. The bridge to be one span of 160 feet from center of end piers; roadway to be 18 feet in the clear; tension members to be best quality of wrought iron, compression members to be best quality of steel. Bidders will be required to furnish full plans and strain sheets and diagrams, showing strains and section on each member. Bidders to file certified check or approved bond with their bids in the sum of \$500. Bridge to be completed by Oct. 1, 1894. FRANK X. DEER, auditor.

**BRIDGE.**—Vicksburg, Miss.—Bids will be advertised for to be filed August 6th to build a single span bridge, 50 ft., 18 ft. roadway, with one sidewalk 6 ft. and railing. Address EDWARD MCGINTY, Superintendent of Roads and Bridges.

Continued on page 19.

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**Contracts Open.**  
Continued from page 18.

**TREASURY DEPARTMENT, OFFICE SUPERVISING ARCHITECT, Washington, D. C., July 11, 1894.**—Sealed proposals will be received at this office until 3 o'clock P. M., on the 14th day of August, 1894, and opened immediately thereafter for all the labor and materials required for the erection and completion of the U. S. Post Office building at Meridian, Miss., in accordance with the drawings and specifications, copies of which may be had at this office or the office of the superintendent at Meridian, Miss. Each bid must be accompanied by a certified check for a sum not less than 2 per cent of the amount of the proposal. The right is reserved to reject any or all bids and to waive any defect or informality in any bid, should it be deemed in the interest of the Government to do so. All proposals received after the time stated will be returned to the bidders. Proposals must be enclosed in envelopes, sealed and marked, "Proposals for the Erection and Completion of the U. S. Post Office Building at Meridian, Miss." and addressed to **JEREMIAH O'ROURKE, Supervising Architect.**

**TREASURY DEPARTMENT, Office Supervising Architect, Washington, D. C., July 7th, 1894.**—Sealed proposals will be received at this office until 2 o'clock P. M. on the 3d day of August, 1894, and opened immediately thereafter, for all the labor and materials required for the surgeon's house (except heating apparatus), and isolated ward for the U. S. Marine Hospital, Detroit, Mich., in accordance with drawings and specifications, copies of which may be had at this office or the office of the superintendent at Detroit, Mich. Each bid must be accompanied by a certified check for a sum not less than 2 per cent of the amount of the proposal. The right is reserved to reject any or all bids and to waive any defect or informality in any bid should it be deemed in the interest of the government to do so. All proposals received after the time stated for opening will be returned to the bidders. Proposals must be enclosed in envelopes, sealed and marked "Proposal for Surgeon's House and Isolated Ward Building for the U. S. Marine Hospital, Detroit, Mich.," and addressed to **JEREMIAH O'ROURKE, Supervising Architect.**

**VENTILATION, ETC.**—Treasury Department, Office Supervising Architect, Washington, D. C.—Sealed proposals will be received at this office until the 31st day of July, 1894, for all the labor and materials required to complete the alteration in ventilation, including additional vent shaft, extension of the present main vent shaft and smokestack and repairs to steam boiler and heating apparatus, etc., for the U. S. courthouse and post-office building at Atlanta, Ga., in accordance with the drawings and specification, copies of which may be had at this office or the office of the custodian at Atlanta, Ga. 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 and to waive any defect or informality in any bid, if it be deemed in the interest of the government to do so. Proposals must be enclosed in envelopes, sealed and marked "Proposal for the Alteration in Ventilation, Including Additional Vent Shaft, Extension of Present Main Vent Shaft and Smokestack and Repairs to Steam Boiler and Heating Apparatus, Etc., for the U. S. Courthouse and Post-Office Building at Atlanta, Ga.," and addressed to **JEREMIAH O'ROURKE, Supervising Architect.**

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