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COAL

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CONTENTS.

IN many low grade mines an increase in tonnage crushed with an existing plant means not only a lower cost per ton of ore but an increased revenue, which in some cases may make a venture profitable which otherwise would prove a loss. It is remarkable, therefore, that a preliminary coarse crushing by means of rolls, before the ore goes to the stamps, is not generally practiced. The only mill to our knowledge constructed on this principle is that of the Huanchaca Mining Company, at Antofagasta, Chili. It is difficult to say what the increased capacity would amount to, but it would certainly be over 20%. Experiments at the Hermosa Mill, Harshaw, Ariz., proved that by screening the fine from the coarse, and charging that separately to the pans, the crushing of the 20-stamp mill was increased one-fifth.

There are few mills using this precaution even; both the millman and the millwright are content to follow along in the same old groove. A mill properly constructed would have rolls on a lower level than the rock-breaker, crushing to say 4 mm. The crushed ore would pass through trommels, the finer go directly to the feeders and the coarse back to the rolls again.

The cost of running and repairs on rolls crushing so coarsely is merely nominal, while the benefit is pronounced. Not only would the capacity be increased and cost per ton lessened, but the feeders would require less attention and the discharge would be more perfect in either wet or dry crushing. It would not be out of way either to have fine screens below the coarse trommels, so that the portion—no inconsiderable amount with many ores—might be sent to the pans or furnaces, as the case might be, without passing through the battery. It is almost time we should see some improvement in gold and silver mills, as we do in other reduction works; for the former, though far from perfect, are built to-day from plans 20 years old.

THE celebration of the 70th birthday of JOHN FRITZ, the veteran iron master at Bethlehem, Pa., on the 30th inst., was a very enjoyable affair, and was attended by a great number of prominent engineers. Every one wishes to do honor to our JOHN FRITZ, and this occasion gave abundant opportunity for testifying the warm personal affection as well as professional esteem in which Mr. FRITZ is held. Over 200 guests were present at the dinner. The after dinner speeches took a new form. Mr. FRITZ was placed as a criminal at the bar, and was tried for sundry offenses.

It was charged in the indictment that he had pretended to be an engineer, that he had ruined the scenery of the Lehigh Valley, and converted the peaceful landscape covered with waving grain into a hideous mass of smoky buildings and railroads; that he had created nuisances by dumping slag into the river, killing the fish, etc.; that he was a man of noise, and had shaken the very earth with his 125-ton steam hammer, and that he was a disturber of the peace and had changed the Quaker settlement of Bethlehem into a warlike community, and was now engaged in making armor plates which could not be pierced except by his own guns. He had even brought the pulpit into disgrace by erecting a pulpit in a converting house, in which no preaching was done, and in which the force used was that of fire instead of moral suasion.

The court was constituted as follows: Chief Justice, Dr. LAMBERTON; associates, Messrs. LORING, MELVILLE, SELLERS, EMERY, WHARTON and MORTON. Attorney General, Mr. HOLLOWAY; District Attorney, Mr. BIRKINBINE; assistants, OLIVER WILLIAMS and J. D. WEEKS. Dr. RAYMOND, General DOSTER and Mr. BROADHEAD were the counsel for the plaintiff. Messrs. JOHN THOMAS, R. W. HUNT, E. D. LEAVITT and several of the old residents of Bethlehem were called as witnesses.

A handsome Tiffany clock bearing the inscription, "Oh, time, deal gently with our loving friends, JOHN and ELLEN B. FRITZ," was presented to Mr. FRITZ. A visit to the steel works was an interesting part of the reception, and the visitors witnessed the hydraulic forging, by a 5,000-ton press, of a 40-ton hollow cylinder. The work of a 125-ton steam hammer on an 85-ton ingot making armor plate was another feature of the visit.

ENGLISH MINING INVESTMENTS IN MEXICO.

English mining investments in Mexico are not turning out so brilliantly as they might; in fact our cousins have been as badly bitten in investments there since, the inception of foreign interests in 1827 as in our own Western States, but it is due in a large measure to the unscrupulous promoters who inflate the original price of the mine two or three times, dividing the surplus among themselves and leaving insufficient working capital. Bad management might be cited also. The Real del Monte mines absorbed over £4,000,000 of English capital. Yet after abandonment by the disheartened investors it has yielded to its Mexican owners many millions of profits and is still producing largely from its 85 mines. In Sonora at the Trinidad mine some £250,000 was scattered right and left by incompetent managers, who built large reduction works which were ill suited to the ore, without making more than a preliminary payment on the property. The property reverted eventually to the Mexican owners, who for some time past have been making a considerable profit. The Almada

& Tirito and the Promontorio at Alamos are still worked, with characteristic English pluck, in spite of poor results for years past.

The North Mexican Mining Company at Cusihuiriachic, Chihuahua, after being closed down for several years is struggling along, and by the aid of good metallurgical talent is making a very small profit, ridiculously small, in fact, when contrasted with the promoters' promises. The Pinos Altos Bullion Company has worked its mine down to considerable depth with but small profit, one dividend only of 9% being paid in 1889. The vein is large but the ore of low grade. The Anglo-Mexican Mining Company at Las Yedras, Sinaloa, after declaring several dividends has suspended them; it is stated, however, a strike, which may prove of considerable importance, has been made recently. The San Jose de Gracias, which was locally supposed to have been salted for the benefit of the purchasers, has gone the way of all such properties. In Durango, which is probably the most promising mining State of Mexico, there is little or no English capital invested. Several mines have recently been floated, however, with reasonable prospects of success.

El Bote in Zacatecas is still producing largely, and is presumably paying good dividends to its owners. The Mesquital del Oro is earning a small profit, but not large enough to pay a dividend. This is undoubtedly a good gold mine with large resources, but the gold is refractory, not over 60% being extracted. In Jalisco, La Luz is attracting some attention, mainly owing to the promises made by those in charge. This, it will be remembered, is the property which was reported on by an expert who contented himself with remaining at Guadalajara, some 50 miles away, where, aided by the former owners of the property, he constructed a clay model of the mine, from the measurements of which he deduced that there was $150,000,000 in sight. Not a dollar of this, it is needless to say, has been produced.

The United Mexican Mining Company at Guanaxuato has passed its dividends since 1887. The San Cayetano is losing steadily, while El Cubo is making quite a profit. It is hardly possible, however, that this company will ever enter the list of large dividend payers. Work at the mines at Angangeo in Michoacan has been suspended for some time, although the large group of mines owned by this company should certainly earn a profit. In Tebasco the Chiapas Company is producing a considerable amount of concentrates, carrying gold, silver, and copper. Transportation is extremely difficult, the roads being perfect morasses. It remains to be seen whether this mine will fulfill the predictions of the eminent experts who examined it.

It can hardly be said after a résumé of mining as it is at present, and still less so when the scores of absolute failures are considered, that the outlook is pleasant for those who have investments in Mexican properties. It never will be, moreover, until their engineers recognize Mexican conditions and the promoters lose a portion, at least, of their rapacity. It would be pleasing to us could we record successes in the mining regions of Mexico, than which none exist more fruitful of minerals, similar to those achieved in recent years in several of our Western States, and we believe we will be able to do so when English investors protect their own interests more strenuously.

LABOR AND LEGISLATION.

There seems to be a revival of the old notion that all kinds of social evils and difficulties can be cured by legislation. And it is just now highly fashionable to legislate "in favor of labor." Many of the laws of this class have been simply disgraceful concessions to the demands of labor unions, and cannot be defended on any grounds of the general welfare. The "contract labor" law is one of these. Under it undesirable immigrants are not excluded, if they only come without knowing what they are going to do next. But the most skillful workmen are shut out if it can be discovered that anybody here has promised to employ them. Meanwhile, to crown the outrage and absurdity of the whole thing, the labor unions import workmen all the time by notifying associated organizations abroad when there is room for more "members." The law thus operates to give a monopoly of this business to certain favored agencies, and aids them in their avowed attempt to coerce all laborers to pay tribute to them.

The list of such laws, both State and Federal, is large enough. But there are others, which may be more plausibly defended, although no small part of the influence which secured their enactment was the same unscrupulous dictation. So long as the irresponsible and reckless power of the labor unions continues, these measures may continue to be enforced, and others of the same class may be called for. The Federal and State constitutions present a limit (of which I will speak presently); but, short of that, there would be no assignable end to legislation "for the benefit of labor," if the situation were really what the advocates of such legislation assert it to be. My present purpose is to point out that the prospect is not so desperate.

The "labor leaders" themselves declare that "labor" is oppressed by "capital" under the system of free contract; that it must have, in self-defense, not only the right to organize for its own protection, and to secure its due share of the products of industry, but also legislative aid of various kinds, extending to the "laboring" class special privileges and safeguards. Moreover, they declare that since "labor" represents the majority of the voters, the needed legislation will be got, sooner or later, through political power.

Whether this assertion as to the nature and extent of the wrongs of labor be well founded or not, it is certain that if it be sincere; if the men who make it truly represent the great mass of wage-workers; and if "labor legislation" really benefits that great class, even though it be unjust to some other class, or, in the long run, injurious to the whole community, we may look for plenty more of it. In my conversations with the representatives of "labor," I have never found the least disposition to consider anybody's interest but their own. Small blame to them, if they sincerely think that they are at war with the rest of society, and that, having been the victims of power for ages, they now have the power, and their turn has come. Small blame to them, again, if they have been taught on every side that statutes are the causes, and not merely the records of progress, and if, proudly conscious of their new jack-knife of political power, they want to whittle, and fancy they can make whatever they desire, without cutting their fingers.

But further examination puts the situation in a different light.

1. These men do not represent "labor" in general, but only a small minority of the laborers of the country, connected with certain organizations.

2. The membership of these organizations is constantly fluctuating. The chronic and chief activity of every one of them is to hang on to its members and make them pay their dues. It is no secret that many strikes, and many controversies which do not end in strikes, are started to revive the waning interest of members and convince them that the Union is worth what it costs them. At such times the membership increases, in periods of peace it is liable to diminish.

3. In other words, the majority of workmen stay out of the labor unions because they prefer to be independent and to save their money; and men are constantly joining or leaving the unions to suit their individual immediate convenience. The latter phenomenon has not received the attention it deserves. But I can only give it passing mention now, as one evidence of the important fact that, in spite of all sympathy, discipline and coercion, the labor unions are nevertheless continually judged by their own members and forced to prove themselves useful, on penalty of going to pieces if they do not.

4. The safeguard against foolish legislation "for the benefit of labor" will be found in the judgment, growing ever more intelligent, of both union and non-union workmen. They have found out already, in many cases, that such legislation operates to their injury, instead of their benefit. The Pennsylvania law, commanding the payment of wages in money every two weeks, and the New York *weekly* payment law, instead of monthly, occasioned considerable inconvenience to employers (to worry whom, and not to remedy any general abuse, they were passed at the demand of somebody who "represented labor"); but they were far more injurious to the workmen, and, indeed, so far as I know, benefited nobody but the saloon-keepers.

5. The general principle is that legislative interference with freedom of contract naturally tends to the injury of the weaker party. Such interference may be justifiable on grounds of public policy; but, in that case, the party usually supposed to be "protected" is really sacrificed. Thus when Congress, whether wisely or unwisely, passed, "for the benefit of American citizens," the Alien Land Act, it really diminished the value of the real estate of every American citizen, by restricting his market for the sale of it.

6. Let us take a single example of "labor legislation" as a further illustration, namely, the recent act of Congress forbidding all government officers and contractors, under heavy penalty, to "require or permit any laborer or mechanic to work more than eight hours in any one calendar day."

The first case under the operation of this act which came to my notice was that of a lot of workmen engaged in the construction of a breakwater on our coast, many miles from any city. They had been accustomed to earn extra pay for extra hours, and earnestly begged that this privilege might be continued. But the law was plain, and they were obliged, for the rest of the season, to stop work early in the afternoon and sit disconsolate in their sandy solitude, with a government officer watching them, to make sure that they did nothing useful. Some of them played cards; some swore; some meditated on the benefit which legislation had conferred upon "labor." A large proportion of the Federal public works is of a character likely to produce similar situations.

This statute is not an interference with the freedom of contract, because the government is the employer, and may offer such terms as it chooses, to be accepted or declined by its contractors and employés. Any private employer might do the same. But there are innumerable employments in which workmen having freedom of choice would prefer the employer who would permit them to earn extra wages for over-time. And a law forbidding this would be a greater injury to the workman than to the employer.

Everybody knows that a law merely fixing the number of hours which should constitute a day's labor, or (as now in New Jersey, a week's labor) and not forbidding over-time, would effect nothing whatever. For nobody dreams that the rate of wages could be directly fixed by law. That must be determined by other means and causes. Even "arbitration" can do nothing better than determine what wages the irresistible decree of business conditions will permit. Hence, a law shortening the "day" either accomplishes nothing at all, or else, by also prohibiting additional work, it restricts the laborer's earning power, diminishes the product of aggregate industry, and, by thus decreasing the wealth of the community, tends to produce at last a reduction of wages, even per hour.

Such a law, if applied to private employers, would be unquestionably unconstitutional, as interfering unwarrantably with the liberty of individual contract. What the State may constitutionally do with regard to corporations it is not so easy to say; but my point is, that in either case it is the wage-earner that suffers.

The constitutional and legal aspects of the question were ably discussed in the *Popular Science Monthly* of February last, in an article by EDWARD ATKINSON and EDWARD T. CABOT, which I heartily recommend to thoughtful patriots. The September number of the same magazine contains an article in reply, by CONRAD RENO, entitled "The Wage Contract and Personal Liberty." This is likewise interesting, and makes out as good a case as can be presented in favor of State interference with the freedom of contract, though it fails to answer satisfactorily the arguments to which it is offered in reply, and is, moreover, affected with the errors of fact and reasoning (expressed, of course, in sweeping generalizations) which characterize the productions of this school. I wish to note, however, only one or two points pertinent to my present theme.

After stating the question, "Is the State justified in fixing a minimum wage and a maximum time for work?" Mr. RENO avoids the issue as regards individual or partnership employers, and urges the right of the State to interfere with the contracts of corporations, because they are its creatures and have received from it special privileges (chiefly, the limitation of the liability of individual stockholders for corporate debts). He says that railroading, manufacturing and mining are "the businesess in which labor wishes the assistance of the State," and that these are conducted almost exclusively by corporations. But his argument for the need and justice of State interference applies to all employés alike; and I infer that, while he is not quite sure of the constitutionality of such action toward private citizens, he would, if he had the power, make any change in the State or Federal constitution that might be necessary to his plan. And he would be right, for the wisdom and justice of the plan are independent of the legal statutes of the employer, and, moreover, it would prove a miserable farce in execution if confined to corporations. Manufacturing and mining corporations in particular would quickly be resolved into partnerships, and the formation of new ones would be prevented. But the subject of the relation of corporations to the labor question is too large to be considered at present; and I will only say, in passing, that of all the eccentricities of logic exhibited by our industrial philosophers, their hostility to the commercial machinery which has done more to produce high wages in the United States than all the laws ever passed, is the most surprising.

When we come to Mr. RENO'S plan of State interference, we find the usual vagueness of statement.

Thus, we are told that "the employer may decide what business he will adopt, where he will transact it, what goods he will manufacture, when and where and at what price he will offer them for sale, what persons he will employ, and in many other ways act on his own judgment, uncontrolled by the State or the general public. But when disputes, strikes and lockouts arise, it is only right that the State should require him to submit the matter to some superior power for determination and settlement." And Mr. RENO'S reason is that such disputes occasion so much trouble and loss to the public.

Let us test his principle. The contract between the Carnegie Company and its Homestead workmen being about to expire, the company proposed a new one, to which the Amalgamated Association, representing about 10 per cent. of the workmen, refused to agree. At the expiration of the existing contract the Homestead workmen struck. The trouble and loss to the public were the result of their lawless violence, not of the strike.

There was no dispute here as to the performance of a contract, but only as to the terms of a new one. Now, what would Mr. RENO have the State do in such a case? Fix the terms of the new contract, he says, in substance. But will it make the parties abide by its decision? If so, then it will not only have oppressed or even ruined the employer; it will, perhaps, not only have wronged other workingmen whose desire and right it was to make a mutually satisfactory contract with him, but it will have done worse, by making slaves of those whom it forces to work upon terms which do not suit them. It will have put a new burden upon labor by denying to it the freedom of movement which modern conditions require.

If the employer prefers to shut up his works, rather than accept terms which he thinks would ruin him, will the State force him to go on; and, if so, how? Or if labor, believing it can do better elsewhere, simply runs away, after the State "settlement" has been made in favor of the terms rejected, will the State bring it back, under that old provision of the Constitution about "persons held to service or labor," which, we thought, went out of date with the abolition of slavery?

But let us take Mr. RENO'S other proposal, the fixing of a maximun time of labor. Eight hours is his aim. Suppose an employer would willingly pay one-fourth more for the gain in time, interest, fuel, general expense, etc., involved in a ten-hour day, but that the law (framed on the pattern of our late Federal statute) forbids this. Is there anything to prevent his making a five-hour day and employing two sets of men? Or could the law prevent workmen in one establishment, after finishing their day's work there, from going to another establishment, and putting in a couple of hours for another employer? Such things would be quite legal and occasionally practicable. The only way to prevent them would be to punish the workman who did more than eight hours' work in any one day. Since that would be absurd, even in the eyes of Mr. RENO, the conclusion must be that State regulation of the hours of work will either be ineffective altogether, or it will injure the working man principally.

What the labor unions desire is shorter hours *with the same pay*. They will or will not succeed in getting that, according to conditions over which the State has no control whatever. When they do get it, it is simply a case of increased wages; and a larger increase would have been practicable, at no greater cost to the employer, if the time of labor had not been shortened.

In conclusion, it is because I believe individual workingmen will perceive what their theoretic advocates, like Mr. RENO, do not understand, namely, the injury done to them by State interference, nominally in their favor, that I expect the present passion for such tinkering with industrial conditions to pass away.

R. W. R.

BOOKS RECEIVED.

The Journal of the Iron and Steel Institute. Part I. 1892. Published by E. & F. N. Spon, London, 1892. Pages 562. Price, $6.00. Illustrated.

An Introduction to Geodetic Surveying. In three parts. By Mansfield Merriman, Ph. D. Published by John Wiley & Sons, New York, 1892. Pages 170. Price, $2.00. Illustrated.

CORRESPONDENCE.

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

The Return of Sulphur in Coal Analysis.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Can you inform me which is considered the correct method of returning the amount of sulphur in an analysis of coal or coke? "Blair" in his "Chemical Analysis of Iron," page 277, states that it should be returned separately, and I have always been in the habit of so doing, but the other day I had a certificate sent back to me on that account as incorrect.

J. S.

MIDDLEBOROUGH, Ky., Sept. 23, 1892.

[It is the approved custom to return the sulphur separately, as to return the volatile portion and that remaining with the fixed carbon would require two separate analyses.—ED. E. & M. J.]

The Rochester Mining and Milling Company.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Can you afford me any information concerning the Rochester Mining and Milling Company, consolidated, of Ouray County, Colo., the stock of which is being offered for sale in Europe.

A SUBSCRIBER.

HAVRE, France, September, 1882.

[We are reliably informed that the United States Depository claim of the company is considered a promising prospect and that the Highland Lassie and Highland Chief claims have a fair reputation as prospects. As a whole, however, the company is not highly spoken of. The general opinion is that the company has some merit as a prospecting venture, but none which warrants a capitalization of $1,000,000.—ED. E. & M. J.]

The Electrolytic Precipitation of Zinc from Solution.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Will you permit me to call your attention to a statement which I find in the interesting report on the treatment of argentiferous zinc-lead sulphides by C. Schnabel in your issue of September 17th. Mr. Schnabel, in calculating the electrical energy required for reducing 1 kilogramme of zinc by the electrolysis of zinc sulphate, concludes that 5 H. P. hours are required. As a basis for his calculation he uses the heat of formation of zinc sulphate, which equals 106,090 calories for 65 kilogrammes zinc, therefore, 1.632 calories for 1 kilogramme zinc. The same amount of energy must be applied to effect reduction of 1 kilogramme by the current. Now, 1,632 calories heat energy are equivalent to 2·52 H. P. hours mechanical energy, since 645 calories equal the work of 1 H. P. exerted for one hour. On an average 10% mechanical energy are lost in the process of transforming mechanical energy into electricity. It follows then that about 2¼ H. P. hours are necessary to produce 1 kilogramme zinc from zinc sulphate by applying electrolysis, not 5. In the case of the electrolytic production of zinc we have no figures representing the ratio of energy theoretically required to that commercially applied, since zinc as yet has not been produced commercially by any electrolytic method. If

we are permitted to draw conclusions from our experience in other branches of electrometallurgy where reduction is effected from aqueous solutions, we find that the amount of surplus energy wasted in heat forms a small fraction of that used for chemical, *i. e.*, electrolytic work. At the same time there is one feature in the electrolysis of zinc salts--aqueous solution which might cause loss of energy, that is, the fact that zinc salts require a higher electromotive force for decomposition than water. And yet by taking certain precautions in adjusting the surface of electrodes to quantity of current, in keeping temperature low, in employing pure solutions, a simultaneous evolution of hydrogen can be entirely avoided. But, even under the most favorable conditions, the production of *commercial* zinc by electrolysis appears of doubtful economic value. With chemically *pure* zinc the question is different.

La Salle, Ill., Sept. 20, 1892. Alfred H. Bucherer.

The Calculation of Charges for the Lead Blast Furnace.

Editor Engineering and Mining Journal:

Sir: Referring to the very interesting article in the issue of 3d inst., on the "Calculation of Charge for the Lead Blast Furnace," by Professor Hofman, permit me to say that, apart from several evidently clerical errors in the calculation, it seems to me that the charge as calculated does not conform to the charge as required.

As stated, "the charge shall weigh 1,000 lbs. and contain 10% of slag; the fuel coke shall be 15% of the charge."

Conforming to these requirements and tabulated, the charges would consist of:

Coke, 15% of the charge	150 lbs.
Slag, 10% of the charge	100 lbs.
Lead ore, Iron ore, Limestone	750 lbs.
Total weight of charge	1,000 lbs.

The charge as calculated and given about the middle of the first column, page 226, is as follows, the inclosure in brackets being what seems to me a proper correction:

"Coke ash 15 lbs.—[This is evidently a mistake, as not only the ash but the whole of the coke enters the charge and the amount should be 15% of charge]	150 lbs.
Slag, 10% of charge	100 lbs.
Lead ore	510 lbs.
Iron ore for SiO	185 lbs.
Iron ore for As and S	75 lbs.
Limestone	115 lbs.
Total weight of charge	1,135lbs.

or 135 lbs. in excess of the required charge.

Port Henry, N.Y., Sept. 19th, 1892. N. M. Langdon.

Editor Engineering and Mining Journal:

Sir: In reply to the communication of Mr. N. M. Langdon, I should like to say that lead smelters, in summing up the items of a charge, usually include only ores and fluxes, and always omit fuel. Some furnace men, however, add the coke ash. This I did, because I wanted to bring together in the table (accidentally omitted in your issue af the 3d inst., but published in that of the 17th) everything that had any influence upon the formation of the slag.

The quotation "coke ash....15 lbs.," is incomplete, as I added, " = 150 lbs. coke;" see issue of September 3d, p. 226, col. 1, line 48 from the bottom).

I should be grateful if Mr. Langdon would point out to me, either through your paper or otherwise, the several clerical errors he found, that I may follow them up and see if they occur in the proof sheets of the book.

Boston, Sept. 24th, 1892. Yours truly, H. O. Hofman.

The Cyanide Process.

Editor Engineering and Mining Journal:

Sir: Your issue of the 13th of August contained an article on our MacArthur-Forrest Process, in which it was stated that it had failed at the Needles mill in California and also in the State of Idaho. Your source of information was unquestionably unreliable, as will be evidenced by the inclosed copies of letters received from Mr. I. E. Blake, President of the Needles Mill and from Mr. Alexander Benham, who has been operating the mill in Idaho.

Mr. Thos. L. Wiswall:

Sir: In reply to yours of the 31st ult., referring to the article on the MacArthur-Forrest Process in the Engineering and Mining Journal in the issue of August 13th, I will state that the process has not failed at the Needles mill of the Needles Reduction Company. The statement made in the Journal is incorrect, as we have not yet gotten underway.

For your information I will add to what I wrote to the Engineering and Mining Journal, that we found that our rolls were improperly set and also unsuitable for fine pulverizing. We therefore have had to substitute entirely new machinery, and the new machinery will be in place and ready to use about September 15th, and until after that date it would be utterly impossible from our experience to express an opinion of the practicablity of recovering the gold and silver in the ores which we expect to handle at our mill. Isaac E. Blake.

Denver, Sept. 1, 1892.

The Gold and Silver Extraction Co.:

Gentlemen: Yours of the 1st inst. requesting information relative to my operations with the MacArthur-Forrest Process in Idaho has been received. The statement made by the Engineering and Mining Journal of New York, in its issue of August 13th, 1892, that the process had failed in successfully working the ores of Idaho is incorrect.

While operating the MacArthur-Forrest process, we worked very successfully up to a saving of 98%. My experiment showed that the consumption of cyanide was very small. Alexander Benham.

Boise City, Sept. 9.

We are endeavoring to present the merits of our process in a careful and honest manner. We do not claim to treat all kinds of ore, but we know that we can profitably and successfully treat some. Reference having been made to the validity of our patents, we will state that they have been submitted to the highest legal authorities in this country and are pronounced unusually strong and binding. They state that the United States Court will unquestionably sustain the decision of the Commissioner of Patents. We have adopted a sliding scale of royalties for treating low grade ores, so that there can be no reason for any one to attempt to operate our process without making arrangements with us.

The Gold & Silver Extraction, Mining and Milling Co.

Denver, Sept. 20, 1892.

[In the next issue of the Engineering and Mining Journal will appear the first of a series of metallurgical articles on the Cyanide Process, giving in full the results of actual practice in the Transvaal. In regard to the so-called McArthur-Forrest process, it should be stated that the Needles Reduction Company and Mr. Alexander Benham, whose letters appear above, are the owners of county rights for San Bernardino County, California, and Boise County, Idaho, respectively. While this might not affect their views, it is but right to state that they are interested parties. In regard to the patents granted to Messrs. MacArthur-Forrest we hold to our previously expressed opinion, that so far as this country is concerned they are untenable. The process has been tested at the Eureka and Excelsior mine, near Baker City, Ore., and at the Hillside mine, Yavapai County, Arizona, and in both cases it has proved a failure, illustrating, as we have said, that it is applicable to a limited class of ore.—Ed. E. & M. J.]

COMPARATIVE COSTS OF MAKING STEEL BILLETS IN THE UNITED STATES, GREAT BRITAIN AND EUROPE.

For the summaries of the cost of producing steel billets here given we are indebted to the valuable report of Mr. Carroll D. Wright, Labor Commissioner, on the Cost of Production of Iron, Steel, Coal, Etc., which forms part of his Sixth Annual Report.

The periods covered by these figures are not exactly simultaneous, varying as they do from the early part of 1888 to the latter part of 1890, but owing to the large number of plants considered, and the extreme care taken in compiling the tables, the averages obtained cannot be very far from the average cost of production in any one of the years mentioned. On the other hand, there is no doubt but that the figures given for the United States are higher than the present cost of production. That this is so, is due to the decreased cost of producing Bessemer pig, and secondly to the increased use of labor-saving machinery in making ingots, blooms, and billets.

At present steel rails are quoted at $30 per ton; but recently a lot were sold for export at $22.50 per ton, and as it is reasonable to suppose that these rails were not sold at a loss, it is evident that the cost of producing steel rails is now less than $22.50 per ton. If this is so, it follows that the cost of producing billets cannot be more than $23 per ton at present; in all probability, it is not over $21.

It will be recollected that the Homestead strike arose in consequence of the attempt of the Carnegie Steel Company to base the wages paid on a minimum price of $22 per ton for steel billets. It will also be recollected that when Mr. H. C. Frick, chairman of the Carnegie Steel Co., was called before the Oates Congressional Committee, to testify concerning the causes of the strike, he stated that the price of steel billets had declined 16% during the last three years. As an actual matter of fact the decline in price has been greater than 16%, for in 1889, during September, we quoted Pittsburg sales at $33 to $35 per ton; at present sales are being made at $23.50 to $24.25 per ton. If we assume that the decrease of 16% referred to the cost of production, we have for the present cost, $26.50 - 16% = $22.26; $27.68 - 16% = $23.25.

COST OF PRODUCING ONE TON (2,240 LBS.) OF STEEL BILLETS IN 1889.

	United States.		Great Britain.	Continent Europe.
Cost of material	*$24·70	*$26·83	†$16·19	†$19·48
Less value of cinder and scrap	·34	1·95	·14	1·01
Net cost of material	$23 86	$24·88	$16 05	$18 47
Labor	1·18	1·62	·89	·83
Officials and clerks	·13	·30	·04	·09
Fuel	·31	·49	·58	·28
Supplies and repairs	·99	29	·68	·96
Taxes	·03	·10	·02	·01
Total cost	$26·50	$27·68	$18·26	$20·64

*Steel ingots. † teel blooms.

It will be noticed that the cost of the steel ingots varies from $24.20 to $26.83 to the ton of billets produced. The quantities used were 2,513 and 2,616 lbs., respectively. The average cost of producing steel ingots in the United States was, at this time, $21.99 per ton. In Great Britain it was $14.99 and on the continent of Europe it was $16.47. The following table will show the details of the cost of production (1 ton 2,240 lbs.):

COST OF PRODUCING STEEL INGOTS IN 1889. BESSEMER PROCESS.

	United States.	Great Britain.	Europe.
Materials (net)	$18·86	$13·08	$14·18
Labor	1·68	·63	·60
Officials and clerks	·11	·07	·08
Fuel	·66	·52	·63
Supplies and repairs	·67	·68	·96
Taxes	·02	·01	·01
	$22·00	$14·99	$16·46

These ingots are made from Bessemer pig, the cost of which is shown by the following table:

	United States.	Great Britain.	Europe.
Ore	$9·21	$6·12	$7·46
Cinder	·10	·19	
Limestone	·43	·21	·24
Coke	3·30	2·64	3·05
Coal	·20	·01	
Labor	1·39	·67	1·00
Officials and clerks	·16	·06	
Supplies and repairs	·53	·40	
Taxes	·04	·02	
	$15·55	$10·32	$11·75

The average cost of producing pig iron here given was taken from figures furnished by 24 establishments in the United States, 4 in Great Britain, and 3 on the Continent of Europe. At the 24 establishments, the cost of production ranged from $13.43 to $17.78 per ton. During the year 1889 the selling price of Bessemer pig at Pittsburg ranged from $16.35 in February to $23.75 in January, the average price for the year being $17.99 per ton. During the present year the price of Bessemer pig has varied from $13.25 to $15.75, the present price being about $14.00. Comparing the present price with the price of three years since, and the average cost of production at that time, we may justly infer the present cost of production to be not more than $13.00 per ton.

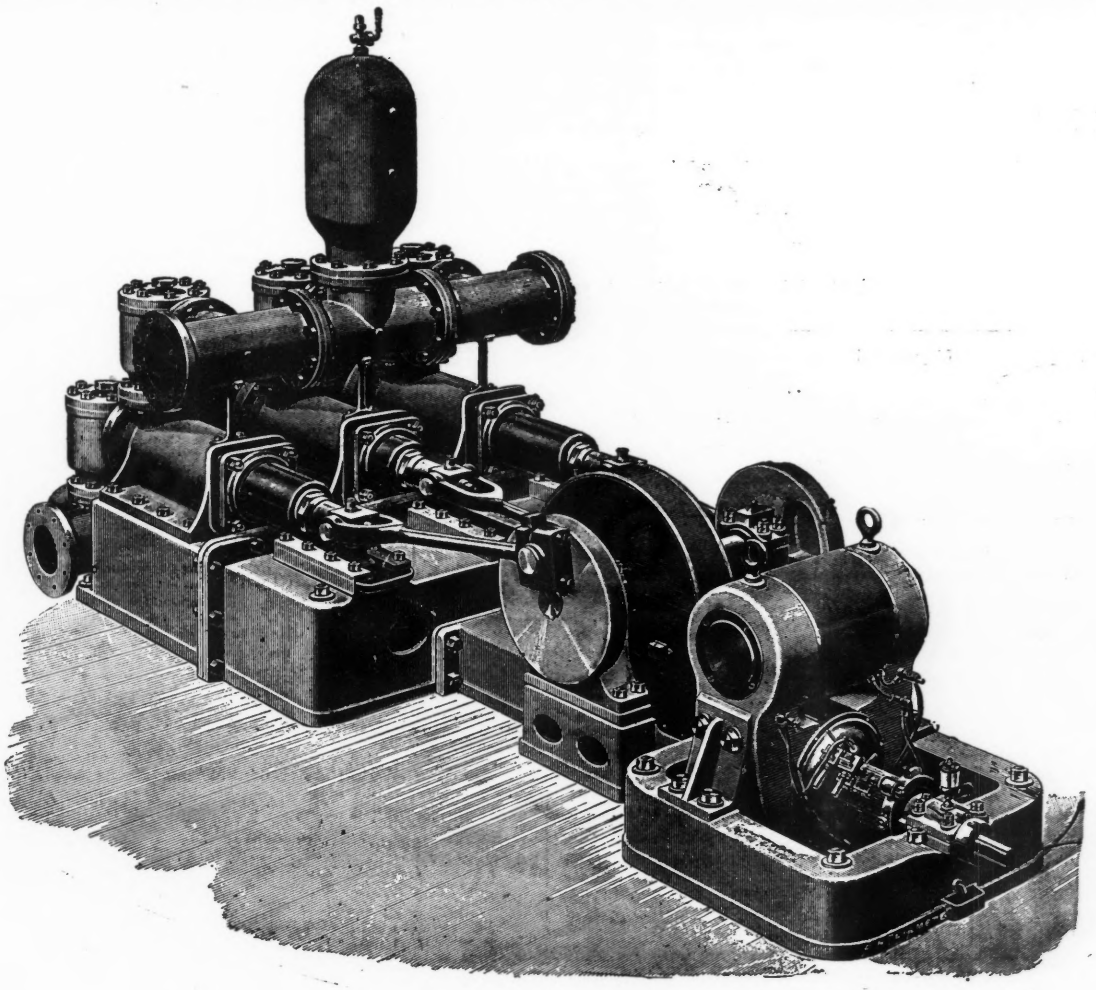
AN ENGLISH ELECTRIC PUMPING PLANT.

As an example of the English method of applying electricity for mining purposes we give the accompanying illustration and description of an electric pumping plant designed and made by Ernest Scott & Mountain, of Newcastle-on-Tyne, for the North Seaton colliery.

The pumps are of the three-throw type, capable of delivering 250 gallons of water per minute against a head of 50 ft. through 1,300 yds. of 8 in. pipe. The plungers are of gun metal, 9 in. in diameter by 15 in. stroke, and work at a speed of 30 strokes per minute. The crank shaft and connecting rods are of steel.

The pumps are driven by means of a "Tyne" electric motor of Ernest Scott & Mountain's mining type, capable of exerting 20 H. P. on the motor spindle when running at 720 revolutions per minute. The power from the motor is transmitted to the pumps through worm gearing. The worm is of wrought-iron, case-hardened, and the worm-wheel is of phosphor-bronze. A thrust bearing is provided for taking the thrust of the worm, and the worm itself is arranged to run in a bath of oil.

The current is supplied by a dynamo of Scott & Mountain's type for mining purposes, and is capable of giving an output of 65 amperes at an electromotive force of 300 volts when running at a speed of 800 revolutions per minute. The machine is provided with cast iron sliding rails and tightening screws, so that the slack of the belt can be taken up while running. By means of a regulating device this dynamo has been arranged so that it can be used for running the electric lamps in the colliery when it is not required for other purposes.



AN ENGLISH ELECTRIC PUMPING PLANT.

The current from the dynamo is taken to a main switch-board, on which a quick-break double-pole switch is placed. Double-pole fusible cut-outs are also placed on the main switch-board, so that in the event of a short circuit the dynamo will be immediately cut out of circuit.

The cables between the main switch-board and the motor consist of 2,700 yards of concentric cable, the inner conductor being composed of 19 wires of No. 16 B. W. G., and the outer conductor of a larger number of smaller wires, but of an equal section of copper. This cable is insulated throughout with bitumenized fibre drawn into a lead pipe, and the cable is finally protected on the outside by a thick coating of braid. This class of cable was selected on account of its being thoroughly watertight and of great mechanical strength.

The total length of cable is in one length of 300 yards and 14 lengths of 200 yards, the joints being made in east iron terminal boxes. The cable is run underground in wooden boxes, pitched, so that it will be thoroughly protected from falling roofs, etc. The illustration we have reproduced from London "Engineering."

Spanish Ore Exports.—During the first six months of the present yea Spain exported 2,399,721 tons of iron ore, 270,425 tons of copper, 24,568 tons of zinc, 7,296 tons of lead and 119,118 tons of salt, as compared with 2,198,789 tons, 385,937 tons, 20,767 tons, 4,341 tons and 109,764 tons respectively in the same period of 1891.

THE NON-HOMOGENEITY OF CERTAIN GOLD BARS.

Wrttten for the Engineering and Mining Journal by Louis Janin, Jr.

My attention has been called to the paragraph in Roberts-Austen's admirable "Introduction to the Study of Metallurgy," in which the author says, after mentioning an experiment, which would certainly lead him to that conclusion, that "as yet there can be said to be no sufficient evidence to show that gold, alloyed with silver and copper and properly mixed in the molten state, is not practically homogenous when solid." This conclusion differs so much from results obtained by the writer, in certain commercial assays, that he believes that it will be of interest to place the results on record.

The material operated on was gold bullion from an Idaho mine. At different times three bars were assayed. The bars were melted in ordinary black lead crucibles with a small amount of borax as a flux. When perfect fusion had been attained the borax was skimmed away, leaving the surface of the metal clear. The contents of the crucible were then vigorously stirred for some minutes with an iron rod. Three dip samples were taken with an iron rod with a spoon fashioned at its end. These were poured into water in a porcelain lined kettle. The metal was again stirred while the tongs were around the crucible and the mass was poured at once into a lampblacked iron mold. When cold, chips were taken from the diagonally opposite corners of the top and bottom faces of the bar.

The granulations were screened and the finer portions reserved for assay. The chips were cut up and two portions of 500 milligrammes were selected at random from the smaller pieces. These were cupelled side by side with two samples of the granulations and two checks of the approximate composition of the alloy. In succeeding tests, as the muffle would allow but four cupels abreast, the relative positions of the granulation samples, chip samples and checks were altered so that the results should not be impaired by the differences in heat or draught. After the addition of the usual amount of silver the buttons were rolled into cornets and parted after three boilings with nitric acid; the first acid of 22° B. and the second and third of 32° B. The results, after the loss by volatilization and absorption had been allowed for, were as follows:

	Bar No. 1.			Bar No. 2.			Bar No. 3.		
	Chips.	Dips.	Dif.	Chips.	Dips.	Dif.	Chips.	Dips.	Dif.
Gold fine.....	808	784	−24	809	786	−23	805	778	−27
Silver fine.....	181	191	+10	180	184	+ 4	190	201	+11
Total....	989	975	−14	989	970	−19	995	979	−16

It will be noticed that the chips from the corners were in each case higher in gold and lower in silver than the granulations; there had evidently been a flow of the less precious metals toward the center. It was unfortunate that these rough experiments were made for commercial purposes only, as more extended tests might have settled what, in my estimation, is still a doubtful question.

THE IRON ORE MINES OF THE SLOSS IRON & STEEL COMPANY, ALABAMA.

Written for the Engineering and Mining Journal.

These mines are located on the southern slope of what is known as "Red Mountain," about 5 miles east of the city of Birmingham.

Red Mountain is a ridge about 300 ft. high, formed by the up-tilted measures, containing the iron ore beds and the underlying limestone dipping south, as they go under the Cahaba Coalfield, as shown on diagram No. 1.

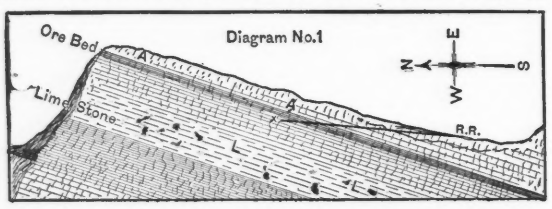
From A to A the dots represent the several entries, or mine levels driven into the ore-bed, the point marked X shows the position of the tipple, connected by the dark line to the railroad, at RR, which runs along the bottom of the hill. The approximate position of the limestone is shown at LL, 60 ft. thick, where it is being quarried, one mile west, on the same range.

At intervals of from ½ to ¾ of a mile the southern face of the hill is cut by narrow ravines, the effects of erosion. These gaps expose the edge of the ore bed along each flank. These openings have generally been taken advantage of as being a convenient and cheap location for reaching the ore. The general plan is to run a spur track from the main road round into the ravine as far as the grade will allow, and to erect tipples on a bridge over the tracks, from which the mine cars are emptied into the railroad cars.

All the mining so far is above the level of the railroad, and years will elapse before it becomes necessary to follow the ore by sinking slopes below water level; therefore, the loaded cars have to be lowered to the tipples by self-acting planes. Ventilation is effected by the "upsets," being driven from the upper entry up and out to the surface at the outcrop.

No. 2 mine, of the Sloss Iron & Steel Co., at Irondale, may be taken as one of the best examples of its class, and great credit is due to Thomas C. Culverhouse, the superintendent, and N. S. Harris, the mine foreman, for the splendid arrangement of the plant, and the practical and economical method adopted in mining and handling the ore.

The first prominent feature of the plant claiming attention is the arrangement of the balance planes and tipples for lowering and empty-



ing the mine car into the railroad cars. The railroad under the tipple is double track, so that two railroad cars can be loaded at the same time.

The accompanying diagram No. 2 will assist in conveying an idea of the general arrangement of the plant. AA represents the loading schutes over the tracks, with tipples placed at both ends.

From the end of the bridge which carries the tipples and tracks BBBB, commence the planes, which run up each flank of the mountain at distances of about 50 ft. apart; the mines or entries are driven into the ore bed, as shown on the diagram. The carriage, which carries the mine cars, is built so that its deck or platform is level. While running on the plane at an angle of 18° it carries two mine cars, standing side by side across its deck.

The balance car is strongly framed and fitted with a sheave lying at the same angle, and in the same plane, with the strain on the rope.

The car is loaded with ore until it has sufficient weight to start and hoist the carriage with two empty cars on it when the brakes are slaked off. When the empty cars are replaced at a landing by two loaded ones it adds over two tons to its weight and changes the balance in favor of the load, so that the loaded cars hoist the balance car.

The "cable" is a one-inch diameter steel hoisting rope, and by keeping the rollers on the plane in good repair and the rope well lubricated with tar one rope will generally work out the mine to a distance of 1,000 ft.

As before stated, the ore at this mine is about 3½ ft. thick, dipping south 18°. It is claimed to contain 55% of iron, therefore, the bed is equivalent to a bed of solid pig iron 21 in., or 1¾ ft. thick. Assuming the weight of cast iron at 450 lbs. per cu. ft. there would be 4 tons per sq. yd. of the bed, or about 19,360 tons per acre as measured on the dip. The management claim that nearly all the ore is extracted in the final mining of the pillars, but allowing 90% as the total result, which would be much above the average result in Alabama, the yield of iron per acre would be about 17,424 tons.

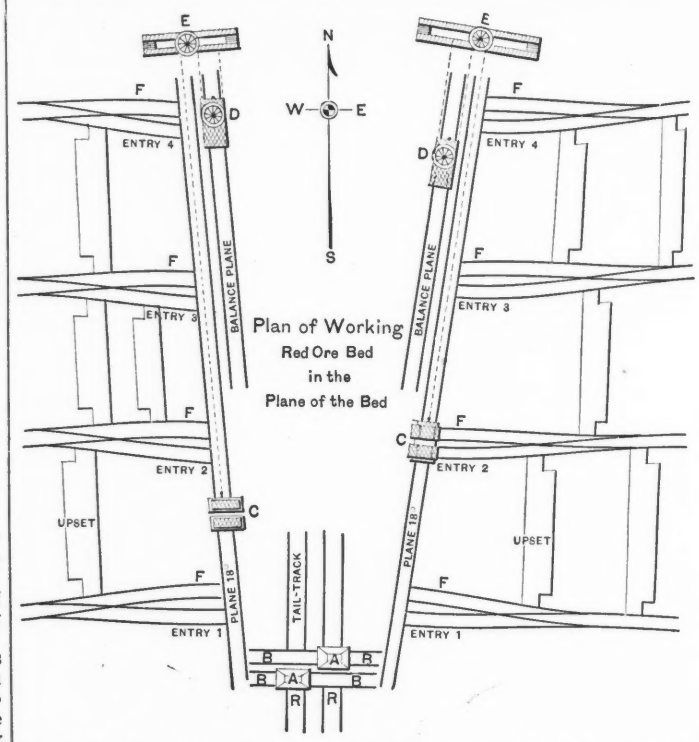
The bedding planes run nearly parallel with the dip, from 3 to 4 ft. apart, with clearages which cut the ore bed into blocks and are of great advantage in mining. Between the ore and the roof of the mine occurs a few inches of a comparatively soft and briable slaty gouge; the miner works this out with the pick until clearage is reached, and then breaks out the ore with wedges, or by blasting.

The entries are 50 ft. apart, driven 16 ft. wide, on a grade of 6 in. in 100 ft. Three rows of props are stood on the lower side, leaving 7 ft. along the upper side clear for the track. The roadbed is leveled by cutting up the bottom on the upper side, the rubbish from this and from the gouge being used as filling. The upsets, 24 yards apart, are 6 ft. wide where they leave the entry. At 2 yds. up they are widened to 10 ft., and driven up through to the next entry with a narrow opening at the top. The upsets are driven so that the upsets of one entry are opposite the pillars of the next.

The work inside the mine is by contract, and paid by the carload. The box of the mine car is $6\times3\times1\frac{1}{2}$ ft., and holds 27 cu. ft., or 1 cu. yd. of broken ore, which when loaded is called a ton, although it probably weighs more. The price paid in the entry is 60c. per car for the first 400 ft. distance from the plane, and 2½c. per car extra for every additional 400 ft. up to 1,000 ft., the price in the upsets and pillars being the same. This includes mining, loading, tramming, propping and putting down the track, but does not include keeping it in repair. In mining backward the pillars are worked like long wall, and the top allowed to close behind the mines, keeping the face open by the use of props.

Where the strata over the ore bed becomes too thin near the outcrop, for underground mining, it is removed by stripping, which costs about 14c. per cu. yd. This allows the ore to be quarried. The mine has 25 entries on the west and 18 on the east plane, and when working to its full capacity produces about 500 tons per day. Eight men are necessary to operate the plant, exclusive of contractors, including a ticket clerk, switchman, brakeman, plane runner and tippleman for each plane. In addition are a mine boss, blacksmith and carpenter. The total cost of the labor may be approximated at: Mining, trimming, etc., per ton, 50c.; handling outside, 3c.; repairs of cars and track, 1c.; timber for props, 5c.; boss' salary, 1c.; total, 60c.

The mine is within the 25c. limit of Birmingham at the general price expected as royalty is 25c. Therefore, the cost at the furnace may be set down at $60\times25\times25=1.10$ per ton. The loss from wear, interest



and the depreciation on the investment is expected to be covered by the profits from the sale of supplies at the mines and at the store; the exact figures for these sources of profit and loss are not easily obtained.

THE PRODUCTION OF STEEL IN GREAT BRITAIN DURING THE FIRST HALF OF 1892.

Everywhere there are unmistakeable signs of the great depression which is threatening British industries of all descriptions. The figures which are published from time to time giving the statistical position of all kinds of trades show that, even from an optimistic point of view, Great Britain is in the midst of a wave of depression; and a pessimist would affirm that she is gradually losing her trade entirely. The figures for the production of steel in Great Britain during the first half of 1892, which are just to hand, serve to confirm our remarks. As compared with the first half of 1891, the production of steel ingots has fallen off 30%, steel rails 50% and open hearth steel ingots 7%. The production of Bessemer steel ingots during the first half of 1891 was 12½% below that of the corresponding period of 1890, so that the total reduction is very great. The figures are given in detail as follows:

In tons of 2,240 lbs.	Bessemer ingots.	Bessemer rails.	Open hearth steel igots.
January-June, 1892.....	649,816	211,805	722,341
January-June, 1891.....	923,005	422,623	778,888

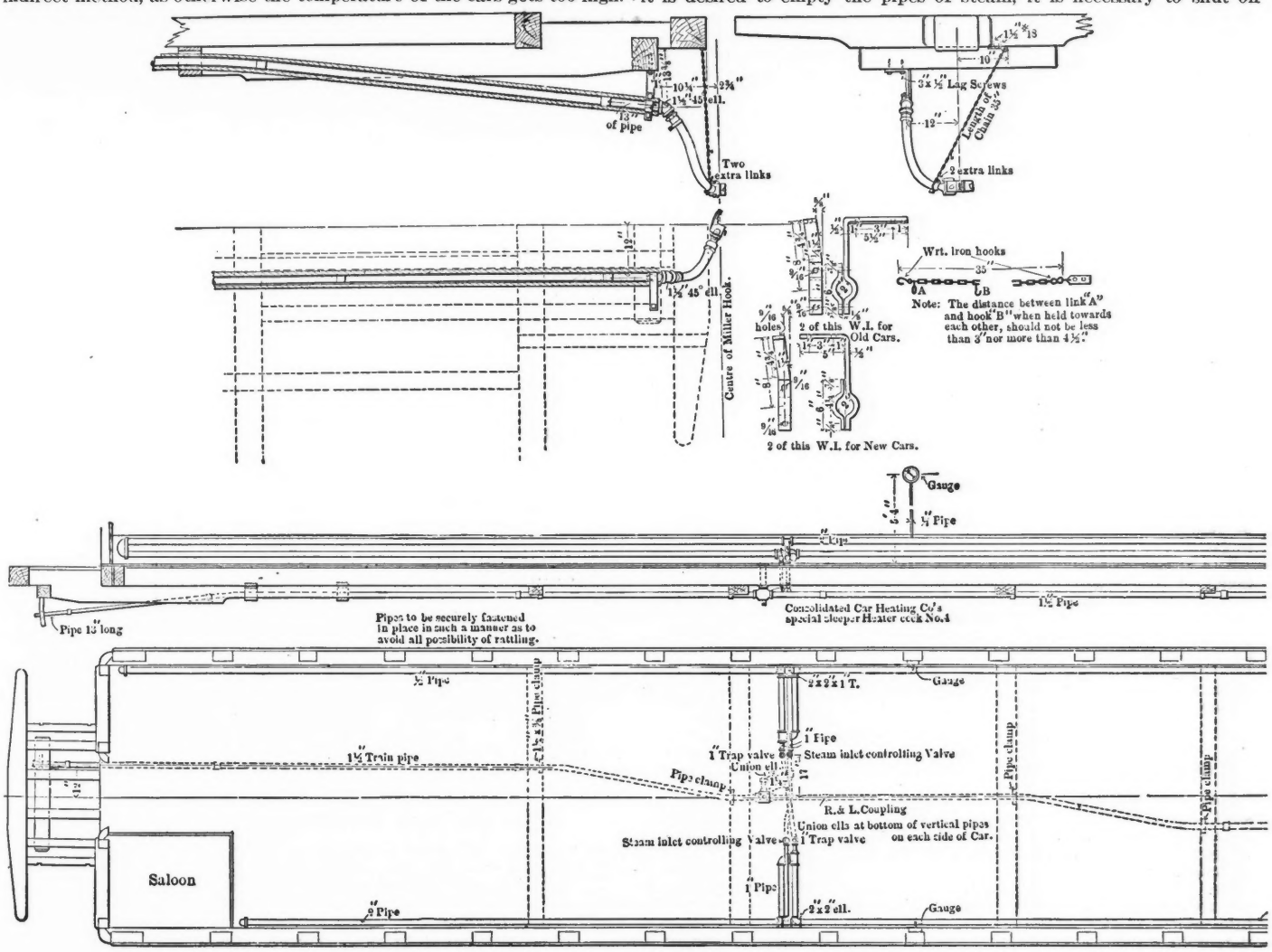
The decrease in the output of steel rails must be most alarming to the British manufacturer and it shows a very different state of things from that which rules in this country. Here the production of Bessemer steel rails has increased from 579,929 net tons during the first six months of 1891 to 865,128 net tons during the first half of the present year. This great decrease in the output of rails in England is all in the export trade and is chiefly due to the diversion of orders from England to Germany and in some cases to this country.

Ingot Steel in India.—Ingot steel was made for the first time in India on June 28th. It was produced at the government gun factory at Cossipore, a suburb of Calcutta. The plant is of the most improved kind and consists of a furnace, four gas generators, annealing ovens, etc. The steel is produced at the rate of 4 to 5 tons per hour. It is said that the trial steel produced was of good quality.

CAR HEATING BY STEAM.*

By A. M. Waitt.†

There are two distinct systems of supplying heat to railroad cars by means of steam, and each has its supporters and partisans, who claim its universal superiority under all circumstances. One is by sending the steam right through the heating pipes themselves and is called the "direct" system; and in the other, called the "indirect" system, the pipes are filled with circulating water which is heated by contact with steam on the locomotive. In my opinion each has a distinct use, and under various circumstances one is superior to the other. For instance, where the train stops often, the greater heat of the direct method is advantageous owing to the great loss of heat at each stop where passengers get in and out and the doors are constantly being opened. It is also most convenient when the trains have to be got ready rapidly for traffic, as by its means the atmosphere of the car is heated up very much more rapidly than when the indirect system is used. On the other hand, if the trains are composed of sleepers or if they are running long distances without stops, then it is best to use the indirect method, as otherwise the temperature of the cars gets too high.



CAR HEATING BY STEAM.—DETAILS OF METHOD ON LAKE SHORE RAILROAD.

On our railroad we have, after much experience, adopted both systems, the direct in all coaches, baggage and mail cars and the indirect in sleepers.

Each system consists of the following six parts: Train pipe, couplers, three-way valve or its equivalent, radiating pipes, steam admission valves, and traps or their equivalents. I intend to discuss each of these and point out the strong and weak points in each.

As regards the train pipe, it is almost universally agreed that it shall consist of a 1½-in. pipe, well covered with asbestos lagging and carried under the car body.

The coupler we are using on our road is the Sewall, and it gives complete satisfaction. Experience has demonstrated that a coupler having a wire-bound rubber connection is much cheaper and freer from breakage that any of the flexible metallic connections that I have ever seen.

There are three ways of controlling the steam in the train pipe in each individual car, but in my opinion the ordinary three-way cock is by far the simplest and safest. The best three-way valve should be so arranged that the water of the drip shall pass through or be in contact with it, so that while there is any steam in the train pipe, the drip outlet can never freeze. The adoption of a uniform style of floor plate and marking for it is very desirable, especially when the sleepers and cars are interchanged by different roads.

Formerly the direct system used to be objectionable on acount of there being far too much radiating pipe employed. Spurs were placed under each seat and pasengers used to be stewed. Now the heating is not overdone in this way and the steam is conducted up each side of the car in two lines of 2-in. pipes, with no spurs. Sometimes 1½-in. pipes are used and then a short spur 10 inches long is placed under alternate seats. With the indirect system it has been customary to use 1¼-in. pipe, but this is apparently too little, and in my opinion much better results would be obtained by using 1½-in. pipe throughout. The pipes on each side of the car in the direct system should have separate steam controlling drip valves and also a separate pressure gauge.

The steam admission valves are a very important part of the installation. Hitherto it has been customary to use an ordinary cheap globe valve, and this has given very bad results. In the first place, the opening for the steam cannot be regulated to a nicety, and thus the heat in the car cannot be varied to suit the temperature of the atmosphere. Either full steam is on all the time and then the heat of the car is a maximum, or, in warmer weather the supply of steam has to be alternately put on and cut off. This is of course an unsatisfactory arrangement. Secondly, this form of valve soon wears out and cannot be easily made steam tight; consequently, in warm weather, when it is desired to empty the pipes of steam, it is necessary to shut off the steam from each car at the three-way valve. Recently some of the Vanderbilt roads have been considering the advisability of introducing a more easily regulated valve, and two firms of manufacturers are now offering to supply such.

The traps have been a constant source of trouble, as they are always either freezing up or choking with water, and sometimes allowing too much steam to waste. Many companies have abandoned their use and have substituted instead a globe valve at the end of the radiating pipes on each side of the cars. In some cases, as in the suggested improvements on the Vanderbilt roads, a small groove is filed in the valve seat, so that the valve can never be entirely closed. This groove is large enough to take care of all condensation in mild weather and in cold weather the trainmen are expected to adjust the opening of the drip valve to suit the amount of condensation.

The committee of heads of the mechanical departments of several Vanderbilt roads have drawn up a series of proposals for the better management of steam heating, and following the recommendations of this committee the Lake Shore have adopted the system of direct heating shown in the accompanying illustrations.

*Abstract of paper read before the Western Railway Club, Sept. 20.
†Assistant Master Car Builder of the Lake Shore and Niagara Southern Railway.

Fulminate of Mercury Manufacture.—The danger of mercurialization is considerably greater than that of explosion. Small explosions certainly occur, but they are chiefly objectionable by reason of the mercury vapor to which they give rise. Another source of risk is the poisonous character of the fumes that are given off during the solution of the mercury in nitric acid, and afterward in the reaction between the mercury solution nd the alcohol which is added thereto.

ESCHKA'S METHOD OF DETERMINING SULPHUR IN COAL.*

By F. Hundeshagen.

In determining the sulphur in coal by Eschka's method, an error may be caused by the volatilization of a part of the sulphur as hydrogen sulphide or ammonium sulphide. When the coal and the magnesia-soda mixture are finely ground and intimately mixed and cautiously exposed to heat, as much as 6 per cent. of the sulphur is often volatilized; and of course with injudicious and careless heating the loss is still greater.

The volatilization of the sulphur may be detected by covering the crucible with a sheet of paper which has been soaked in a solution of some lead salt. The paper becomes blackened by the precipitation of lead sulphide, and in many cases, especially when the coal is rich in sulphur, black glistening crusts of lead sulphide form in a few seconds.

I have found that this volatilization of sulphur ceases entirely, or almost so, if potassium carbonate is used partly or wholly in place of the carbonate of soda. The best results seem to be given when two parts of magnesia are mixed with one part of potassium carbonate. More than one part of potassium carbonate to two parts of magnesia must not be used, as when mixed with the coal the mass balls on heating and prevents combustion of the coal.

One part by weight of coal is mixed with two parts of this dry mixture of magnesia and carbonate of potash. Three-quarters of the mixture is distributed through the mass of powdered coal and the remaining quarter is placed evenly over the surface. The combustion is more rapid than with the soda mixture and is usually finished in from ¼ to ½ an hour. This mixture is also less dusty than the soda mixture.

Comparative tests have been conducted on the same coal with Eschka's process and with the magnesia potash mixture. The coal was Bohemian brown coal and three different specimens were experimented with. In experiments Nos. 1 and 2 the mixture was freshly dried; in No. 3 it was heated with 15% of water, and the heating of the coal was conducted more rapidly. The following table gives the results.

	A Magnesia-soda mixture.		B Magnesia-potash mixture.		
Experiment.	Action on Lead Paper.	Sulphur Found.	Action on Lead Paper.	Sulphur Found.	Loss of Sulphur in A.
No. 1.	Blackening.	1·97%	No coloration.	2·10%	0·13%
No. 2.	Blackening.	2·43%	No coloration.	2·58%	0 15%
No. 3.	Blackening.	2·77%	No coloration.	3·06%	0 29%

In both series of experiments two parts of the mixture were used with one of coal, and the ignited mass was treated with bromine and hydrochloric acid and the filtrate precipitated with barium chloride.

Further experiments have shown that a mixture of two parts of magnesia with one-half part of sodium carbonate and one-half part of potassium carbonate gives excellent results, even when slightly moist.

The imperfect action of Eschka's mixture is due partly to the tendency of the carbonate to become anhydrous at a comparatively low temperature, and to its consequent inability to absorb the hydrogen sulphide. It is also due to the ease with which sodium sulphide is decomposed by carbon dioxide. The carbonate of potash retains its moisture longer and is acted on readily by sulphuretted hydrogen, with the formation of potassium sulphide and carbon dioxide. This action is also facilitated considerably by the conversion of a part of the potassium carbonate into hydroxide.

NOTES ON THE PHOSPHORUS DETERMINATION IN IRON AND STEEL.

Two communications on the phosphorus determination in iron and steel appear in the July issue of the Journal of Analytical and Applied Chemistry, by Mr. F. L. Crobaugh, of the Stewart Iron Company, Sharon, Pa., and Mr. H. C. Babbitt, of the Wellman Iron and Steel Co., Thurlow, Pa.

Mr. Crobaugh points out that, in the estimation of phosphorus by the reduction of the molybdic acid of the phosphomolybdate precipitate by means of zinc and sulphuric acid, and by the subsequent titration with standard potassium permanganate, it becomes necessary to have a positive knowledge of the oxidizable matter contained in a sulphuric acid solution of an approximate weight of zinc. To dissolve zinc in dilute hydrochloric acid is a tedious and often an impossible operation. The addition of small quantities even of hydrochloric acid where the amount of oxydizable matter is small, as in the case in question, seems objectionable. To avoid this addition and at the same time to obtain a rapid solution of zinc in sulphuric acid, Mr. Crobaugh has designed a new method for use in his laboratory.

He describes his experiments as follows: A potassium permanganate solution was very carefully standardized by aid of 0·2 gramme of iron wire dissolved in a strictly ferrous condition. Repeated experiments showed that 0·2 grammes of iron wire were equal to 32·5 cc. of potassium permanganate solution, which in turn corresponded to 0·0001 gramme of phosphorus. Next 0·2 gramme of iron wire, together with 5 grammes of zinc were dissolved, with the exclusion of air, in a solution of one part of sulphuric acid (sp. gr. 1·84) in four parts of water. On cooling, the volume was made up to 500 cc. with cold water from which all air has been expelled by boiling. Then the solution was titrated with the potassium permanganate solution already prepared. Four samples of the same 20-lb. lot of zinc required 32·8 cc., 32·75 cc., 32·75 cc., and 32·8 cc., respectively. This was on an average 0·275 cc. above the 32·5 cc. of the standard, so that the five grammes of zinc required on an average 0·275 cc. of potassium permanganate solution. Since about 10 grammes is consumed in each determination of phosphorus, this shows that 0·550 cc. should be subtracted from the reading of the burette before the percentage of phosphorus is calculated.

Mr. Babbitt in his communication describes some experiments which prove that many of the discrepancies in phosphorus determinations are due to the arsenic that is present in the iron or reagents being precipitated with the phosphomolybdate when the reaction is conducted at too high a temperature. To illustrate this point, he added 0·0133 gramme of arsenic in the form of sodium arsenite to one gramme of steel containing 0·006% phosphorus and no arsenic. The sample was dissolved in nitric acid and oxidized with potassium permanganate, as in the ordinary phosphorus determination. Ammonium molybdate was then added and the precipitation conducted at a different temperature at each experiment. When the precipitation was conducted at 85° C., 75% of the arsenic was thrown down with the phosphomolybdate. The results of the series of experiments are shown in the following table:

Precipitated at	Percentage of arsenic precipitated.	Precipitated at	Percentage of arsenic precipitated.	Precipitated at	Percentage of arsenic precipitated.
85° C.	75·2	50° C.	7·8	30° C.	2·5
70° C.	63·9	40° C.	7·8	25° C.	0·2
60° C.	12·0	35° C.	4·3		

The amount of arsenic precipitated at 25° C. is within the limits of experimental error, so that if the temperature of precipitation is kept at or below this point the presence of arsenic will have no effect on the accuracy of phosphorus determinations.

THE SHALE OIL PRODUCTION IN SCOTLAND.

It is now some eighty years since Dr. Young, of Edinburgh, discovered that petroleum oil could be obtained by distilling the shales which are found in close proximity to the coal fields in the south of Scotland. The deposits of this shale still appear to be practically inexhaustible, although they have been worked for over eighty years. Of course the industry is in very small compass when compared with the enormous transactions in Russian and American oils, for during 1890 the total output of oil in Scotland was only one-fifteenth of that in this country and one-twelfth of that in Russia. The price per gallon obtained at the works is far higher, however, than here.

Their market is a home one and there is no export business, and they can obtain the same price as that of the imported article. The retail selling price of petroleum for lighting and heating purposes in Great Britain varies from seven pence to one shilling per gallon in different districts. Moreover, there is a large amount of sulphate of ammonia produced in the distillation, and this chemical is sold at over £10 per ton. The cost of production is greater, however, than here and in Russia, as the oil has to be distilled from the shale. Mr. T. Moore, in a communication to the British Federated Institution of Mining Engineers, expresses the opinion that oil and gas may yet be found in these deposits, for in some districts the geological formations present remarkable similarities to those of Pennsylvania. To the same authority we are also indebted for the following official figures of the output of shale and its products in Scotland during the last nineteen years:

Output of shale in tons of 2,240 lbs. in Scotland from 1873–1891:

Year.	Tons.	Year.	Tons.	Year.	Tons.	Year.	Tons.
1873	524,095	1878	645,939	1883	1,130,729	1888	2,052,202
1874	351,910	1879	712,428	1884	1,469,649	1889	1,986,990
1875	424,026	1880	730,777	1885	1,741,750	1890	2,180,483
1876	541,273	1881	912,171	1886	1,669,144	1891	2,337,932
1877	684,118	1882	994,487	1887	1,390,320		

Products obtained from one ton of shale, and total price realized at works from the refined products obtained from one ton of shale:

Year.	Crude oil, gallons.	Naphtha, gallons.	Sulphate of ammonia, in pounds.	Total price received per ton of shale. £ s. d.
1877	30·49	....	17·37	1 3 2
1882	29·84	....	13·77	0 14 4
1887	27·96	....	28·95	0 11 2½
1891	25·09	1·73	27·23	0 13 2

Yield of finished products from 100 gallons of crude oil:

Years.	Lighting and heating oil, gallons.	Lubricating oil, gallons.	Medium oil, gallons.	Scale, gallons.	Total gallons.
1877	40·35	10·70	4·43	8·26	63·74
1882	31·64	14·35	11·98	10·41	67·48
1887	34·12	13·45	6·25	13·12	66·94
1891	30·81	12·63	11·71	14·72	69·87

Net prices realized at works for products:

Year.	Burning and heating oil, pence per gallon.	Lubricating oil, pence per gallon.	Medium oil, pence per gallon.	Scale, pence per pound.	Naphtha, pence per gallon.	Sulphate of ammonia per ton. £ s d
1877	9·3	11·0	6·7	4·3	—	17 5 6
1882	4·3	7·4	4·1	2·4	..	18 2 5
1887	3·2	2·2	1·1	2·1	..	10 5 0
1891	4·2	3·7	2·8	2·3	5·1	10 7 1

The Use of Petroleum in Locomotives in Russia is rapidly increasing, in spite of the opinion expressed by some experts that its combustion causes the rapid corrosion of the interior of the furnaces. During 1890 no less than 286,737 tons of petroleum were burnt on Russian locomotives, as compared with 1,887 tons in 1881. On the other hand, the amount of coal used for the same purpose has decreased. During 1881 rather more than 32,000 tons of Silesian and 148,000 tons of English coal were burnt; but in 1890 these figures had fallen to 2,973 tons and 109,112 tons, respectively.

Harvard's New Photographic Telescope.—This instrument is provided with four lenses specially constructed for photographic purposes, each of which is two feet in diameter. They are the largest ever made. In front of the lenses is the prism for spectrum analysis. In other respects the instrument and its mounting are similar to others. At a special test made some time ago by Mr. A. J. Clarke, the optician, it was found that the focus was about as calculated, but that the spherical aberration of light was yet too strong, which will be corrected by further grinding. Recently Prof. Pickering has asked for a donation of $200,000 to buy a large telescope, similar to that of the Lick Observatory, for the new Harvard Observatory in Peru.

*From *Chemiker Zeitung* through the *Journal of Analytical and Applied Chemistry*.

NEW MINING LOCOMOTIVE OF THE GENERAL ELECTRIC COMPANY.

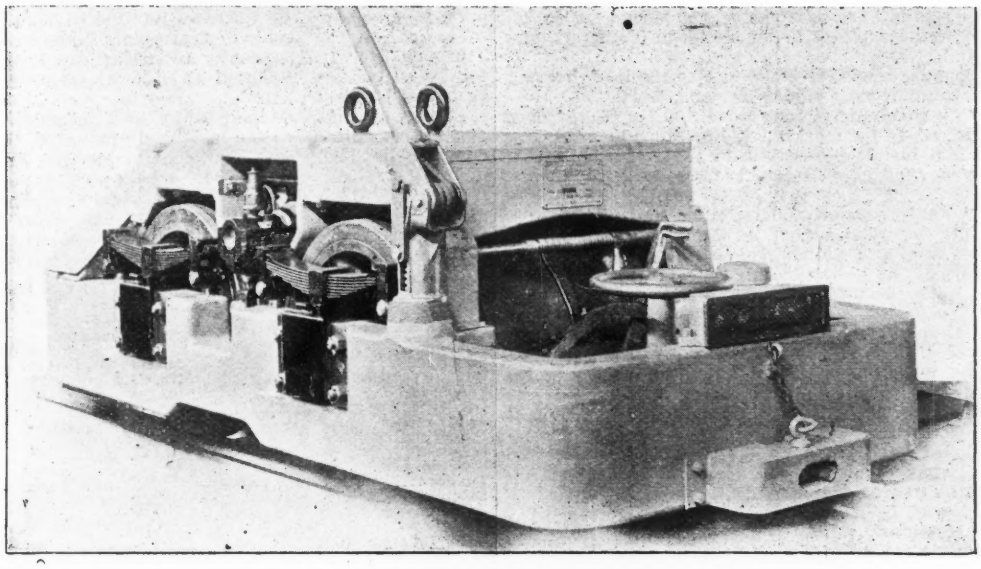
The mining department of the General Electric Company have just brought out a new mining locomotive which is designed for working in low and narrow entries. The frame consists of a single heavy box-shaped casting with recesses in the sides for the axle boxes. Space is allowed at one end for the operating platform, and at the other end for the rheostat, while the motor is placed in the center. Recesses are provided in the frame casting for the brake levers and axle gears.

The motor is of a type similar to the company's W. P. railway motor, and consists essentially of two main castings. The lower casting forms the lower pole piece, and supports the bearings for the armature shaft, the two intermediate shafts (placed one on each side of the armature) and the field spool. The gears are set in pockets in the frame of the motor, and are completely and tightly covered by the iron castings, thus doing away with separate gear cases. The top pole piece is part of the upper casting of the motor, and is of such shape as to make a complete cover for the motor, thoroughly protecting the armature, field spool and other interior parts. The armature itself is of the iron clad ring type, with all the latest improvements that have been shown advisable in railway practice. The intermediate shafts, two in number, are placed one on each side of the armature, and transmit power directly to both axles.

The advantages claimed for this method of construction are: First, by gearing the armature to two intermediate shafts on opposite sides, the thrusts of the gears tend to neutralize each other so that the resultant pressure on the armature bearings is very slight. Second, by doing away with the parallel connecting rods on the axles it is possible to largely decrease the width of the machine. Third, it allows a spring suspension for the whole machine, motor included. Fourth, the axle boxes are on the outside of the machine and are easy of access for oiling, or for the removal and replacement of the linings.

The locomotive is equipped with a new form of trolley, perfectly insulated, so that the operator may take hold of it at any part except at the wheel. In case it is necessary to move the trolley wire from one side of the entry to the other, the trolley may be lifted entire from its socket, and placed in a corresponding socket on the opposite side of the locomotive. All connections are automatically made by simply setting the trolley in place. The rheostat used is of the standard railway type, provided with special filling. The brake is a very powerful form of toggle joint, made of substantial steel castings. Easy means are provided for the adjustment or renewal of the brake shoes.

The locomotive illustrated here has a drawbar pull of 3,000 lbs., and it is built for a 30-in gage. The dimensions are: Length, 9 ft. 6 in.; height, 36 ins.; width, 48 ins.; weight 15,000 lbs. It is capable of running at a speed of 6 to 10 miles an hour. Similar machines are made with drawbar pulls varying from 750 to 4,500 lbs.



New Electric Mine Locomotive.

River and Harbor Improvements.—Proposals were opened on the 28th ult., in the Army Building, 39 Whitehall street, New York City, by Col. D. C. Houston, Corps of Engineers, for dredging and breakwater construction at the following localities: The amounts given were those appearing in the appropriation bill authorizing the undertaking of the work: Mystic and Thames rivers, Conn., dredging, $40,000; Five Mile River Harbor, Conn., dredging, $5,000; Cos Cob Harbor and Miamus River, Conn., dredging, $7,900; Patchogue River and Brown's Creek, N. Y., dredging, $13,500; Duck Island Harbor, Conn., breakwater, $35,000; Housatonic River, Conn., breakwater, $12,000. Bids for the work indicated at the following points, at the outside margin indicated by the appropriations, were opened by Col. Houston on the 29th ult.: New Haven, Bridgeport and Black Rock harbors, Conn., dredging, $40,000; Flushing Bay, N. Y., dredging, $10,000; Fort Jefferson Harbor. N. Y., dredging, $10,000; Greenport Harbor. N. Y., dredging. $11,000; Port Chester Harbor, N. Y., breakwater, $5,000; Glen Cove Harbor, N. Y., breakwater, $10,000. The contract for the dredging of the harbor at Huntington, N. Y., for which the sum of $5,000 has been appropriated, is to be awarded October 24th. Proposals for breakwater construction at New Haven, Conn., were opened August 26th and a contract entered nto with John Beattie, the appropriation for the work being $120,000.

MINING IN THE PYRENNEES.

Written for the Engineering and Mining Journal by A. G. Charleton, A. R. S. M., M. E.

Comparatively little, I think, is known of the mineral resources of this interesting section of Europe, which up to the present has received far less attention than it seems to merit.

This may be attributed to two distinct causes—insufficient exploitation on the French side, and want of communication on the Spanish frontier.

Its neglect is the more remarkable, as not only do the geological features of the district favor the occurrence of a variety of mineral deposits, but most favorable surface indications are to be found in many different directions; the natural conditions are such as to facilitate mining operations, and recent developments have already proved several lodes on the French border to be undoubtedly payable.

The only systematic attempts at energetic work of recent date are due to the introduction of English enterprise into the district. It is true that mining, so called, in all probability, dates back to very ancient times, and traces are to be found scattered all over the country of what are probably old Roman or Phoenician workings. They mostly amount, however, to mere surface scratchings, and appear to have been abandoned without being pushed to any depth.

The earliest authentic records of actual mining on the English concessions alluded to are those of a Spanish corporation, who some years ago leased a portion of the property at present owned by the New Pierrefitte Co., and report says they realized considerable profit from the surface ores they took out, but as the French lessors would not grant them more than an annual leasehold of the ground, they wisely decided to go to the expense of deeper developments.

A good deal of desultory exploration seems to have been done by the French owners of the possessions about the same time in other directions; but instead of being concentrated on some of the more promising shows, it seems to have been wasted on indiscriminate prospecting.

The outcrop of the north lode at Pierrefitte is a well defined, massive body of gassany material (chapeau de fer), intermixed with lode matter and patches of mineral, upon which there are extensive old Spanish workings, overlooking the Canterets Valley, at a height of 2,392 ft. above Pierrefitte, and 2,099 ft. above the Dussingloks. The lode courses nearly E. and W., and dips S. through portions of what is known as the Blendi branch, have a tendency to tower over northward in the lower levels.

The ore, more especially in what is caled the "Galena branch," occurs in branches and pockets, rather than in strings or ribs.

Horses of country, or mine-rock, as it might more properly, perhaps, be called, intrude themselves into the ore bodies, adding to the complicated problem of mining them. The two principal branches of the vein, already alluded to, known as the Blende and Galena lodes, are divided by a horse of "country," which varies in thickness from 15 metres to a feather edge, as the two unite in the western end of the workings.

A third branch, known as the new lode, was found in No. 4 level, and followed up at No. 3, above which it does not appear to continue, a point to be noted of much interest, as it shows that the "onbodes" do not in all cases give evidence of their existence at surface. Of the three this branch seems to be actually the richest as well as the best defined and regular; the Galena running in shoots for several hundred feet in length, in places two to three feet wide, nearly solid. The croppings of the south, like those of the north lode, are massive "blows" of lode matter, heavily stained with iron and manganese, carrying pockets of mineral (chiefly blende), but are only traceable at surface for a short distance. They run S. E. and N. W., and the south vein may be expected to junction in depth with the N. vein, a portion of which it seems to have faulted and thrown off its course.

The richest ore found in this lode has been met with in the neighborhood of an intrusion of trachyte, which lies north of it, in contact with its southern portion, and south of the eastern extension of the north lode. In addition to Galena and Blende, the north lode carries a little copper pyrites, and the blende is in places associated with considerable magnetite.

Following the same belt of country, several massive outcrops of mineral ore are found in the hills to the west of Pierrefitte, and crossing the "divide" into what is known as the Estaing Valley, there is one in particular which deserves special notice. Here again the strike of the lode, as proved by a tunnel driven upon it, is nearly east and west, and it lies between a belt of black friable slates and a hard body of filsitic rock north of it. It is situated at an elevation of about 3,000 ft. above Pierrefitte, and the croppings, which can be traced distinctly for several hundred feet up the face of the hill, have been worked upon by the ancients to a depth in places of 50 or 60 ft.

They are extremely massive, and show galena and blende, more especially the latter, in strings and pockets, in considerable quantity though irregularly distributed.

The stone struck in the tunnel last July is of a much more silicious nature than the general run of Pierrefitte ore, and contains besides a fine show of galena, blende, copperpyrites and pyrrhotite (magnetic pyrites). The dip of the lode is nearly vertical, and assays made by me of the galena showed 30 to 50 oz. of silver to the ton of concentrates. The lodes on the company's estate at Gavarine have not as yet been worked by them, and carry less surface mineral than those at Pierrefitte.

They form, however, a series of well defined fissures, 3 to 6 ft. in width in granite and gneiss country, with a general east and west strike, and well defined regular walls. Several can be traced for several hundred feet, and those which occur in the granite have a gangue consisting of calcspar and heavy spar, while in the gneiss it is mostly silicious.

The mineral which is disseminated through them is chiefly galena, and it seems by no means improbable that it may be found in considerable bodies in depth, which would pay for exploitation.

Ore-Dressing.—The floors for the treatment of the ore from the Pierrefitte mine are located about 2 miles from the Pierrefitte Railway buckets, onto a grezzly or screen, which divides it into two sizes, coarse and fine ore.

All the stone conveyed by it is dumped direct from the tramway buckets, onto a grizzly or screen, which divides it into two sizes, coarse and fine ore.

The fine ore, or "mine smalls," are subdivided by a second screen, on which they are tipped into fines (pieces under 3-4 in. in diameter), and coarse (pieces over 3-4 in.).

The fines go to the upper jig house for blende, or to the lead dressing floors, according as they contain most blende or lead.

The coarse ore goes to a revolving picking table. When picked over it yields: 1. Pure galena, ready for market; 2. Pure blende, ready for market; 3. Mixer lead and blende—ores sent to the roller house; 4. Poor blende (containing magnetic iron, set aside for special treatment); 5. Waste.

The lump ore from the tramway grizzly is spalled and picked over to separate any large lumps of pure galena, blende or waste in the ore, and what remains passes through a stone-breaker, and drops into a revolving drum screen, which divides the mixed product again into "smalls" and "roughs." The latter (over 3-4 in. in diameter), are picked over at a revolving table, and give the same products as those obtained from the picking of the coarse portion of the mine smalls.

The lead and blende ores, it should be remarked, are brought down separately from the mine, when one or the other mineral preponderates largely, and are crushed separately in the stone-breaker.

The blende works, or upper jig house, till quite lately, had a plant consisting of screens, jigs, hydraulic classifiers and buddles, which returned: (1) Pure blende ore, ready for market. (2) Pure lead ore, also salable. (3) A mixed product of blende and magnetic iron, which up to the present could not be treated or disposed of, and (4) Waste.

They have lately, however, been remodeled and now contain rolls, screens, jigs, hydraulic classifiers, rubber belt shaking tables (Stein's), a drying-floor and magnetic concentrators, for the purpose of freeing the blende from the iron.

The roller house for lead ores has two pairs of rolls, with raff-wheels, screens, jigs, hydraulic classifiers and buddles.

They produce as final products pure salable lead ore and waste.

The middle jig products from this section of the works, as well as those from the blende works, go to the fine roller house, where they are re-crushed and again jigged. The resulting slimes being finally sized and washed in another building, known as the slime house, which contains a set of spitzkhtten buddles.

The pure ores obtained in lump form by hand picking, are crushed separately in a pair of dry rolls. The different classes of fine ores having been enriched by buddling to 50 or 60 per cent. lead, in the case of the galena, and 39 to 40 per cent. of zinc, in the case of blende, are tossed in a "dolly," to still further free them from impurities and separate as much as possible of the water they contain.

The resulting product, which may still contain 1-2 to 4, or even up to 10 per cent. of moisture, is mixed with the ore from the jigs and spread out to dry further on the lead and blende drying floors, where it is freely sampled and sacked for market.

The blende must be dressed up to an equivalent of at least 40 per cent. of zinc, to be salable. The moisture in the ore sacked for shipment is reckoned at 3 to 3 1-2 per cent.

Gravity Wire Tramway.—The capacity of the present line from the mine to the dressing floors may be taken at 80 tons of ore in 12 hours, and two tons of return freight. The carrying cable is 4 1-2 in. in circumference, and the pulling rope 2 in.

The line is in two sections, the upper rope being 280 metres long, with an average grade of 41 deg., while the lower ropes are 754 metres long, with a grade of 30 deg.; though from point to point of the terminals, the last mentioned distance would be reduced to 723.56 metres. The life of the ropes of the lower section may be taken at about 3 1-2 years, equivalent to a gross carrying capacity of between 70,000 and 80,000 tons.

The full capacity of the dressing works, working 11 to 12 hours per diem, is reckoned at 100 tons of crude ore (galena) and 20 tons of blende.

The average selling price of silver-lead ore shipped last year was £14 3s. 7 3-4d. per ton. That of blende was £4 18s. 1-2d. per ton; 21,449 tons of crude ore treated gave 2,298 tons of dressed galena ore, and 1,948 tons of blende, prepared for market; the former carrying 65.37 per cent. of lead and 41.97 oz. of silver per ton; the latter 46.64 per cent. of zinc..

The cost of mining, dressing, etc., reckoned on the above output, came to about 17s. 6 1-2d. per ton, chargeable to the following items: Mine salaries, wages and supplies expended in production, 6s. 5d.; mine developing and exploratory work, 2s. 1-2d.; transport by cable from mine to dressing works, 3 1-2d.; dressing, including wages, renewals of machinery, ore sacks, cartage, etc., 4s. 4d.; carriage of dressed ore to smelting works, by rail, 2s. 5 1-2d.; rent, repairs and general expenses, 2s.; total 17s. 6 1-2d.

The crude ore coming from the mine averaged 9.33 per cent. of lead, 11 per cent. of zinc, and 139 grains of silver per ton. The daily wages of miners, (Basque laborers), are 40 cts.; lumbermen, 90 cts.; truckers, 50 to 80 cts.; blacksmiths, 65 cts.; slukers, 55 cts.; carpenters, 60 cts. to $1; mill men, 55 to 60 cts.; boys, 20 to 40 cts.; laborers, 45 to 50 cts.; engineers and mechanics, 80 cts.

The following table shows the production of the new Pierrefitte Company:

Year.	Gross Mining Profits.	Dividends paid per cent.	Ore raised. Tons.	Dressed Silver Ore. Lead Tons.	Dr'ss'd Blende. Tons.	Average Yield. Lead per cent.	Silver oz. per ton.	Zinc per cent.	Average Price. Silver lead per ton.	Blende per ton.	Value of Total Production.
									£ s. d.	£ s. d.	£
1887	£ 2,757· 3· 1	—	8,540	915	228	61·3	31·4	49·8	10·10· 2¾	3·16·1½	9.914·19·1
1888	£ 5,361·12· 1	15	14,780	1,461	551	64·6	35·3	47·5	12· 4· 0	3·16·10	19,329·11·0
1889	£14,127· 7·10	55	19,890	2,286	754	64·8	39·8	45·1	12·12· 3½	4· 8·8¾	31,764·14·9
1890	£21.758· 4· 4	60	21,449	2,298	1,948	65·37	41·97	46·64	14· 3· 7¾	4·18·0¼	40.660·17·2

MINERAL AND METALLURGICAL OUTPUT OF AUSTRIA IN 1891.

The Austrian government has shown commendable promptitude in publishing so early the statistics relating to her mining and metallurgical industries. The figures here given are taken from the "Statistumsches Jahrbuch" for 1891; recently issued by the K. K. Ackerminister, and for them we are indebted to the "Oesterreichische Zeitschrift fur Berg und Huttenwesen."

There was a notable increase in the total value of the ores produced, due almost entirely to the increased amount of lignite and bituminous coal mined. There was also a slight increase in the values of silver, quicksilver, lead and copper ores which was more than counterbalanced by the decreased value of the output of gold, iron, manganese and graphite ores. Metallurgical products show a decided falling off, the value of the output but very slightly exceeding that of 1889 (vide Statistical Number Engineering and Mining Journal, January 2).

MINERAL AND METALLURGICAL OUTPUT OF AUSTRIA IN 1891.

	1891.	1890.	1891.	1890.
	Metric tons.		Value in florins.	
Gold ore	4,397	15,463	14,446	18,169
Silver ore	145,383	144,941	3,180,885	3,167,179
Quicksilver ore	706,332	707,299	1,035,561	891,687
Copper ore	93,150	75,032	354,575	343,422
Iron ore	12,312,484	13,615,478	2,854,889	3.105,765
Lead ore	133,607	112,736	1,068,512	969,622
Nickel ore / Cobalt ore	.....	4	.....	318
Zinc ore	288,282	326,322	575,547	552,812
Tin ore	7,205	5,692	3,600	5,168
Bismuth ore	10,833	7,929	25,476	19,032
Antimony ore	3,334	7,701	42,575	51,881
Arsenic ore	42	0	391	.....
Uranium ore	225	256	19,314	41,674
Wolfram ore	567	378	21,380	12,337
Sulphur ore	30,885	54,223	37,204	64,263
Alum and alum stone	343,943	588,384	20, 50	35,998
Manganese ore	52,793	80,068	70,743	102,625
Graphite	213,462	237.283	€93,327	726,036
Asphalt	1,800	1.808	2.808	2,962
Lignite	161.830,762	153,290,565	30,769,956	27,639,115
Bituminous coal	91,928,846	89,310,649	32,681,693	30,401,078
			73,465,432	68,270,313

METALLURGICAL OUTPUT OF AUSTRIA IN 1891.

	1891.	1890.	1891.	1890.
			Value	
			Florins.	Florins.
Gold kilos	14,717	21,573	19.273	29,093
Silver kilos	36,037.46	35,862.7	3,219,048	3,197,585
	Metric.	Tons.		
Quicksilver	570.2	541.7	1,383,683	1,596,563
Copper	1,033.1	992.5	584,720	602,163
Copper vitriol	197.8	338.4	42,287	108,805
Pig iron	517,988.2	574,714.4	20,582,753	23,295,187
Forge iron	99,153.6	91,558.9	4,298,332	4,015,430
Lead	7,583.3	8,297.0	1,206,105	1.399,495
Litharge	2,267.6	1,912.7	353,059	296,554
Nickel sulphate	1.5	.....	1,050	.....
Zinc	5,005.6	5,448.7	1,375,076	1,467.811
Tin	56.2	49.7	63,718	59,137
Bismuth	0.64	0.116	5,606	1.914
Antimony	115.4	200	45,318	83,485
Uranium salts	4.13	3.95	45.244	64,213
Sulphur	45.0	37.3	3,417	2,642
Vitriolstein	2,831.0	3,717	48,523	66,596
Sulphuric acid	12,267.9	11,333.8	374,577	441,947
Alum	1,126.6	1 463.6	74,340	101,633
Copperas	1,184.3	1,288.2	33,158	38,655
Mineral paint	838.4	778.3	25,351	22,137
			33,784,598	36,891,477

Railroads of Great Britain.—The railroads of Great Britain and Ireland have an aggregate length of 22,685 miles, and the total number of locomotives owned by the railroad companies amounts to 16,860, Of English roads the London & North Western owns 2,648; the Midland, 2,020; the Great Western, 1,660; the North Eastern, 1,560, and the Lancashire & Yorkshire, 1,127. All these lines are north of London, and of the roads running south the London and South Western comes first with 570. In Scotland the Caledonian has 690, and the North British 677.

RACINE HORIZONTAL AUTOMATIC ENGINE.

The Racine Hardware Mfg. Co., of Racine, Wis., who have until recently confined themselves to the producing of vertical stationary and marine engines have commenced building a line of horizontal engines from 35 to 100 H. P., in which they embody all that their long experience has proved to be the best.

The engines are built to stand all the stress that their highest ratings demand, with broad margins for safety. In deciding what type of engine to embody in this, their latest, they have followed what is rapidly coming to be the conviction of practical mechanics and users of power (and at a considerable increase of cost), in supplying an outer support for their engine power wheels. Years ago this concern commenced building their engines without outbearings, but after costly experimenting and years of experience, they have decided that an outbearing is necessary to the life of an engine, thus securing what cannot be secured otherwise, the least wear and uniform wear, the least time lost in repairs and the least cost of repairs.

DIGEST OF FEDERAL COURT CASES.

U. S. Circuit Court of Appeals, Eighth Circuit, District of Colorado.

MINING CLAIMS—ALIEN'S TENURE—STATE AND FEDERAL STATUTES—CANCELLATION OF DEED — MISREPRESENTATIONS — LACHES — TRUSTEE—PARTIES — INNOCENT PURCHASER—TENDER OF PURCHASE-MONEY.

1. An alien who has expended his time, money and labor in exploring and locating a mining claim on public lands, conjointly with others, may hold his interest, or recover the same if deprived thereof, as against his co-locators, and as against all the world, except the United States, though R. S. U. S., Sec. 2,319 confines the right of exploration, purchase and occupation of unsurveyed mining land to United States citizens, or persons who have declared their intention of becoming such.

2. The question whether an alien can inherit an interest in a mining claim located on government lands is determined not by federal law, but by laws of the State in which the mine is situated, and under acts of the Colorado Legislature of November 4th, 1861, and April 2d, 1887, aliens may inherit mining claims located in that State.

3. Where residents in a foreign country, or distant State, having no independent means of knowledge, are induced to convey an interest in a mining claim for a grossly inadequate consideration on the representation of purchasers' agent that they have no real interest therein, and that he desires the conveyances merely for the purpose of fortifying his own title against impending litigation, such conveyances will be set aside, though the representations were honestly made.

4. *But* where a person living in an adjoining State refuses to make a deal on such representations, and causes inquiries in his behalf and receives independent information, and then makes a conveyance for a much larger consideration, he is concluded thereby, though the consideration is inadequate.

5. A delay of three years after making the first-mentioned deeds did not, in such case, constitute *laches*, it appearing that soon after executing the same the grantors conveyed the same interest to a third person in trust to enable him to take proceedings for the recovery thereof; knowledge of which fact was promptly brought home to the purchaser, and that the delay of the trustee was not caused by the grantors.

6. The said trustee having entirely failed to take such proceedings, he should be made a party defendant in a suit brought by the grantors themselves to recover their interest, since defendants are entitled to be protected by the decree against any subsequent demand on his part.

7. It was error to refuse a petition by the representative of a deceased daughter of the alien to become a party complainant, since the decree should be in such shape as to settle the rights of all parties claiming under such alien.

8. The purchaser having conveyed the mining claim title thus acquired to a corporation of which he was president and principal stockholder, the corporation was *not* an innocent purchaser, especially in the records of the county in which the mine was located, showed that the alien was one of its original locators, and the fact that after his demise, one of his co-locators published a notice to him, or his administrators, to pay his share of the outlay expended for holding said mining-claim on pain of forfeiture of his interest, could not render the corporation an innocent purchaser, it appearing that it must have known that such publication was against a dead person and without effect.

9. The fact that the defendant corporation had conveyed a portion of the claim to another mining company did not render the latter a necessary party; for, while no decree could be entered affecting its rights, a final determination could be had of all the issues between the actual parties.

In a suit to cancel conveyances of an interest in a mine, plaintiffs need not tender a return of the purchase money. Where it appears that, in case of a decree in their favor, defendants would be required to account for past profits far in excess of the purchase price; for such price can be credited to them in the accounting, and their interest thus be fully protected.—(Case of appeal from the Circuit Court of the U. S., for the Dist. of Colorado). Billings *et al. vs. The Aspen Mining and Smelting Co., et al.* [SHIRAS, D. J., *Decision rendered July* 5, 1892.]

Circuit Court U. S. Decisions.

LABOR UNION INTERFERENCE WITH MINING EMPLOYÉS—INJUNCTION.

An injunction may be granted to restrain labor unions and members thereof from entering upon mining premises or interfering with the working of the same, or by force, threats, or intimidation, preventing employed miners from working the mines, when the threatened acts are such that their frequent occurrence may be expected and defendants are insolvent.—*The Cœur d'Alene Consolidated Mining Companies v. The Miners' Union of Wardner et al.—Circuit Court District of Idaho.* [Beatty, D. J. Dec. July, 11, 1892.]

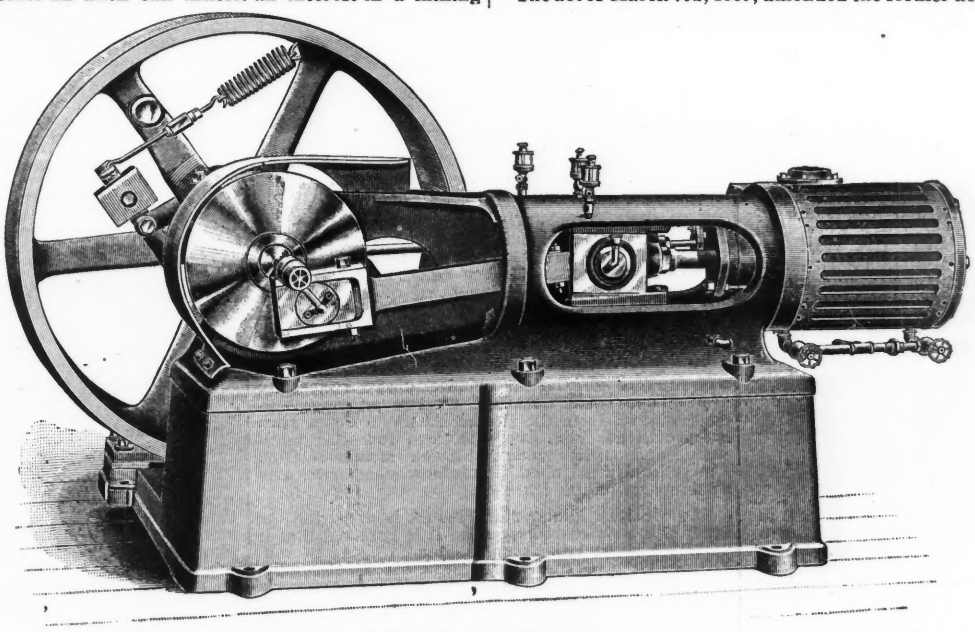
State Court Decisions.

ARTESIAN WELLS—BOUNTY PRECEDENCE—AMENDMENT OF STATUTE.

The act of March 5th, 1887, Sec. 1, provided for the payment of bounties for the sinking of artesian wells of a given capacity.

The act of March 7th, 1889, amended the former act fixing different bounties for different depth of wells and providing that "no two wells shall receive a bounty if located in the same county," and that "when two or more wells within the prescribed limits apply for a bounty the well which first furnished the amount of water required by this act shall be entitled to the bounty."

The amendment was made by enacting that the former act "is hereby amended so as to read as follows;" Sec. 1 of the act of 1887 being republished as amended, and the amendatory act contained no words of appeal. *Held*, That the effect of republishing the former act was not to repeal and re enact it, but that it continued uninterruptedly in force, and that the amendatory act was to be construed in connection with it; so that where a well was to be sunk and a bounty for it granted under the original act, another bounty would not be granted under the amendatory act for another well sunk in the same county.—*State of Nevada ex rel. Blossom v. Horton, State Comptroller, in Supreme Court of Nevada.* [Murphy, J. Dec. August 31, 1892.]



THE RACINE ENGINE.

PATENTS GRANTED BY THE UNITED STATES PATENT OFFICE.

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

TUESDAY, SEPTEMBER 20TH, 1892.

482,795. Rock Crusher. Horace L. Kent, Boston, Mass.

482,710. Hydraulic Mining Pump. William A. Rockliff and John P. Foley, Rumsey, Mont.

482,853. Ore Separator. Horace H. Taylor, San Francisco, Cal. Assignor of one-half to Robert Pollard, same place.

482,941. Bucket Elevator. Joseph Cavanagh, Philadelphia, Pa. Assignor to the Link Belt Engineering Company, same place.

482,942. Pneumatic Tool. Daniel Drawbaugh, E erly Mill, Pa. Assignor to the Pneumatic and Electric Tool Company, New York, N. Y.

482,962. Machine for Edge Curling Sheet Metal. William J. Gordon and Edmund D. Gilbert, Philadelphia, Pa.

483,005. Apparatus for the Manufacture of Gas. Thomas McBride, Philadelphia, Pa., and Ebenezer Fisher, Kincardine, Canada.

483,018. Drying Stove for Bricks or other Materials. Albert Schaaf, Halle, Germany.

483,107. Apparatus for Making Gas. Ira S. Elkins, New York, and Reinhold Boekl en, Brooklyn, N. Y.

PERSONALS

Prof. H. S. Monroe, professor of mining at the Columbia School of Mines, has returned from Europe, where he has been during the past year. He will resume his duties at once.

Mr. M. D. Greenwood, formerly superintendent of the Hoosick Falls Malleable Iron Company, N. Y., has been made superintendent of the Frost Malleable Iron Works at Smith's Falls, Ontario.

Mr. Thomas Nelson, treasurer of the Boston & Montana Mining Company, has returned to Boston from a trip to the company's mines. He also visited on the way the Lake Superior copper region.

Mr. L. H. Bridgeman, superintendent of the Chicago Copper Refining Company, has been in Salt Lake City investigating the mineral resources of Utah. He is now further West looking for copper properties.

Capt. J. H. Moyle, of the Arnold Copper Mine, Lake Superior, is in Boston on business. It is reported that a special meeting of the company will be called during this visit to consider the advisability of resuming operations.

Mr. James Hemphill, of McIntosh, Hemphill & Co., owners of the Old Fort Pitt Foundry, and H. C. Frowes, manager of the Carey Furnace, all of Pittsburg, Pa., have returned to that city from an investigation of the resources of the Mesaba Range, Minn.

Mr. Hamilton Smith, Jr., mining engineer of London, and director of the Exploration Company, is now at Johannesberg, South Africa. He will report upon the explorations of the Consolidated Deep Levels Company, in the interest of Messrs. Rothschild.

Mr. Edward M. Boggs, a hydraulic engineer of Redlands, Cal., who for several years has had charge of the extensive works of the Bear Valley Irrigation Company, has been elected to the chair of irrigation engineering in the University of Arizona at Tucson.

The Summer School of Surveying of the School of Mines, Columbia College, closed Sept. 24 at Bantam, near Litchfield, Conn., after a session of nearly two months. The school is on a tract of 125 acres, near Bantam Lake, 1,000 ft. above sea level. The land has been leased for five years, and this is the second year it has been occupied. There were about 80 students at "Camp Columbia" this year. The school was under the direction of James L. Greenleaf, C. E., adjunct professor of civil engineering in Columbia College, who had under him seven assistants. The Summer School of Geodesy, under Prof. Rhees, and the Summer School of Practical Mining under Prof. W. Allen Smith, has also closed.

Yale University enters upon her 191st year this week. The following changes and additions have been made in the faculty: Mr. Jules Luquieus, instructor in the Romance languages at the Massachusetts Institute of Technology, has been appointed to fill the vacancy made by Professor Knapp's retirement. Carlton W. Brownson, of Brooklyn, N. Y., has been appointed instructor in Greek. Prof. H. L. Williams, of Cornell, has been selected to fill the place of Prof. James D. Dana, who for so many years has held the chair of natural science. Mr. F. K. Saunders, of Ohio, will be the new instructor in Biblical literature in the Theological School. Prof. George D. Watrous has been appointed instructor in the Law School. In the Art School, Harrison W. Lindsley will be the new teacher in perspective. Professor Sumner, the instructor in political economy and social science, whose absence for a year was a necessity, owing to continued ill health, will probably not be able to resume his position. It is expected that the incoming class in the academic and scientific departments together will number 537 members, an increase of 69 over a year ago.

A large number of members of the Society of Mechanical Engineers and the Society of Civil Engineers, left this city on the 28th ult., to present a testimonial and give a complimentary dinner to John Fritz, general superintendent of the Bethlehem Iron Company, at Bethlehem, Pa. Mr. Fritz was 70 years of age on August 25th, and the intention was to extend the congratulations of his many friends to him at that time, but it was postponed it a month, because of so many being absent in Europe and elsewhere. The honors paid to him are in recognition of his retirement from active life, and of the work designed and reared by him in the steel plant at Bethlehem, an accomplishment of an American engineer well worthy of recognition. The committee in charge of the arrangements consists of Eckley B. Coxe, S. W. Baldwin, R. P. Linderman, E. D. Leavitt, Oliver Williams, S. T. Wellman, James Moore, Robert W. Hunt, T. F. Halloway, W. H. Wiley and Charles Kirchhoff. Among the many guests invited are Secretary Tracy, Secretary Elkins, Brigadier-General D. W. Flagler, B. F. Jones, ex-Lieutenant W. H. Jaques, Professors Henry Morton, R. H. Thurston, F. R. Hutton, R. W. Raymond and Charles E. Emery, Charles H. Cramp, Senator Hawley and the following officers of the Navy: Commodore W. M. Folger, Engineer-in-Chief G. W. Melville, ex-Engineer-in-Chief Charles H. Loring, Chief Engineer Clark Fisher, Passed Assistant Engineers John C. Kafer and Henry E. Rhoades, Lieutenant I. F. Meigs and Chief Naval Constructor T. D. Wilson.

OBITUARY.

William E. Ryder died in this city on the 24th ult., aged 62 years. He was the owner of several iron mines in New Jersey, from which he derived his great wealth.

Frederick O. Norton died in this city on the 27th ult. He was one of the best known cement manufacturers in the state. Mr. Norton was born at Eastport, Me., in 1838. At the time of his death he was president of the F. C. Norton Cement Company.

SOCIETIES.

The second annual convention of the Ontario Mining Association will be held at Sault Ste. Marie on Wednesday, October 5th.

The Engineers' Club of St. Louis met on the 21st of September. Prof. W. B. Potter read the paper of the evening on "Water Supplies for Large Cities." The paper described the sources of our water supplies and showed the differences in mineral contents as affected by the nature of the rocks which it met in the Eastern cities; where the supply passed over the granite rocks the mineral matter is small, while in the West, where limestones and clays are met with, the amount is large. The different methods of filter were described and their uses shown. The question of boiler scales was noticed and the preventives considered. After mentioning the evil effects due to the presence of large amounts of lime the more important organic impurities were fully discussed. The nature and character of the impurities found in the four classes of water supply, rain, surface, ground and deep water, were dealt on in detail.

EXPORT NOTES.

The Venezuelan methods of collecting duties are peculiar. If a stove has a brass knob on its door, the stove is weighed as so much brass, and duty charged accordingly. A barrel of flour costing $5 pays duty not only on the flour, but the staves, hoops and heads, costing, when set down, with freight and duties added, say $15.

Collectors of the different customs ports are instructed to reject on entry all invoices of imported goods which do not distinctly set forth the per se value of the goods, and they will not permit a deduction from the price so declared of any so-called non-dutiable items. If consignees do not comply with the law in this respect, then consignments must be treated as unclaimed merchandise.

Secretary Foster hopes to be able to announce within a few months the completion of a reciprocity arrangement with Costa Rica. The principal articles exported from the United States to Costa Rica are provisions, flour, drugs, railroad and other hardware, and cotton goods. Fifteen steamers from Europe and the United States now touch regularly at the ports of the Republic.

The Mexican Minister of Finance is preparing the draft of a new customs tariff. It is rumored that it embodies great reductions, as the Minister is considered to have free trade ideas. It is a notable fact that of the new taxes imposed none directly affects the industries of the country to their disadvantage.

All packages of merchandise landed at Chilian ports on and after January 1, 1893, must have the exact gross weight in kilograms marked in plain figures alongside the marks and numbers of each package. Should this not be done, such packages will be placed apart and weighed by the authorities at the expense of the consignees before being admitted into the Custom House.

In Vienna iron stoves are but little used either for cooking or heating, porcelain, terra-cotta or clay stoves taking their place. These stoves are quite different from American stoves, the grate and fire place being quite small. Our American base-burner found a ready market in Germany for several years, says Consul General Goldschmidt, of Vienna, in a recent consular report, and had also been successfully introduced into Austria, and these and other countries of Europe might have become an important market for these goods in course of time if the manufacturers had had the forethought to protect their patents and trade-marks by taking out patents and registering their trade-marks in European countries to prevent the imitation of their products. As it was our stoves were immediately copied by the Germans and now these cheap imitations have hurt our export trade.

Edward Bedloe, United States Consul, writing from Amboy, China, says that there is a great field in China for American manufacturers. Cheaper sewing machines, both hand and treadle, are needed. It is folly to send out the newest patterns with every improvement. No one will buy them except European residents, and they are few and far between. An old-fashioned Howe, Singer, Wilson, Domestic, Remington, or any one on which the patents have expired and which can be produced at a minimum rate, will sell and sell well after it becomes known. There seems to be a good field in agricultural instruments, but with the important qualification that the manufacturer must follow Chinese models. For example, their hoe is a mattock in weight and strength, and is used like a pick-axe as well as in the ordinary way. The common rake is shaped like a fan with the stick bent down at right angles, 3 in. from the further end. The plow is a small affair, more like a miniature cultivator than any other type. The sickle is a heavy pruning hook, the sector of whose curve is almost at right angles with the handle. The garden knife and a common jack knife are the exact opposites of our own. The blade is a long, wide piece of metal with a thick back, and is so large that the handle only covers the edge and point.

Special reports from United States Consuls located in the West Indies indicate that American fertilizers are not making much headway in the West Indies. We give the following extracts:

Jamaica.—Intelligent and practical users of fertilizers assure Vice-Consul Wright, that if American manufacturers will hold out the same inducements in regard to analyzing the soils and manipulating the manure to supply the requirements thereof, as English manufacturers do, and in addition thereto will sell at the same price fertilizers of the same commercial value, the item of freights being so much in favor of the United States, our manufacturers can turn the tide in their favor.

Martinique.—There are no duties on fertilizers, and wharfage is nominal. Small lots of sulphate of ammonia and nitrate of potash have been recently imported from the United States through a commission house.

Matanzas.—No attempt has been made to introduce fertilizers from abroad.

St. Thomas.—There is no demand for fertilizers; all planters have home-made manure.

St. Christopher.—A few years ago the English fertilizer companies sent out a chemist who analyzed the soil and prepared a special formula of a fertilizer for the sugar-cane plant, which is very popular here and sells at the highest price, $60 per ton.

Trinidad.—The United States got somewhat of a foothold last year; it is still not fairly in the market.

WORLD'S FAIR NOTES.

The Treasury Department has decided that whenever a diminution in the invoice contents of any package which shall have been on exhibition at the Exposition can, at the close of the Exhibition, be accounted for to the satisfaction of the Collector by evidence that such contents have been distributed to visitors as free samples, duty may be waived upon such deficiency, provided it does not exceed a reasonable allowance for the purpose mentioned.

Members of the Finance Committee of the World's Fair have decided on the policy which they will pursue in regard to floating $5,000,000 worth of bonds, selling the souvenir fifty-cent coins and disposing of the budget of estimated expenditures which has been submitted by the heads of various departments. The committee practically determined that the souvenir coins should be sold by the exposition company for neither more nor less than $1 each. The idea of giving to any syndicate the entire issue was discouraged as operating against individuals who might desire to purchase several of the coins but be unable or unwilling to pay a price which might be fixed by a syndicate holding a monopoly of the souvenirs. The budget of expenditure up to the opening of the exposition indicates that a trifle over $18,000,000 must be expended.

INDUSTRAIAL NOTES

The plate department of Light's Rolling Mills, at Lebanon, Pa., started up on the 27th ult., after an idleness of 17 months.

The Krupp Works at Essen, Germany, have 2,542 furnaces of all kinds, which consume 1,666 tons of coal and coke per day.

An explosion caused by dumping hot slag into a pit containing water caused a serious accident at the Pennsylvania Steel Works, Steelton, Pa., on the 26th ult. Several workmen were seriously injured. The corrugated iron roof was blown off the building and windows were broken.

The Crane Iron Company, of Macungie, Pa., has blown out its furnace, and the works present a gloomy appearance, says the Scranton "Republican." About 3,000 tons of the best quality of ore are stacked around the furnace. This company is going to alter its Catasauqua furnace, for the purpose of manufacturing a pig iron of a higher quality.

A dispatch from Norristown, Pa., states that a deed was recorded there by which the Philadelphia & Reading Coal and Iron Company convey its blast furnace at Swedeland, to Richard Hechsher & Sons, who recently erected a second furnace there. The consideration is $100,000. The property embraces the furnace and adjuncts, a mansion, dwelling house and five small tracts of land.

The Berlin Iron Bridge Company, of East Berlin, Conn., are building a new machine shop for the Mather Electric Company, at South Manchester, Conn. The building will be 52 ft. wide by 150 ft. long, the central portion being 35 ft. in width and controlled by a 15-ton traveling crane. The design

is a combination of iron and wood—all the heavier parts of the building being of iron.

On the 29th ult. a gas explosion occurred at the Edgar Thomson Steel Works, at Braddock, Pa., by which two workmen were mortally burned. The molten material in the lower part of one of the furnaces had all been run out, and gas collected in the opening. A terrible explosion resulted, blowing off the whole upper part of the furnace upon which the two men were at work.

The United States Pipe Line Company starts into business with $600,000 capital, all subscribed. The right of way for the line from Bradford to New York has been secured and the telegraph wire to be used by the company is being strung and the poles erected. This company will compete with the Standard Oil Company but like all other competitors will probably be absorbed by its more powerful rival before it has done any benefit to the consumer. Bradford is to be the base of operations.

The manufacture of petroleum motors in Germany has grown to large dimensions. The works of Herr G. Daimler, at Cannstadt, Wurtemberg, have already turned out a large number. A short time ago a small launch was to be seen on the Rhine fitted with a 5-H. P. of this type, by which a speed of 6¼ miles per hour could be attained. There is also a "droschke" in use fitted with a petroleum motor made by the Maschinenfabrik Brenz. The droschke attains a high speed, and is controlled without difficulty.

The report was current in Pittsburg during the week that Mr. Audrew Carnegie was on his way to this country for the purpose of settling the difficulty at Homestead between the Carnegie Steel Company and the workmen. Mr. H. C. Frick, chairman of the company, denied the truth of the report and the leading officers of the Amalgamated Association disclaimed any knowledge of such a movement on Mr. Carnegie's part. In reference to the statement that one of the mills at Homestead had suspended operations, Mr. Frick is quoted as saying: "There is no truth in the story that our 23-inch mill has been closed down, or that we intend to indefinitely suspend operations at our Homestead plant. Everything is going along very smoothly, and we are satisfied with the situation."

The New York Central Railroad Company has just added to its rolling stock what is reputed as the largest locomotive in the world. The engine itself is 60 ft. long, and weighs, minus the tender, 60 tons net. There are four driving wheels, and the pressure upon each of these is 10 tons, therefore the gross weight of the monster, when in motion, is an even 100 tons. The machine stands 15 ft. high. The driving wheels, which are the largest ever turned out in this country, are 7 ft. 3 in. high, have a spread of 8½ ft. on a level grade, and are provided with special tires 5½ in. thick. This locomotive has been put into commission on the Empire State Express line running between New York city and Buffalo and will average 61½ miles per hour with the regular train of five coaches and a freight car. The frame and skeleton of the machine were furnished by the Schenectady Locomotive Works, but the boiler, wheels, cab, etc., were built at the New York Central Company's shop at West Albany.

MACHINERY AND SUPPLIES WANTED AT HOME AND ABROAD.

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

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

No charge will be made for these services.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be plesed to furnish them information concerning goods of any kind, and forward them catalogues and discounts of manufacturers in each line, thus enabling the purchaser to select the most suitable articles before ordering.

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

Goods Wanted at Home.

2,788. A 15-H. P. engine and a 20-H. P. boiler; also saw mill for chair factory. Virginia.

2,789. All material necessary to build and equip six miles of electric railway; electricity will be generated from water pressure, which will be low, but with a 200 to 300-H. P. Texas.

2,790. A small car load of 12 lb. second-hand iron rails and 20 or 25 one-ton cars, 14-in. wheel, and 2 ft. gauge. Kentucky.

2,791. A 48-in. swing lathe, 8 ft. between centers, and a 20-in. swing lathe, 14 ft. between centers; also a planer, 28-in. × 28-in. × 6-ft., a drill, 24 in. to center, and a bolt cutter machine. Virginia.

2,792. Prices on 50 miles of 70-lb. steel rails, 3 engines, 3 power houses, electric wire, etc. Texas.

2,793. Engine, boiler and machinery for a cotton mill. North Carolina.

2,794. An outfit for a sausage factory. Virginia.

2,795. Machinery to roll and rivet cotton ties that have been used on cotton bales; also machinery to roll second-hand bagging made of jute. Georgia.

2,796. Machinery for an ice factory and laundry, including boiler, engine, etc. Virginia.

2,797. Machines to bore pump logs or wooden water pipe; also machinery to make several sizes of bowls or trays from the same block. Virginia.

2,798. Estimates on a creosoting plant of ordinary capacity for piling and bridge timber of ordinary sizes. Texas.

2,799. Machinery for a lumber and veneering company. Florida.

2,800. Barb wire machinery. West Virginia.

2,801. Engine and boiler combined for hoisting coal and supplies from barge in river. West Virginia.

2,802. Small railroad iron. West Virginia.

2,803. Coal cars. West Virginia.

2,804. A small roller flour mill. Virginia.

Goods Wanted Abroad.

2,781. Catalogues of mining machinery, more especially relating to electric coal cutting machines; diamond drills for deep boring, say 2,000 ft., and the best kind of water motors. New Zealand.

2,805. Catalogues, price lists, etc., of diamond drills for mine prospecting. Mexico.

GENERAL MINING NEWS.

ALABAMA.

De Kalb County.

Fort Payne Coal and Iron Company.—Receiver Sheldon of this company is, it is said, getting ready to bring suits against all parties who bought land in Fort Payne during the "boom," and who gave notes in part payment for the same. These people are, in turn, preparing to resist such suits, on the ground that the promises made when the land was bought and which were the inducements for its purchase have not been fulfilled.

Jefferson County.

United States Rolling Stock Company.—The prospects for an early resumption of work at this plant are now bright. The Noble Bros. Company have a force of men repairing and cleaning boilers, etc., preparatory to the anticipated opening.

ARIZONA.

Mohave County.

According to the Tucson correspondent of the New York "Sun," the mines at White Hills are improving with development. The Horn Silver, which had pinched out at a depth of about 30 ft., is now showing a fine vein of horn silver and chlorides. The Grand Army, at a depth of 60 ft., is in big ore. One shaft has a 3-ft. vein of chloride, with nuggets and globules of horn silver through the entire mass. The other shaft is 400 ft. away on the same veiu, showing 30 in. wide of ore equally rich, while some 400 ft. east of this another shaft is being sunk with a foot of $100 ore which is gradually widening. Tobe Wilkinson and H. B. Hanna have a lease ou a portion of the Prince Albert, with high-grade ore on the surface to begiu on. Little & Schimmelpfeniug have a good showing on their claim lying just to the uorthwest of the Grand Army.

Yavapai County.

The Seven Stars Gold Mining Company.—The mines of this company, recently incorporated under the laws of New Jersey, 200,000 shares of the stock of which is now offered for sale at $5 a share, are situated in Yavapai County, Arizona, 50 miles from Prescott. They consist of the Seven Stars, Happy Jack, Hillside, Contact No. 1 and No. 2, Mesa, Elwood, Midnight, Mescal, Waterfall and Boulder claims.

Since the discovery of these mines in 1887, nearly $180,000 has been realized from the sales of ore. And it is stated that the present production with a 5-stamp mill amounts to $1,000 per day. The developments consist of levels, shafts and winzes with a total length of 6,000 ft., developing the vein some 1,875 ft. in length. In addition to this, surface workings have proven the continuity of the ore bodies for 1,200 ft. further. Mr. Arthur Rickard, Mr. T. A. Rickard and Mr. Harrington Blauvelt, all gentlemen of established reputation, have reported favorably on the property, estimating a large amount of ore in sight. Mr. Rickard, after stating the remarkably cheap cost of mining there, says: "The vein is nearly vertical, while the rock through which it cuts lies nearly horizontal. * * * *

"The lode, so far, has been worked without the sinking of shafts, save such as are required to connect the levels. Usually the ore bodies of a mine are of known length, and, once determined, the plan adopted is to follow them down. Here the ore is still in the ends of the levels, though they are already very long, and there has as yet been no limit shown to the extent north and south of the very large ore body of the mine. That valuable ore bodies will be found far beyond the present limits of the present workings is demonstrated by the work done along the surface for over 500 ft. south of the present ends of the underground workings. While north, ore of extraordiuary richness (8 tons averaged $539 a ton; 1½ tons gave $1,740), has been found 1,150 ft. beyond the present breast of the No. 3 north level. All the winzes sunk from the bottom of the deepest (No. 3) level have gone down in ore and as the depth of an ore shoot usually is in proportion to its length, there is every evidence of a further development of immense ore resources as the workings become deeper."

Fuel is said to be easily obtainable and it is stated that there is enough water in Boulder Creek to run a 40-stamp mill 8 months in the year, while a dam could be built retaining a supply for the entire year. The ores contain both gold and silver in equal proportions as to value, but recently a strike of ore carrying a large proportion of gold has been made.

The company is incorporated with the following Board of Directors: Hon. Warner Miller, Arthur G. Yates, T. Clifford Richardson, H. H. Warner, Hon. John W. Vrooman, B. E. Chase, Hon. R. S. Hudspeth and J. Herbert Jeffries, all men of high financial standing. The capital is $3,000,000 in 600,000 shares of $5 par value each, 200,000 of which are offered for sale at par. Mr. H. H. Warner personally guarantees dividends of 15% per annum on the 200,000 shares for a total of 5 years, unless 75% has been paid in a shorter time. In addition to this he binds himself to purchase all guaranteed stock at par within 30 days from the expiration of 2 years from the date of allotment. To secure the fulfillment of this obligation Mr. Warner agrees to deposit in trust with the Industrial and Mining Guaranty Company, securities to the value of $500,000 to secure the payment of the five years' dividends, and the Seven Stars Mining Company, in consideration of this guarantee, agrees to deposit stock of that company to the par value of $500,000 until Mr. Warner's obligations are fulfilled; $200,000 of the amount realized from the sale of 200,000 shares now offered, is to be used as a working capital for the erection of a larger mill and the further development of the mine. Of the balance of the stock, amounting to 400,000 shares, 100,000 shares is pledged to Mr. Warner as security for his guarantee of dividends on the stock sold. No statement is made in the prospectus of the distribution of the remaining 300,000 shares of stock nor of the $800,000 which is part of what is received for the 200,000 shares to be now sold.

CALIFORNIA.

Amador County.

We have been informed by a reliable correspondent that the "Bunker Hill" mine in Amador County, Cal., is about to change hands, and work is likely to be soon commenced. It is also said that Mr. N. W. Crocker, who ably managed the property for several years, will be asked to take charge of it again. We hope this report may prove true. We would be pleased to see Mr. Crocker in his old position again, as we believe the property would be well managed by him.

Mono County.

Bulwer Consolidated Mining Company.—The extraction of ore from the stopes in this company's mine has been discontinued. The main ore chute will now be rebuilt and much needed repair work will be done in the mine and prospecting work will be vigorously carried on. According to the latest official weekly letter, 136 tons of ore were crushed at the mill, and on September 18th there were two days' more of crushing to do before cleaning up. Average battery samples $23.25 per ton, tailings $7.03 per ton.

Mono Mining Company.—The latest official weekly letter says that the south drift from No. 4 upraise from the 700 level has about 18 in. of fair grade ore in the face.

(From our Special Correspondent.)

Summit Mining Company, Bodie.—The work of stopiug out on the north from upraise No. 1, from south drift, 300 level, is going on. Cleaning out and timbering in the main south drift.

Placer County.

Gray Eagle Mining Company.—At the annual meeting of the stockholders, the election of officers resulted as follows: H. W. Gray, president; C. L. Benlon, viee-president, and W. A. M. Van Bokkelin, F. C. Morgan and D. E. Allison, directors. A. W. Barrows was re-elected secretary and his financial statement showed an overdraft of $5,900. T. C. Dwining was re-elected superintendent. His report showed that a large amount of work had been done during the year. A new mill was erected and the mine is now sufficiently opened up to keep the mill going 10 hours a day.

COLORADO.

Gunnison County.

Crested Butte.—Work has commenced on the grade from Crested Butte to the Yule Creek marble quarries. It is the intention to finish the grade this fall so that heavy teams can reach the quarries. Slabs of marble weighing two or three tons will then be taken to Denver, where it can be dressed and thus fully determine the quality. It is intended to get out five or six carloads this way this fall, and as soon as the weather will permit next spring to lay the rails and make a railroad to connect with the Denver & Rio Grande at Crested Butte.

Ouray County.

Ironclad Mining Company.—Work is pushing at this property, a strong force being employed. The company will commence the construction of a large mill shortly.

Mickey Breen Mining Company.—This company is working double the force it did last year. Good ore is being taken out.

Slide.—At this mine the force continues at about 30 men and shipments are regular.

Pitkin County.

According to the Aspen "Times," the Cowenhoven tunnel will reach Champion Empire ground in Oc-

tober, when development work will begin on the vein of the tunnel level. The joint incline for this property, Mineral Farm and Pontiac is going down at a rapid rate with the machine drill. The Cowenhoven will push into the center of the Mineral Farm and reach that point in about four months, when it will suspend operations until arrangements can be made to extend the tunnel into the Silver Certificate Company's ground and the Koch ranch.

IDAHO.

Alturas County.

Solace.—Over 200 tons of ore are on the dump at the mill, and teamsters are hauling 1,000 tons additional, under contract. The Vienna mill machinery has been started up for a trial run, and found to be in excellent working order. The mill will shortly begin work, but it is not the intention of the management to run over 1,200 tons through at present, owing to the low price of silver, says the Harley "Times."

Boise County.

Custer.—This 30-stamp mill, after about two years' idleness, is running again, this time on ore from A. J. McFadden's mine on Mount Estes. A new strike has been made in the Oriental mine near Bellevue. It consists of gray copper and ruby and native silver.

Lemhi County.

Coal is said to have been discovered in the Lost River region. The find is said to be a good coking coal and the vein is reported to be several feet in width.

Owyhee County.

Blaine Tunnel.—This tunnel is now in 1,667 ft.

Poorman Mines, Ltd.—In his report for August the manager says: "This month 275 tons produced $15,750. In winze block 87 have extended drift 4 ft. south, making 32 ft. Extended drift north 4 ft. or 24 ft. in all. Air has been downcast through Hope shaft all week, making air in winze too heavy to work full time. Block 65 is fine, and continues to hold its own, with gold predominating, the test bar from 30 tons milled going $2,400 gold, $400 silver (average $93 per ton). Crosscuts in block 71 were not operated this past week on account of downcast of air. Ore throughout the mine holds its own, and the work keeps our reserves on the increase. Am drifting north on ore body to the west, and the ore holds good, the face and sides being in ore, and I will have blocks 63 and 64 soon opened up, going back to the tunnel No. 3 in block 62."

Shoshone County.

Spokane & Coeur d'Alene Mining Company.—The tunnel which was started to cut the ore under the 100 ft. shaft is now in 500 ft. When it cuts the shaft it will afford stoping room for 300 ft. perpendicularly. Eight hundred feet below another tunnel has been started to cut the ledge. It cut a stringer at 200 ft. and it is now in nearly 500 ft. It will afford 400 ft. stoping to the level above. On the War Eagle claim 2 shafts are being worked.

The Stemwinder Mining Company.—This company has now 80 men on its payroll; the mine is being worked steadily and the tramway, which has not been used since January 10th, is now in running order.

MASSACHUSETTS.

Berkshire County.

Hudson Iron Company.—Operations at the iron ore mines of this company at West Stockbridge have been suspended, and only four men are employed to attend to the pumps. This is said to be the first time in 30 years that the company has suspended the work at these mines.

MICHIGAN.

Copper.

Allouez Mining Company.—The diamond drill reached the Calumet conglomerate at a depth of 455 ft. The belt at that point showed about 4 ft. wide and barren of copper. A little further north the drill has again been started toward the belt.

Osceola Mining Company.—The Osceola has mined, treated and marketed its copper in 1892 at a material saving over cost of 1891, says the Boston "Transcript." Then it was over 10 cents; this year's average has not been much above 9 cents, if at all over that figure. It ran under 8 cents in some months. Construction expenses have been very light, not over $20,000 and probably not so much. For some of the copper a better price than 12 cents per pound was obtained, for most of it less. The year's product will aggregate in the vicinity of 7,000,000 lbs. Call cost 9 cents and average received no better than 11½ cents, which probably is not an over-estimate, and $175,000 would be shown as net profit. Allow for construction, and $3 per share on 50,000 shares appears fairly to have been earned. The mine never was in better shape, and its friends express confidence that it is capable of earning $3 per share per annum on an average price of 11 cents per lb. for the metal.

Red Jacket Mining Company.—The shaft is now being sunk with vigor. In one hour 18 buckets of rock were hoisted from the bottom—a depth of 2,600 ft.

Tamarack Mining Company.—One hundred and seven ft. was sunk in No. 2 shaft, North Tamarack, during August, with three drills going by day, two by night.

Tamarack, Jr., Mining Company.—Operations have been discontinued in No. 2 shaft. This shaft cost the company about $300,000. and the fact that exploration has been stopped there shows rather plainly how little confidence the management can have in finding anything of value at this almost central point of the property, says the Torch Lake "Times."

Iron—Gogebic Range.

Marquette, Mich., Sept. 29 (By Telegraph.)—A cave-in occurred at No. 8 shaft of the Nerrie mine at Ironwood early this morning just after the drill holes had been fired. The concussion loosened the hanging wall, bringing thousands of tons of earth upon eleven men who were in the drift. Attempts are being made to rescue the men, but there is little hope that any of them will be saved. Among the imprisoned men are Ralph Johnson, Abraham Thompson, Frank Danielson, and Samuel Danielson, all miners with families. The others, whose names are unknown, are four timbermen, two trainmen, and a shiptender. Several days may elapse before the rescuers reach the men.

Iron—Marquette Range.

Cleveland Iron Mining Company.—This company is boring a diamond drill hole from the east end mine shaft of the Pittsburg & Lake Angeline Company. Its direction is to the northwest from this point, and the object is to discover what there may be of value in the way of iron ore in that territory. The new machinery at the Lake shaft of the company was put in operation the first of the week. It is new to the engineers as yet and has not reached its maximum or average duty.

Iron—Menominee Range.

Briar Hill.—The crosscut north from the exploring shaft has been driven 125 or 130 ft., and is now in jasper.

Claire Iron Company.—The daily shipment of ore has been reduced to 500 tons owing to a lack of miners. The open pit is now 60 ft. deep. No work is being done on the shafts. The output for the year to date is nearly 50,000 tons.

Commonwealth Iron Company.—A find of ore is reported at the exploration on the southwest quarter of the southwest quarter of section 34, 40-18. Ore was encountered in a shaft at a depth of 25 ft. from the surface, and up to last reports a north and south crosscut had penetrated the metal a distance of about 16 ft. The ore is of a bluish color and fairly hard. The indications are that a large body of it exists upon the forty.

Cuff's Find.—Exploration work on this property, which is near the Indiana, will now be resumed, says the Norway *Current*. The last shaft sunk is about 85 ft. deep and in ore, and it is the intention to sink it about 50 ft. more and do some drifting and crosscutting from the level then reached.

Dayton Mining Company.—In consequence of the finding of good ore on section 34, 40-18, by the Commonwealth Company, the above company is putting down a shaft on the adjoining "forty."

Florence Iron Company.—Work with the diamond drill has been resumed on the property of this company after a month's suspension, and already some good looking mixed ore has been encountered.

Waverly Iron Company.—The shaft at this mine is down 185 ft, and will be sunk to the 200 ft. level before any drifting or cross-cutting is done.

MINNESOTA.

Iron.

Shipments of iron ore from Two Harbors up and including Wednesday, Sept. 14th, aggregated 870,880 gross tons, of which 500,201 tons were from the Chandler, 361,157 tons from the Minnesota, 2,525 tons from the Pioneer, and 6,997 tons from the Zenith mine. On the same date shipments from Ashland aggregated 1,624,234 gross tons, divided among the different mines as follows: Ashland 157,351 tons, Aurora 241,957, Colby No. 1 1,170, Colby No 2 47,335, Rand 17,233, Tilden 174,198, Taylor 14,640, Globe-Ashland 5,309, Iron Belt 117,788, Montreal, south vein, 3,383, Montreal, north vein, 25,749, Palms 45,898, Section 33, south vein, 4,619, Section 33, north vein, 3,133, Anvil 1,696, Brotherton 75,568, Comet 25,049, Carey 22,324, Newport 81,024, Imperial 3,456, Norrie 310,541, East Norrie 148,419, Odanah 2,242, Pabst 38,599, Eureka 5,086, Sunday Lake 40,114, Windsor 18,936, Jack Pot 1,609.

Iron—Vermilion Range.

Midway Mining Company.—This company has leased of Samuel Smoely several "forties" on the northwest quarter of section 2 and northeast quarter of section 3, town 58, range 18. Five thousand dollars are to be charged annually for ground rent for each tract until a royalty of 30 cents per ton on the output will amount to that much, when the royalty is to be taken instead. The lease runs for 30 years.

MISSOURI.

Jasper County.

(From our Special Correspondent.)

JOPLIN, Sept. 26.

There was the usual heavy output of ore last week through the entire lead and zinc belt, and the market opened Monday morning at Carterville and Webb City at $24.50 to $25 per ton for best grades of ore, and some large sales were made. The average price through the entire district was about $23.50 per ton. Lead ore declined to $22.75 per thousand. Following are the sales from the different camps: Joplin mines, 1,651,190 lbs. zinc ore and 221,350 lead; value $24,123.90. Webb City mines, 288,890 lbs. zinc ore and 58,200 lead; value $4,631.75. Carterville mines. 2,135,300 lbs. zinc ore and 104,200 lead; value $27,966.20. Zincite mines, 322 590 lbs. zinc ore, and 890 lead; value. $3,730.25. Lehigh mines, 84,000 lbs. zinc ore, and 1,900 lead; value, $1,042. Oronogo mines, 44,750 lbs. zinc ore, and 152,020 lead; value, $3,943.50. Alba mines, 44,000 lbs. zinc ore; value. $506. Carthage mines, 61,420 lbs. zinc ore; value. $763. Galena, Kan. mines, 1,005,830 lbs. zinc ore and 311,870 lead; value, $17,714. Districts, total value, $84,420.65; Aurora Lawrence County mines, 387,891 lbs. zinc ore, 533,340 lbs. silicate, and 180,000 lead; value, $12,208; lead and zinc belts, total value, $96,628.60.

MONTANA.

Deer Lodge County.

Granite Mountain Mining Company.—The company's operations are going ahead as usual, and all give promise of continuing as heretofore, with the exception of the Granite mill. The Rumsey-Granite tunnel has reached a length of more than 2,000 ft., and is being pushed ahead with more vigor than at any time before. It is said that one of the large veins lying between Granite and Rumsey will be crossed by the tunnel about 200 ft. further in.

Puritan Mining Company.—The ore is increasing in value with depth. The Algonquin 20-stamp chloridizing mill is being repaired by the company, and it is expected to treat custom ores as well as those from the Puritan.

Jefferson County.

Alavieska Mining Company.—This company has closed down the Gopher mine near Bernice.

Lewis and Clarke County.

Penobscot.—This property now belongs to the Longmaid Brothers, who are erecting on the site of the old hoist a new hoist and a 10-stamp mill. This mine has not heen worked in 12 years, and is, consequently, full of water.

Meagher County.

George.—This mine on Lost Creek has been leased and bonded for one year. The consideration of the bond is $30,000 and a certain interest in the profits accruing from the shipment of ore. The mine has been an occasional producer for the past year or so and th owners have expended about $10,000 on the development of the property. There is a two compartment working shaft 200 ft. in depth, and the hoisting has been done with a whim, but the present owners propose to use a steam hoist with a capacity of 500 ft. deep.

Ned.—The development work on this property consists of one tunnel 400 ft. along with a winze 30 ft. deep in the face of the tunnel, one incline shaft 106 ft., and one vertical shaft 75 ft. deep. It is claimed that the ore averages $20 per ton. Joining the Ned on the south is the Silver bell, which has one incline shaft 30 ft. deep and about 20 ft. of crosscutting and drifting. There are bunches of very high grade ore all through this ore. About 75 ft. south of the shaft the lead crops out and is about 6 ft. thick, one stratum lying on the foot wall about 2 ft. thick, which shows horn silver. Lying between this and the upper strata of quartz is a stratum of lime about one foot thick. The upper straum of quartz it about 4 ft. thick.

Missoula County.

Iron Mountain Mining Company.—This company will construct a tramway from the mine to the concentrator. In fact there will be two tramways, one from the mine to the hins on the hill above the concentrator, a mile and a quarter in length, which will he operated hy a locomotive, and a double-track gravity tramway from the hins to the concentrator, 1,756 ft. The cost of this work will not exceed $13,000, and it will effect a saving of 80 cents on each ton of ore.

Silver Bow County.

Anaconda Mining Company.—Ever since the fire at the Anaconda mine the air at the St. Lawrence, which is connected at several levels with the Anaconda, has not been as pure as it was formerly. Several times the miners working on the 800 level have been compelled to quit work on account of the gases. Lately three men at work in that level were overcome with gas and were removed in a helpless condition to the surface. Many of the other men became affected also, and orders were given that all the men he sent home. The air on the 400 level is also very bad. About 160 men have been employed, and nearly all of this number have been notified that they will be given employment at the Anaconda mine until such time as the St. Lawrence resumes.

Butte & Boston Mining Company.—The adjourned meeting of Butte & Boston Mining Company stockholders was held in Boston, Sept. 20. Of the 200,000 shares of capital stock 184,428 were represented, all of which were voted in favor of the proposition to place a mortgage for $2,500,000 on the property, securing new 7% bonds to be issued. Of the new bonds $1,000,000 are to be reserved against outstanding issues, $500,000 will remain in the Treasury and $1,000,000 will be offered to stockholders at 80.

Silent Treasure Mining Company.—This company is building a mill. It is now nearing completion and will have a capacity of about 24 tons per day. It is a Huntington pattern and is run by water power. The company has been taking ore out of their mine all season and now have a large amount on the dump. The mine is worked from two tunnels that are connected by a shaft.

NEVADA.

Elko County.

Grand Prize Mining Company.—At this company's annual meeting, held in San Francisco, Cal., on the 21st ult., 75,080 shares were represented and the following officers elected: William C. Ralston, president; Thomas Cole, vice-president; William Bowers, H. Zadig and H. H. Noble, directors. R. R. Grayson was re elected secretary and his financial statement showed an overdraft of $3,231.40.

Following are the latest official weekly letters from the superintendent of the various Tuscarora mines:

Belle Isle Mining Company.—No. 1 upraise, 250-ft. level, extended 6 ft.; the vein is looking better and the ore of higher grade. North drift on vein from the raise extended 8 ft.

Commonwealth Mining Company.—The stopes from the east line drift are not so high grade. East drift, from No. 3 cbute, has been extended 20 ft. without improvement. Third level stopes producing usual amount of second-class ore. Hoisted 16 cars first-class ore, sample $270 per ton, and 138 cars second-class, sample $24 per ton.

Navajo Mining Company.—The stopes are looking better this week, yielding three cars of ore estimated at $367 per ton and eight cars at $45 per ton.

Nevada Queen Mining Company.—The stopes at chutes 6 and 7 are about exhausted. Stopes below the level continue about the same as last reported. Exposed in east line drift one foot of second grade ore. Hoisted 33 cars first-class ore, sample $322 per ton, and 160 cars second-class, sample $24 per ton.

North Belle Isle Mining Company.—The north drift, south 300-ft. level, extended 5-ft.; ore continues high grade and the vein is getting wider. Stopes below the 400-ft. level are not looking so well.

(From our Special Correspondent.)

Recently a test was made with the cyanide process on a small lot of tailings. It was so successful that a plant is to he introduced for working over the enormous quantity of tailings which have accumulated from working the ore from the Tuscarora mines.

Esmeralda County.

Mount Diablo Mining Company.—The latest official weekly letter from the superintendent of this company says:

"We have stopped the winze from the sixth east for the present and have started a raise above the sixth near this winze; this is up 19 ft. and shows a bunch of $40 ore 2 ft. wide. We have begun stoping from the hanging stope on the sixth east and have 2 ft. of $50 ore showing to-day; the ledge is irregular here. The intermediate slope between the fifth and sixth levels shows about 3 ft. of $30 ore. The east drift from the north crosscut in this intermediate is in 13 ft., and has followed 6 in. of $30 ore for this distance; the west stope in this intermediate shows a foot of $60 ore. The intermediate stope above the fourth east shows a foot of $50 ore where we are working at present. We have started to drive east from this stope and have a little low-grade ore in the face of the drift. The west stope on the third level shows some improvement, the ledge being about 3 ft. wide and assaying $40. We have started a drift in the intermediate between the second and third levels to connect with this stope. The stope above the second east is giving the usual quantity of $35 ore."

(From our Special Correspondent.)

The Holmes Mining Company, Candelaria.—Everything is in readiness for starting up work in the mine upon receipt af orders from London. It is expected that orders to this effect will be received this week, and, although the times are not propitious for anything like a boom in a silver camp, the resumption of work in the mine is anxiously looked for.

Lincoln County.

Bullionville Mining and Reduction Company.—This company is now ready to start work. The company will buy and work custom ores, using the large pile of tailings at Bullionville and Dry Valley as a reserve. The process of working is a new invention of A. H. Godbe, on the principle of leaching. The pulp is treated with hypo solution in a number of large tanks, and after being precipitated is forced back by compressed air, then refiltered with an addition of the cyanide process, which extracts the gold.

Storey County—Comstock Lode.

A large force of men are at work cleaning up the quicksilver and amalgam from the ruins of the old Eureka mill, which used to crush Consolidated California & Virginia ore and was destroyed by fire six months ago. It is expected that this clean-up will yield a large sum of money.

Following is the official report of the pumping operations in the Crown Point incline for the week ending September 17th: "The 1,700 station pumps have been working continuously during the week, and the flow of water continues to keep both pumps running the same as at last report. Repairs to the pump shaft at the 1,400 station are nearly completed, and we expect to be able to get a current of air going through the drain tunnel in a day or two."

Belcher Mining Company.—The latest authentic news from this mine, says the San Francisco "Report," is that the ore vein has increased in width from 2 ft., where cut on the 300-ft. level, to at least 9 ft. where the upraise from the 400 level found it, which is about midway between the two levels, and the ore is of rich quality. Should the dip of the ore continue the same down to the 400-ft. level it will give 400 ft. of backs for stoping.

Savage Mining Company.—The latest official weekly letter says: In the main south drift, 750 level, the winze was carried down 50 ft., and connected at this point with the upraise from the 950 level. Have commenced stoping ore at the point of this connection which corresponds with the 800 level. The usual prospecting and repair work is being carried on throughout the mine. The joint north drift with the Gould & Curry Consolidated on the Sutro tunnel lead has been advanced 10 ft.

(From our Special Correspondent.)

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

Mine.	Tons extracted.	Car sample assay.	Tons milled.	Av. battery assay.	Bullion product, week.	Bullion shipped.
		$		$	$	$
Con., Cal. & Va.....	986	24.74	980	20.29	.....	14,192.33
Gould & Curry.....	[1]39	19.31	85	21.28	.....	[2]1,964.94
Justice.....	.....	.....	.....	.....	.....	[2]4,570.91
Occidental.....	172	.....	172	19.85	.....	....
Potosi.....	41	24.55	311	21.47	.....	.....
Savage.....	[4]65	25.20	525	23.38	8,592.15	[5]15,413½lb

[1] 4 Cars of ore. [2] Received at San Francisco. [5] Crude bullion.

Hale & Norcross Mining Company.—Major Charles P. Eagan, Commissary of Subsistence, U. S. A., the gentleman who was mulcted in the sum of $208,172.50 by the decision of Judge Hebbard rendered against Alvinza Hayward, W. S. Hobart, and the directors of this company, for conspiring to defraud the stockholders, on Monday filed his affidavit claiming that he knew nothing of the case. This is simply a feeble effort to save himself, for the odium of the judgment is upon him, and it looks as if he would be called to account by his superiors.

The application of Major Eagan to set aside the judgment is based on the ground that he had never been served with any summons, any legal process or copy of complaint, and that he never authorized any attorney to appear for him in the case. And, furthermore, the findings in the case are void for the reason that the court never acquired jurisdiction over the defendant. He swears that any appearance made by an attorney in his behalf, and any answer filed by the attorneys in his defense, or any defense made for him, is wholly unauthorized by him and without his knowledge, authority or consent. He learned of the suit in a casual way through the newspapers, and he supposed that the suit was against the Hale & Norcross Mining Company, as a corporation, and not against him personally. The affidavit having been filed a continuance was obtained for two weeks, when arguments on the major's exact position will he heard. Army officers are not permitted to engage in business for themselves, although there is, presumably, no bar against them making money by any scheme that does not occupy their time or interfere with official duties; and furthermore, that is on the line of strict integrity, not reflecting on their status as "officers and gentlemen."

Meantime it is understood that an officer from the War Department is in the city awaiting the Major's vindication.

The case of M. W. Fox vs. The Hale & Norcross Company *et al.* came up on Wednesday on a motion for a new trial. Attorney W. S. Wood made the opening argument for the defendants. Arguments lasted two days, and the case was then submitted.

Silver Hill Mining Company.—The Justice Mill has started up on ore from the mine belonging to this company. There are about 1,200 tons of ore that will average $24 per ton, of which two-thirds are gold. This mine being completed, the mill will commence crushing ore from the Consolidated New York mine.

NEW MEXICO.

Grant County.

Summit, Cook's Peak.—According to the Silver City correspondent of the New York "Sun," the strike in this mine at Cook's Peak, which was made a few weeks ago, has been shown to he not only the biggest strike ever made in that camp, but the biggest strike of lead carbonate ever made in the Territory. It is estimated that there is $100,000 worth of ore in sight now in the mine, and it is impossible to tell how extensive the deposit is. Ore which averages 60% lead is being taken out at the rate of a carload a day, and the smelter returns show that the cars average about $500 each. All the ore found in this district runs a few ounces in silver, but the ore is high enough grade to make it pay without taking the silver into consideration. The Surprise mine is shipping three carloads of carbonate ore a week, and there are about 30 carloads of ore in sight in the Inez mine, from which regular shipments are being made. The output of the camp has been increasing steadily during the summer, and now the daily shipments reach nearly 100 tons. There is more ore in sight in the mines there now than there has ever been before.

According to the Silver City "Sentinel," work has been resumed in the Hanover iron mines, the differences between the Atchison, Topeka & Santa Fe Railroad Company and the Silver City & Northern Railroad Company, which grew out of the rate question, having been settled. The Atchison will now furnish cars in which to transport ore. The new rate which has been made by the Silver City & Northern is $2.75 per ton from Hanover to El Paso, and $3.50 per ton from Hanover to Socorro. These rates are higher than the old through rates, which were cancelled several months ago, but are considerably lower than the rates which went into effect when the through rates were cancelled. Shipments of iron ore cannot he made to points beyond Socorro under the new rate, as iron can be obtained at other points cheaper, so that it is not likely that shipments will average over 50 tons a day for the present.

Sierra County.

An important discovery of zinc ore has been made in Mineral Valley, two miles from Hillsborough. A large number of claims have already been located.

OHIO.

Seneca County.

In the Michael well, which is being drilled for oil near Tiffin, a flow of gas was struck in the red shale at a depth of 530 ft. The pressure was so strong that it was necessary to stop the drill and remove the boiler from the well. In the other wells drilled in this vicinity no shale gas of any consequence has been found.

PENNSYLVANIA.

Coal.

The Ross vein has just been struck at Wanamie in good condition by means of a large tunnel from the Baltimore vein, 8 ft. high by 14 ft. wide and 130 ft. long.

Lawrence Colliery.—This colliery has been sold for $200,000 and the first payment of 10 per cent has been made. It is one of the best known in the anthracite regions. The purchasers are understood to be New York capitalists.

Lehigh & Wilkes-Barre Coal Company.—This company is at present sinking an air shaft at the Lance Colliery in Plymouth. The lower workings are becoming deeper, more complicated and extensive each year, and additional ventilation is necessary, says the Wilkes-Barre "Record." It will be sunk to the Red Ash vein, and will be completed in about a year. A new air shaft sunk at the Nottingham, in Plymouth, to the Ross vein will be complete in about a week. It was started 10 months ago. The size of the shaft is 26 by 14 ft. This will also provide greater safety on account of the gas met in the deeper workings.

Forest County.

Jno. S. Newmyer has commenced the erection of 100 coke ovens on a tract in Perry Township, containing 2,000 acres of coal land. The ovens are being erected on a small stream known as Washington's Run. The location of the new plant is about three miles from any railroad connection, but a branch of the Pittsburg, McKeesport & Youghiogbeny Railroad will he built to the new works at once. It is the intention of Newmyer to build 500 ovens in all at the new works. They will he fired up as they are built. The mine will be a slope. The tract is a valuable one, and was but recently purchased at a high figure. The works will open up a new wing to the Connellsville coke region. The vein of coal lies west of the Connellsville region, and extends almost to the Monongahela River, where it crops out on the surface. It can nearly all he mined by drift and slope mines. The coal is somewhat harder than that in the center of the Connellsville region, but nevertheless makes excellent coke.

SOUTH DAKOTA.

Lawrence County.

Harney Peak Tin Mining and Milling Company.—The following telegram was sent to the London office Sept. 13: "Good progress is being made on the railway spurs. Three-quarters of the distance now ready for rails. Will be completed by 1st October. Cowboy lode at the lowest level 4½ ft. wide, average 7 per cent. of tin oxide. Japanzey lode 3 ft. wide, 2 ft. of which average about 8 per cent. of tin oxide.

St. John's Mining Company.—A strike in this mine assays $9 a ton gold. This mine was recently bonded by Graham Bros. to Eastern parties, who paid $10,000 down and commenced active work. In enlarging the old shaft to two compartments the ore body was uncovered.

Pennington County.

J. R.—This mine is showing well. The ledge has been traced for a distance of 1,000 ft. on the surface, and the ore from the shaft continues of a uniform grade. A new concentrator has been added to the mill. The water is a little low for running 10 stamps, but about $1,500 are being obtained per week.

UTAH.

Grand County.

Coates Mining District.—There are now about 30 miners in this district, says the Salt Lake "Herald." It has not received much attention until quite recently, but now over 100 locations have been made. It gives the following description of the most important: The Enterprise is a true fissure vein, one foot in width, and recent assays show $31 gold, 22% copper, and $3 50 silver. This at a depth of 14 ft. The Missouri Girl is also very promising. At a depth of 180 ft. a vein of ore was tapped showing 50% copper and between 40 and 50 oz. silver. The Pride

the West shows gold sulphurets at a depth of but 10 ft. The rock appears to be very rich, but no assays have yet been made. The Comstock at a depth of 22 ft. carries $15 gold and 60 oz silver. This is also a true fissure vein. The Board of Trade shaft is down 50 ft. and shows a 2-ft. lead, the ore of which averages $279 a ton.

Juab County.

Boss Tweed Mining Company.—The tunnel is in about 150 ft. Ore has been encountered all through the tunnel, and now the whole face, top, sides and bottom are in solid ore which assays $250 per ton in bismuth and gold. Arraugements are being made for extensive work.

Paxman.—The shaft has attained a depth of 165 ft., and is being sunk at the rate of 50 ft. per month. When the 300-ft. level is reached drifting will be commenced. The shaft is being sunk on a strong and clearly defined ledge.

Undine.—The new shaft is down to the 100 ft level and the station is being cut. A vein is coming in at the bottom which promises well. A drift will be run to the north a distance of about 70 ft. where it will connect with the old workings. Several tons of good ore are broken and there is ore in sight in all parts of the mine. The new steam hoist is in good working condition.

Pi Ute County.

Mountain Chief.—The shaft is now down 30 ft., and cuts a 7 in. vein of high grade ore. On the Chicago Great Claim, in the same district, a tunnel now in 55 ft. has cut a body of ore which assays 64 oz. silver, $11 gold and 70% lead. It is about 8 in. wide.

Salt Lake County.

New Emma Mining Company.—The latest report says: "The ore in the Illinois Tunnel is looking better, if anything, and the character has improved decidedly. No. 2 is also improving. The water below the Bay City Tunnel has been giving very much trouble. The power drill for the face of the Bay City Tunnel went up Sept. 1 and will be put to work shortly. Ore in Illinois level is 10 in. solid pay and 18 in. solid iron, which looks like going into pay. The 10 in. assay 31% lead and 26 oz. silver."

Stewart No. 2.—A Jordan Amalgamator has arrived and will be used in connection with the Crawford mill recently bought.

Summit County.

Anchor Mining Co.—The Park City "Record" reports a strike of ore in the incline running below the tunnel level. The ore runs from 60 to 80 oz. silver and from 35 to 68 per cent. lead, making a high grade shipping rock. The new find has been stripped for quite a distance, an ore platform put in and operations again commenced on the incline, which is still in the same grade of ore. The station for the shaft on the tunnel level has been completed with the exception of a few timbers, and the clay water sheds and sinking has commenced.

Crescent Mining Company.—The tramway has been practically closed down for the year, says the Park City "Record." The concentrator will also be closed down as soon as the present lot of ore upon which the mill is engaged is cleaned up. The reason given at headquarters for the shutting down is that the company does not care to market its ores with silver at present quotations, preferring to store it at the mine. About 50 men will be retained at the mine, who will be kept busy breaking down ore and in prospecting and uncovering new ore bodies and opening up more stoping ground It is also rumored that the company will divide the 7,000 ft. tunnel that was surveyed two years ago, and when completed will tap the Crescent at a vertical depth of 1,700 ft. below the collar of the present incline shaft. This tunnel, if run, will start from a point below the tramway near the foot of the long grade leading up to Rocky Point, and will prospect a large scope of country lying between there and the Crescent mine.

Washington County.

Wooley, Lund & Judd Copper Mining Company.—A shipment of 69 tons of copper bullion has just been made from the Dixie mine. This was the output for August; that for September will be about 25 tons. The mines continue to show well. A carload of ore of 45% Cu. will be shipped about Oct. 1.

VIRGINIA.

Augusta County.

Dora Coal Mines.—These mines, which were opened several years, but not worked on account of legal complications, are now being prepared for active mining. The deposits are an excellent quality of anthracite. Messrs. W. G. Kinney and Harry Wegner, of Staunton, will conduct the operations.

WASHINGTON.

Stevens County.

The discovery of a new mining district has been reported just north of Baker Lake, along the banks of Hokatum River, in the foothills of Mount Shuska. About 40 locations have already been made. The ore is a galena in good bodies, and is reported to assay from $200 to $300 per ton in silver. The district has been named the Sulphide.

WISCONSIN.

Jackson County.

The owners of the Black River Falls furnaces have decided to locate at West Superior. They have visited Ironwood, Escanaba, Manistique, Iron Mountain and other upper Michigan towns, with a view to locating in the one that offered the best advantages. The product for the past six years has averaged 85 tons per day, but the capacity of the new plant will be greatly increased.

WYOMING.

Albany County.

La Plata.—Discoveries of high grade silver ores continue to be made, says the Laramie *Boomerang*. Quite a number of shafts have been sunk and good indications at the surface have increased in quality and quantity by sinking. An assay from the gray copper lode made gives 625 ounces of silver and 15 per cent. copper. The Big Strike shows up large quantities of galena, and the Florence, Surprise, Star 44, Wyoming Best, Bill Nye, Ironsides, Iron Age, Big Thunder and others are all rich in mineral and give assurance of a permanent camp. A recent mill run of the Vesuvious ore gave very satisfactory returns. At Mill Creek, 35 miles from Laramie, some free gold veins have been discovered. At Herman's camp the East Fork shaft is down 35 ft. and the ore shows well. At the Chicago the ore is said to be improving.

FOREIGN MINING NEWS.

AUSTRALIA.

Another find of emeralds has been made in the New Emerald Proprietary mine, Emmaville, New South Wales. Up to April last some 40,000 carats of emeralds had been won from Butler's shaft. The largest of these weighed about 15 carats, and was discovered at a distance from the surface of 35 ft. Since then active operations have been going on at the mine; the underlay of the lode has been followed down to a distance of 76 ft., the lode having widened out from 2 ft. to over 6 ft. at the bottom level. Emeralds in fair quantities were found all the way, but at 74 ft. from the surface the manager discovered some of the largest stones yet found.

Broken Hill Proprietary Company.—The latest telegraphic dispatches from this company say: A large party of free laborers have this week been brought to Broken Hill, amidst somewhat hostile demonstrations from the strikers. Owing to this an additional force of 100 police have been drafted into the district. The Broken Hill Proprietary Company have signed a large contract for stoping the mine, and if the present system of intimidation and terrorism can be overcome, they feel assured that, without reducing wages, they will be able to get a much greater amount of work done for the money expended than has been the case in the past. A large number of the new hands have been sent by the Associated Mineowners.

BRITISH COLUMBIA.

Pilot Boy Smelter.—The smelter and calciner are now housed and work on the refinery has begun; 75 men are working. Large quantities of ore are accumulating.

Rattler.

This mine and mill near Fairview, B. C., have been sold to a syndicate of English capitalists, who are represented by George Atwood, mining engineer, W. T. Thompson and Edmund Reynolds, all of London, England.

BURMAH.

At the Jade quarries, of Tammaw, 500 men are now employed. Along the Uru river for a distance of 40 miles shafts have been sunk to tap the veins. The Jade found is both green and red. The mining is extremely crude, great fires being built on the vein which, upon cooling, is easily broken into fragments by hammering.

CANADA.

Ontario.

Lily of the Valley.—A depth of 50 ft. has been attained on No. 2 lode, and it is still a bonanza, says the Algoma "Miner." The vein at this point is increasing in width, and a depth of 45 ft. measures 6 ft. wide, wall to wall. Average assays of ore from this point yield from 100 to 250 oz. Work on the large or No. 1 lode is also going on.

ENGLISH GUIANA.

According to the *Circulaire Chaumier* the gold output of English Guiana from January 1st to August 10th, 1892, was 64,217 oz. valued at $1,143,150, as compared with 48,524 oz. valued at $862,787 for the same period of 1891.

FRENCH GUIANA.

According to the *Circulaire Chaumier*, the situation of the mining industry is improving. The rain has been unusually abundant this year and has retarded mining operations, but the rainy season shows signs of coming to an end and active preparations are being made by the different mining companies to increase their force. During July the output of gold was 143·8 kilos, or 4623·17 oz. valued at $83,217; during August the output amounted to 146 96 kilos or 4,724·76 oz. valued at $85,045.

GREAT BRITAIN.

The Glendinning antimony mines, situated at Westerkirk, in Dumfriesshire, have just been definitely closed, and most of the machinery has been sold. The mines were first discovered in the year 1760, but they were not regularly worked until the year 1793. The ore, which was sulphide, yielded about 50 per cent. Operations in the mines were discontinued a quarter of a century ago, but of late years work has been taken up by a company, which has now, however, been forced to forego bringing the ore into a market at a loss, the price of antimony on the London market having declined to barely £50 a ton.

INDIA.

It is said that the Punjab is in a fair way of being independent of Bengal in her coal supply. Her own coal-fields are being worked with success. According to official reports, the Dandot Colliery nearly doubled its output during last year. It was over 72,000 tons, the profits realized being nearly 15 per cent. on the capital outlay. The Bhaganwala coalfield on the Salt Range, seventeen miles from Dandot, also seems very promising, with coal slightly better than that produced at Dandot. Nevertheless, says *Indian Engineering*, the engine-drivers on the North Western Railway complain of being arbitrarily handicapped with a bad fire and lumps of pyritic fuel.

ISLAND OF ELBA.

The concession of the iron ore mines of the island of Elba for a term of five years from July 1, 1892, has just been made to Signor Guiseppe Tomelli. The quantity of ore to be extracted each year must not be less than 90,000 tons, nor more than 180,000 tons, of which one-third is to be small washed ore. The price at which the ore is to be sold must not exceed 5.5 francs per ton, and the price of that used by Italian works is to be 19 per cent. less than that exported abroad.

MEXICO.

Durango.

(From our Special Correspondent.)

By the time this letter reaches New York, the extension of the Mexican International Railway from Torrean to Durango will be completed. At the present writing (September 10th) the road is open for traffic as far as San Gabriel; the grade has been finished for the entire distance from San Gabriel to Durango, and the laying of the iron is delayed only by the non-arrival of spikes. Durango thus having received its railway connection, there is considerable talk of extensions in other directions. Among other things it is rumored that the International will at once send a reconnaissance party up the "Llano de Guatimape," with a view of locating a line to the Pacific Coast, crossing the Sierra Madre near Santiago, where there is one of the most favorable passes. It is also said that the Mexican Central proposes a similar undertaking, building from its main line at Fresnillo to Durango, and thence over the mountains. However, it is likely that these schemes are still in the air.

The present season has pretty effectually broken the drought which has prevailed in Northern Mexico so long, the rains having been both frequent and heavy. The "arroyos," which were so dry that water could not be obtained from them even by digging to the bed-rock, are now raging torrents and oft are impassable. The "mesas" and "llanos" are sloughs of mud, over which it is impossible for wagon trains to go, so that transportation is now as much at a standstill on account of the rain as it was three months ago for lack of it. By the early part of October, though, the rainy season will be over, and the roads drying rapidly and the new corn beginning to come to market, operations of all kinds will become more active.

Bacis Gold and Silver Mining Company, Limited—This company has been organized in London, with a capital of £200,000, to take over the Bacis mines, at Sapioris in the Sierra Madre. The mines were purchased from Messrs. Gilman & Shepard, of Durango, who take an interest in the new company. Under the management of the old owners the mines have produced considerable bullion by the patio process—the ore being free milling—and it is reported that there is much ore in sight. About one-third of the value of the bullion is in gold. Mr. Thomas Richards, a miner of long experience in Chili and Venezuela, has been sent hither to manage the Bacis mines and I am informed that a 10-stamp mill, with pans, will be erected immediately. From all accounts the new company starts out with a more generous provision of working capital than is usually the case with English concerns and proposes to exploit its properties energetically.

NEW SOUTH WALES.

Broken Hill Proprietory Co.—A dispatch from Sydney, under date of Sept. 14, says that the unionist miners on strike at Broken Hill have become more aggressive toward the non-union men. The strike pickets have been strengthened, and as the men at work are frequently assaulted, a force of police have been dispatched from Sydney for their protection. There has only been a slight increase in the number of non-union laborers since the mines have been reopened.

Sydney, Sept. 20 (By Cable)—A deputation o 6,000 persons called upon Prime Minister Dibbs to-day to demand the release of the laoor agitators arrested on account of the labor troubles at Broken Hill mine. Minister Dibbs refused to see them until to morrow. The crowd became furious at this and rushed to the House of Parliament and tried to break open the doors, but the armed police kept them back. The crowd threatened violence, and the authorities apprehend that an attempt will be made to release the prisoners.

NOVA SCOTIA.

According to official returns the amount of gold obtained during August was 1,117 oz. from 2,116 tons of ore, but ten companies furnishing returns.

The largest production from any mine was that from the South Uniacke at Eastville, which obtained 317½ oz. of gold from 29 tons of ore.

Crawford Mill.—The following certificate from the Secretary of the Salisbury Gold Mining Company speaks for itself:

This company had four tons and four cwt. of ore from their property at the Montague Gold District crushed in the Crawford Mill, which yielded four ounces and seven pennyweights (4 oz. 7 dwts.) of gold.

"A sample of the tailings which ran through during the crushing yielded by assay of Messrs. Davenport & Williams, of Boston, the equivalent of 0·033 oz. of gold to the ton. This evidence of the capability of the Crawford Mill to extract all but a trace of the gold which the ore may contain, must be considered of importance by all who are interested in the question of improved methods of winning gold from the ore."

For the information here given we are indebted to the Halifax *Critic*.

Mr. Wm. Madden, deputy inspector of mines, says of the mines of Nova Scotia:

Crow's Nest Mine, Guysboro County.—Very little has been done at this mine for some time past, but some new leads have been opened, all showing metal. Three men are prospecting at Cochrane Hill. This property has been idle lately, but a lead has been struck showing gold in the solid, and it is likely active operations will again be in order. The Copeland mine, at Country Harbor, has 30 men employed. This mine has a 15-stamp mill and looks well. The Johnstone mine is idle at present. Some prospecting is being done, and there is a likelihood of a good lead being struck. The mine at Isaac's Harbor has 25 men employed. They are down 400 ft., on an angle of 30°, dipping south. They are also erecting a 20 stamp mill, with engine of 45 H. P. and a boiler of 60 H. P. The Richardson mine is looking well. Preparations are being made to erect a mill, buildings, etc. At the North Plow lead, Wine Harbor, there are 16 men employed. The Fraser-McDonald lead, on the Alexander property at Goldenville, shows gold well. A gin has been erected. The old Wellington mine is being opened up. The Ecum Secum mine, which has been idle for about three years, has again been started, and so far is paying its way. Thirteen men are working on the south dip. No work has ever been done on the north dip, although some leads have been cut showing gold. Hurricane Cove mine is well equipped with stamps, boilers, etc. It has been idle for some time, but it is likely to be started soon. It is owned by R. McMahon and others. The Dufferin mine at Salmon River is working the two east shafts. One of the shafts is down 300 and the other 200 ft., cross-cutting the measures going north. The company has struck a vein 16 ft. thick, showing fairly good quartz, and an 8 in. lead, showing one ounce to the ton. Forty men are employed. All the work is done by water power. The mill is capable of crushing 60 tons in 24 hours. Fifteen men are employed at the Killag mine at Sheet Harbor. The men are sinking a shaft and erecting a mill. The Oxford mine, at East Chezzetcook, has 22 men employed. The mill has 10 stamps. A lot of surface quartz has been crushed, which has paid fairly well. John H. Anderson, of the same place, has 12 men working on the "Barber" lead. Wm. Carroll has three men working on the Cogswell or "Angle' lead.

Mabou Gypsum Company—This company is shipping large quantities of gypsum to the United States. A coal mine, situated within two miles of the harbor, is also being worked by this company. Already several shipments have been made from this mine and the coal is said to be of good quality.

ONTARIO.

Gas.

Some 60 natural gas wells supply Port Colborne and the village of Humberstone, two miles distant. Pipes have also been laid to Buffalo, N. Y., which city will draw a large supply. The large establishment of the Ontario Silver Company at Humberstone uses nothing else, and the manager speaks highly of its advantages over coal.

SOUTH AFRICA.

Transvaal.

The gross output of the Witwatersrand gold mines during the month of August amounted to 102,322 oz., an increase of 43,252 oz. over that of August, 1891. The output for 1892 to August 31st amounts to 766,305 oz., against 729,506 oz. for the 12 months of 1891.

STRAITS SETTLEMENTS.

(From our Special Correspondent.)

The information has been received per steamship "Belgic" that the government of the Straits settlement will make no exhibit at the Chicago Fair, but the individual exhibits will be very numerous and of much interest. There will be a large display of tin; the mines in 1891 yielded 36,000 tons. The tin companies in the Straits are very prosperous, the leading one having voted a yearly dividend of 30%, and carried to the reserve fund an even greater amount than the declared dividend. One reason for this prosperity is found in the depreciation of silver. Labor is paid in Mexican dollars, which are worth just now barely 72c. On the other hand, the exports are paid for in gold.

The newly discovered gold mines at Pahend give every promise of permanence and value. The quartz carries from three-quarters of an ounce to two and a half ounces per ton, the average yield being one and one-half ounces. On account of trouble with the natives the mines have not yet been opened up extensively.

Russian and Eastern capitalists have built enormous oil tanks at Bombay, Colombo, Singapore, Bangkok, Hong Kong, Shanghai and Yokohama, for the purpose of receiving the oil brought in bulk from Black Sea ports through the Suez canal. Tank steamers have been built in England, and it is intended that the first cargo of oil shall be landed in the Orient within two months. The promoters of the enterprise believe they will be able to sell their oils at one half the prices paid for American oils.

American shippers have taken no steps to meet this opposition and are consequently in danger of losing a trade which in the first six months of the current year reached 205,000 cases.

VENEZUELA.

Callao Bis.—The latest official report says: On the Independence vein the drift has been advanced 24 ft. The vein at this point is 18 in. wide. Water is abundant. The cross-cut from this point is in 8 ft. On the Providence vein. the drift No. 1 east has advanced 22 ft., the vein being 8 ft wide. Drift No. 2 west has been advanced 23 ft. The vein is broken and filled with country rock. A new shaft has been started which is now 2 ft. deep.

MINING STOCKS.

[For complete quotations of shares listed in New York, Boston, San Francisco, Aspen, Colo.; Baltimore, Pittsburg, Deadwood, Dak.; St. Louis, Helena, Mont.; London and Paris, see pages 334 and 336.]

NEW YORK, Friday Evening, September 30.

The mining market here has not responded as actively as brokers anticipated to the resumption of trading in San Francisco. While some business is doing between the members of the Consolidated Stock and Petroleum Exchange and the California market, the public here has shown but scant interest in mining stocks. With the exception of some of the Comstocks mining shares generally have not been in much demand. Still our brokers, ever the most sanguine of all people, are hoping for the speedy return of business, basing their expectations on the San Francisco market and the unexpectedness with which the "hoomlet" struck the coast.

The Comstocks have been in fair demand only. There were sales of 150 shares of Best & Belcher at $3. Bullion declined during the week from $1 to 75c.; 700 shares were sold. Of Chollar there was but one sale of 50 shares at $1.25. Comstock Tunnel was in fair request, 13,200 shares were sold at 14 to 17c.; bonds were sold at $18. Julia was stationary at 20c.; sales amounted to 300 shares. There was a solitary transaction of 100 shares of Mexican at $1.90 and another of Potosi at $1.30. Of Union Consolidated 100 shares were sold at $2.20.

Consolidated California and Virginia declined from $5 to $4.20, with total sales of 450 shares. There was a single sale of 100 shares of Gould & Curry at $1.90. Other sales were as follows: 200 shares of Hale & Norcross at $3.30@$3.40; 25 shares of Ophir at $3.25; 150 shares of Savage at $2@$2.50; 300 shares of Sierra Nevada at $2.50@$3·10 and 600 shares of Yellow Jacket at $1.25@$1.70.

The Bruswick Consolidated Gold Mining Company has levied assessment No. 4 at 2c. per share. The stock will be delinquent on October 31st. Owing to this assessment the price of the stock declined to 7c. during the week and the total sales amounted to 6,600 shares at 7@8c. Of Bodie Consolidated 600 shares were sold at 50@55c. Bulwer was stationary at 35c. with sales of 300 shares. There was a solitary transaction of 100 shares of Plymouth at 50c. We are reliably informed that a meeting of the directors of this company will probably be held within the next fortnight to decide upon the policy to be pursued in regards to the property. A sale of 1,000 shares of Hollywood at 1c. is reported this week.

Colorado stocks were in better demand this week. Of Chrysolite 800 shares changed hands at 18@22c. Leadville Consolidated was rather active; the stock opened at 20c. and declined to 18c. The total sales during the week were 2,650. The August output of this mine amounted to $4,300, from which the company derived royalties of $700. Little Chief was quiet; only 400 shares were sold at 25c. Sales of Robinson Consolidated aggregated 300 shares at 37@38c. There was a solitary transaction of 100 shares of Small Hopes at $1. The Breece Mining Company has received an order for 7,000 tons of iron ore. Shipments will commence at once.

Of the Black Hills stocks Caledonia was quiet, only 100 shares being sold during the week at 90c. An equal number of shares of Father de Smet was sold at 30c. This week the official list of the Consolidated Stock and Petroleum Exchange report a sale of 100 shares of Sullivan Consolidated at 99c.

El Cristo shows a single sale of 100 shares at 40c. Phœnix of Arizona was in demand during the week; 2,100 shares changed hands at 50@58c.

Boston. Sept. 92.

(From our Special Correspondent.

Copper stocks have been quite active the past three days, but without any real advance in prices. An effort was made to induce speculation, and the leading operators started in to buy Boston & Montana stock quite freely, which resulted in advancing the prices from $30 to $32, about 4.000 shares changing hands. They found, however, that they had missed the mark, as there was more stock offered than they cared to take, and to-day the price settled back to the old figure.

The balance of the market sympathized more or less with the Montana stocks and scored a slight advance which was fairly well maintained. Butte & Boston sold up to $9, which was an advance of $1, and closed quite firm at the higher figure. Centennial from which good reports have recently been received was quite strong through the week and advanced from $5½ to $6½, with a small lot selling at $7.

Calumet & Hecla was not much affected by the incipient boom, but lost $1. Selling at $277.

Osceola sold up to $32½, a gain of $3 from last week. The advance was partly lost, however, to-day, as it sold down to $30½. A net gain of $1.

It is asserted that the Osceola can earn an amount sufficient to pay $3 dividend per annum even at the present low price of copper, which, if true, would make the stock a fairly good investment at about $30.

Tamarack declined to $148 for a small lot in the early dealings, but soon recovered and sold at $150.

Tamarack, Jr., after selling at $19 early in the week, declined to $16, but later recovered and sold at $18 on moderate transactions.

Kearsarge steady at $10.50@$10.75. Franklin at $12.25@$12, and Atlantic at $9.25. Santa Fe sold at 11c.

There were no dealings in Allouez or Arnold; 75c. is bid for the former and $1.12½ for the latter.

3 P. M.—Since the noon hour interest settled entirely in Boston & Montana and Osceola, the former selling from $30⅜ to $30, closing at $30¼, and the latter, after selling at $30¼, declined to $30. About 2,000 shares were dealt in.

The silver stocks continue to be neglected.

Chicago. Sept. 28.

(Special Report by Horace M. Johnson.)

While there is yet no activity in iron mining stocks, there is a slight increase in the demand for these securities, principally for Mesaba Range stocks. The Bulletin shows:

Mesaba Range Mines.—Aurora, $9.50; Biwabik, $28; Cincinnati, $2.25; Great Northern Mining Company, $6.50; Great Northern I. & S. Co., $1.25; Kanawha, $4.75; Mesaba Mt., $22; Mountain Iron, $60.

Gogebic Range Mines.—Aurora, $9.50; Ashland, $48 00; Anvil, $3.00; Brotherton, $2.50; Gogebic L. Synd., 10c.; Iron Belt, $2.60; Montreal River, $7.00; Metropolitan, $67.00; Minnewawa, 50c.; Odanah, $12.00.

Marquette Range.—Jackson, $85.00; Republic $10.00.

Vermilljon Range.—Chandler, $47.00.

Prices quoted are based on the actual selling and holding values, as near as can be obtained.

San Francisco. Sept. 23.

(From our Special Correspondent.)

The stagnation that has affected the mining stock market has given place this week to a feverish activity. Monday the first signs of a marked advance were apparent, and with each succeeding day a higher point in values has been reached, though prices have generally toned off before the close of the session. To-day trading bore a marked similarity to old times. After the regular sessions the curbstone brokers continued to keep the game alive, and an idea of the business done may be gained from the fact that 142,900 shares changed hands in regular session in the San Francisco Board alone.

Every stock on the Comstock advanced, although Belcher was the favorite. So far no reason has appeared for this sudden rally in prices. All the leaders in mining manipulation have been out of the city and "Bob" Morrow, acting under instructions from D. O. Mills, is credited with manœuvering this "deal" by means of which the Street will soon find itself loaded up with stocks which will be assessed.

"Jim" Flood and party arrived back in the city to-day and at once orders were given to commence cross-cutting on the 1,800 level of the Hale & Norcross. His brokers bought heavily of this stock, which advanced nearly 100%.

Of the north end Comstocks Consolidated, California & Virginia sold from $3.95 up to $5, giving way 20 cents before the close. Mexican sold to $2.50, Ophir to $4.10, Sierra Nevada from $2.70 to $3.10, Union Consolidated to $2.10, and Utah to 50 cents.

Of the middle Comstocks Hale & Norcross sold this morning for $2.55, an advance on the week's trading of 55 cents. During the day it advanced to $4.20, closing strong at 5 cents off. Best & Belcher sold to $3.35, Chollar to $1.75, Gould & Curry to $2, Potosi to $1.75 and Savage to $3.05, the latter fluctuating in value, but advancing exactly to double its morning value.

The ore vein at Belcher has widened out from 2 to 9 ft. and is of rich grade, and this fact was used to give the market its first fillip, although it has been led up throughout the week. Belcher opened on morning call at $4.70—the selling price a week ago was $1.70—and advanced during the day to $6.75 in the informal session. Alpha gold for 40c.; Alta, 50c.; Bullion, 85c.; Challenge, $1.10; Con, New York, 50c.; Caledonia,

40c.; Confidence, $3.40; Crown Point, $2.25; Exchequer 40c.; Justice, 35c.; Kentuck, 35c.; Lady Washington, 20c.; Overman, $1.10; Occidental, 50c.; Silver Hill, 30c.; Seg. Belcher, 95c., and Yellow Jack, $1.85.

Early in the day most of the crowd posed as sellers, but had to pay higher prices when they tried to buy in again later. In the afternoon, when values reached their highest point, a break took place, and along the entire line of Comstocks signs of weakness were shown. The informal session was prolonged until nearly five o'clock, when prices were again strong, the market closing firm at a trifle under ruling rates.

The outside stocks were not included in the general advance, although attention was attracted to them so far that larger sales were made than for some time past. Of the Tuscaroras, Belle Isle sold for 15c.; Nevada Queen, 15c.; North Belle Isle, 5c., and Navajo, 15c.

In the Bodie group, Bodie Consolidated was the only stock sold, the ruling rate being 45c.

San Francisco, Sept. 30.—(*By Telegraph.*)—The opening quotations to-day were as follows: Best & Belcher, $2.80; Bodie, 50c.; Belle Isle, 15c.; Bulwer, 30c.; Chollar, $1.30; Consolidated California and Virginia, $4.40; Gould & Curry, $1.90; Hale & Norcross, $3.35; Mexican, $2.50; Mono, 20c.; North Belle Isle, 5c.; Navajo, 10c.; Ophir, $3.40; Savage, $2 30; Sierra Nevada, $2.40; Union Consolidated, $1.75; Yellow Jacket, $1.30.

MEETINGS.

Breece Mining Company, at the office of the company, No. 115 Broadway, New York, October 5th, at 12 o'clock (noon).

Edgar Union Mining Company, at the office of the company, room 213, People's National Bank Building, Denver, Colo., October 18th, at 11 A. M.

Little Chief Mining Company, at the office of the company, No. 60 Broadway, New York, October 4th at 10 A. M.

Middle Creek Gold Mining Company, at the office of the company, Room 5. No. 318 Pine street, San Francisco, Cal., October 6th at 1 P. M.

Presidio Mining Company, at the office of the company, Room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal., October 3d at 12 o'clock noon.

ASSESSMENTS.

Company.	No.	When levied.	D'l'nq't in office.	Day of sale.	Amt per share.
Alpha, Con., Nev...	9	Sept. 2	Oct. 6	Oct. 27	.10
Belle Isle, Nev.....	15	Aug. 22	Sept. 26	Oct. 20	.10
Best & Belcher, Nev.	62	Aug. 17	Sept. 22	Oct. 13	.25
Brunswick Con., Cal	4	Sept. 29	Oct. 31	Nov. 17	.02
Bullion, Nev....	39	....	Sept. 2	Oct. 4	.25
Challenge Con., Nev.	12	Aug. 24	Sept. 27	Oct. 18	.10
C mm'nwe'lth Con., Nev	9	Sept. 7	Oct. 13	Nov. 9	.10
Confidence, Nev....	12	Aug. 13	Sept. 15	Oct. 6	.50
Crocker, Nev.....	12	.....	Sept. 2	Oct. 18	.05
Evening Star, Cal..	4	Aug. 19	Sept. 21	Oct. 8	.01
Del Monte, Nev....	6	.....	Aug. 26	Oct. 5	.10
Guasucarau & California, Hon. C. A.	7	Aug. 9	Sept. 15	Oct. 8	1.50
Hale&N'rcross, Nev	102	Aug. 11	Sept. 15	Oct. 7	.50
Independence, Nev.	17	Aug.15	Sept. 29	Oct. 13	.05
Keystone, Cal.....	3	Aug.22	Sept 26	Oct. 18	1.00
Navajo, Nev.	22	Aug. 17	Sept 21	Oct. 14	.10
North Belle Isle, Nev	2	Sept. 1	Oct. 6	Nov. 7	.10
Northwestern, B. C.	5	Aug. 17	Sept. 24	Oct. 15	.20
Silver King, Ariz...	8	Aug. 26	Oct. 7	Nov. 4	.25
Teresa, Mex	8	July 19	Sept. 22	Oct. 8	.10
Yellow Jacket, Nev.	52	Sept. 5	Oct. 7	Nov. 10	.25

DIVIDENDS.

Alice Furnace Company. The coupons on the bonds of this company and the 1st and 2d mortgage bonds of the Tennessee, Coal, Iron and Railroad Company, due October 1st, will be paid on and after that date at the Mechanics' National Bank, New York City.

Enterprise Mining Company, dividend No. 8, of 10 cents per share, $50,000, payable October 5th, at the office of the company, No. 33 Wall street, New York. Transfer books close October 1st and reopen October 6th.

Hope Mining Company, dividend No. 17, of 25 cents per share, $25,000, payable October 6th at the office of the company, Room 130, Laclede Building, St. Louis, Mo.

Horn Silver Mining Company, dividend No. 28, of 12½ cents per share, $50,000, payable September 30th.

Lexington Mining and Milling Company, dividend No. 10, of one cent. per share, $3,000, payable October 1st at the office of the company, No. 1,624 Curtis street, Denver, Colo.

Mollie Gibson Consolidated Mining and Milling Company, dividend No. 26, of 15 cents per share, $150,000, payable October 15th, at the office of the company in Colorado Springs, Colo. Transfer books close October 8th and reopen October 17th.

Pharmacist Mining Company, of Colorado, dividend No. 1, of one cent per share, $12,000, payable October 1st.

Tamarack Copper Mining Company, dividend No. 18, of four dollars per share, $200,000, payable October 6th at the office of the company in Boston, Mass.

Tennessee Coal, Iron and Railroad Company, the coupons due October 1st on the Tennessee Division. Bonds of this company will be paid on and after that date at the Fourth National Bank, New York City.

The total sales of Pipe Line certificates at the Consolidated Stock Exchange, for the week ending September 30th, amounted to 271,000 bbls.

METAL MARKET.

New York, Friday Evening, Sept. 30, 1892.

Prices of Silver Per Ounce Troy.

Sept.	Sterling Exch'ge.	London. Pence.	N. Y. Cents.	Value of sil. in $1.	Sept.	Sterling Exch'ge.	London. Pence.	N. Y. Cents.	Value of sil. in $1.
24	4·87	38⅛	83¼	·644	28	4·87	38⅛	83¼	·644
26	4·86¾	38⅛	83¼	·644	29	4 87	38⅛	83⅛	·643
27	4·86¾	38⅛	83¼	·644	30	4·87	38⅛	83	·642

Silver has been remarkably steady. This has been owing to the attitude of the Indian Council in declining all offers for their bills under the equivalent of 38⅛, and awarding in full all bids at that price. Shipments of bullion to London have been light, but Mexican dollars have been going forward freely owing to small premium over their bullion value.

The United States Assay Office at New York reports the total receipts of silver for the week to be 63,000 ounces.

There were sold during the week ending Friday, September 30th, 10,000 ounces in silver bullion certificates, at from 83⅜ to 83 cents per ounce.

Government Silver Purchases.

The Government has purchased during the week the following quantities of fine silver at the accompanying prices per fine ounce:

September 26th, 606,000 oz. at 83·89 to 93·85c.
September 28th, 165,000 oz. at 83·68 to 83·73c.
This completes the 4,500,000 oz. for September.

Gold and Silver Exports and Imports at New York for Week Ending September 24th, 1892, and for Years from January 1st, 1892, 1891.

	Gold.		Silver.		Excess of
	Exports.	Imports.	Exports.	Imports.	Exports.
Week...	$4,576	$22 733	$184,500	$55,190	$111,153
1892.....	58,698,619	6,544,281	16,329 614	1,862,019	66.619,888
1891.....	75,218,910	5,053,657	12,771,755	1,52 ,466	81,426 878

During the week ending October 1st the exports and imports, so far as ascertained, have been as follows: Exports, gold, $21,700; silver, $224,550. Imports, gold, $7,184; silver, $124,417.

NOTES OF THE WEEK.

The exports of gold to Europe have ceased, and it is believed that they will not be resumed for some time to come. For two weeks now no gold has been shipped to Europe, the little going out being sent to South America or the West Indies. Silver, however, continues to be exported to London.

As yet neither time nor place has been appointed for the meeting of the International Silver Conference. This delay may prevent Senator Allison from serving as a delegate, as he is Chairman of the Senate Committee on appropriations, and his absence would seriously cripple the committee in its work. His non-attendance at the conference would be regrettable because his views on the question are eminently sound. Regarding the conference the London *Statist* says editorially:

"It is hoped that the new government will have the courage even now to withdraw from the International Monetary Conference. Neither the Prime Minister nor the Chancellor of the Exchequer, nor indeed any of their colleagues, has the slightest sympathy with its objects. They know that this country will not tamper with its monetary system, and they must feel, therefore, that they are in a false position in going into the conference."

On the other hand, Indian financiers are urging that something be done to relieve the distress produced by the depreciation of silver. At a meeting of the Bombay Chamber of Commerce, held Sept. 14, the following resolution was adopted:

"A serious difficulty and danger to commerce has arisen from the violent fluctuations in the value of the rupee, which is not the result of the incidents of Eastern trade, and could not be foreseen by the most prudent traders. The development of the resources of the country by the assistance of European capital has thereby been seriously checked, and the execution of public works has been hampered. This Chamber of Commerce demands, therefore, that the subject be referred to a committee of experts." It was also decided that a copy of the resolution should be forwarded to the Indian Government for transmission to the Secretary of State for India.

Sir David Barbour, in a recent letter, states practically the same thing, saying that owing to the depreciation of silver Europeans are deterred from investing in India.

Victoria and New South Wales are to be allowed to coin silver, the Imperial treasury having so decided at the beginning of this month. This will not, however, add very much to the total amount of silver used for coinage, as it is stated that the Imperial treasury will coin less silver hereafter.

Austria has been on a gold basis since August 11th. The base, or unit, of the new system, is the gold 20 crown piece, containing 6·097 grammes of fine gold, valued at $4,052.

Domestic and Foreign Coin.

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

	Bid.	Asked.
Mexican dollars.....	$ .66	$ .67
Peruvian sols and Chilian pesos.....	.61	63
Victoria sovereigns.....	4.85	4.90
Twenty francs.....	3.86	3.90
Twenty marks.....	4.74	4.78
Spanish 25 pesetas.....	4.74	4.81

Copper has been rather dull all the week, and some sales are reported as having been made at 11c.; and though most of the copper was sold by second hands, part of it came from the smaller Lake companies. The Calumet is understood as still holding out for 11½, but we cannot learn of any buyers at such a price, and consumers appear not to be in a hurry to purchase, being well stocked still with raw material. Casting copper also has given way somewhat, and is easy at 10⅛@¼. Arizona pig copper is generally held for a price above the market. With the exception of furnace material, the exports are rather small. The London market showed a hardening tendency during the week, and although prices are not very much higher there certainly is a better feeling and it is expected that deliveries will this month be very good. G. M. B's close at the best., viz., £44 2s. 6d.@£44 5s. for spot and $44 10s.@£44 12s. 6d. for futures, while for refined and manufactured the figures are as follows: English tough, £46@£46 10s.; best selected, £47 5s.@£47 10s.; strong sheets, $54 10s.@£55; India sheets, £51@£51 10s.; yellow metal sheets, 4⅛d.

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

To Liverpool—	Copper Matte.	Lbs.	
S. S. Cufic.....	2,211 bags	241,259	$12,000
S. S. Bothnia.....	2,371 bags	282,810	13,100
S. S. Saint Pancras.....	2,916 bags	313,958	16,000
S. S. Wisconsin.....	1,530 bags	162,340	8,500
To Cherbourg—	Copper.	Lbs.	
S. S. La Bretagne.....	316 pigs	112,086	$12,000
To Rotterdam—	Copper.	Lbs.	
S. S. Maasdam.....	53t pigs	155,11t	$15,200
" "	363 bars	63,497	6,500
" "	40 casks	50,000	5,600

Tin.—London has advanced about 10s.@15s. and values here have hardened in about the same proportion, but buyers are unwilling to follow the advance, and the higher prices asked somewhat check business. The arrivals are rather heavy just now and shipments from the East continue at a very fair rate. We have to quote 20·40@ 50 here. In London the closing quotations are £92 12s. 6d. for spot and £93 for futures.

Lead is easy, and lifeless, with a demand hardly up to what is expected for this season of the year. We quote 4·05@4·07½. The English market has improved considerably, and Spanish lead is now quoted in London at £10 7s. 6d. and English lead at £10 10s.

Chicayo Lead Market.—The Post-Boynton-Strong Co. telegraphs us as follows: "The market has been very quiet and dull. Prices are nominally 3.875c.@3.90c., with no sales to record. The general trade is very dull."

St. Louis Lead Market.—The John Wahl Commission Company telegraph us as follows: "Lead is still sick, and it is hard to say whether the market has struck bottom or not. The metal could be had here at 3·80c. and buyers are not too anxious for it at that."

Lead Production in Germany.

We are indebted to Mr. Julius Matton, London, agent for the Mechernich Mining Company, for the following figures of production.

	1890. Tons.	1891. Tons.
Mechernich Mining Company.....	24,088	21,550
Stolberg Mining Company.....	13,752	13,914
Rhenish Nassau Mining Company, (Eschweiler).....	4.256	4,047
A. Poensgen & Sons.. (Herbst & Co.)	5,503	4,667
Remy Hoffmann & Co.. (Emser Hütte).....	6,105	5,533
S. B. Goldschmidt, (Braubach).....	6,135	7,922
Giesche Erben	3,922	4,354
Prussian Government Mines, Tarnowitz.....	15.700	13,646
Prussian Government Mines, Harz..	13.037	12,748
Saxon Government Mines, Freiberg	6,189	5,480
Rothenbach Smelting Works	60	———
Harz Mining Company, Neudorf....	581	816
Total.....	99,328	94,677
Lead Production in England of English ore.....	33,590	32,205
Lead Production in England of Foreign ore, abt.....	11,000	16 000
Lead Production in America...	181,494	205 488
Lead Export from Spain.....	t40,337	194.753
Lead Import (English) from Australia.....	39,854	55,511

Spelter is again rather lower, the market continuing to be thoroughly demoralized. Smelters have been free sellers and the contracts closed have been larger than any for some time past. At the same time we have to lower quotations at 4·40@·45, New York. Good ordinaries are quoted at £18 6d. in London, and specials at £18 7s. 6d.

Antimony is dull and lower prices have been accepted. We quote Cookson's at 11½c., L. X. at 11c and Hallett's at 10@10½c.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Sept. 30, 1892.

Pig Iron Production.—The following table gives the number of furnaces in blast and the estimated production of pig iron in the United States during the week ending Saturday, September 26th, 1891, and for the corresponding week ending September 24th, 1892. Also the total estimated production from January 1st of last year to these dates. This table has been corrected by the official returns of the American Iron and Steel Association for the first six months of each year. The figures are in gross tons.

Fuel used.	Week ending—				From Jan..'91.	From Jan.,'92.
	Sept. 26, '91.		Sept. 24, '92.			
	F'cs.	Tons.	F'cs.	Tons.	Tons.	Tons.
Anthracite..	83	31,700	67	27,777	1,370,100	1.298,919
Coke.....	159	128,000	128	116,605	3,860,000	5,076,185
Charcoal....	58	12.300	43	9,748	402,027	396,177
Total.....	300	172,000	238	154,130	5,632,127	6,771,281

Pig Iron.—Throughout the Eastern States there is an indication of a firmer feeling in pig iron. Inquiries and sales are rather better, and consequently sellers are firmer. This feeling is accentuated by the new policy of the Southern producers announced a week or two ago, viz., not to cut prices so ridiculously and ruinously low. This stronger feeling does not appear to have spread to New York yet, for most dealers report that buyers have no confidence in the stability of the market and confine themselves to a hand-to-mouth transaction; consequently the market is not any firmer than it has been for the last two months. Dealers are quite unable to impress buyers with the idea that the market is stiffening and that prices are likely to go up. The efforts of the Southern producers to rehabilitate their trade and raise it to a paying level are not likely, in our opinion, to be persevered with. As long as they can they will insist on higher prices, but when they find that their sales are not so great on such a system they will take anything they can get instead of stocking their irons. Prices remain at present at about $15 for No. 1; $14 for No. 2; $13@$13.50 Grey forge, at tide water. We are informed by Naylor & Co., of 43 Wall street, that they have ceased to be sales agents of the Tennessee Coal and Iron Company, though they intend still to deal in Southern irons.

Spiegeleisen and Ferromanganese.—We hear of no transactions in spiegeleisen. Hardly any business has been done in ferromanganese. The price quoted for the latter by the New York dealers is $61.

Steel Rails.—No new orders have been received during the last week, and work is entirely confined to regular business. Consequently, the mills are all exhibiting a slackness. So far as we can ascertain there is no intention among producers to court new business by reducing the price which remains established at $30 at mill and $30.75 tidewater.

Rail Fastenings.—Nothing of novelty is to be noted in this market and only the regular renewal business is reported. Prices rule as follows: Fish and angle plates, 1·55@1·65c. at mill; spikes, 1·90@2c.; bolts and square nuts, 2·50@2·70c.; hexagonal nuts, 2·70@2·80c., delivered.

Merchant Iron and Steel.—The market for all sorts of merchant iron and steel is, as usual, regular and quiet. There is no variation in prices, which stand as follows: Mushet's special, 48c.; English tool steel, 15c. net; American tool steel, 6½@7½c.; special grades, 13@18c.; crucible machinery steel, 4·75c; crucible spring, 3·75c.; open hearth machinery, 2·2 .c.; open hearth spring, 2·50c.; tire steel, 2 25c.; toe calks,2 25@2·50c.; first quality sheet, 10c.; second quality sheet, 8c.

Structural Iron and Steel.—There is not anything like the pressure of orders in structural iron and steel that there was a month ago, but some very fair orders have come in during the past week for ship plates and building material. There is plenty of work in hand to last for a few weeks, so that deliveries are not very quick. Some plate mills report a scarcity of orders. Prices are still retained at the high level which they reached a month ago, so that makers evidently do not anticipate any slackness due to lack of orders just yet. Prices are as follows: Beams, 2·3@2·5c., except for 20-inch beams, which are 2·8c.; angles, 2·15c.; sheared plates, 2@2·10c.; tees, 2·40@2·60c.; channels, 2·35@2·50c.; universal plates, 2@2·10c.; bridge plates, 2@2·10c., all on dock.

Iron Ore.—The following are the quotations at Cleveland: No. 1 specular Bessemer, $5.25; No. 1 specular non-Bessemer, $4; Bessemer hematites, $4.25; non-Bessemer, $3.50 to $3.75. Spanish ores are quoted as follows: 50% Portman ore (0.05% phosphorus), 5s. 9d. f. o. b. Portman; manganiferous ores (0.03% phosphorus), 25% iron, 17% manganese, 11% silicon), 10s. f. o. b. Portman.

Buffalo. Sept. 29.

(Special Report by Rogers, Brown & Co.)

The week has been an especially quiet one, but during the past two days considerable activity has been noticed. Prices are firm and shipments are curtailed only by car famine, which on certain lines is very severe. Although Southern irons are firm at an advance of 25 cents, Northern irons still remain at their previous low prices. We quote for cash f. o. b. cars Buffalo: No. 1 X Foundry Strong Coke Iron Lake Superior Ore, $15.25; No. 2 X Foundry Strong Coke Iron Lake Superior Ore, $14.25; Ohio Strong Softener No. 1, $15.25; Ohio Strong Softener No. 2, $14.25; Jackson County Silvery No. 1, $17.30; Jackson County Silvery No. 2, $16.80; Lake Superior Charcoal, $16.25; Tennessee Charcoal, $17.00; Southern Soft No. 1, $13.90; Alabama Car Wheel, $19.00; Hanging Rock Charcoal, $20.50.

Chicago. Sept. 29.

(From Our Special Correspondent.)

The authorized capital stock of the East Chicago Iron and Steel Company, incorporated last week, is $250,000, all subscribed. The puddling furnaces have been running for the past two weeks, and the 10-in. and 18-in. rolls were started last week. This, it will be remembered, is the plant of the defunct National Forge and Iron Company, located at East Chicago, Ind., 23 miles from here. The company will build a steel mill 50 × 200 ft. and thoroughly equip it with modern machinery, etc. At the southeast corner of State and Madison streets will be a 16-story building, which for novelty of construction will eclipse anything on this or any other continent. The skeleton steel framework is already well under way, and on the outside there will not be a single piece of stone, wood or brick. The entire exterior will consist of plate glass and aluminum. The aluminum sheets will be three-sixteenths of an inch thick, and 20 × 48 inches; back of this sheeting will be fireproofing. Twenty tons of the 90 per cent. pure metal will be used to cover the building, which, at 75 cents per lb., will represent an outlay of $30,000. A marked feature of the iron trade last week was the number of quick shipment orders for both crude and finished material, and in the latter particularly for black sheets. There is a perceptibly brighter tone to the market, and values, though generally stronger, are no higher than they have been for the past thirty days.

Pig Iron.—The firm attitude assumed by agents of Southern furnaces has imparted some degree of strength to the market on Northern iron. The lines around concessions are more closely drawn, terms are more sharply looked after, and, altogether, the consumer or buyer has little to congratulate himself upon when he gets through with his deal. It must not be inferred from this that trade is briskly active and customers tumbling over each other in their scramble to cover themselves. No, but there is a fair amount of business doing in local coke iron, and prices, though no higher, are more uniform and steadier than they have been of late. Orders range from 50 to 200 or more tons, and many of them are for quick delivery. Leading Southern furnaces are firm in the advance made and buyers not as anxious as they were to place business. Lake Superior charcoal iron is in some demand, but the tonnage is light though prices remain steady.

Quotations per gross ton f. o. b. Chicago are: Lake Superior charcoal, $16.55@$17.00; Lake Superior coke, No. 1, $14.25@$14.75; No. 2, $13.50@$14; No. 3, $13.25@$13.75; Lake Superior Bessemer, $16.50; Lake Superior Scotch, $15@$15.50; American Scotch, $16.50@$17.00; Southern coke, foundry No. 1, $14.50; No. 2, $13.25; No. 3, $12.50; Southern coke, soft, No. 1, $13.25; No. 2, $12.75; Ohio silveries, No 1, $17; No. 2, $16.50; Ohio strong softeners, No. 1, $17; No. 2, $16.50; Tennessee charcoal, No. 1, $17; No. 2, $16.50; Southern standard car wheel, $20@$21.

Steel Billets and Rods.—Several large orders were current during the week and price steady at $24.50. Rods are in good inquiry and mills working to full capacity. Price unchanged, $13.45.

Structural Iron and Steel.—Foundries are taking on a large quantity of work, and demand heavy for the season. Bridge and building shapes are in good demand, though slow. Shipments are retarding progress, and on some structures work is at a standstill. Regular quotations, car lots f. o. b. Chicago, are as follows: Angles, $2@$2.10; tees, $2.30@$2.40; universal plates, $1.95@$2; sheared plates, $1.95@$2; beams and channels, $2.25@$2.50.

Plates.—There is a moderate amount of mill business being placed, and warehouse trade is active. Boiler shops here are taking in more orders and the outlook is good, Tubes are firmer but no higher. Steel sheets, 10 to 14, $2.30@$2.40; iron sheets, 10 to 14, $2.20@$2.30; tank iron or steel, $2.10@$2.15; shell iron or steel, $2.75@$3; firebox steel, $4.25@$5.50; flange steel, $2.75@$3.00; boiler rivets $4.00@$4.15; boiler tubes, 2¾ in. and smaller, 60%; 7 in. and upward, 70%.

Merchant Steel.—A very fair tonnage of soft steels was placed last week, mostly for tires and other specialties used by the carriage and wagon trade. Tool steel is in active demand. We quote tool steel, $6.50@$6.75 and upward; tire steel, $2.10@$2.20; toe calk, $2.40@$2.50; Bessemer machinery, $2.10@$2.20; Bessemer bars, $1.75@$1.80; open hearth machinery, $2.40@$2.60; open hearth carriage spring, $2.25@$2.30; crucible spring, $3.75@$4.

Galvanized Sheet Iron.—Agents are much worried over limited shipments and many orders remain unfilled each week. Discounts are steady at 70 and 10% off on mill lots, and 70% on Juniata and 70 and 5% off on charcoal from warehouses.

Black Sheet Iron.—Black sheets of the lighter gauges are hard to get, mills behind with deliveries and demand good. Mills near here are unable to ship on new business before November. Prices are steady at 2·90@2·95c. for No. 27 common; f. o. b. Chicago Steel sheets are 10c. higher. Dealers quote 3·10@3·20c. from stock, same gauge.

Bar Iron.—From the attitude assumed by Ohio mills and those near here the East Chicago mill will experience no difficulty in filling its order books at its own figures, which range from 50c. to $1 a ton less than named by the former. Most of the season's contracting is done, but business of a miscellaneous character continues active, and quotations are 1·62½@1·65, with half extra, and some orders are taken at the latter figure on a flat price. Warehouse orders are filled at 1·80@1·90c. rates.

Nails.—Wire nails are in good demand from mill, and price said to be steady at $1.65 base, though lower figures are hinted at. Steel cut are in good request at $1.60@1.62 in mill lots. Jobbers quote $1.75 and $1.80 for wire.

Steel Rails.—The market is devoid of new or interesting features, orders light and price unchanged at $31@32. A heavy tonnage of angle bars has been placed by the "Santa Fe" at 1.70c. Spikes, $2.05@$2.15 per 100 lbs.; track bolts, hexagonal nuts, $2.65; square, $2.55.

Scrap.—Several sales of splice bars and No. 1 wrought are reported at $17, and there is a better inquiry. Prices nominal. No. 1 railroad, $15; No. 1 forge, $14; No. 1 mill, $9.50; fish plates, $17; axles, $19; horseshoes, $15.50; pipes and flues, $7; cast borings, $5.50; wrought turnings, $8; axle turnings, $9.50; machinery castings, $10; stove plates, $8.50; mixed steel, $10.60; coil steel, $14; leaf steel, $15; tires, $14.50.

Old Material.—Old iron rails have sold at $17.50@$17.75, both in large as well as small lots. Old steel rails, for relaying, are in better demand at $15.35@$15.50 for selected, mixed, $14, and short lengths, $12.50. Car wheels are dull at $14.

Louisville. Sept. 24.

(Special Report by Hall Brothers & Co.

A better tone prevades the market, and efforts have been made to obtain better prices, but so far without success. Sales are reported for delivery extending several months into next year, and several round lots have been placed for quick shipment at prices which would not be entertained for extended deliveries. The general tone of the market is better; but it will be difficult to establish a higher basis of values now.

Hot Blast Foundry Irons.—Southern coke No. 1, $13@$13.50; Southern coke No. 2, $12.25@$12.50; Southern coke No. 3, $11.75@$12; Southern charcoal No. 1, $16@$17; Southern charcoal No. 2, $15.00@$15.50.

Forge Irons.—Neutral coke, $11.50@$12.00; cold short, $11.25@$11.50; mottled, $10.75@$11.

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

Philadelphia. Sept. 29.

(From our Special Correspondent.)

Pig Iron.—A gradual process is going on in the iron trade which indicates higher prices and a more active demand in the near future. This is not stated in the way of prophecy at all, but simply as an indication apparent to brokers and large buyers. Salesmen who have made a tour of Eastern and surrounding markets have returned with the statement that stocks, of foundry irons especially, are quite low, but they say buyers are still hesitating about placing large orders for early or mid-winter melting. Under the present condition of things it is probable that larger lots will be bought within a month, and that possibly an advance of 25c. on standard irons will be realized. To-day's quotations continue at $14.25 to $15.50. The effort to obtain higher prices on inferior foundry irons is not successful. Forge irons continue at old quotations, namely $13 to $13.25 for standard makes. The mill men, while recognizing the possibility of a firmer market, are still pursuing their hand to mouth policy and will likely continue to do so until some decided symptoms of an advance are apparent. Bessemer is at present quiet at $16.25 to $16.50 for standard.

Steel Billets.—A good many steel billets could be sold if makers would lower prices, but this they have thus far refused to do. For late deliveries $25 is the average price. Both buyers and sellers are awaiting developments.

Muck Bars.—Quite an active demand has been maintained all week for muck bar for immediate, as well as for delivery 30 to 60 days, hence it seems probable that a still better demand will show itself through October. Quotations, $25.50 to $26.50.

Merchant Iron.—All the mills are making good time, and delivering everything made. Stores are placing for replenishing stocks. A few large car builders are in the market this week, but want better figures than they have been able to get. Interior mills will probably fill some of these orders at 1·60.

Skelp Iron.—A good many lots of skelp have been sold within a few days at 1·65 for grooved. Some makers have refused offers at 1·60.

Wrought Iron Pipe.—The past few days has developed quite a business in small lots. Two or three large orders are in sight; discounts without change,

Sheet Iron.—All the sheet iron makers report a very good business. Two large orders have been placed since Monday, which will give the successful mills an advantage over others in steady running up to the close of the year. Quotations on best refined, 2·75@3½.

Plate Iron.—Another mill has just started up. All the mills are crowded with orders at present; whether this rushing condition will continue it is hard to say, and in some quarters a little anxiety is expressed lest when present orders are completed new ones will not be on hand. This uncertainty has not affected prices. Tank plates, 1·85; shell, 2·25; steel flange, 2·50.

Structural Iron.—The same report must be made as to the structural mills. Prices are very firm, and all the business that can be taken care of is offered. Angles, 1·95; universal plates, 2c.; beams, tees and channels, 2·20.

Steel Rails.—Quotations, $30. No important business at the offices. The only statement made is that small orders are coming along.

Old Rails.—Old iron rails are offered at $19. A good many steel rails are being held by railroad companies at higher figures than buyers care to pay.

Scrap.—Railroad scrap ranges from $17@$17.50, and quite an amount of it has been sold since Monday.

Pittsburg. Sept. 29.

(From our Special Correspondent.)

Raw Iron and Steel.—Trade since our last shows an improved demand. For most descriptions there is a larger inquiry; buyers appear to have made up their mind that further postponement may be dangerous. In fact, there is a general report of an all-round improvement in the tone of the market. The situation as regards Bessemer and grey forge pig iron looks more promising, the advantage having been transferred from the buyer to the seller. The statistics of the trade gives tangible evidence that the current production is all being taken, and more besides, and this circumstance has made buyers a little more anxious. In fact, the situation is changed, as buyers now have to do most of the trading; at the same time the increase has not been sufficient to start up new furnaces.

The undertone of the market is certainly more favorable to makers. The inquiry for iron for prompt delivery is decidedly more frequent, indicating beyond question that consumers have little stock on hand, as their arrangements about deliveries are generally quite close.

We hear of certain producers declining to accept orders for late delivery at present prices, and some Southern makers have raised their prices a little for certain grades, but this is about the only change on the part of the seller.

Pig Iron.—An Eastern dealer remarks: "Some good concerns talk very hopefully in regard to the situation. They have a demand at full current rates for every ton of iron they own, and in some instances have sold their entire output for the balance of the year. Others who control large quantities of iron say it requires hard work to prevent accumulation, and that inside prices are the most they can realize on large lots. Both these reports are doubtless actual experiences, and between the two, it is probably fair to assume that the market is in moderately good share among active or favorite brands, but somewhat heavy on medium and low qualities."

Iron Ore.

7,000 Tons Bessemer at Lake Docks	$4.00 cash.
3,000 Tons Republic Specular at Lake Docks	5.25 cash.

Coke Smelted Lake and Native Ore.

3,000 Tons Grey Forge at Valley Furnace	$12 00 cash.
2,500 Tons Bessemer, Oct.. Nov	13.85 cash.
2,500 Tons Bessemer City Furnace	14.00 cash.
2,000 Tons Grey Forge	12.50 cash.
1,500 Tons Bessemer, City Furnace	14.00 cash.
1,000 Tons Bessemer, City Furnace	14.00 cash.
1,000 Tons Bessemer	13.90 cash.
1,000 Tons Mill Iron	12.50 cash.
1,000 Tons Bessemer	14.00 cash.
500 Tons Mill Iron	12.50 cash.
500 Tons Grey Forge	12.50 cash.
100 Tons Grey Forge	12.75 cash.
100 Tons Silvery No. 1	16.50 cash.
100 Tons No. 2 Foundry, all ore	14.50 cash.
100 Tons No. 2 Foundry	13.75 cash.
100 Tons No. 1 Foundry	14.75 cash.
50 Tons No. 1 Foundry	14 75 cash.
50 Tons No. 2 Foundry	13.75 cash.

Charcoal.

100 Tons Cold Blast	25.00 cash.
100 Tons No. 2 Foundry	19.00 cash.
75 Tons Cold Blast	26.50 cash.
50 Tons Extra Foundry	30.00 cash.
50 Tons No. 2 Foundry	20 00 cash.
50 Tons No. 1 Foundry	21.00 cash

Steel Billets and Slabs.

2,200 Tons Billets, Oct. Nov	23.50 cash.
1,500 Tons Billets next three months	23.50 cash.
1,000 Tons Billets, October	23.75 cash.
1,000 Tons Billets and Slabs, Oct., Nov	23.25 cash.
200 Tons Billets, late delivery	23.00 cash.

Muck Bar.

2,000 Tons Neutral	24.85 cash.
1,000 Tons Neutral	24 75 cash.
500 Tons Neutral	25.00 cash.

Steel Skelp.

750 Tons Wide Grooved	1.50 4 m.
50 Tons Wide Grooved	1.47½ 4 m.

Iron Skelp.

1,000 Tons Sheared Iron	1.87½ 4 m.
1,000 Tons Wide Grooved	1.62½ 4 m.
500 Tons Narrow Grooved	1.65 4 m.

Sheet Bars.

500 Tons Sheet Bars at Mill	29.50 cash.

Steel Wire Rods, Five Gauge American.

800 Tons, five gauge American at Mill	31.75 cash.

Ferro-Manganese.

200 Tons 80 per cent. Domestic	61.50 cash.

Bloom Rail and C Ends.

800 Tons Bloom Ends	16.50 cash.
550 Tons Rail Ends	16.25 cash.

Old Iron and Steel Rails.

500 Tons Old Steel Rails	15.45 cash.
500 Tons Old Iron Rails, Valley del	20.50 cash.
300 Tons Old Iron Rails, Cleveland del	21.00 cash.

Scrap Material.

300 Tons Iron Axles, net	24 00 cash.
200 Tons Iron Axles, net	23 50 case.
200 Tons Soft Steel, gross	15.00 cash.
200 Tons No. 1 W. R. R. Scrap, net	15.50 cash
100 Tons No. 1 W. R. R. Scrap, net	16.00 cash.
100 Tons Cast Borings, gross	8.00 cash.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Sept. 30.

Statement of shipments of anthracite coal (approximated) for week ending September 24th, 1892, compared with the corresponding period last year.

Regions.	Sept. 24, 1892.	Sept. 26, 1891.	Difference.
	Tons.	Tons.	Tons.
Wyoming Region	493,831	394,477	Inc. 99,357
Lehigh Region	150,625	118,140	Inc. 32,485
Schuylkill Region	309,250	250,441	Inc. 58,809
Total	953,703	763,058	Inc. 190.65
Total for year to date	29,557,763	27,824,083	Inc .1.76 3,68

PRODUCTION OF BITUMINOUS COAL for week ending September 24th, and year from January 1st.

EASTERN AND NORTHERN SHIPMENTS.

	1892. Week.	1892. Year.	*1891. Year.
Phila. & Erie R. R.	3,128	63,352	131,713
Cumberland, Md	76,263	2,740,270	3,031,591
Barclay, Pa	783	38,866	136,139
Broad Top, Pa	13,341	437,505	358,531
Clearfield, Pa	75,427	2,871,748	2,960,304
Allegheny, Pa	21,460	928,586	937,728
Beach Creek, Pa	33,875	1,751,918	1,757,409
Pocahontas Flat Top	60,310	1,883,034	1,694,462
Kanawha, W. Va.	*48,045	1,772,247	1,741,052
Total	332,632	12,487,526	37,688,929

* Week ending September 21st.

WESTERN SHIPMENTS.

	1892. Week.	1892. Year.	1891. Year.
Pittsburg, Pa	24,073	929,110	911,115
Westmoreland, Pa	35,888	1,237,314	1,446,874
Monongahela, Pa	13,790	471,077	443,577
Total	73,751	2,637,501	2,801,566
Grand total	406,383	15,125,027	39,490,495

PRODUCTION OF COKE on line of Pennsylvania R.R. for the week ending September 24th, 1892, and year from January 1st, in tons of 2,000 lbs.: Week, 99,714 tons; year 3,917,348 tons; to corresponding date in 1891, 2,991,149 tons.

Anthracite.

The anthracite coal trade is reported on every hand as dull. There is, of course, a large amount of coal being disposed of, but everybody is buying simply for immediate needs and instead of stocking for the winter. On account of this stagnation it was considered advisable at the meeting of sales agents on Thursday to refrain from further raising the prices for October. Among the Eastern sales agents there appeared to be a unanimous feeling against a further rise, and the point was not pressed at all.

In the meeting of the Western agents some attempt was made to raise the price, but the opposition was too great; most of those present considered it would be inadvisable to add to the price just now, as the railroads west of Buffalo are going to advance the freight tariffs 25 cents per ton in October. The most interesting item of business transacted at this meeting was the decision not to make any allotment for October. No reason is officially given for this omission, but no doubt the agents have at last concluded that these allotments are a sheer farce, as they are never adhered to.

The committee of the Senate of the State of New York who have been investigating the Reading deal concluded their sittings on Tuesday by recommending the Attorney-General to take proceedings to annul the franchise of the Lehigh Valley Railroad Company of New York, or its lease to the Lehigh Valley Railroad Company of Pennsylvania, and to take similar proceedings against the New York corporations whose roads are leased to the Delaware, Lackawanna & Western. The Senate's counsel saw that the testimony showed that the roads leased to the Port Reading Railroad Company controlled 85% of the output of anthracite, and that the corporation of the Delaware, Lackawanna & Western Railroad, which had been secured, and was as effective as a lease, had enabled the company to control the whole output.

Although the managers of the roads have said ever since last January that prices would not be advanced, the price of domestic sorts had been actually raised 80 cents per ton. This advance has been made solely to increase the income of the stockholders, and without reference to the cost of production or transport. It was illegal for any stock corporations to combine to prevent competition. Section 1,793 of the Code of Civil Procedure authorizes the Attorney-General to bring an action to dissolve any New York corporation which has violated any provision of the law whereby it has forfeited its franchise. This action could be brought against the Lehigh Valley Railroad of New York, as it is a corporation formed under the laws of this State and leased to the Lehigh Valley of Pennsylvania. So with the New York corporation whose roads are leased to the Delaware, Lackawanna & Western. The Senate Committee adopted these views and recommendations and their counsel have since been in consultation with Attorney-General Rosendale. No definite statement has yet been made as to the method of carrying out the recommendations.

Testimony was heard at Trenton on Tuesday by Herbert W. Knight, the lately appointed Master in Chancery, in the Reading combine case. After the Secretary of the State Board of Assessors had proved that the Port Reading was assessed for taxes in 1892, the sitting was adjourned until October 7th.

The papers in the proceedings to forfeit the charter of the Port Reading Company have been filed at Trenton by Attorney-General Stockton, of New Jersey.

The Pennsylvania Railroad's tide-water freight rates on anthracite were advanced on the 24th September to $1.59 per ton, an increase of 7 cents over the previously ruling rate. Their system is to charge a rate of 40% on the market price of the coal.

The Chicago people seem to be thoroughly aroused about the prices of anthracite. An information was filed in the Circuit Court in Chicago on Tuesday last in which the complainants ask that the Philadelphia & Reading Coal and Iron Company, and its Chicago agents, be restrained from selling anthracite in Cook County, on the ground of unlawful combination. The Chicago people generally, and the Western roads particularly, are considering the practicability of bringing Colorado coal into competition with the Pennsylvania product. The railroads have such high rates at present that it would cost the dealer from $10 to $12.50 a ton to put down Colorado coal in Chicago. If the coal was shipped in large quantities the rates would be much different, in fact would be reduced quite one half.

Bituminous.

The demand for bituminous coal is very great and is far in advance of the possibility of supply. The stoppage of freight transport last week impeded business tremendously, and though coal is going off now as fast as ever it can be carried there is a great scarcity. The bituminous coal companies all suffer from shortness of supply and are continually trying to borrow coal from each other to fill pressing orders. The ocean steamships experience some difficulty in getting coal in time. Prices are very stiff and only regular customers are being supplied. Vessels are scarce at Baltimore and are not very plentiful at Philadelphia. Freight rates have not as yet altered and keep low, but in all probability we shall see an advance in a week or so. From Philadelphia to Boston, Salem and Portland they are 55c., and to Sound ports 60c. From Baltimore, Newport News and Norfolk to Boston, Salem and Portland 60 to 65c., and to Sound ports 70c.

NOTES OF THE WEEK.

The stockholders of the Philadelphia, Reading & New England Railroad met in New York on Wednesday and ratified a lease recently made between the company and the Dutchess County Railroad for the use of the latter line as a connecting link between the Philadelphia & Reading at Poughkeepsie and the New York & New England at Hopeweld, Dutchess County. Of the 66,000 shares of the company 65,985 were cast in favor of the lease.

The last rail has been laid on the Ohio extension of the Norfolk & Western Railroad. This extension will bring the port of Norfolk and the entire southern section of Virginia into direct connection with Chicago and the Northwest, and will afford a Western opening for Flat Top coal and coke.

Buffalo. Sept. 29.

(From our Special Correspondent.)

The anthracite coal market is very quiet; householders are not giving orders, except for immediate requirements; country dealers are not exhibiting much disposition to purchase; and large orders are few and far between. The movement by rail is not equal to the desires of vesselmen, and many craft leave light in preference to waiting for the coal trains to arrive. Prices without change, and no advance has been made for October. At a meeting of the Buffalo Freight Committee, held this week, it was decided to advance the coal rate by rail from Buffalo to Chicago from $1.75@$2 per ton.

Bituminous coal is in fair demand for manufacturing purposes, and a good business is being done for tugs and propellers. Prices are nominally unchanged. Supply is fully adequate to all the needs of the trade.

Lake freights on coal are steady, except for Duluth and Superior, which fluctuated from 35c. to 40c., then back to 25c. per ton. It will be seen that the shipments by lake for the week exceeded 100,000 tons. Vesselmen express the opinion that a larger movement for the season in the aggregate will be recorded for 1892 than in preceding years. Lake tonnage is increasing rapidly notwithstanding the many serious disasters thus far this year.

The movement of coal by lake westward from Sept. 21 to 27, both days inclusive, aggregated 101,623 net tons, distributed about as follows: 35,250 to Chicago, 21,650 to Milwaukee, 18,100 to Duluth, 9,300 to Superior, 5,500 to Toledo, 1,350 to Detroit, 3,400 to Ashland, 1,300 to Manitowoc, 1,200 to Gladstone, 1,325 to Hancock, 500 to St. Clair, 800 to Marquette, 626 to Windsor, 822 to St. Ignace. The rate of freights were 55c. to Chicago, Milwaukee, Escanaba and Manitowoc; 40c. to Marquette, St. Clair and Sarnia;

35c. to Bay City, 50c. to Houghton, p. t. to Gladstone. 25c. to Detroit, Windsor and Toledo, 35c. to Ashland, 40c., 35c., 25c. to Duluth and Superior.

Boston. Sept. 29.

(From our Special Correspondent.)

Up to the writing of this letter I have not heard of the developments of agents' meeting held this afternoon in New York. It was thought here that prices would not he advanced. As for trade, there is none, practically speaking. The drain on the stocks in the yards here hy the demand of the past month has been comparatively light. It goes without saying that prices are firm.

We quote f. o. b. prices at New York: Stove, $4.75; egg, $4.50; free broken, $4.10; chestnut, $4.65. Lykens Valley (at Philadelphia), broken, $4.85; egg, $5.45; stove, $5.90; chestnut, $5.00.

There is a very fair business doing in soft coal. Prices are quite firm here, though no higher. Spot stocks in first hands are light, and dealers have been crowding their yards with anthracite at the expense of their usual space for soft coal. George's Creek coal on cars here is worth $3.60; Clearfield, $3.10.

There is so little doing in coal transportation that rates are necessarily low and easy. From New York, 40@45c.; from Philadelphia, 55@65c.; to Portland, 60@65c.; to Bath, 75@80c.; to Providence, 60@65c.; from Baltimore, 65c.; from Newport News, 60@70c.; to Sound Points, 65@70c.

The retail dealers continue to do a very good business. Prices are rigidly adhered to. Quotations are: Stove, $6.25; nut, $6.25; egg. $6.00; furnace, $5.75; Franklin, $7.50; Lehigh egg, $6.25; Lehigh furnace, $6.25. Wharf prices 50 cents less than the foregoing.

The receipts of coal at this port for the week ending Sept. 24th were 44,454 tons of anthracite and 16,499 tons of bituminous, against 33,897 tons of anthracite and 13,739 tons of bituminous for the corresponding week last year. The total receipts thus far this year have been 1,535,722 tons of anthracite, and 585,132 tons of bituminous against 1,479,112 tons of anthracite and 781,857 tons of bituminous for the same time last year.

Chicago. Sept. 30.

(From our Special Correspondent.)

It would appear from the daily papers of Chicago, yesterday, that they too had formed a "combination" to simultaneously attack the Philadelphia and Reading Coal and Iron Company for its method of doing buisness. The State's Attorney of Cook County, goaded by the constant assaults of the press on the Philadelphia and Reading people, and, probably annoyed by its insinuations that he was not doing his duty, has filed a petition in the Circuit Court for an injunction to restrain the "combine" from doing any further business in said county. It is quite a lengthy document and a remarkable method of procedure, and appears to us to he an effort to spar for wiud. In other words, we do not see how he proposes to accomplish his purpose, even hacked, as he is, by the People's Association. during the lifetime of anybody at present in the coal trade here or in the East. We fail to see why the P. & R. should he selected, while in the aggregate more coal is sold by the D., L. & Co., the D. & H., the Penn. Coal Co., W. L. Scott & Co., Coxe Bros. and various other minor concerns here at the same prices and under the same restrictions.

True these are not controlled hy the "combine," hut they are *influenced*, and as the latter fiddles, they dance. Unfortunately, this agitation has the effect of deluding a large number of dealers and consumers into the idea that the "combine" is going to he smashed, annihilated as it were, at one fell swoop of the law. Furthermore, that coal will shortly be selling at the prices of 1879, which were about $3.25 f. o. h. cars, Chicago. An attempt on the part of these dealers and consumers to hold their orders until this happy day, for them, shall arrive, will result in a very chilly attmosphere around their respective offices and houses. A call at the general office of the Pennsylvania & Reading showed that the officials there were suffering no perturbation of spirit on account of the proposed injunction. One thing is very certain, that these advances and the general attitude assumed hy the "combine" in robbing the poor, for it is this class who suffer more than any other, is one of the causes of anarchy and serve to make them anarchists. Not only this, hut it fosters in them a disrespect for property rights.

Prices remain unaltered. The anticipated advance October 1st has not stimulated trade as much as was expected, nor as much as it did last month. Coal is coming forward hy rail hut slowly, and for the first time in years chestnut is the most scarce of any. Egg and stove were last month in stronger demand and lease supply, and, hy persistent pushing, agents succeeded in ohtaining larger proportions of these sizes to the neglect of chestnut. This latter from now on will be in best demand fromthe fact that the hand-to-mouth consumer uses more of this size than any other. Attempts to cover hy dealers in city and country during the past few days have heen numerous, and they find that in many instances the short notice debars them, as deliveries cannot possihly he made. The docks and yards are well supplied with coal and prices steady.

Bituminous coal is in strong demand at fairly remunerative prices. Ohio coal of all grades is active, though business is much restricted hy the poor car supply. Hocking will be advanced to-morrow to $3.10 to city and $3.20 to the country trade and Jackson Hill to $3.25. Much embarrassment is caused hy the limits placed on the distance to which cars are allowed to run from mines without transfer; large contractors are feeling this rather severely just now. A sudden cold snap in the Northwest would cause many public institutions considerahle discomfort. It will take a month of easy sailing with no obstacles to get all contracts and orders properly filled. Illinois and Indiana coal is active and prices steady. More miners could he used in both States were they availahle. The condition of the hituminous trade is healthy and the outlook most promising.

Coke is growing in demand and the prospects for greater improvement are excellent. Crushed coke is gaining in favor as a substitute for anthracite and shipments westward are increasing.

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

Circular prices are at the following rates: Lehigh lump, $6.50; large egg, $5.85; small egg, range and chestnut, $6.10. Retail prices per ton are: Large egg, $7.25; small egg, range and chestnut. $7.25.

Prices of bituminous per ton of 2,000 lhs., f. o. b. Chicago, are; Pittshurg, $3.15; Hocking Valley, $3; Youghiogheny, $3.25; Illinois block, $1.90@2; Brazil block, $2.40@$2.50.

Pittsburg. Sept. 29.

[From our Special Correspondent.]

Coal.—The river coal trade presents no especially noteworthy features at the present time. Stocks of coal in the Western and Southern markets are large with the exception of Louisville. The shut down of the Monongahela miners still continues and neither shows any signs of weakening. The river is divided into two parts—the coal that is consumed here forming one part and that which is exported the other. Of course the local trade is a very small proportion of the output of the entire river, hut it has always heen a disturhing element, in the settlement of strikes. This time the operators are not willing it should be so, and they have decided to set apart four mines for supplying the local trade if necessary, and will not let local trade prices enter into the present strife at all. While the operators are confident of winning, the miners are apparently just as firm in their determination to resist the reduction. A good, healthy trade continues on the railroads. Nearly all the mines are doing all they can, and a great amount of coal is heing shipped west and north daily. The prospects are good for a heavy trade for some time to come.

Connellsville Coke.—The shipments of coke this week show up well. In production there was an increase of nearly 2,000 tons. Both the large and small operators made excellent running time. Since the 1st of September the operators with idle ovens have either made a start at firing up or are making preparations to do so. The McClure and Frick companies will fire up more ovens. All indications are that the dullest month of the year has passed. The middle of August saw the coke business in a worse condition than it has been for a long time. From now on it will improve. The supply of cars is short.

The Frick Coke Company fired up 509 cold ovens. The Lippincott plant is firing 100 ovens. The Hill farm 20 ovens. The McClure Company made a full 6-day run, Southwest 6 days; in fact they all made about 6 days.

Week's shipments aggregated 127,820 tons, distributed as follows: To Pittsburg, 1,617 cars; east of Pittsburg, 1,409 cars; points west of Pittsburg, 3,365; total, 6,391. The increase over last report shows 165 cars west; 24 cars east, and 17 cars to Pittsburg; total, 206 cars. Prices are unchanged.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Sept. 30.

Heavy Chemicals.—The market for heavy chemicals is easier, generally speaking, and a fair demand has been experienced during the week. Sales aggregating a very fair quantity have heen made, as well as contracts for delivery extending over some months. Bleaching powder has declined, 3⅛ to 4c. heing quoted for goods on the spot. Consumers who were forced to huy during the late rise, having supplied their immediate requirements, are now holding off in anticipation of a further decline. Arrivals, for some time to come, will not be very heavy and Septemher shipments are held at 3½c.

Our quotations are this week as follows: Caustic soda, 60%, 3·17½@3·20c.; 70%, 2·95@3·12½c.; 74%, 2·97½@3·12½c.; 76%, 3·12½@3·25c.; 77%, 3·12½@3·25c. Carhonated soda ash, 48%. 1·57½@1·60c.; 58%, 1·47½@1·52½c. Alkali, 48%, 1·75@1·85c.; 58%, 1·65@1·75c. Sal soda, English, 1·07½@1·15c; American, 1·05@1·10c. Bleaching powder, 4¼c. minimum.

Acids.—An improved demand is experienced for sulphuric acids, hut no new features can he reported. Prices continue unchanged. Our quotations are: Acid per 100 lhs. in New York and vicinity, in lots of 50 carboys or more: Acetic, $1.60 @$2 according to quality; muriatic, 18°, $1@$1.25; 20°, 90c.@$1.10; 22°, $1.25@$1.50; nitric, 40°, $4; 42°, $4.50@$4.75; sulphuric, 85c.@$1.10; mixed acids, according to mixture; oxalic, $7.25@$7.75. Blue vitriol is quoted all the way from $3.50@$3.75; alum, lump or ground, $1.70@$2. Glycerine for nitro glycerine, 11½@12½c., according to quality and quantity.

Brimstone.—The market for Sicilian brimstone conitnues dull and quiet. Nothing of interest has transpired during the week and we can only give the ruling quotations, which are as follows: On the spot, best unmixed seconds, $24; best unmixed thirds. $23. Future shipments, hest unmixed seconds, $23.50; best unmixed thirds, $22.50.

Fertilizers.—There is an improved demand for fertilizing chemicals and sales are reported at the prices given helow. Several fish factories have closed down and the price of scrap is steady. On the whole the fertilizer market is firm and a very fair volume of husiness is doing. We quote this week: Sulphate of ammonia, $2.87½@$2.95 for bone goods and $2.90@$2.95 for gas liquor. Dried blood. $2@$2.05 per unit for high grade and $2 for low grade; acidulated fish scrap, $13.50 f. o. h. factory; dried scrap, $23@$23.50. Azotine, $2. Tankage, $18@$22, according to grade. Bone tankage, $22.50 @$23.50; bone meal, $23.50@$25.50. The demand for double manure salts is good and the prices are stiff.

Phosphates.—Following is Messrs. Couper, Millar & Co.'s report on the fertilizer market of the United Kingdom, issued under date of London, Septemher 15th:

The extreme dullness of husiness, speaking generally, continues, with little or no signs of improvement. In the fertilizer trade we never remember such a long spell of depression, and the prospects ahead are gloomy. In phosphates "a sudden or considerahle rise in price is not to be expected, for with all the availahle sources of supply which are in view, and with the certain fact of an increased production in Florida, it is not reasonahle to suppose that huyers will be induced to pay higher prices, which can only he realized hy an absence of weak sellers. It is, nevertheless, possible to keep the market steady and avoid fluctuations, which upset the balance of trade and do no good to anv one, hy endeavoring to arrive at some kind of arrangement in Florida for the avoidance of senseless internal competition." This extract from an American paper points to a combination among the Florida and South Carolina raisers, a matter easier spoken of than arranged; still it took place in the Somme some years ago, when the interests were very conflicting, with a very happy result.

Mineral Phosphate—Canadian coming forward in small quantities and prices realized are unremunerative to raisers. South Carolina offering at about 7d. Florida hard rock 75% selling at 8½d., pebble 60% at 7d. Ground Somme dull at 11¼d. for 75%, and 10¼d. for 70%, hasis c. i. f., London. Ground Belgian continues scarce, and held for 5d. per unit, f. o h. Antwerp. Little available for this year. Osso there is no inquiry for in U. K. Cambridge and Bedford coprolites only in local demand.

Kainit.—During the week arrivals at this port aggregated 600 tons, and at Mohile, Ala., 500 tons. Prices are unchanged as follows: $8.75 for invoice weight and $9 for actual weight.

Muriate of Potash.—There is no change to report of this article. Arrivals during the week amounted to 500 tons. New sales were 200 tons. Prices are: For 50 ton lots or over, New York or Boston, $1.81½; Philadelphia or Baltimore, $1.84; Southern ports, $1.86½.

Nitrate of Soda.—This market continues to exhihit the same features which have characterized it for the past fortnight. Quotations are $1.95 for goods on the spot. Sales of ahout 4,000 hags are reported.

Liverpool. Sept. 21.

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

There is not much moving in heavy chemicals at the moment, and all the late excitement has died away. Soda ash is strong owing to scarcity, as the "Union" states they have nothing to sell for the halance of this year so far as Le Blanc makes are concerned. Quotations are nominal as follows: Caustic ash. 48%, £5 6s. 3d. per ton and upward, 57@58% £6 7s. 6d. per ton and upward; carh. ash, 48%, £5 9s. 9d. per ton and upward; 58%, £6 12s. 9d. per ton and upwards; ammonia ash. 58%, £6 7s. 6d., net cash.

Soda Crystals are quiet, and nearest values are £3 7s. 6d. to £3 10s. per ton less 5%, while possihly the lower figure could be shaded for a good order.

Caustic Soda.—There is some husiness reported for Russia, hut the market generally is inactive. Quotations are nominally unchanged as follows: 60%, £9 2s. 6d. per ton; 70%, £10 5s. per ton; 74%, £11 5s. per ton and 76%, £12 5s.@£12 10s. per ton, net cash. For parcels under 10 tons, five shillings per ton extra is charged. Shipments to United States and Canada harred hy the Alkali Company.

Bleaching Powder.—There is very little to be had for this month or the first half of next, the "Union" being sold for that period. There are a few resale parcels offered at £9 5s.@£9 10s. per ton net, cash for hardwood, September delivery, hut huyers are pretty well filled up, and are holding off expecting to see lower prices shortly. For October delivery the "Union" quotes £9 5s. per ton. United States and Canada harred.

Chlorate of Potash continues very scarce, and nothing is offering for prompt delivery, while for October 7½d. per ton is the nominal quotation, and for November and December 7d.@7¼d. is about the range quoted hy resellers.

Bicarb. Soda steady at £6 15s. per ton. less 2½%, for one hundredweight kegs, with the usual allowances for larger packages.

Sulphate of Ammonia is well maintained, and nearest values are about £10 2s. 6d. per ton for good gray 24%, and £10 5s. per ton for 25%, both in double bags less 2½ % f. o. b. here.

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

Name and Location of Company.	Sept. 24 H.	Sept. 24 L.	Sept. 26 H.	Sept. 26 L.	Sept. 27. H.	Sept. 27. L.	Sept. 28. H.	Sept. 28. L.	Sept. 29. H.	Sept. 29. L.	Sept. 30 H.	Sept. 30 L.	Sales.
Adams, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Alice, Mont.	....	....	....	....	....	....	....	....	....	....	....	....	....
Amador, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Atlantic, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Belcher, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Belle Isle, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Bodie Cons., Cal.	.50	....	.55	....	50	....	....	....	....	....	....	....	600
Bos. & Mont., Mont	....	....	....	....	....	....	....	....	....	....	....	....	.....
Breece, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Bulwer, Cal.	....	....	.35	....	....	....	....	....	....	....	....	....	300
Caledonia, S. Dak.	....	....	....	....	....	....	.90	....	....	....	....	....	100
Catalpa, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Chrysolite, Colo.	19	....	+.22	....	....	....	....	....	.18	....	....	....	80
Colorado Central, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Commonwealth, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Comstock T. bonds, Nev.	....	....	....	....	.18	....	18	....	....	....	18	....	6,000
" scrip., Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Cons. Cal. & Va., Nev.	5.00	....	4.35	....	4.75	....	4.75	....	4.20	....	....	....	450
Crown Point, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Deadwood, Dak.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Enterprise, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Eureka, Cons., Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
Father de Smet, Dak.	....	....	....	....	....	....	....	....	.30	....	....	....	100
Freeland, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Gould & Curry, Nev.	....	....	....	....	1.90	....	....	....	....	....	....	....	100
Grand Prize, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Hale & Norcross, Nev.	....	....	3.30	....	3.40	....	....	....	....	....	....	....	200
Homestake, Dak.	....	....	....	....	....	....	15.00	....	....	....	....	....	50
Horn Silver, Utah.	....	....	....	....	....	....	....	....	....	....	....	....	....
Independence, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
Iron Hill, Dak	....	....	....	....	....	....	....	....	....	....	....	....	....
Iron Silver, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Leadville Cons., Colo.	.20	....	....	....	.22	.19	....	....	.19	.18	.18	....	2,650
Little Chief, Colo.	.25	....	....	....	....	....	....	....	....	....	....	....	400
Martin White, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mono	....	....	....	....	....	....	....	....	....	....	....	....	....
Mt. Diablo, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Navajo, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
N. Belle Isle, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Ontario, Utah.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Ophir, Nev.	....	....	....	....	3.25	....	....	....	....	....	....	....	25
Overman, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
Plymouth, Cal.	....	....	....	....	.50	....	....	....	....	....	....	....	100
Quicksilver, Pref., Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
" Com., Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Quincy, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Robinson Cons., Colo.	.38	.37	....	....	....	....	....	....	....	....	....	....	....
Savage, Nev.	2.00	....	....	....	....	....	....	....	....	....	....	....	300
Sierra Nevada, Nev.	3 10	....	2 80	....	2.50	....	....	....	....	....	....	....	150
Silver Cord, Colo.	....	....	....	....	....	....	....	....	2.56	....	....	....	300
Silver King, Ariz.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Silver Min. of L. Valley	....	....	....	....	....	....	....	....	....	....	....	....	.....
Small Hopes, Colo.	....	....	1.00	....	....	....	....	....	....	....	....	....	.....
Standard Cons., Cal.	....	....	....	....	....	....	....	....	....	....	....	....	100
Yellow Jacket, Nev.	1.35	1.30	1 50	....	1.70	....	....	....	1.25	....	....	....	600

NON-DIVIDEND-PAYING MINES.

Name and Location of Company.	Sept. 24. H.	Sept. 24. L.	Sept. 26. H.	Sept. 26. L.	Sept 27. H.	Sept 27. L.	Sept. 28. H.	Sept. 28. L.	Sept. 29. H.	Sept. 29. L.	Sept. 30. H.	Sept. 30. L.	Sales.
Alpha., Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Alta, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
American Flag, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Andes, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	....
Astoria, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Augusta, Ga.	....	....	....	....	....	....	....	....	....	....	....	....	.....
" bonds.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Barcelona, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Belmont, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Best & Belcher, Nev.	3.00	....	....	....	3.00	....	....	....	....	....	....	....	150
Bonanza King, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Brunswick, Cal.	....	....	....	....	.08	....	.07	....	07	....	07	....	6,600
Bullion, Nev.	....	..	.95	....	1.00	....	.90	....	.80	.75	....	....	700
Butte & Bost., Mont.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Castle Creek, Idaho.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Chollar.	1.25	....	....	....	....	....	....	....	....	....	....	....	50
Comstock T., Nev.	.16	.14	.15	....	.17	.14	....	....	.15	....	.15	....	13,200
Con. Imperial, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Con. Pacific, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Crescent, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Del Monte, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
El Cristo, Rep. of Col.	40	....	....	....	....	....	....	....	....	....	....	....	100
Emmett, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Exchequer, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Hollywood, Cal.	....	....	....	....	.01	....	....	....	....	....	....	....	1,000
Julia, Nev	....	....	....	....	.20	....	....	....	....	....	....	....	300
Justice, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
King & Pembroke, Ont.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Lacrosse, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Lee Basin, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mexican, Nev.	....	....	....	....	1.90	....	....	....	....	....	....	....	100
Middle Bar, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Monitor, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mutual S. & M. Co., Wash.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Nevada Queen, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
N. Standard, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
N. Commonwealth, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Occidental, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Oriental & Miller, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Phœnix Lead, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Phœnix of Ariz.	.58	.57	.53	....	.50	....	.52	.50	....	....	.55	.50	2,100
Potosi, Nev.	....	....	....	....	....	....	....	....	1.30	....	....	....	10
Rappahannock, Va.	....	....	....	....	....	....	....	....	....	....	....	....	.....
S. Sebastian, S. Sal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Santa Fe, N. M.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Scorpion, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Seg. Belcher, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Shoshone, Idaho.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Silver Queen, Ariz.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Sullivan Con., Dak.	....	....	....	....	....	....	....	....	.99	....	....	....	100
Sutro Tunnel, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Syndicate, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Tornado Con., Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Union Cons., Nev.	2 20	....	....	....	....	....	....	....	....	....	....	....	100
Utah, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....

*Ex-dividend. +Dealt at in New York Stock Ex. Unlisted securities. ‡ Assessment paid. ‖ Assessment unpaid. Dividend shares sold, 13,325. Non-dividend shares sold, 18,000. Total shares sold, 31,325.

BOSTON MINING STOCK QUOTATIONS.

Name of Company.	Sept. 23.	Sept. 24.	Sept. 26.	Sept. 27.	Sept. 28.	Sept. 29.	Sales.
Atlantic, Mich.	....	....	....	....	9 25	....	100
Bodie, Cal.	....	....	....	....	....	....	.....
Bonanza Development.	....	....	....	....	....	....	.....
Bost. & Mont., Mont.	30.25	....	30 00	....	31.50	30.75	31 00	30.75	32 00	31.13	32.00	30.00	5,694
Breece, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Calumet & Hecla, Mich.	277½	....	279	278	278	277	....	....	277	....	....	....	49
Catalpa, Colo.	.15	....	.15	....	....	....	....	....	....	....	....	....	200
Central, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Cœur d'Alene, Id.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Con. Cal. & Va., Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Dunkin, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Eureka, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Franklin, Mich.	12.25	....	....	....	12.13	....	....	....	12.00	....	....	....	35
Honorine, Utah.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Horn Silver, Utah.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Kearsarge, Mich.	10.0	....	....	....	10.50	....	....	....	10.75	10.50	....	....	240
Lake Superior, Iron.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Little Pittsburg, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Minnesota Iron, Minn.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Napa, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Ontario, Utah.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Osceola, Mich.	29.25	....	29 50	....	....	....	30.00	29 50	32.50	30 00	30.50	30.00	2,051
Quincy, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Ridge, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Sierra Nevada, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Silver King, Ariz.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Stormont, Utah.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Tamarack, Mich.	150	148	150	....	....	....	....	....	150	....	....	....	91
Tecumseh, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	....

Name of Company.	Sept. 23.	Sept. 24.	Sept. 26.	Sept. 27.	Sept 28.	Sept. 29.	Sales.
Allouez, Mich.	....	....	....	....	....	....	.....
Arnold, Mich.	....	....	....	....	....	....	.....
Aztec, Mich.	....	....	....	....	....	....	.....
Brunswick, Cal.	....	....	....	....	....	....	.....
Butte & Boston, Mont.	....	....	8 00	....	8.75	....	9.00	....	....	....	1,285
Centennial, Mich.	5.50	....	6 00	....	6.25	....	6 25	....	7.00	....	395
Colchis, N. Mex.	....	....	....	....	....	....	....	....	....	....	.....
Copper Falls, Mich.	....	....	....	....	....	....	....	....	....	....	.....
Crescent, Colo.	....	....	....	....	....	....	....	....	....	....	.....
Dana, Mich.	....	....	....	....	....	....	....	....	....	....	.....
Don Enrique, Mex.	....	....	....	....	....	....	....	....	....	....	.....
Geyser, Colo.	....	....	....	....	....	....	....	....	....	....	.....
Hanover, Mich.	....	....	....	....	....	....	....	....	....	....	.....
Humboldt, Mich.	....	....	....	....	....	....	....	....	....	....	.....
Hungarian, Mich.	....	....	....	....	....	....	....	....	....	....	.....
Huron, Mich.	....	....	....	....	....	....	....	....	....	....	.....
Mesnard, Mich.	....	....	....	....	....	....	....	....	....	....	.....
National, Mich.	....	....	....	....	....	....	....	....	....	....	.....
Native, Mich.	....	....	....	....	....	....	....	....	....	....	.....
Oriental & M., Nev.	....	....	....	....	....	....	....	....	....	....	.....
Phœnix, Ariz	....	....	....	....	....	....	....	....	....	....	.....
Pontiac, Mich.	....	....	....	....	....	....	....	....	....	....	.....
Rappahannock, Va.	....	....	....	....	....	....	....	....	....	....	.....
Santa Fe, N. Mex.	....	....	....	....	....	....	.11	....	....	....	300
Shoshone, Idaho.	....	....	....	....	....	....	....	....	....	....	.....
South Side, Mich.	....	....	....	....	....	....	....	....	....	....	.....
Tamarack, Jr., Mich.	19.00	18 00	16.50	16.00	....	....	18.00	17.50	18.00	....	18 00	....	670
Washington, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Wolverine, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....

Dividend shares sold, 8,360. Non-dividend shares sold, 2,647. Total shares sold, 11,007

COAL STOCKS.

Name of Company.	Sept. 24 H.	Sept. 24 L.	Sept. 26. H.	Sept. 26. L.	Sept. 27. H.	Sept. 27. L.	Sept. 28. H.	Sept. 28. L.	Sept. 29. H.	Sept. 29. L.	Sept. 30. H.	Sept. 30. L.	Sales.
Cambria Iron.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Cameron Coal & I. Co.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Ches. & O. R. R.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Chic. & Ind. Coal R. R.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Do. pref.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Col. C. & I.	40⅝	40¼	41⅛	40⅝	42⅜	41⅛	43¼	42⅛	43	41⅛	42⅞	41¼	24,820
Col. C. & Hocking C. I.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Consolidation Coal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Del. & H. C.	132¾	132½	133¼	132¾	132	131¾	133	130¼	133¾	133	133¼	133¼	2,347
D., L. & W. R. R.	154¼	154¼	155¼	154⅜	155	154¼	154	153⅜	154⅛	154¼	154⅛	.....	8,712
Hocking Valley	32⅜	.....	32⅜	32⅛	32½	.....	32¼	.....	32⅛	32	32¼	.....	1,400
do. pref	....	....	....	....	....	....	....	....	....	....	....	....	.....
Hunt & Broad Top.	35½	35⅜	35¾	35	56¾	.....	.....	.....	.....	.....	.....	.....	1,868
Do. pref.	56	.....	.....	.....	.....	.....	.....	.....	55⅛	.....	.....	.....	1,102
Illinois C. & Coke Co.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Lehigh C. & N.	....	....	....	....	53¾	.....	54	53⅞	53⅜	.....	.....	.....	68
Lehigh Valley R. R.	60¼	60¼	59⅝	59⅝	59⅞	59⅝	59⅝	59	59⅛	59	.....	.....	2,364
Lehigh & Wilk. Coal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mahoning Coal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Do. pref.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Maryland Coal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Morris & Essex.	....	....	....	....	....	....	....	....	....	....	....	....	.....
New Central Coal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
N. J. C. R. R.	132	131¼	132¾	132⅛	132	130½	130	132	130¾	.....	.....	.....	3,000
N. Y. & S. Coal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
N. Y., Susq. & West.	16⅝	16	16¼	.....	16⅝	16¼	16⅜	16¼	16⅜	16	16	.....	7,142
Do. pref.	66½	.....	.....	.....	66	.....	.....	.....	.....	.....	65	.....	408
N. Y. & Perry C. & I.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Norfolk & West. R. R.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Do. pref.	....	....	....	....	....	....	....	....	10¾	10	....	....	110
Penn. Coal.	....	....	....	....	....	....	....	....	38	....	38	37½	868
Penn. R. R.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Ph. & R. R. R.	55⅛	55	55⅛	55¼	55⅛	55¼	55⅝	55⅛	55½	55¾	.....	.....	9,602
Sunday Creek Coal.	58¼	57¼	57⅝	56⅝	57⅜	56⅞	57⅜	56¼	58	56¾	57¾	56¾	489,759
Do. Pref.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Tennessee C. & I. Co.	36	....	35⅛	35⅞	.....	.....	36	35⅛	.....	.....	35⅛	34⅛	34⅛	34¼	1,510
Do. pref.	....	....	....	....	....	....	102	.....	.....	.....	.....	.....	.....	.....	100
Westmoreland Coal.	....	....	....	....	....	....	....	....	....	....	....	....	.....

Total shares sold, 555,180.

San Francisco Mining Stock Quotations.

Names of Stocks.	Closing Quotations. Sept. 23.	Sept. 24.	Sept. 26.	Sept. 27.	Sept. 28.	Sept. 29.
Alpha	....	....	....	....	....	....
Alta	.55	.60	.65	.60	.55	.....
Belcher	....	....	....	....	....	.....
Belle Isle	....	....	....	.10	.10	.....
Best & Belcher	2.95	2.90	3.15	2.75	....	.....
Bodie	.45	.60	.50	.55	.45	.....
Bulwer	.30	30	.50	.35	.35	.....
Chollar	1 25	1.20	1.55	1.30	1.15	.....
Commonwealth	....	....	....	....	....	.....
Cons. Cal. & Va.	4.75	4.20	4.65	4 45	3.25	.....
Cons. Pacific	....	....	....	....	....	.....
Crown Point	1.85	1.85	2.10	2.05	1.65	.....
Del Monte, Nev.	....	....	....	....	....	.....
Eureka Consolidated	1.50	....	....	1.50	1.50	.....
Gould & Curry	1.80	1.70	1.90	1.75	1.70	.....
Hale & Norcross	3.35	3.30	3.50	3.10	2.95	.....
M. White	....	....	....	....	....	.....
Mexican	2.35	2.25	2.60	2.35	2.30	.....
Mono	.10	.15	.15	.15	.15	.....
Mt. Diablo	....	....	....	....	1.10	.....
Navajo	.10	.10	.....	.10	.10	.....
Nev. Queen	.10	.10	.15	.15	.10	.....
N. Belle Isle	.....	.15	.05	....	....	.....
N. Commonwealth	....	....	....	....	....	.....
Ophir	3.40	3.25	3.40	3.45	3.30	.....
Potosi	1.35	1.15	1.60	1.30	1.30	.....
Savage	2.25	2.15	2.60	2.05	1.95	.....
Sierra Nevada	2.70	2.70	2.65	2.55	2.30	.....
Union Cons	2.15	1 90	1.95	1.80	1.60	.....
Utah	.50	.50	.55	.50	.45	.....
Yellow Jacket	1.25	1.40	1.75	1.55	1.40	.....

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total levied.	Date and amount of last			Dividends. Total paid.	Date & amount of last.		
1	Adams, s. l. c.	Colo.	$1,500,000	150,000	$10	*				$637,500	Jan.	1892	.05
2	Alice, s.	Mont.	10,000,000	400,000	25	*				975,000	Nov.	1891	.06¼
3	Alma & Nel Wood., g	Idaho	300,000	30,000	10	*				60,000	Jan.	1889	.50
4	Amador, g	Cal.	1,250,000	250,000	5	*				31,250	Aug.	1890	.12½
5	American, g	Colo.	3,000,000	300,000	10	*				225,000	Mar.	1892	.05
6	American Belle, s. g. c	Colo.	2,000,000	400,000	5	*				50,000	April	1891	.12½
7	Americ'n & Nettie, g. s	Colo.		300,000						175,000	Mar.	1892	.05
8	Atlantic, c.	Mich.	1,000,000	40,000	25	$280,000	April	1875	$1.00	700,000	Feb.	1891	1.00
9	Argenta, s.	Nev.	10,000,000	100,000	100	835,000	July.	1889	.10	40,000	Feb.	1880	.20
10	Argyle, g.	Colo.	1,000,000	1,000,000	1	*				20,000	Mar.	1892	.01
11	Aspen Mg. & S., s. l.	Colo.	2,000,000	200,000	10	*				760,000	Sept.	1892	.10
12	Aurora, i.	Mich.	2,500,000	100,000	25					455,000	June	1892	1.00
13	Badger, s	Ont.	250,000	50,000	5					37,500	Mar.	1890	.25
14	Bald Butte	Mont.	250,000	250,000	1	*				72,500	Mar.	1892	.03
15	Belle Isle, s.	Nev.	10,000,000	100,000	100	220 00	Aug.	1892	.10	300,000	Dec.	1879	.25
16	Belcher, s. g.	Nev.	10,400,000	104,000	100	3,16[illegible] 00	May	1892	.25	15,397,000	April	1876	1.00
17	Bellevue, Idaho, s. l.	Idaho	1,250,000	125,000	10	1[illegible] 000	Dec.	1889	.25	200,000	Jan.	1890	.10
18	Best Friend	Colo.	1,000,000	1,000,000	1					90,000	Feb.	1892	.01
19	Bi-Metallic, s. g.	Mont.	5,000,000	200,000	25					1,800,000	Nov.	1891	.35
20	Bodie Con., g. i.	Cal.	10,000,000	100,000	100	5[illegible]0,000	June	1890	.25	1,602,572	April	1885	.50
21	Boston & Mont., g.	Mont.	2,500,000	250,000	10	*				520,000	June	1886	.15
22	Boston & Mont., c. s.	Mont.	3,125,000	125,000	25	*				2,075,000	Nov.	1891	1.00
23	Brooklyn Lead, l. s.	Utah	500,000	50,000	10					127,000	July.	1887	05
24	Bulwer, g.	Cal.	10,000,000	100,000	10	130,000	Aug.	1889	.25	185,000	April	1892	.10
25	Bunker Hill & S. s. l.	Idaho	3,000,000	300,000	10	*				150,000	Oct.	1888	.06⅔
26	Caledonia, g.	Dak.	10,000,000	100,000	100	505,000	May.	1885	.15	192,000	Oct.	1890	.08
27	Calliope, s.	Colo.	1,000,000	1,000,000						140,000	Jan.	1891	.00½
28	Calumet & Hecla c	Mich.	2,500,000	100,000	25	1,200,000				38,350,000	Sept.	1892	5 00
29	Centen'l-Eureka, s. l.	Utah.	1,500,000	30,000	50					562,500	April	1892	.50
30	Central, c.	Mich.	500,000	20,000	25	100,000	Oct.	1861	.65	1,970,000	Feb.	1891	1.00
31	Champion, g	Cal.	340,000	34,000	10					104,700	Sept.	1892	.10
32	Chrysolite, s. l.	Colo.	10,000,000	200,000	50	*				1,650,000	Dec.	1884	.25
33	Clay County, g.	Colo.	200,000	200,000	1	*				56,000	Nov.	1891	.02
34	Cœur D'Alene, s. l.	Idaho	5,000,000	500,000	10					810,000	Nov.	1891	.02
35	Colorado Central, s. l.	Colo.	2,750,000	275,000	10	*				488,750	Oct.	1892	.05
36	Commonwealth, s.	Nev.	10,000,000	100,000	100	190,000	Sept.	1892	.10	20,000	Nov.	1890	.20
37	Confidence, s. l.	Nev.	2,496,000	24,960	100	1,589,550	Aug.	1892	.50	199,680	April	1889	1.00
38	Cons. Cal. & Va., s. g.	Nev.	21,600,000	216,000	100	108,000	Jan.	1885	.20	3,682,800	Aug.	1891	.50
39	Contention, s.	Ariz.	12,500,000	250,000	50					†2,637,500	Aug.	1892	.20
40	**Cop. Queen Con., c.	Ariz.	1,400,000	140,000	10					1,085,000	Aug.	1892	.25
41	Cortez, s.	Nev.	1,500,000	300,000	05	*				687,000	Mar.	1892	.50
42	Crescent, s. l. g.	Utah	15,000,000	600,000	25					228,000	Oct.	1888	.03
43	Crown Point, g. s.	Nev.	10,000,000	100,000	100	2,675,000	Mar.	1892	.50	11,898,000	Jan.	1875	2.00
44	Cumberland, l. s.	Mont.	5,000,000	500,000	10	*				15,000	Nov.	1889	.08
45	Daly, s. l.	Utah	3,000,000	150,000	20					2,550,000	Sept.	1892	.25
46	Deer Creek, s. g.	Idaho	1,000,000	200,000	5	*				20,000	June	1889	.05
47	Deadwood-Terra, g.	Dak.	5,000,000	200,000	25	*				1,140,000	Sept	1892	.25
48	DeLamar, s. g.	Idaho	2,000,000	400,000	5					416,000	July.	1892	.25
49	Derbec B. Grav., g.	Cal.	10,000,000	100,000	100	90,000	Dec.	1881	.10	260,000	Aug.	1891	.10
50	Dunkin, s. l.	Colo.	5,000,000	200,000	25	*				390,000	Oct.	1889	.05
51	Elkhorn, s. l.	Mont.	1,000,000	200,000	5	*				846,000	Sept.	1892	.62½
52	Enterprise, s.	Colo.	100,000	10,000	10	*				600,000	Oct.	1892	.10
53	Eureka Con., s. l. g.	Nev.	1,000,000	50,000	100	550,000	June	1889	.50	5,017,500	Jan	1892	.25
54	Evening Star, s. l.	Colo.	500,000	50,000	10	*				1,450,000	Dec.	1889	.25
55	Father de Smet, g.	Dak.	10,000,000	100,000	100	200,000	Nov.	1878	1.00	‡1,125,000	Dec.	1885	.20
56	Franklin, c.	Mich.	1,000,000	40,000	25	220,000	June	1871		1,100,000	July	1892	2.00
57	Freeland, s. g.	Colo.	5,000,000	200,000	25	*				190,000	July.	1886	.10
58	Garfield Lt., g. s.	Nev.	500,000	100,000	5					90,000	April	1888	.12½
59	Gould & Curry, s. g.	Nev.	10,800,000	108,000	100	4,591,200	June	1892	.25	3,826,800	Oct.	1870	10.00
60	Grand Prize, s.	Nev.	10,000,000	100,000	100	785,000	Jan.	1890	.30	495,000	Mar.	1884	.25
61	Granite, s. l.	Idaho	500,000	500,000	1	*				83,400	Nov.	1890	.02
62	Granite Mountain, s.	Mont.	10,000,000	400,000	25					12,040,000	June.	1892	.20
63	Green Mountain, g.	Cal.	1,250,000	125,000	10	*				212,000	Nov.	1881	.07½
64	Hale & Norcross, g. s.	Nev.	11,200,000	112,000	100	5,534,800	Aug.	1892	.50	1,822,000	Aug.	1888	.50
65	Hecla Con., s. g. l. c.	Mont.	1,500,000	90,000	50					1,860,000	Aug	1892	.50
66	Hel'a Mg. & Red, s. l. g.	Mont.	3,315,000	663,000	5	*				197,970	July.	1886	.06
67	***Holmes, s.	Nev.	10,000,000	100,000	100	370,000	May.	1890	.25	75,000	April	1886	.25
68	Homestake, g.	Dak.	12,500,000	125,000	100	200,000	July.	1878	1.00	4,891,250	Sept.	1892	.10
69	Honorine, s. l.	Utah	500,000	250,000	2	37,500	April	1889	.05	125,000	Sept.	1887	.05
70	Hope, s.	Mont.	1,000,000	100,000	10	*				288,000	Oct.	1892	.25
71	Horn-Silver, s. l.	Utah	10,000,000	400,000	25	*				4,600,000	Sept.	1892	.12½
72	Hubert, g.	Colo.	1,000,000	1,000,000	1	*				247,000	Dec.	1889	.00½
73	Idaho, g.	Cal.	310,000	3,100	100					2,373,500	Aug.	1892	2.50
74	Illinois, s.	N. M.	100,000	100,000	1	*				45,000	April	1889	.20
75	Iron Hill, s.	Dak.	2,500,000	250,000	10	134,000	July.	1889	.03	156,250	Nov.	1887	.07½
76	Iron Mountain, s.	Mont.	5,000,000	500,000	10	*				215,000	Aug.	1892	.03
77	Iron-Silver, s. l.	Colo.	10,000,000	500,000	20	*				2,500,000	April	1889	.20
78	Jackson, g. s.	Nev.	5,000,000	50,000	100	237,500	Nov.	1880	.20	60,000	Jan.	1891	.10
79	Kearsarge, c.	Mich.	1,000,000	40,000	25	190,000	Oct.	1887	1.00	80,000	Jan.	1890	2.00
80	Kennedy	Cal.	10,000,000	100,000	10					387,000	May.	1892	15
81	Kentuck, s. g.	Nev.	3,000,000	30,000	100	454,180	Oct.	1891	.15	1,350,000	Dec.	1886	.10
82	La Plata, s. l.	Colo.	2,000,000	200,000	10	*				610,000	Sept.	1882	.30
83	Leadville Con., s. l.	Colo.	4,000,000	400,000	10	*				448,000	May.	1892	.03
84	Lexington, g. s.	Mont.	4,000,000	40,000	100	*				609,000	Jan.	1890	2.00
85	Little Chief, s. l.	Colo.	10,000,000	200,000	50	*				820,000	Dec.	1890	.05
86	Little Rule, s.	Colo.	500,000	500,000	1					220,000	Dec.	1891	.02
87	Mammoth, s. l. c.	Utah	10,000,000	400,000	250	110,000		1882	.25	1,040,000	Dec.	1891	.10
88	Martin White, s.	Nev.	10,000,000	100,000	100	1,275,000	Jan.	1892	.25	140,000	Dec.	1886	.25
89	Mary Murphy, s. g.	Colo.	350,000	3,500	101	*				175,000	May.	1888	5.00
90	Matchless, s. l	Colo.	500,000	500,000	1	*				15,000	Feb.	1896	.00½
91	Maxfield	Utah.	3,000,000	300,000	10					117,000	April	1892	.03
92	May Mazeppa, s. l.	Colo.	1,000,000	100,000	1					205,000	Oct.	1891	.03¾
93	Minas Prietas, g. s.	Mex.	1,000,000	100,000	10	*				350,000	Dec.	1890	.50
94	Minnesota, c.	Mich.	1,000,000	40,000	25	420,000	April	1886	1.00	1,820,000	Mar.	1876	
95	Mollie Gibson, s.	Colo.	5,000,000	1,000,000	5					2,400,000	Oct.	1892	.15
96	Monitor, g.	S. Dak	2,500,000	250,000	10					45,000	Oct.	1890	.03
97	Mono, g.	Cal.	5,000,000	50,000	100	760,000	Sept.	1890	.25	12,500	Mar.	1886	.25
98	Montana, Lt., g. s.	Mont.	3,300,000	660,000	5	*				2,619,075	June.	1891	12½
99	Morning Star, s. l.	Colo.	1,000,000	100,000	10					925,000	April	1891	.25
100	Morning Star Drift, g	Cal.	240,000	2,400	100					75,800	July.	1892	3.00
101	Moulton, s. g.	Mont.	2,000,000	400,000	5	*				380,000	Dec.	1887	.07½
102	Mt. Diablo, s.	Nev.	5,000,000	50,000	100	137,500	June	1880	2.00	210,000	July.	1891	.10
103	Napa, q.	Cal.	700,000	100,000	7					500,000	Oct.	1892	.20
104	Navajo, g. s.	Nev.	10,000,000	100,000	100	520,000	May.	1891	20	229,950	April	1889	.10
105	New California, g.	Colo.	800,000	160,000	5	*				48,800	May.	1890	.12½
106	New Guston, s.	Colo.	550,000	110,000	5					1,877,500	April	1892	.75
107	N. Hoover Hill, g. s.¶	N. C.	300,000	120,000	2½	*				30,000	Dec.	1885	.06¼
108	North Belle Isle, s.	Nev.	10,000,000	100,000	100	445,000	Aug.	1891	.25	230,000	May.	1888	.50
109	North Star, g.	Cal.	1,000,000	100,000	10					300,000	April	1889	.50
110	Omaha Cons., g.	Cal.	2,400,000	24,000	100					41,000	May.	1892	.15
111	Ontario, s. l.	Utah	15,000,000	150,000	100					14,250,000	Sept.	1892	.50
112	Ophir, g. s.	Nev.	10,000,000	100,000	100	4,210,640	April	1890	.50	1,595,800	Jan.	1880	1.00
113	Original, s. c.	Mont.	1,500,000	60,000	25	*				138,000	Jan.	1889	.05
114	Oro, s. l. g.	Colo.	500,000	100,000	5					95,000	July.	1890	.20
115	Osceola, c.	Mich.	1,250,000	50,000	25	480,000	April	1876	1.60	1,647,500	Sept.	1892	1.00
116	Pacific Coast, b.	Cal.	1,500,000	15,000	100					315,000	Sept.	1892	1.00
117	Parrot, c.	Mont.	1,800,000	180,000	10					1,604,000	Sept.	1892	.10
118	Plumas Eureka, g.	Cal.	1,406,250	140,625	10					2,643,559	April	1892	.18
119	Plymouth Con., g.	Cal.	5,000,000	100,000	50	*				2,280,000	Feb.	1888	.40
120	Quicksilver, pref., q.	Cal.	4,300,000	43,000	100					1,823,911	June	1891	1.25
121	" com., q	Cal.	5,700,000	57,000	100					643,867	July.	1882	.40
122	Quincy, c.	Mich.	1,250,000	50,000	25	200,000	Dec.	1862		6,320,000	Aug.	1892	3.00
123	Red Cloud	Idaho	1,000,000	200,000	5					118,000	Aug.	1892	.05
124	Reed National, s. g.	Colo.	500,000	500,000	1	*				50,000	Dec.	1890	.01
125	Rialto, g.	Colo.	300,000	300,000	1	*				50,250	April	1892	.01½
126	Richmond, s. l.	Nev.	1,350,000	54,000	25	*				4,346,3[illegible]	Aug.	1891	.25
127	Ridge, c.	Mich.	500,000	20,000	25	219,939	Mar.	1886	.50	99,785	Feb.	1880	.50
128	Robinson Con., s. l.	Colo.	10,000,000	200,000	50	*				585,000	Mar.	1886	.05
129	Running Lode, g.	Colo.	1,000,000	1,000,000	1	*				36,000	May	1892	.00 1-10
130	Savage, s.	Nev.	11,200,000	112,000	100	6,772,000	Feb.	1892	.50	4,460,000	June	1869	3.00
131	Sheridan, s. g.	Colo.	300,000	3,000	100	*				300,000	Oct.	1891	2.50
132	Shoshone, g.	Idaho	150,000	150,000	1					7,500	April	1883	.01
133	Sierra Buttes, g.	Cal.	2,225,000	122,500	10					1,507,257	April	1892	.12
134	Sierra Nevada, s. g.	Nev.	10,000,000	100,000	100	6,411,910	June	1892	.25	102,000	Jan.	1871	1.00
135	Sierra Nevada, s. l.	Idaho	1,000,000	1,000,000	1	*				40,000	May.	1889	.02
136	Silent Friend	Colo.	500,000	500,000	1					60,000	Aug.	1891	.02½
137	Silver Cord, s. l. g.	Colo.	4,500,000	450,000	10					265,000	April	1889	.10
138	Silver King, s.	Ariz.	10,000,000	100,000	100	130,000	Nov.	1890	.30	1,950,000	July	1887	.25
139	Silver Mg. of L. V., s. l.	N. M.	500,000	500,000	1					300,000	Dec.	1891	.05
140	Small Hopes Con., s.	Colo.	5,000,000	250,000	20	*				3,162,500	Oct.	1890	.10
141	Spring Valley, g.	Cal.	200,000	200,000	1	50,000	Oct.	1886	.25	50,000	Jan.	1881	.25
142	Standard, g. s.	Cal.	10,000,000	100,000	100	100,000	June	1890	.50	3,635,000	July.	1892	.10
143	Stormont, s.	Utah	500,000	500,000	1	*				155,000	Nov.	1881	.05
144	St. Joseph, l.	Mo.	1,500,000	150,000	10	*				1,974,000	Dec.	1890	.02
145	Tamarack, c.	Mich.	1,250,000	50,000	25	520,000	April	1885	3.00	3,160,000	Oct.	1892	4.00
146	Tombstone, g. s. l.	Ariz.	12,500,000	500,000	25	*				1,250,000	April	1882	.10
147	United Verde, c.	Ariz.	3,000,000	300,000	10	*				207,500	Jan.	1892	.10
148	Viola Lt., s. l.	Idaho	750,000	150,000	5					337,500	Nov.	1888	.37½
149	Ward Con., s.	Colo.	2,000,000	200,000	10					20,000	Dec.	1889	.05
150	Woodside, s. l.	Utah	100,000	100,000	10					25,000	Oct.	1889	.25
151	W. Y. O. D.	Cal.	30,000	15,000	4	22,500	May.	1891	.10	21,000	May.	1892	.10
152	Yankee Girl, s.	Colo.	1,300,000	260,000	5					1,405,000	April	1891	.50
153	Yellow Jacket, g. s.	Nev	12,000,000	120,000	100	5,808,000	Sept.	1892	.25	2,184,000	Aug	1871	2.50
154	Young America, g.	Cal.								175,000	Jan.	1889	.10

NON-DIVIDEND PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total levied.	Date and am't of last.		
1	Alliance, s. g.	Utah.	$100,000	100,000	$1	$120,000	Feb.	1891	.20
2	Allouez, c.	Mich.	2,000,000	80,000	25	737,800	Jan.	1890	.70
3	Alpha Con., g. s.	Nev.	3,000,000	30,000	100	209,000	Sept.	1892	.10
4	Alta, s.	Nev.	10,080,000	100,800	100	3,369,880	Jan.	1892	.10
5	American, c.	Idaho	5,000,000	500,000	10				
6	American Flag, s.	Colo.	1,250,000	125,000	10	300,000	June	1887	
7	Amity, s.	Colo.	250,000	250,000	1				
8	Anchor s. l. g.	Utah.	3,000,000	150,000	20	410,000	June	1890	.20
9	Anglo-Montana, Lt.	Mont.	600,000	120,000	5				
10	Astoria, g.	Cal.	200,000	100,000	2				
11	Barcelona, g.	Nev.	5,000,000	200,000	25	*			
12	Belmont, g.	Cal.	500,000	500,000	1	*			
13	Belmont, s.	Nev.	5,000,000	50,000	100	735,000	April	1886	.10
14	Best & Belcher, s. g.	Nev.	10,080,000	100,800	100	2,405,275	Aug.	1892	.25
15	Black Oak, g.	Cal.	3,000,000	300,000	10	*			
16	Boston Con., g.	Cal.	10,000,000	100,000	100	170,000	Nov.	1883	.25
17	Brownlow, g.	Colo.	250,000	250,000	1				
18	Brunswick, g.	Cal.	2,000,000	400,000	5				
19	Buckeye, s. l.	Mont.	1,000,000	500,000	2				
20	Bullion, s. g.	Nev.	10,000,000	100,000	100	2,890,000	Aug.	1892	.25
21	Butte & Boston, c. s.	Mont.	5,000,000	200,000					
22	Butte Queen, g.	Cal.	1,000,000	100,000	10	6,000	Jan.	1892	.04
23	Calaveras, g.	Cal.	500,000	500,000	1	*			
24	California, ●	Cal.	1,000,000	100,000	10	9,000	Mar.	1892	.03
25	Carisa, g.	Wy.	500,000	100,000	5	*			
26	Carupano, g. s. l. c.	Ven.	200,000	100,000	2	*			
27	Cashier, g. s.	Colo.	500,000	250,000	2	*			
28	Cherokee, g.	Cal.	1,500,000	150,000	10				
29	Chollar, s. g.	Nev.	11,200,000	112,000	100	1,820,000	May.	1892	.50
30	Cleveland, t.	Dak.	1,000,000	500,000	2	*			
31	Colchis, s. g.	N. M.	500,000	50,000	10				
32	Colorado Silver	Colo.	1,625,000	325,000	5				
33	Comstock Tun.	Nev.	10,000,000	100,000	100	35,000	Mar.	1887	.15
34	Con. Imperial, g. s	Nev.	5,000,000	50,000	100	2,062,500	Jan.	1892	.25
35	Con. New York, s. g.	Nev.	5,000,000	100,000	50	110,000	Mar.	1892	.10
36	Con. Pacific, g.	Cal.	6,000,000	60,000	100	198,000	June	1890	.10
37	Con. Silver, s.	Mo.	2,500,000	250,000	10				
38	Crescent, s. l.	Colo.	3,000,000	300,000	10	*			
39	Crocker, s.	Ariz.	10,000,000	100,000	100	165,000	Aug.	1892	.05
40	Crowell, g.	N. C.	500,000	500,000	1				
41	Dahlonega, g.	Ga.	250,000	250,000	1	*			
42	Dandy, s.	Colo.	5,000,000	500,000	10				
43	Decatur, s	Colo.	1,500,000	300,000	5	*			
44	Denver City, s.	Colo.	5,000,000	500,000	10	*			
45	Denver Gold, g.	Colo.	300,000	60,000	5				
46	Dickens-Custer, s.	Idaho	2,100,000	420,000	5				
47	Durango, g.	Colo.	500,000	500,000	1	*			
48	Eastern Dev. Co., Lt.	N. S.	1,500,000	150,000	10	990,000	Mar.	1886	1.00
49	El Dorado, g.	Cal.	1,000,000	250,000	4	*			
50	El Talento, g.	U.S.C.	1,000,000	500,000	2				
51	Emmons, s. l.	Colo.	2,000,000	2,000,000	1				
52	Empire, s.	Utah.	10,000,000	100,000	100				
53	Eureka Tunnel, s. l.	Nev.	10,000,000	100,000	100	*			
54	Exchequer, s. g.	Nev.	10,000,000	100,000	100	940,000	Jan.	1892	.25
55	Found Treasure, g. s.	Nev.	10,000,000	100,000	100	130,500	Jan.	1892	.50
56	Gogebic I. Syn., i.	Wis.	5,600,000	200,000	25				
57	Gold Bank, g. s.	Colo.	250,000	250,000	1	*			
58	Gold Cup, s.	Colo.	500,000	500,000	1	*			
59	Golden Era, s.	Mont.	2,000,000	200,000	10	*			
60	Gold Flat, g.	Cal.	1,000,000	100,000	10	5,000	Mar.	1892	.05
61	Gold Rock, g.	Cal.	1,000,000	500,000	2	*			
62	Goodshaw, g.	Cal.	10,000,000	100,000	100				
63	Goodyear g. s. l	Mont.	1,000,000	200,000	5	18,000	Feb.	1892	.01
64	Grand Belt, c.	Tex.	12,000,000	120,000	100				
65	Grand Duke	Colo.	800,000	80,000	10				
66	Gregory Con., g.	Mont.	3,000,000	300,000	10				
67	Harlem M. & M. Co., g.	Cal.	1,000,000	200,000	5				
68	Hartery Con., g.	Cal.	1,000,000	100,000	10	22,000	Oct.	1890	.05
69	Head Cent. & Tr., s. g.	Ariz.	10,000,000	100,000	100	16,981	Mar.	1892	.03
70	Hector, g.	Cal.	1,500,000	300,000	5	45,000	Jan.	1889	.15
71	Highland, c.	Mich.	500,000	25,000	20				
72	Holywood	Cal.	200,000	100,000	2				
73	Hortense, s.	Colo.	2,000,000	200,000	10				
74	Huron, c.	Mich.	1,000,000	40,000	25	280,000	May.	1887	3.00
75	Ironton, i.	Wis.	1,000,000	40,000	25				
76	Iroquois, c.	Mich.	1,250,000	50,000	25				
77	J. D. Reymert, s.	Ariz.	10,000,000	100,000	100				
78	Julia Con., g. s.	Nev.	11,000,000	110,000	100	1,463,000	Jan.	1889	.10
79	Justice, g. s. c.	Colo.	500,000	500,000	1	*			
80	Lacrosse, g.	Colo.	1,000,000	100,000	10	*			
81	La Cumbre, g. s.	Mex.	150,000	3,000	50	*			
82	Lee Basin, s.	Colo.	5,000,000	500,000	10	*			
83	Lone Star Cons., g.	Cal.	500,000	500,000	1	10,000	April	1892	.00½
84	Madeleine, g. s. l.	Colo.	750,000	150,000	1	4,500	Feb.	1892	.00½
85	Mammoth Gold, g.	Ariz.	245,000	49,000	5	*			
86	Mayflower Gravel, g.	Cal.	1,000,000	100,000	10	*			
87	Medora, g.	Dak.	250,000	250,000	1	585,000	Mar.	1890	.56
88	Merrimac Con., g. s.	Colo.	5,000,000	500,000	10				
89	Mexican, g. s.	Nev.	10,000,000	100,000	100	*			
90	Middle Bar, g.	Cal.	400,000	200,000	2	2,892,960	May.	1892	.25
91	Mike & Starr, s. c.	Colo.	1,000,000	200,000	5				
92	Milwaukee, s.	Mont.	500,000	500,000	1	*			
93	Monitor, g.	Colo.	100,000	100,000	1	12,500	May.	1891	.01
94	Montreal, g. s. l.	Utah.	750,000	150,000	5	4,500	Feb.	1892	.00½
95	Mutual Mg. & Sm.	W'sh.	100,000	100,000	1	*			
96	Native, c.	Mich.	1,000,000	40,000	25				
97	Neath, g.	Colo.	1,000,000	100,000	10				
98	Nevada Queen, s.	Nev.	10,000,000	100,000	100	200,000	Oct.	1889	.25
99	New Germany, g.	N. S.	100,000	100,000	1	*			
100	New Pittsburg, s. l.	Colo.	2,000,000	200,000	10	*			
101	North Standard, g.	Cal.	10,000,000	100,000	100	20,000	Nov.		
102	Oneida Chief, g.	Cal.	500,000	125,000	100	*			
103	Oriental & Miller, s.	Nev.	10,000,000	400,000	100				
104	Original Keystone, s.	Nev.	10,000,000	100,000	100	250,000	Mar.	1892	.10
105	Osceola, g.	Nev.	5,000,000	500,000	10	*			
106	Overman, g. s.	Nev.	11,520,000	115,200	100	4,001,840	May.	1892	.10
107	Park, s.	Utah.	2,000,000	200,000	10				
108	Peer, s.	Ariz.	10,000,000	100,000	100	190,000	Feb.	1892	.10
109	Peerless, s.	Ariz.	10,000,000	100,000	100	405,000	Oct.	1890	.15
110	Pennsylva'a Cons., g	Cal.	5,150,000	515,000	10	36,050	Feb.	1892	.10
111	Phœnix	Ariz.	500,000	500,000	1	*			
112	Phœnix Lead, s. l.	Colo.	100,000	100,000	1	*			
113	Pilgrim, g	Cal.	600,000	300,000	2	*			
114	**Pioche M. & R., s. g. l.	Utah.	20,000,000	2,000,000	10				
115	Potosi, s.	Nev.	11,200,000	112,000	100	1,573,000	Mar.	1890	.50
116	Proustite, s.	Idaho	250,000	250,000	1	*			
117	Puritan, s. g.	Colo.	1,500,000	150,000	10	*			
118	Quincy, c.	Colo.	3,000,000	300,000	10				
119	Rappahannock, g. s.	[illegible]	250,000	250,000	1	*			
120	Red Elephant, s.	Colo.	500,000	500,000	1	*			
121	Red Mountain, Ltd., s	Colo.	300,000	60,000	5	*			
122	Ropes, g. s.	Mich.	2,000,000	80,000	25	167,200	Feb.	1891	.50
123	Ruby & Dun., s. l. g.	Nev.	25,300	506	50				
124	Russell, g.	N. C.	1,500,000	300,000	5				
125	Sampson, g. s. l.	Utah.	10,000,000	100,000	100	288,15[illegible]	July.	1888	1.[illegible]
126	Silver Age, s. l. g.	Colo.	2,000,000	200,000	10	*			
127	Silver Queen, c.	Ariz.	5,000,000	200,000	25	*			
128	South Bulwer, g	Cal.	10,000,000	100,000	100	100,000	May.	1881	.25
129	South Hite	Cal.	10,000,000	100,000	100	195,000	Jan.	1883	.05
130	South Pacific	Cal.	500,000	100,000	5				
131	Stanislaus, g.	Cal.	2,000,000	200,000	10				
132	St. Kevin, s. g.	Colo.	100,000	100,000	1	*			
133	St. Louis & Mex., s.	Mex.	[illegible],000,000	500,000	10	*			
134	St. Louis & St. Elmo.	Colo.	[illegible]000 000	200,000	10				
135	St. L. & St. Felipe, g. s.	Mex.	[illegible],000	150,000	10				
136	St. L. & Sonora, g. s.	Ariz.	3,000,000	300,000	10	*			
137	Sunday Lake, i.	Mich.	1,250,000	50,000	25				
138	Sullivan Con., g.	Dak.	600,000	200,000	3	*			
139	Sylvanite, s.	Colo.	5,000,000	500,000	10	*			
140	Taylor-Plumas, g.	Cal.	325,000	65,000	5	3,575	Mar.	1892	.01½
141	Telegraph, g. s.	Mex.	100,000	100,000	1	70,000	Feb.	1892	.10
142	Teresa, g. s.	Cal.	1,000,000	200,000	5	10,000	Feb.	[illegible]	.10
143	Tioga Con., g.	Nev.	10,000,000	100,000	10	295,000	May.	[illegible]	.25
144	Tornado Con., g. s.	Nev.	100,000	100,000	1	*			
145	Tuscarora, s.	Nev.	10,000,000	500,000	20	2,335,000	Jan.	1892	.25
146	Union Con., g. s.	Nev.	10,000,000	100,000	100	370,000	June	1892	[illegible]
147	Utah, s.	Nev.	10,000,000	100,000	100	245,000	Aug.	1890	.2[illegible]
148	Ute & Ulay, s. l.	Colo.	1,000,000	500,000	2	1,500	Mar.	1892	.0018
149	Wall Street, g. s. l.	Colo.	500,000	500,000	1				
150	Washington, c.	Mich.	1,000,000	40,000	25				
151	West Granite Mt., s.	Mont.	500,000	100,000	5	*			
152	Whale, s.	Mont.	5,000,000	500,000	10	*			
153	Yuma, c. s. g.	Ariz.	10,000,000	400,000	25				
154	Zelaya, g. s.	C. A	600,000	300,000	2				

G., Gold. S., Silver. L., Lead. C., Copper. B., Borax. * Non-assessable. † This company, as the Western, up to December 10th, 1881, paid $1,400,000. ‡ Non-assessable for three years. § The Deadwood previously paid $275,000 in eleven dividends and the Terra $75,000. Previous to the consolidation in August, 1884, the California had paid $31,320,000 in dividends, and the Cons. Virginia $42,390,000. ** Previous to the consolidation of the Copper Queen with the Atlanta, August, 1885, the Copper Queen had paid $1,350,000 in dividends. ¶ This company paid $190,000 before the reorganization in 1880. ** This company acquired the property of the Raymond & Ely Company, which had paid $3,075,000 in dividends. *** Previous to this company's acquiring Northern Belle, that mine declared $2,400,000 in dividends, against $125,000 in assessments.

STOCK MARKET QUOTATIONS.

Aspen. Sept. 24.

The closing quotations were as follows:

Agnes C.	$....
Argentum Junlata	.78
Aspen Deep Shaft	.12
Aspen Contact	4.00
Best Friend	.18
Bimetallic	.25
Bushwacker	28@.30
Carbonate Chief	.11
Empire Champion	.20
Justice	.10
Little Annie	.16@.18
Mollie Gibson	9.00
Nolan Creek	....
Park, Mamie & Queen	....
Pontiac	12@ 14
Sheep Mountain S. & M. Co.	.20@.25
Smuggler	19.50
St. Joe & Mineral Farm	.14
Yellow Boy	.20

Baltimore, Md. Sept. 29.

Company.	Bid.	Asked.
Atlantic Coal.	$..	....
Balt. & N. C.	....	....
Big Vein Coal	....	....
Conrad Hill	....	....
Cons. Coal	....	....
Diamond Tunnel	....	.15
George's Creek Coal.	1.05	1.08
Lake Chrome	....	....
Maryland & Charlotte	....	....
North State	..	....
Silver Valley	.75	.80

Pittsburg, Pa.

Prices highest and lowest for the week ending September 29th:

Company.	H.	L.
Allegheny Gas Co.	$. ...	$.
Bridgewater Gas Co.	36.00	27.00
Chartiers Val. Gas.	12.75	12.25
Columbia Oil Co.	....	....
Consolidated Gas Co.	48 00	....
East End Gas Co.	....	....
Fisher Oil Co.	....	....
Forest Oil	....	....
Hazlewood Oil Co.	....	....
Hidalgo Mining Co.	10 00	....
La Noria Mining Co.	20	11
Luster Mining Co.	9.00	8.13
Mansfield C. & C. Co.	....	....
Manufacturers Gas Co	27 50	27.25
Nat. Gas Co. of W. Va	....	....
N. Y. & Clev. Gas Coal Co.	52.50	52.00
Ohio Valley Gas Co.	....	....
Pennsylvania Gas Co.	12.00	10.00
People's Natural Gas Co.	27.75	27 25
People's N. G. & P. Co.	16.00	15.00
Philadelphia Co	22.75	22.25
Pine Run Gas Co.	....	....
Pittsburg Gas Co.	74 00	....
Red Cloud Mining Co	....	....
Silverton Mining Co.	....	....
South Side Gas Co.	....	....
Sterling Silver Mining Co.	....	....
Tuna Oil Co.	....	....
Union Gas Co.	....	....
Washington Oil Co.	....	....
W'moreland & Camb.	....	....
Wheeling Gas Co.	19.75	18.00
W'house E. Light	23.50	22.50
W'house Air Brake Co.	145.50	140.00
W'house Brake Co., Ltd.	100.00	95.00

Deadwood. Sept. 24.

	Bid.	Asked.
Bullion	.05	.06
Caledonia	.90	1 10
Calumet	.07	.07½
Cambrian	....	.02
Carthage	.01	.01½
Cora	.04	05
Deadwood Terra	2.20	2.25
De Smet	.25	.30
Double Standard	.20	.22
Elk Mountain	.00½	.01
Emmett	.01	.02
Equitable	.03	.04½
Florence	.01	.02
Golden Reward	1.40	1.50
General Merritt	.08	.10
Harmony	10	.12½
Hester A.	.02	.02½
Homestake	14 00	15.00
Hermit	.01½	.02½
Iron Hill	.16	.19
Isadorah	.22½	.26
Maggie	.07	.10
Monitor	.	.08½
Rainbow	.01½	.02½
Retriever	.10	.12
Ross-Hannibal	.07	.10
Ruby Bell	.18	.20
Ruby Wilkes	.19	.24
Seabury-Calkins	.05	.05½
Silver Queen	.02	.02½
Spanish R.	.01½	.02½
Stewart	.12	.15
Tornado	.25	.30½
Troy	.02	.02½

St. Louis. Sept. 28.

The closing quotations were as follows:

	Bid.	Asked
Adams, Colo	$.....	$5.28
American & Nettie, Colo.	....	.75
Bi-Metallic, Mont.	.....	9.50
Central Silver	.....	.....
Elizabeth, Mont.	.40	....
Granite Mountain, Mont.	5.50	6.50
Hope	.....	3.15
Leo	.....	.05
Little Albert	.....	....
Montrose Placer, Colo.	.....	.06
Mickey Breen	.....	....
Pat Murphy, Colo.	.02	.03
Silver Age	.....	....
Silver Bell	.....	.20
Small Hopes, Colo.	.93¾	1.00
Yuma, Ariz.	.....	....

Helena, Mont.

(Special report by Samuel K. Davis.)

Prices highest and lowest for week ending September 24th:

	H.	L.
Bald Butte (Mont.)	$2.00	$1.90
Benton Group, Mont.	.40	.30
Bi-Metallic, Mont	....	....
Bi-Metallic Extension	35	.30
California (Castle), Mont.	15	12½
Champion (Ore Fine), Mont.	30	.25
Combination (Philipsb'g), Mont.	1.10	1.00
Copper Bell (Cataract), Mont.	.05	.04
Cornucopia, Mont	....	....
Cumberland (Castle), Mont	.50	.45
Elizabeth (Phillipsburg), Mont.	.40	.37½
Florence (Neihart), Mont.	.30	.25
Fourth of July, Wash.	....	....
Glengary (Butte), Mont.	....	....
Helena & Victor, Mont.	1.10	1.00
Iron Mountain (Missoula), Mont.	1.05	1 00
Jersey Blue (Butte)	....	....
Lone Pine Consolidated	2.90	2.75
Moulton, Mont.	....	....
Polaris (Beaverhead Co.), Mont.	....	....
Poorman (Cœur d'Alene), Idaho	.87½	.82½
Queen of the Hills (Neihart)	....	....
Southern Cross (Deer Lodge), Mont.	15	.12½
Whitlach Union & MacIntyre	.50	.40
Yellowstone (Castle), Mont.	.20	.15

Foreign Quotations.

London. Sept. 17.

	Highest.	Lowest
Alaska Treadwell	£2½	£2¼
Amador, Cal.	2s. 3d.	1s. 9d.
American Belle, Colo.	3s. 6d.	3s.
Appalachian, N. C.	....	....
Can. Phosphate, Can.	£½	£¼
Colorado, Colo.	1s.	6d.
De Lamar, Idaho	£1 7-16	£1 15-16
Dickens Custer, Idaho.	6s.	3s.
Eagle Hawk	2s. 6d.	1s. 6d.
East Arevalo, Idaho.	....	....
Eberhardt, Nev.	6s.	3s.
Elkhorn, Mont.	£1 13-16	£1 11-16
Elmore, Idaho	....	....
Emma, Utah	1s.	6d.
Esmeralda, Nev.	7½s.	4½s.
Flagstaff, Utah	2s.	1s. 6d.
Garfield, Nev	9s.	6s.
Golden Feather, Cal.	18s.	17s.
Golden Gate, Cal.	7s.	6s.
Golden Leaf, Mont	1s. 3d.	9d.
Golden River, Cal.	....	....
Idaho	....	....
Jay Hawk, Mont.	11s.	10s. 6d.
Josephine, Cal.	....	....
Kohinoor, Colo.	....	....
La Luz, Mex.	2s. 3d.	2s.
La Plata, Colo.	6s.	3s.
La Valera, Mex.	....	....
Maid of Erin, Colo.	20s.	15s.
Mammoth Gold, Ariz.	1s. 6d.	1s. 3d.
Mount McClellan	4s.	3s
Montana, Mont.	4s. 3d.	3s. 9d
Mona Lake Gold	....	....
New California, Colo.	....	....
New Consolidated	....	....
New Eberhardt, Nev	1s.	6d.
New Gold Hill, N. C.	6s.	3s.
New Guston, Colo.	£1	£⅞
New Hoover Hill, N.C.	....	2s. 6d.
New Russell, N. C.	....	....
New Viola, Idaho	9s.	3s.
Old Lout, Colo	£⅜	£¼
Parker Gold, N. C.	1½s.	1¼s.
Pittsburg Cons., Nev	2s. 6d.	1s. 6d.
Poorman, Idaho	7s. 3d.	6s. 9d.
Plumas Eureka, Cal.	£⅜	£⅛
Richmond Con., Nev.	12s.	11s.
Ruby, Nev.	6s.	3s.
Sam Christian, N. C.	....	....
Sierra Buttes, Cal.	£⅜	£¼
" Plumas Eur., Cal.	£9-16	£7-16
Silver King	£⅜	£¼
United Mexican, Mex.	£3-16	£1-16
West Argentine, Colo.	....	....
Yankee Girl, Colo.	10s.	9s. 6d.

Paris. Sept. 15.

	Francs.
East Oregon, Ore.	0.75
Forest Hill Divide, Cal.	20 00
Golden River, Cal.	130.00
" " parts	30.00
Laurium, Greece	725.00
Lexington, Mont	105.00
" parts	2 50
Nickel, New Caledonia	950.00
Rio Tinto, Spain	378.75
" " oblig.	511.25
" "	515.00
Tharsis, Spain	113.75
Vieille-Montagne, Belgium	520.00

CURRENT PRICES.

These quotations are for wholesale lots in New York unless otherwise specified.

Acid—Acetic, No. 8, pure, 1,040, ℔ lb. .06@.08
Commercial, in bbls. and cbys. .015@.019
Carbonic, liquefied, ℔ lb. .30
Chromic, chem. pure, ℔ lb 1 00
for batteries .40
Hydrobromic, dilute, U. S. P. .25
Hydrocyanic, U. S. P. .45
Hydrofluoric .20
Alcohol—95%, ℔ gall. $2.30@$2.40
Absolute $3.80
Ammoniated $2.80
Alum—Lump, ℔ lb. .016@.017
Ground, ℔ lb. .0165@.0175
Powdered .04½@.05
Lump ℔ ton, Liverpool £5
Aluminum Chloride—Pure, ℔ lb. $1.25
Amalgamating solution, ℔ lb. .60
Sulphate .01¾@.03
Ammonia—Sul., in bbl. lots, ℔ lb. .02½@.03
Carbonate, ℔ lb., English and German .07¾
Muriate, white, in bbls., ℔ lb. .08½
Aqua Ammonia—(In cbys) 18° ℔ lb. .03@.04
20°, ℔ lb. .04@.05
26°, ℔ lb. .04¾@.05
Antimony—Oxymur, ℔ lb. .04@.06
Regulus, ℔ ton, London £42½@£43¼
Argols—Red, powdered, ℔ lb. .15
Arsenic—White, powdered ℔ lb. .02¾@.03
Red ℔ lb. .05@.065
Yellow .08@.09
White at Plymouth, ℔ ton £12 2 6
Asbestos—Canadian, ℔ ton $50@$300
Italian, ℔ ton, c. i. f. L'pool £18@£60
Ashes—Pot, 1st sorts, ℔ lb. 4 75@5
Pearl .06@.06¼
Asphaltum—
Prime Cuban, ℔ lb. .04@.05¼
Hard Cuban, ℔ ton $28.00
Trinidad, refined, ℔ ton $30.00
Egyptian, ℔ lb. .07@.08
Californian, at mine, ℔ ton $12.00
at San Francisco, ℔ ton $15.00
Barium—Carbonate, pure, ℔ lb. .45
Carbonate, commercial, ℔ lb .05@.10
Chlorate, crystal, ℔ lb. .75
Chloride, commercial, ℔ lb. .05@.10
pure, ℔ lb. .16
Iodide, ℔ oz. .40
Nitrate, ℔ lb. .07@.07½
Sulph., Am. prime white, ℔ ton $17.50@$19
Sulph., foreign, floated, ℔ ton $21@$23
Sulpb., off color, ℔ ton $11.50@$14.00
Carb., lump, f. o. b. L'pool, ℔ ton £6
No. 1, Casks, Runcorn, " " £4 10 0
No. 2, bags, Runcorn, " " £3 15 0
Bauxite—℔ ton $10.00
Bichromate of Potash—Scotch, ℔ lb. .10½@.11
American, ℔ lb. .10½@.11
Bichromate of Soda—℔ lb. .09½@.10
Borax—Refined, ℔ lb., in car lots .08@.08½
San Francisco .08½
Concentrated, in car lots .08@.08½
Refined, Liverpool ℔ ton £29
Bromine—℔ lb. .15@.22
Cadmium Minion—℔ lb. $2.00
Cadmium Iodide—℔ lb. $5.50
Chalk—℔ ton $1.75@$2.00
Precipitated, ℔ lb. .05@.06
China Clay—English, ℔ ton $13@$18.00
Domestic, ℔ ton 9@$11
Chlorine Water—℔ lb. .10
Chrome Yellow—℔ lb. .10@.25
Chrome Iron Ore—℔ ton, San Francisco $10.00
Chromalum—Pure, ℔ lb. .40
Commercial, ℔ lb. .12
Cobalt—Oxide, ℔ lb. $2.50@$2.90
Copper—Sulph. English Works, ton £20@£21
Vitriol (blue), ordinary .03¼@.03¾
" " extra .04½
Nitrate, ℔ lb. .40
Copperas—Common, ℔ 100 lbs. .73@90
Best, ℔ 100 lbs. .85@$1.00
Liverpool, ℔ ton, in casks £2
Corundum—Powdered, ℔ lb. .04½@.09
Flour, ℔ lb. .03
Cryolite—Powdered, ℔ lb., bbl. lots. .07
Emery—Grain, ℔ lb. (℔ kg.) .04½@.05
Flour ℔ lb. .02½@.10
Epsom Salt—℔ lb. .01½
Feldspar—Ground, ℔ ton $20.00
Crude $10@$14
Fluorspar—Powdered, No. 1, ℔ ton $30.00
French Chalk—
Fuller's Earth—Lump, ℔ ton. $20@$25
Glauber's Salt—in bbls., ℔ lb. .01@.0125
Glass—Ground, ℔ lb .10
Gold—Chloride, pure, crystals, ℔ oz. $12.00
pure, 15 gr., c. v., ℔ doz. $5.40
liquid, 15 gr., g. s. v., ℔ doz. $5.50
Chloride and sodium, ℔ oz $6.00
15 gr., c.v., ℔ doz. $2.88
Oxide, ℔ oz. $27.25
Gypsum—Calcined, ℔ bbl. $1.25@$1.50
Land Plaster
Iodine—Resublimed $3.30@$3 35
Iron—Nitrate, 40°, ℔ lb. .01½
47°, ℔ lb. .02½
Kaolin—*See China Clay.*
Kieserite—℔ ton $9@$10
Lead—Red, American, ℔ lb. .06¾@.07½
White, American, in oil, ℔ lb. .06½@.07½
White, English, ℔ lb., in oil .08½@.09¾
Acetate, or sugar of, white .12@.13
Granulated
Nitrate .09@.10
Lime Acetate—Am. Brown, $1.00@$1.05
" Gray, $1.75@$1.87½
Litharge—Powdered, ℔ lb. .06¾@.07½
English flake, ℔ lb. .09@.09½
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@.28
Oxide, ground, ℔ lb. .02½@.06½
Mercuric Chloride—(*Corrosive Sublimate*) ℔ lb. .66@.69
Powdered, ℔ lb. .54
Marble Dust—℔ bbl. $1.25
Metallic Paint—Brown ℔ ton. $20@$25
Red $20@$25
Mineral Wool—Ordinary slag .01½
Ordinary rock .02½
Ground, ℔ ton
Mica—In sheets according to size.
1st quality, ℔ lb. .25@$6.00
Naphtha—Black
Nitre Cake—℔ ton $10.00
Ochre—Rocbelle, ℔ lb. $1.10@$1.50
Washed Nat Oxf'rd, Lump, ℔ lb. .06½@.06¾
Washed Nat Oxf'rd, Powder, ℔ lb. .07@.07½
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. .2(@.24
Dark steam refined, ℔ gal. .09@.12
Phosphorus—℔ lb. .55@.60
Precip., red, ℔ lb. .85@.90
white, ℔ lb. .93@.97
Plumbago—Ceylon, ℔ lb. .04@.05
American, ℔ lb. .05@.07
Potassium—Cyanide, ℔ lb., C. P. .70
67%, ℔ lb. .45
50%, ℔ lb. .40
Bromide, domestic, ℔ lb. .23@.25
Chlorate, English, ℔ lb. .12¾@.13
Chlorate powdered, English, ℔ lb. .13@.13½
Carbonate, ℔ lb., by casks, 82% .04½@.05¾
Caustic, ℔ lb., pure slick .06½@.07
Iodide, ℔ lb. $2.58@$2.63
Nitrate, refined, ℔ lb. .06@.08
Bichromate, ℔ lb .10@.11
Yellow Prussiate, ℔ lb. .23½@.24½
Red Prussiate, ℔ lb. .40@.45
Pumice Stone—Select lumps, lb. .04@.15
Original cks., ℔ lb. .01½@.02
Powdered, pure, ℔ lb. .01¾@.02¾
Pyrites—Non-cupreous, p. units .12@.15
Quartz—Ground, ℔ ton $12.50@$17.50
Rotten Stone, Powdered, ℔ lb. .03¼@.03½
Lump, ℔ lb. .06@.07
Original cks, ℔ lb. .04½@.05½
Rubbing stone, ℔ lb .03½@.04
Sal Ammoniac—lump, in bbls., ℔ lb. .80½
Salt—Liverpool, ground, ℔ sack .700
Domestic, fine, ℔ ton $7@$7.5
Common, fine, ℔ ton $4.50@$5
Turk's Island, ℔ bush. .26@.28
Salt Cake—℔ ton $10 00
Saltpeter—Crude, ℔ lb. .03¾@.04¼
Soapstone—Ground, ℔ ton $8@$
Block and slab according to size
Sodium—Prussiate, ℔ lb. .22@.2
Phosphate, ℔ lb. .06@.08
Stannate, ℔ lb. .08@.15
Tungstate, ℔ lb.
Hyposulphite, ℔ lb., in casks .0235@.0245
Strontium—Nitrate, ℔ lb. .09@.09¼
Sulphur—Roll, ℔ lb. .02½
Flour, ℔ lb. .02½
Sylvinit, 23@27%, S.O.P., per unit .40@.42½
Talc—Ground French, ℔ lb. .01¼@.01½
American No. 1, ℔ lb. .01@.01¼
American No. 2 .06
Terra Alba—French, ℔ lb. .75@.80
English, ℔ lb. .70@.75
American, No. 1, ℔ lb. 1.00
American, No. 2, ℔ lb. .45@.50
Tin—Crystals, in kegs or bbls. .14@.15
feathered or flossed. .25
Muriate, single .0 @.08
Double or strong, 54° B. .1(@.12
Oxy, or nitro 19
Vermilion—Imp. English, ℔ lb. .85@.90
Am. quicksilver, bulk .57 @.62
Am. quicksilver, bags .58 @.62
Chinese .85 @$1.00
Trieste .90 @ .95
American .11½@ .12
Zinc White—Am., Dry, ℔ lb 04½@ 05
Antwerp, Red Seal, ℔ lb. .06¼ @ 07½
Paris, Red Seal, ℔ lb. .08@.08½
Muriate solution .06
Sulphate crystals, in bbls., ℔ lb. .03¾

THE RARER METALS.

Aluminum—℔ lb. .50@.65
Arsenic—(Metallic), per lb. .40
Barium—(Metallic), per gram $4.00
Bismuth—(Metallic), per lb. $2.40
Cadmium—(Metallic), per lb. $1.00
Calcium—(Metallic), per gram $10.00
Cerium—(Metallic), per gram. $7.50
Chromium—(Metallic), per gram. $1.00
Cobalt—(Metallic), per lb. $6.00
Didymium—(Metallic), per gram. $9.00
Erbium—(Metallic), per gram $7.50
Gallium—(Metallic), per gram $140.00
Glucinum—(Metallic), per gram $12.00
Indium—(Metallic), per gram $9.00
Iridium—(Metallic), per oz. $7.00
Lanthanum—(Metallic), per gr. $10.00
Lithium—(Metallic), per gram $10.00
Magnesium—(Powdered), per lb. $4.00
Manganese—(Metallic), per lb. $1.10
Chem. pure, per oz. $10.00
Molybdenum—(Metallic), per gm .50
Niobium—(Metallic), per gram $5.06
Osmium—(Metallic), per oz. $65.00
Palladium—(Metallic), per oz. $35.00
Platinum—(Metallic), per oz. $7@$8
Potassium—(Metallic), per lb. $28.00
Rhodium—(Metallic), per gram $5.06
Ruthenium—(Metallic), per gm. $5.50
Rubidium—(Metallic), per gram. $2.00
Selenium—(Metallic), per oz. $1.80
Sodium—(Metallic), per lb. 5(@.75
Strontium—(Metallic), per gm .60
Tantalum—(Metallic), per gram $9.00
Telurium—(Metallic), per lb. $5.00
Thallium—(Metallic), per gram .20
Titanium—(Metallic), per gram $2.20
Thorium—(Metallic), per gram $17.00
Tungsten—(Metallic), per lb. .80
Uranium—(Oxide), per lb. $5.00
Metallic, per gm .20
Vanadium—(Metallic), per gm $22.00
Yttrium—(Metallic), per gram $9.00
Zirconium—(Metallic), per oz $60.00