

THE ENGINEERING AND MINING JOURNAL



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

VOL. LX. OCTOBER 5. No. 14.

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SOPHIA BRAEUNLICH, Business Manager.

THE SCIENTIFIC PUBLISHING CO., Publishers.

SUBSCRIPTIONS to THE ENGINEERING AND MINING JOURNAL are PAYABLE IN ADVANCE. Price: For the United States, Mexico and Canada, \$5 per annum; \$2.50 for six months; all other countries in the Postal Union, \$7.
The address slip on the paper will show date of expiration of subscription. Subscribers wishing their address changed will please give the name of the old post-office as well as the new one.
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ADVERTISING RATES furnished on application.
REMITTANCES should always be made by Bank Drafts, Post-Office Orders or Express Money Orders on New York, payable to THE SCIENTIFIC PUBLISHING CO.

THE SCIENTIFIC PUBLISHING COMPANY.

OFFICERS: P. O. BOX 1833.
R. P. BOWWELL, Pres. & Gen'l Mang. 253 Broadway, New York.
SOPHIA BRAEUNLICH, Sec'y & Treas. Cable Address: "Rothwell, New York."
Use McNeill's Code.

LONDON OFFICE: 20 Bucklersbury Rooms 366 and 367, London.
E. C., England. Edward Walker, Manager.

CHICAGO OFFICE: Monadnock Building, Room 737.
DENVER OFFICE: Boston Building, Room 206.

CONTENTS.

The Headquarters of the Mining Industry.....	Page. 317
Coke Prices.....	317
The Manufacture of Ferro-Silicon at Ashland.....	317, 319
Pig Iron Production.....	317
The Merced Gold Mine.....	317
South African Mines and the Stock Market.....	318
New Publications.....	319
Books Received.....	319
The Atlanta Exposition.....	320
*The Hartville Iron Ore Deposits in Wyoming.....	E. P. Snow 320
Abstracts of Official Reports.....	322
*The Largest Diamond Ever Found.....	323
Fractional Precipitation of Gold From a Solution Carrying Gold and Copper, with Hydrogen-Sulphide Gas.....	J. E. Rothwell 324
The Georgia Mineral Exhibit at the Atlanta Exposition.....	323
*Electric Mining Pumps.....	325
Russian Oil Exports.....	325
Mineral Production of the United Kingdom.....	326
Patents Relating to Mining and Metallurgy.....	326
Personal, Obituary, Societies, Technical Schools, Industrial.....	327
Trade Catalogues.....	328
Notes: The Lake Erie & Ohio Ship Canal, 326—Gold Mining in Wales, 326—Filling Trestles by Sluicing, 326.	328

* Illustrated.

MINING NEWS:	Wyoming..... 332	METALS:	Aspen..... 338
Alaska..... 328	FOREIGN MINING NEWS:	Gold & Silver 334	San Francisco..... 338
Arizona..... 325	British Guiana..... 332	Other Metals. 334	Pittsburg..... 338
California..... 328	Mexico..... 334	CHEMICALS AND MINERALS:	Baltimore..... 338
Colorado..... 329	Nova Scotia..... 334	New York..... 336	St. Louis..... 335
Florida..... 329	So. Africa..... 334	Liverpool..... 333	Coal Stocks..... 338
Idaho..... 329	West Australia 332	New York..... 336	Ind. and Trust..... 338
Illinois..... 329	MARKETS:	Boston..... 346	Colo Springs..... 348
Indiana..... 330	COAL:	Colo. Springs. 237	Helen..... 348
Michigan..... 330	New York..... 332	San Francisco. 337	Shanghai..... 338
Minnesota..... 330	Buffalo..... 333	London..... 37	Salt Lake City. 338
Missouri..... 335	Chicago..... 334	Paris..... 37	London..... 338
Montana..... 330	Pittsburg..... 333	Meetings..... 347	Paris..... 348
Nevada..... 330	IRON:	Dividends..... 337	Mexico..... 338
New Mexico..... 334	New York..... 333	Assessments..... 337	Valparaiso..... 338
New York..... 331	Buffalo..... 333	Aug. Divid. 337	Philadelphia..... 338
Ohio..... 331	Chicago..... 333	STOCK QUOTATIONS:	Current Prices:
Oregon..... 331	Cleveland..... 334	New York..... 333	Chemicals..... 338
Pennsylvania..... 331	Philadelphia..... 334	Boston..... 338	Minerals..... 338
South Dakota..... 331	Pittsburg..... 334	Denver..... 338	Rarer Metals..... 338
Tennessee..... 331	ADVT. RATES. 18	Duluth..... 338	ADVT. INDEX. 15
Texas..... 331			
Utah..... 331			
Virginia..... 331			

THE HEADQUARTERS OF THE MINING INDUSTRY.

Visitors find here files of a great number of papers from the mining districts of this and other countries, and books of reference which can be consulted for information on any question in which they may be interested. They can have their letters addressed in care of "The Engineering and Mining Journal," P. O. Box 1833, New York, and will find in the headquarters every convenience for correspondence.

The advance of prices made by the operators in the Connellsville region puts the price of furnace coke at \$1.60 per ton on cars at the ovens. This is in sharp contrast to the sales at 90 cents and even 85 cents per ton, which were reported less than a year ago. Under the agreement between the operators and the miners, the new price carries with it an increase in wages which will probably prevent any further talk of a strike in the region, for a time at least. The present conditions of demand are such that there is little doubt that prices will be maintained, with possibly a further increase before long. The supply is not over-abundant, and West Virginia coke is now having a fair opportunity in the markets west of Pittsburg.

The manufacture of ferro-silicon of bessemer ore in this country is an event of some importance in the history of the iron trade. There has heretofore been no trouble in making high silicon iron with many of our ores, but the ferro-silicon used has been imported. The Ashland Coal, Iron and Railroad Company recently took up this question and has worked it out to a successful issue, as is told in an interesting letter, published in another column, from Mr. J. C. Mathewson, the chemist of the company. The attempt has been made more than once in this country, but heretofore unsuccessfully. Mr. Putnam, the manager of the Ashland Company, has now succeeded in solving the problem on a commercial scale and in supplying a product which will, in all probability, if the company continues the work, soon take the place of the imported ferro-silicon in the market.

The production of pig iron in the United States as shown by the reports of the furnaces is now at the rate of somewhat over 10,500,000 tons per year, with every probability that before the increase stops it will reach the rate of 220,000 tons a week, or say, 11,500,000 tons yearly. That this large production is being promptly taken up is shown by the fact that during September there was an actual reduction in the stocks reported at the furnaces, and as our market reports show, there is an actual scarcity of certain kinds of iron, such as Bessemer pig, while there is no class of raw material that is in excessive supply.

We still continue to hear from all quarters of furnaces being repaired and put into blast, and the fact is that before very long we will have almost reached the limit of possible production until additions are made to existing plants. It is always the case that many furnaces are carried on the lists which are really not available for use on account of their small size, old pattern, or from other causes. At the present time we are informed that every furnace which is available in the Pittsburg district and in the Shenango and Mahoning valleys is in blast, and very nearly the same thing can be said of Southern Ohio, and the Alabama district is rapidly approaching the same condition. We hear a great deal of the erection of new furnaces, but that is an operation which takes some time, and before new plants could be made ready the immediate stress of demand will have passed and the trade settled down to a normal working condition. The present prospect is, however, that there will be no lack of demand for raw iron for some time to come.

The lawyers are said to have as a guiding principle, "When you have a case so bad that nothing can be said for it, then abuse the opposing counsel." It would seem that those interested in floating Merced gold stock at four to six and a half million dollars must think their case indefensible, for in answer to our requests, made in the interests of investors, that full and disinterested information concerning the value of the property be made public, these indiscreet "boomers" publish in the papers a lot of contradictory statements of the cost of the property, and abuse the "Engineering and Mining Journal," asserting—a palpable falsehood—that our request for information was prompted by disappointment of some one connected with the Journal at not being employed to report on the property. A Butte paper also thinks the report of an expert, financially interested in the effect of his report, is just as safe as if he had no such pecuniary interest. This may occasionally be true, but what would our contemporary say if asked to submit a case in court to the decision of a judge whose pecuniary interests would be advanced by a verdict against him?

There is no one connected with the "Engineering and Mining Journal" who has the least desire to examine the Merced Mine, and the company

can easily find many competent and disinterested experts whose opinions command confidence. In the meantime, however, we shall welcome equally the reports of even the interested experts. Let us have some light and some definite statement as to what stockholders are actually buying.

SOUTH AFRICAN MINES AND THE STOCK MARKETS.

The fact that in London and on the Continental exchanges a very active speculation has been going on for a year or more past in the stocks of the South African gold mining companies is very generally known, but few of us have appreciated the great dimensions which that speculation has attained. We have seen here and abroad periods of excitement and speculation in oil wells and in mining ventures; but the Transvaal craze is probably the greatest movement of this kind which has ever been known, and a few statements regarding it must be of interest.

In almost all other known gold regions the first discoveries and the first important yields have been of alluvial or placer gold, and the earlier returns have been obtained by individual prospectors and miners, who were able to work with little or no capital. The gold mines of the Transvaal, however, differ from the mining districts of California, Australia and Russia, in that the amount of the yellow metal obtained from placer workings has been only an insignificant fraction of the total. The output has come almost entirely from deep mining, and the work has necessarily been carried on by companies with capital sufficient to sink shafts, put up hoisting and pumping machinery, and erect mills for the extraction of the metal from its ores.

For this reason also, and because the auriferous formation of the most important district was different from that previously known in any important gold producing country, the region was slow in securing recognition of its importance. Many experts were doubtful of its value in the beginning, and actual experience was needed to convince miners generally of the extraordinary regularity and persistency of yield of the "banket" beds or reefs of the Witwatersrand. When the facts were once established, however, the movement of capital to the district began to assume extraordinary proportions. Not only was this the case, but the public demand for a share in the supposed profits became so great that the stocks of the mining companies at work in the district have reached premiums heretofore unknown in the history of similar ventures.

The first question which an investor would naturally ask is, what are the actual returns and profits obtained? We find from the records accessible that at the present time there are only about twenty-five Transvaal companies which are actually paying dividends on their stocks. In the following table—for the figures of which we are indebted to the London "Economist," a most reliable authority—we give a list of these dividend paying companies, with their issued capital; its present selling price; the dividend rate in 1894; the dividend rate for the first half of 1895, and the return on the selling price, provided the last named rate is maintained for the whole of this year:

Companies.	Capital stock.		Dividend %		Return year. year. ing price.
	Par value.	Selling price.	1894	1895 half	
City & Suburban.....	\$425,000	\$1,475,000	50	75	5.5
Crown Reef.....	600,000	7,200,000	50	25	4.1
Durban-Roodepoort.....	625,000	5,468,750	60	30	6.9
Ferreira.....	450,000	9,225,000	150	65	8.3
Goldenhul's estate.....	1,000,000	6,937,500	30	30	8.8
Goldenhul's Main Reef.....	750,000	1,230,000	..	10	12.3
Glencairn.....	1,125,000	4,302,000	12½	15	6.8
Jubilee.....	250,000	2,687,500	120	60	11.5
Jumpers.....	500,000	4,375,000	55	25	6.0
Kleinfontein.....	925,000	5,445,000	12½	12½	4.3
Langlaagte Estate.....	2,350,000	15,860,000	45	25	7.5
May Consolidated.....	1,262,500	4,853,000	..	10	5.1
Meyer & Charlton.....	425,000	3,135,000	55	25	6.0
New Chimes.....	500,000	1,625,000	25	45	27.8
New Heriot.....	443,750	4,881,250	40	50	16.3
New Primrose.....	1,393,750	10,800,000	40	25	6.5
Nigel.....	1,000,000	7,625,000	50	20	5.3
Orion.....	800,000	3,250,000	105	20	8.8
Robinson.....	13,750,000	30,593,750	10	6	5.5
Roodepoort United.....	750,000	5,906,250	20	25	6.5
Simmer & Jack.....	1,250,000	27,187,500	30	20	2.0
Stanhope.....	170,000	262,500	100	30	40.0
Transvaal Gold.....	1,300,000	12,510,000	10	10	2.1
Wemmer.....	275,000	3,085,000	..	100	17.5
Worcester.....	453,635	2,211,000	70	30	6.3
Total.....	\$32,773,635	\$192,822,000	..	35.9	6.1

From this table it will be seen that the total amount of dividends paid by these companies, assuming as above that the rate for the second half of 1895 will be the same as for the first half, will amount this year to about 35.9% on their issued capital, but to only about 6.1% on the present selling price. The prices of some of these stocks has been forced up to an extraordinary amount; thus, for instance, the £1 shares of the City & Suburban Company on September 14th were selling at £27; that is, the current value of the stock was 2,700% of the par value. Taking a few other instances we find Simmer & Jack selling at 2,175; Ferreira at 2,050; Crown Reef at 1,200; Langlaagte Estate at 654. In considering the value of these dividend-paying companies, moreover, it must be remembered that all of them are what are known as "outcrop" companies; that is, they are companies which commenced to work on the banket beds from the surface.

Now, from what is known of the position of those beds the time is not far distant when they will pass beyond the limits of the claims owned by these companies, and as under the Transvaal mining law a company is not allowed to follow a vein beyond the lines of the surface limits of its claim, a definite, and in many cases, a not very long life can be assigned to the mines.

These dividend-paying companies, however, constitute only a small part of the whole number, and from the same authority cited above we obtain a list of no less than 131 other mining companies, which are operating in South Africa, most of them in the Witwatersrand district of the Transvaal. The total amount of the issued capital reported for these companies is, reduced to American currency, \$138,649,770, and its market price on September 14th was \$566,145,230; that is, the stocks were selling at an average of 408 per cent. of their par value. It is to be remembered that not one of all these companies has as yet paid any dividend to its stockholders; that many of them are as yet producing nothing, and that a number of them are the so-called "deep-level" companies, which are sinking expensive shafts and putting up costly machinery to work the "banket" beyond the limits assigned to the "outcrop" companies. The value of the beds at the deep levels rests so far on the evidence of a few diamond drill borings, since none of the new workings have as yet reached the vein, and some of them do not expect to reach it inside of a year to come. The prices of these non-dividend stocks are even more extraordinary in many cases than those of the dividend payers. Thus we find Rand mines—a large concern owning many claims—selling at £38 5s. for a £1 share; that is, at 3,825 per cent. of its par value. The Apex is quoted at 1,600; Crown Deep, at 1,450; Modderfontein at 1,550; Wolhuter at 1,100; Geldenhuis Deep at 1,025, and Van Ryn at 1,000.

There is a third class of companies whose stock is just now in great demand. These are variously known as "trusts," "banks," and "exploration companies," and they are organized primarily for the purpose of buying and holding stocks of actual mining companies. We find, quoting again the same authority, that there are 26 of these companies whose stocks are registered and dealt in in London, having a total capital of \$79,363,395, with a market price at current quotations of \$317,895,890, or about 401 per cent. of the par value. Here again we find some extraordinary quotations: The South African Gold Trust is selling just now at 1,144 per cent. of its par value; Consolidated Goldfields of South Africa at 1,687½; Robinson Bank at 1,050; Lydenburg Estate at 925, and the newly organized Barnato Bank at 350 on September 14th, though, we believe it has since gone to a much higher price.

We find that the total issued capital of the several classes of companies named and their market value, or selling price on September 14th were as follows:

	Capital.	Market price.	Av. per ct.
Dividend mines.....	\$32,773,635	\$192,822,000	588
Non-dividend mines.....	138,649,770	566,145,230	408
Total mines.....	\$171,423,405	\$758,967,230	443
Trust, etc., companies.....	79,363,395	317,895,890	401
Total.....	\$250,786,800	\$1,076,863,120	429

The third column gives the average percentage of the par value at which the capital stock is now selling.

We have included in the table above the stocks of the "banks" or "trusts" companies. To a considerable extent these duplicate values, since those companies hold the stocks of others; but this amount is probably more than offset by the private ventures and the companies which have been floated quietly and whose stocks have been sold in England and in France, and also in Germany, without making their appearance upon the exchanges. We find, therefore, that the total investment thus far in the South African gold mines is at its par value over \$250,000,000, while its present selling price reaches nearly \$1,100,000,000. How much of this extraordinary value is due to speculation purely and to the popular tendency to exaggeration will be apparent if we attempt to examine the question and to inquire what is the probable return.

At the rate of production of the mines so far this year it appears probable that the gold output of the Transvaal for 1895 will amount to not far from 2,400,000 oz., or reducing it to fine gold at the rate usually allowed for the Transvaal product, to 2,000,000 fine oz.; that is, the money value will not be far from \$41,000,000. This is the gross value of the output with no allowance for the cost of mining and reduction. It is, of course, impossible to give the exact amount of the latter. The Transvaal ores are not, however, high grade as a rule, and the average return, taking all the mines together and accepting the figures of the monthly statement issued by the Witwatersrand Chamber of Mines, is probably not over 12 dwts. per ton. A table compiled from official returns by the "South African Mining Journal," and published in the "Engineering and Mining Journal" of June 8th, 1895, gave the average cost of working at 12 of the larger mines at about \$7.50 per ton, or nearly 70 per cent. of the average yield, leaving the profit at 30 per cent. of the value of the gold produced. Another test would be to take the amount paid in dividends last year, which was 23.5 per cent. of the entire output of gold. Applying this to the estimated production of the present year would give a profit of

\$9,676,000, that is, 3.8 per cent. on the par value of the stocks, or 0.9 per cent. on their selling price, a return manifestly most inadequate. It is useless to pursue this question further, since the figures already given will show how much the current values of the South African mines depend upon speculation and the popular craze in their favor.

As a contrast to the extreme and dangerous inflation of these African gold mines, and as illustrating the greater safety of our own mining investments, we may instance the case of our Michigan copper companies. The year 1894 was for them a period of extreme depression and they received the lowest prices ever known for their product; yet in that year the total amount of dividends paid by the Lake companies was equal to 14 per cent. on the par value of the capital stocks issued, including both dividend and non-dividend payers. If we include the stocks of the dividend-payers only, the return was 39 per cent. At the present time the prices of stocks have been carried up to a high point by speculation; but even at current prices, and making allowance for the better price of copper, the dividends will probably be not less than 8 per cent. on the present market value of all the Michigan copper companies, those not paying dividends as well as those that do pay. This result shows that even at present inflated values an investment in Michigan copper stocks is about nine times as profitable as the average investment in Transvaal mining stocks.

In the figures above we have reckoned only the gold mining companies and those operating in the districts actually developed. The figures do not include any of the diamond mining companies, nor do they include the newer organizations formed to operate in Mashonaland and the other districts of the Chartered Company's domain, whose value is as yet problematical. It is evident, however, that even in these known and established districts prices have been carried to a point far beyond the real values and that a disastrous collapse is inevitable in the future. We are not at all disposed to underrate the great importance and value of the Transvaal mines, but the enormous inflation of which they have been made the basis is quite as injurious to the true interests of South Africa as to those of the investors in its mines.

NEW PUBLICATIONS.

TRUSTS OR INDUSTRIAL COMBINATIONS IN THE UNITED STATES. By Ernst von Halle; New York and London; Macmillan & Co. Pages 350, with diagrams. Price, \$1.25.

This is an interesting and historical collection of facts relating to trusts and combinations in this country, with just sufficient reference to English law bearing on the subject. The compilation of facts and the commentary upon them is most carefully carried out, nothing controversial being introduced, but a painstaking elucidation of the truth being evidently aimed at with impartiality. Naturally, in the course of such evidence as is laid before the reader, some of the greatest evils arising from the formation of a trust or combine are laid bare, and at the same time supported by the most convincing tables of figures, the benefits to consumer (especially of a really well-managed monopoly) are fairly set forth, and credit is given where credit is due.

The origin of the work is a guarantee of the fitness of the author for the task, being based on the report drawn up by him at the request of the "Verein für Social-Politik" of Berlin, a society which holds a position second to none in the collection of valuable statistical and social-political economical information. This work is not a mere translation of the above mentioned report on "Industrial Combinations," as much matter is omitted unnecessary for the American readers, and on the other hand further information is added. The style of the work and writing is German in its preciseness and clear cut details, but it is edited in such a manner that not a Germanism remains, the credit being given to Professor W. J. Ashley.

The amount of labor expended will be appreciated by anyone glancing over the history, and very interesting history, too, of the American Cotton Oil and fifteen other trusts, and the tables of capitalization and dividends are also instructive. As a work of reference the appendices are of value, comprising as they do, "Deed of the Standard Oil Trust," "By-laws of the Same," "United States Anti-Trust Law," "List of Combinations in the United States," "Bibliography" on the subject, "Illinois and Texas Anti-Trust Laws," and many other kindred documents. In addition there are two very interesting charts one showing the relative prices of refined and raw sugar since 1880, with dates of organization of trust, change of tariff, etc., and the other showing the average monthly price of corn per bushel at Peoria, Ill., and the average monthly price of spirits derived from one bushel of corn.

OUTLINE OF THE INFRINGEMENT OF PATENTS, FOR INVENTIONS, NOT DESIGNS. By Thomas B. Hall. New York and Albany; Banks & Brothers. Pages, 88; price, \$1.

A most opportune and well-condensed book, giving in clear language the very information required by many inventors, or those who do not exactly know whether they are inventors or not. The main point is, that the rulings on which the work is based are those of the United States Supreme Court, and therefore settled by the final authority in this country.

The work is well divided up into subjects or sections, thereby making it easy even for a layman to master, and to extract without loss of time and hunting through many pages the information of which he is in search. The introduction itself is instructive and concise, and the subjects, as divided into chapters, could not be improved upon as expressing distinctly the ground covered by them. These subjects are as follows: "License Under Patent," "Identity of Invention," "Validity of Patent," and "Recovery for Infringement."

The separation of the points to be determined into these four subjects is logical, and therefore recommends itself to any searcher after information, and the dictum that "every patented invention consists of, and every patent infringement involves, certain means" is one always to be kept in view by those interested or dealing in patents. Further, it is useful to have it pointed out, and proved by decisions of the Supreme Court, that means may be either generic or specific, and the means that constitute a patented invention may be so generic as to comprise various kinds of specific means." Hence, a patented invention may include a number of forms, each composed of detail means peculiar to itself; additionally to the form that is composed of the detail means described by the patent.

It is frequently most difficult for an inventor (so supposed to be by himself) to decide whether his work is not defeated or made valueless to him by identity of invention, or by his lack of a thorough understanding of what are the precise conditions prerequisite to a patent. The argument followed by the author in his division of the subjects is worthy of note, and shows what may be expected of the work, namely, that in considering a matter of possible infringement of a given patented invention, one or more of four questions will arise. The first question asks if the given means be unlicensed under the patent; the second if the given means constitute a form of the given patented invention. Should both answers be affirmative, the third question arises, asking if the patent be valid for such infringed invention. Then the fourth question arises, asking what sum may be recovered for such infringement.

This little book, which contains a great deal in small space, has reference tables appended giving the authorities and cases which can be referred to by lawyer or layman, and thereby presenting an opportunity of comparing the correctness of the condensation as here presented.

BOOKS RECEIVED.

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

Field Columbian Museum: Handbook and Catalogue of the Meteorite Collection. By Oliver C. Farrington, Curator, Department of Geology, Chicago, Ill.; Published by the Museum. Pamphlet; pages 66, with six plates.

Compressed Air. By Frank Richards. New York; John Wiley & Sons. London, Eng.; Chapman & Hall, Limited. Pages, 203; illustrated. Price \$1.50.

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.

Letters should be addressed to the MANAGING EDITOR.

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

The Manufacture of Bessemer Ferro-Silicon at Ashland, Ky.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: At the No. 3 furnace of the Ashland Coal and Iron Railway Company, Ashland, Ky., under the management of Mr. D. G. Putnam, Bessemer ferro-silicon has just been successfully made. A burden, consisting of high-grade ores, high in silicon, with coal as fuel, using just enough coke to make it drive easy, was put on Sunday night, September 15th, and at 1 p. m. the next day the "flush" showed that the burden was coming through. This change was made from a No. 1 soft iron. The iron at 5 o'clock was a flaky iron, lighter in color than a No. 1 soft, and contained 9.30% silicon. The heat carried ranged between 1,380° and 1,400°. Pressure in engine-room averaged about 7 lbs., which was equivalent to 5 lbs. at the tuyeres. The next cast was at 11 p. m. and the silicon was 9.73%. By 5 a. m., which was the third cast, the silicon had reached 10.65%. It remained about the same until the sixth cast, when the silicon went to 11.50%. The silicon did not get much higher until the fifteenth cast, when it reached 11.95%, and on the next cast, No. 6, it was 12.25%. On the twentieth cast it was 12.90%, and the next cast, at 5 p. m., September 21st, five days after the first cast, it reached the 13% mark, going to 13.07%. This was the highest that was obtained, though Mr. Putnam thinks he would have no trouble in going to 14 or 15%.

The phosphorus in the ordinary high-silicon iron made at Ashland is between 1% and 1.4%. On the third cast the phosphorus had dropped to 0.35%; fourth, 0.32%; sixth, 0.30%; eighth, 0.138%; twelfth, 0.122%. It then reached 0.1180% on next cast and remained between that and 0.1105%.

The sulphur in this iron is higher than was expected, as it goes between 0.051% and 0.054%.

This iron is very silvery and flaky, with no grain in it. The surface is slick, and has the appearance of being oiled. When cooling the free end of the pigs commences to turn up, and by the time they have cooled stands about 2 in. out of the sand. This iron chills very quickly, and while taking sample it has to be poured immediately, or most of it will remain in ladle. This iron is also very "rotten" and easily broken, but hard and difficult to drill. Nitric and sulphuric acids have very little effect upon it.

I tried Dr. Drown's method for silicon, but it would not work on this iron; but I obtained very good results by changing it a little.

This iron has been tried at the Ashland steel plant, when they had cold heats, and Manager Bryan reports they used it with good success.

It is true that this iron is slightly over the Bessemer limit for ordinary pig iron, but in a ferro-silicon the slight amount over would not be injurious, as only a small proportion of it is used in a mixture. The output was not very large, on account of the slow speed at which it was necessary to drive the engines, making from 50 to 55 tons a day.

The slag was heavy, almost white on top, and underneath it was stony and of a bluish color.

J. C. MATHEWSON,
Chemist, Ashland Coal, Iron and Railway Co.

ASHLAND, KY., Oct. 1, 1895.

THE ATLANTA EXPOSITION.

Written for the Engineering and Mining Journal by our Special Correspondent.

During the past week a great deal has been accomplished so far as completing the arrangements in the different buildings on the Exposition grounds. The exhibits in the Mining department are virtually complete, except so far as the State buildings of Georgia and Alabama, and those buildings especially set apart for the exhibits by the Plant and the Southern railway systems are concerned. These will be completely finished in a few days. The following is a full list of the Jury of Awards:

Commissioner of Awards—Dr. D. C. Gilman, Johns Hopkins University, Baltimore, Md.

Local Secretary, Dr. Hopkins, president of the Georgia School of Technology, Atlanta, Ga.

General Henry Abbott, U. S. Engineers, Engineering and Public Works. President C. K. Adams, University of Wisconsin, Liberal Arts.

Professor W. O. Atwater, Director of the Storrs Agricultural Station, Middletown, Conn., Food.

Prof.-sor Brown Ayers, Tulane University, New Orleans, Electricity.

Rear Admiral George E. Belknap, U. S. N., Steam Engines and Other Machinery.

John Birkinbine, late president of the Society of Mining Engineers, Mining.

D. H. Burnham, director of works Columbian Exposition, Chicago, Architecture.

Prof. N. Murray Butler, of Columbia College, Education.

W. M. Canby, Wilmington, Del., Forestry.

Chancellor Winfield S. Chaplin, Washington University, St. Louis, Machinery.

Prof. Charles R. Cross, Massachusetts Institute of Technology, Boston, Electricity.

Prof. Charles W. Dabney, Jr., University of Tennessee, Agriculture.

Prof. Louis Duncan, President of the Society of Electrical Engineers, Electricity.

G. Brown Goode, of the Smithsonian Institution, Fisheries.

Prof. J. Howard Gore, Columbian University, Washington.

Prof. J. A. Holmes, State Geologist of North Carolina, Geology.

Dr. J. S. Hopkins, president of the Georgia School of Technology, Technical education.

Dr. Henry M. Hurd, superintendent of the Johns Hopkins Hospital, Hygiene.

Morris K. Jesup, president of the American Museum of Natural History, New York, Museums, parks, etc.

Commander T. F. Jewell, U. S. N., superintendent naval gun factory, Washington, Ordnance.

Col. William Preston Johnson, president of Tulane University, New Orleans, Education.

Prof. J. M. McBryde, Virginia College of Agriculture, Agriculture.

President T. C. Mendenhall, president of the Worcester Technological Institute, Machinery.

Dr. Charles Mohr, Mobile, Ala., Forestry.

Prof. Simon Newcomb, U. S. N. Instruments of precision.

Thomas Nelson Page, Richmond, Va., Books.

Prof. H. W. Parker, Yale University, Music.

Gifford Pinchot, Biltmore, N. C., Forestry.

James B. Randol, Passaic, N. J., Metallurgy.

Prof. Ira Remsen, editor "American Chemical Journal," Chemistry.

Prof. I. P. Roberts, Cornell University, Ithaca, N. Y., Agriculture.

Prof. Henry A. Rowland, Johns Hopkins University, Electricity.

Prof. C. S. Sargent, director of the Arnold arboretum of Harvard.

Prof. William T. Sedgwick, Massachusetts Institute of Technology, Technical education.

Henry Trimble, editor "American Journal of Pharmacy," Philadelphia, Tanning, forestry.

Prof. C. F. Vanderford, University of Tennessee, Agriculture.

J. E. Watkins, United States National Museum, Transportation.

There is one feature of the Exposition grounds which must impress a stranger. This is the use of blue limestone chert for roadways, instead of a concrete or some material that could have been rolled level. The City of Atlanta, on Fifth street and Fourteenth street, to the main entrance of the Exposition, is using a silicate conglomerate obtained from Rocky Face, in Whitfield County, Ga., from W. P. Laramore's quarry, which forms a natural concrete and presents a perfectly smooth surface. A contrast between this and the roads in the Exposition grounds is so great as to provoke much adverse criticism.

The Forestry and Mining Building, which is erected entirely of Georgian timber in its natural state, is one of the most interesting features at the Exposition. In front of the main entrance on the north side a large pyramid of coal from the mines of the Galloway Coal Company, in Alabama, has been placed. The entire east wall of the building is covered on the inside with an exhibit of furs, woods, minerals and agricultural products; which was presented by the Argentine government to the Commercial and Economic Museum, Philadelphia. The west half of the building has been devoted entirely to the mineral exhibit. Two geological maps along the ceiling, other than those mentioned last week, occupy this entire length. These are a geological section across the State of Texas, from El Paso to Galveston, and a geological section across the State of North Carolina, from Cranberry, near the Tennessee line, to Wilmington, on the Atlantic Ocean.

The petroleum exhibit, which is a miniature of the exhibit made at Chicago, covers samples from all portions of the United States which produce petroleum, with some significant samples from the South. In making a tour of the building, the absence of any exhibit from South Carolina is noticeable, and the meager exhibit of Georgia marbles provokes much criticism. Tennessee has taken advantage, through the large exhibit made by the Evans Marble Company, of Knoxville, to thoroughly advertise its resources. This exhibit consists of an obelisk of unpolished marble, besides five polished columns of ornamental marble, as well as a peristyle, surrounding a square inclosing an urn, which most effectually shows off the various colors of ornamental marble.

The display of minerals from Pennsylvania is in charge of Dr. A. E. Foote, and includes his private collection, as well as an exhibit made by

the State College. Another exhibit is expected to be sent by the Academy of Natural Science.

West Virginia is well represented by sections of the coal veins from the following properties: Davis Coal and Coke Company, Gauley Mountain Coal Company, Austed; the Thacker Coal Company, of Kenova.

Kentucky shows sections of coal veins from the North Jellico Company, Grays; McHenry Coal Company, McHenry; Empire Coal and Mining Company, Empire; and the St. Bernard Coal Company, Earlington.

Georgia shows a section of coal vein from the Chickamauga Coal and Iron Company.

North Carolina contributes several cases of economic minerals, sent by the Geological Survey of that State, and arranged by Mr. H. B. C. Nitze. These include, besides the corundum of the State, gold ores, pyrites, chalcopyrite, magnetite, limonite and other minerals. The building stones—including marbles, granite, brownstone and sandstone—from North Carolina, are exhibited in cubes. Mr. Nitze has also arranged a separate case containing a collection of gold ores from the Southern States, collected by himself and Mr. Wilkins, during a recent trip from Virginia to Alabama.

The State of Missouri is represented by a large exhibit of minerals, the most prominent feature of the exhibit being two pyramids of lead and zinc ores from the Joplin and Aurora districts.

The Arkansas exhibit has been arranged with a great deal of artistic skill, and includes, besides the economic minerals, a case of very fine quartz crystal and calcites.

Of the individual exhibits in this department, among the most noticeable, is the display of novelties manufactured from aluminum, and exhibited by the Pittsburg Reduction Company; the models of the Ball-Norton Electro-Magnetic Separator, and the Chase Separator for magnetic ores, exhibited by Mr. Chase, of New York; McCully's Improved Rock and Ore Crusher; the products of the Powhattan Clay Manufacturing Company, of Richmond, Va.; the Chattanooga Brick Company of Atlanta; the Johns Manufacturing Company of New York; and the crystal rock salt, from the mines near New Iberia, La., exhibited by Myles & Company, of New Orleans.

In the Government Building, in the collection from the Smithsonian, besides the specimens of minerals from the Southern States, which form such an interesting educational feature, are a series of geological models in relief, showing the high plateaus of the state of Utah; the drainage basin of the Arkansas River: Coon Butte, near Canyon Diablo, in Eastern Arizona; Mount Shasta, California (two models); Washington and vicinity; Yosemite Valley, California; New Jersey; Leadville, Colo.; the United States, showing theoretically the restoration of the ancient ice sheet at the stage of glacial period, following the main Silt Epoch; United States, showing distribution of public lands; Baltimore and vicinity; United States and Gulf of Mexico; Atlanta and Chattanooga region. This last was made specially for this Exposition, and embraces the territory reaching from a point about 15 miles north of Chattanooga, to about the same distance south of Atlanta; and from 12 miles east of Atlanta to a short distance west of Anniston, Ala. The main features, in this model, show the geology in the vicinities of Atlanta, Anniston and Chattanooga. One of its most interesting features is the difference of the topography between the Cumberland and Lookout Mountains, from Chattanooga southwest, and the Blue Ridge Mountain, from the Tennessee line southwest toward Atlanta. The former shows the valley areas and long chains of ridges peculiar to that section, while the latter shows the short, choppy, rugged topography peculiar to the Blue Ridge region.

THE HARTVILLE IRON ORE DEPOSITS IN WYOMING.

Written for the Engineering and Mining Journal by E. F. Snow.

The remarkable deposit of iron ore at Hartville, Wyoming, 100 miles north of Cheyenne, has been recently visited and examined by your correspondent, and the facts and data given are those he has been able to obtain by a thorough personal investigation of the area in question. At the Columbian Exposition in Chicago the exhibit of Hartville ores obtained an award as the best in quality, after thorough chemical and furnace tests. It was shown to be a red hematite, and was classed as a Bessemer ore. Owing to the panic and general depression in the iron industry, and the fact that the extent of the Hartville iron belt was not generally known, little attention was paid to the samples of ore exhibited. Now, the pressing demands upon the iron resources of the country, and the certainty of great development in our iron industry through a long future period, give to this deposit a new importance.

The Hartville iron belt is situated upon the north bank of the Platte River in Laramie County, Wyoming, and the center of the belt is about 13 miles from the nearest station on the Cheyenne & Northern Railroad, which is a part of the Gulf system. The nearest point where the iron crops out is about 8 miles from the railroad at Fairbank where a copper smelter was located some years ago. From there the deposit continues through a range of hills running in a northeasterly direction for a distance of 10 or 12 miles, the outcrop being heaviest at Hartville, about 5 miles from Fairbank. The ore body can be traced for about 7 miles further. The width of the deposit varies from 2 to 3 miles, and from openings already made at various points within this area it seems to be satisfactorily shown that the iron belt has an area of from 25 to 30 square miles. The hills are low, comparatively bare, and easy of access. On the west side of the range runs the Platte River, while the east side is bounded by a valley, miscalled Whalen Canyon. In this valley is a small creek furnishing sufficient water for mill purposes.

The iron ore is found in the slates or between the limestone and slate and, so far as can be determined by present development in mining, together with the natural outcrop as seen in surface bodies and ore chimneys, it exists in immense masses, or continuous lenses of unknown depth. On one mine a shaft has been sunk 150 ft. through a body of solid iron ore without reaching the bottom of the deposit. At this mine, the Sunrise, one can walk 1,100 ft. upon an outcropping ledge of iron ore all in sight, with a width of from 200 to 300 ft. Other claims with less development have equal exposures of ore. Many claims have shafts and

tunnels from 60 to 100 ft. all in pure ore, solid or soft bodies, carrying no admixture of clay, slate or dead rock.

This is the most remarkable feature of this iron region. The uniformity and strength of the ore is such that in the claims best developed it is estimated that the ore can be quarried at a cost of 15 to 25c. per ton with no waste matter whatever, and such ore would average about 60% in metallic iron. In places there are natural exposures of the ore bodies in huge boulders of almost clear iron, some of them weighing tons and appearing as if uplifted by volcanic or other disturbance.

Although the magnitude of the ore bodies cannot be fully ascertained with the limited explorations so far made, enough is known to justify the belief that a large portion, if not all, of the area of the belt of 25-square miles is underlaid with deposits or traversed by vein masses of ore, and that there is practically in sight over 10,000,000 tons of ore, with every indication of five or six times that amount unexplored.

Numerous analyses of the ore have been made from samples taken over every portion of the district all showing nearly uniform results. I have been shown analyses of different chemists and so little is the variation in these tests, that one fairly represents them all. The following analyses made by Mr. H. B. Hodges, chief chemist of the Union Pacific railroad, seems to be a fair representation of the average character of the Hartville ores: Sample marked No. 1: Metallic iron, 67.557%; alumina, 1.42%; silica, 1.50%; sulphur, 0.054%; phosphorus, 0.008%; titanium, none; lime and magnesia, small amount, or traces.

Sample No. 2: Metallic iron, 68.41%; alumina, 1.86%; silica, 1.82%; sulphur, 0.019 per cent; phosphorus, 0.035%; titanium, none; lime and magnesia, small amount, or traces.

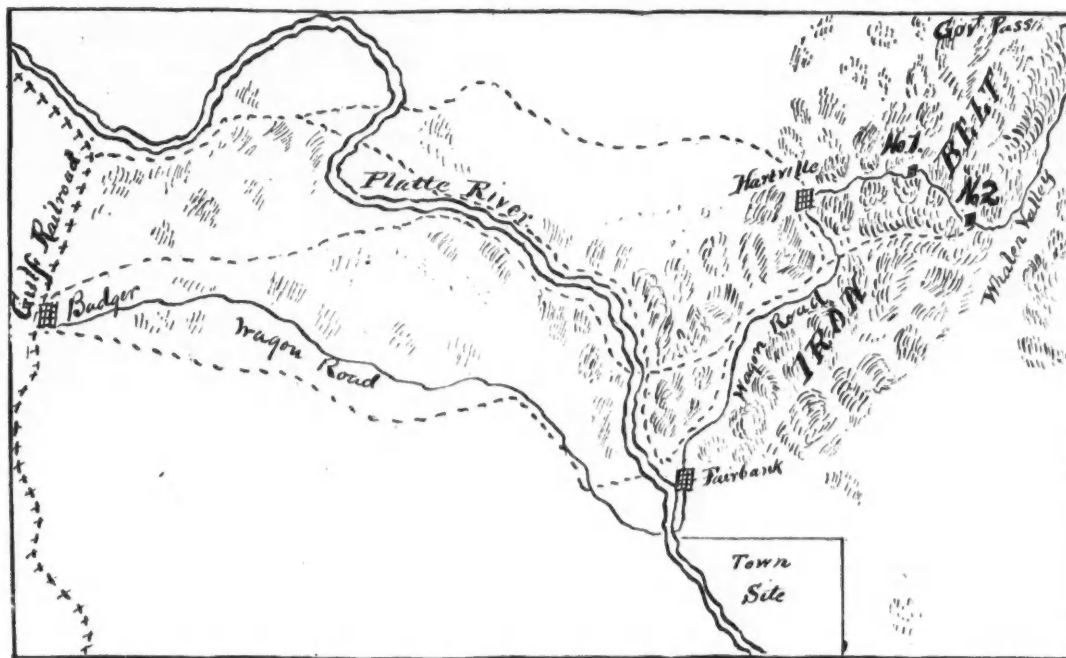
Mr. G. M. Davidson, of Chicago, former chemist of the Cambria Iron Company, after experimenting with samples of Hartville ore a few years ago, pronounced them among the best Bessemer ores in the country. It

site near Fairbank, the aggregate of their investments amounting to nearly \$300,000. They are now organized as the Wyoming Railway and Iron Company. Meanwhile prospecting was stimulated and larger area of iron were uncovered.

The two strongest groups in the belt are the Good Fortune and Sunrise groups. In the Good Fortune group may be mentioned the Blue Bird, Apex and Valley lodes, all showing immense bodies of iron. This group is owned by Mr. Bartlett and his associates—the old miners of Hartville. The Sunrise group, owned by the Wyoming Railway Company, comprises with that claim the Lone Jack, Village Belle and others. But little development work has been done. In very many places the iron can be quarried from the surface. Hartville is still only a prospecting camp. Its advantages are that it is only 13 miles from the railroad, and can be reached over easy grades, though the altitude is about 4,600 ft. above sea level. A good limestone for flux is found in connection with the iron. Timber is plentiful at a distance of from 8 to 10 miles. Water power can be obtained at Fairbank, where the Platte emerges from the mouth of the canyon. Four different railroads have made surveys into Hartville. A good smelting coal can be contracted for at \$2 per ton for a blast furnace located at Cheyenne.

From estimates made within the last month based on cost of ore, fuel, transportation and all necessary furnace expenses, it is found that pig iron can be produced at Cheyenne, provided a railroad spur extended to Hartville, for less than \$10 per ton, and, even with the wagon haul now required, it would not cost over \$11.50 per ton. The market would include all the Rocky Mountain region, and perhaps part of the Pacific Coast also.

The accompanying sketch map shows the Hartville iron fields. On this map the dotted line shows the railroads surveyed and projected, and the crossed line the Gulf Railroad, which is now actually in operation. No.



THE HARTVILLE IRON-ORE DISTRICT IN WYOMING.

not only high in iron, but low in phosphorus, and would make an excellent grade of pig iron, suitable for making a high grade of Bessemer or open-hearth steel.

As before stated, the ore is a red hematite and is found in both hard and soft varieties. The analyses given were made from hard ore. The soft ores do not differ materially from the hard in chemical composition, except that they run from 1½ to 2% less in metallic iron.

It is a curious fact, which has recently come to light, that the red iron of Hartville was a resort of the Indian tribes for war paint long before the advent of the white man. Many Indian relics have been unearthed by prospectors and in one claim, the "Chicago," an Indian paint mill was found with various war implements, 20 ft. under ground in a rich iron deposit. Another interesting fact in this connection is the existence of an arrow-head mine of prehistoric origin about 15 miles north of Hartville. In that mine there are to-day evidences of the work of hundreds of Indians for many years.

Although the existence of large iron deposits at Hartville has been known for many years no one paid any attention to the fact until the first iron locations in the range were made by Mr. I. S. Bartlett, of Cheyenne, in 1887. Mr. Bartlett went to Hartville as assistant superintendent of the Wyoming Copper Company. For a while this company smelted copper with coke costing \$37.50 per ton and hauled the bullion by wagon 110 miles to the railroad at Cheyenne. Finding the copper deposits not rich enough, nor sufficiently extensive to smelt profitably under those conditions, the enterprise was finally abandoned.

Mr. Bartlett then turned his attention to iron and is now the possessor of some of the richest mines in the district. For several years he endeavored to interest other parties in the development of the mines, but without success. After the building of the Cheyenne & Northern Railroad conditions became more favorable and many locations were made by prospectors and ranchmen living in that region.

Early in 1890 some Eastern investors made a purchase of the Sunrise mine at a price in the neighborhood of \$100,000, and thereafter secured by purchase many other claims, including ranches and a prospective town-

1 on the map indicates the location of the Sunrise group described above, and No. 2 that of the Good Fortune group. The distance by wagon road from Badger to Fairbank is 8 miles, and from Fairbank to Hartville 3½ miles.

GOLD MINING AT CRIPPLE CREEK.

Written for the Engineering and Mining Journal.

The Cripple Creek district was characterized originally by a large number of very narrow veins, producing extraordinarily high grade ore. It is true that there were in the Anna Lee and Summit Deerhorn mines large bodies of low grade ore, and in the Independence a large vein of marvellously rich ore, but these mines were exceptional. During the past six months there have been numerous new discoveries in the district, but nearly all have been of low grade ore, that is, ore containing not more than 1½ oz. gold per ton, which cannot be profitably mined and shipped to the smelters. Not a few of these new discoveries, however, have been of wide, strong veins from which the ore can be mined at a moderate cost. This, in connection with the low rates now being offered by the local reduction works, will doubtless result in an increased output from the district in point of tonnage if not in gross value. The indications are, therefore, that Cripple Creek will eventually become a large producer of low grade ore, which it has not been hitherto.

The low rates for reducing silicious ores made by the smelters after the disruption of their combination, last February, were discontinued several months ago, and at present practically all the ore with less than 1½ oz. gold contents is left to the local works, which do not limit themselves to ores of that grade, however, but buy freely up to 2 or 2½ oz. These conditions, together with the manner of occurrence of the gold in the ores (non-free-milling), have led to the development of a very interesting metallurgical industry, the chlorination, cyanide and amalgamation processes being represented. The largest works are the Brodie (cyanide) of 50 tons per day capacity, the Lawrence (chlorination) of 45 tons, and

the El Paso (chlorination) of about 40 tons. The works of the Metallic Extraction Company (cyanide) at Florence, which have a daily capacity of about 100 tons, derive their ore wholly from the Cripple Creek district; in addition to these there are three small stamp mills, which run intermittently. Mention should also be made, perhaps, of the numerous process plants and abandoned stamp mills which are scattered about the district, but none of these play any part in the ore-market. The chlorination and cyanide works are well managed, which means that these processes are properly adapted to the ores. There have also been some good stamp-mill amalgamators in the district, but the ores are not free-milling, and the waste of value that has been occasioned by treating them in this manner has been something frightful. More than one good mine has been ruined by extracting its ore for stamping, and subsequently turning the pulp (under name of tailings) down stream. Probably a saving of 55% of the gold in the ore, including bullion and "concentrates," is the best work done by stamp mills on Cripple Creek ore at the present time. The "concentrates," or blanket tailings, assaying about 1½ oz. per ton, are sold to the cyanide and chlorination works, or to the smelters.

The non-amalgamable character of the Cripple Creek ore is due, of course, to the form in which the gold in them occurs. Below the zone of oxidation this is generally as telluride, existing as sylvanite, petzite, or a similar mineral; above the zone of oxidation the gold is more or less free according to the stage of decomposition of the telluride mineral, but even at the surface the perfectly free gold is likely to be coated with tellurous oxide, which, to say the least, probably does not increase its amalgamability. On panning these ores an abundance of "colors" may be noted if the ore is at all oxidized, but the majority of them are of very "rusty" appearance. With the cyanide and chlorination processes on the other hand the occurrence of tellurium does not matter especially. A coating of tellurous oxide does not prevent gold from dissolving in the cyanide solution since it is also soluble, and it is now known that even the gold tellurides are attacked under certain conditions, while at the chlorination works the practice is to roast all the ores, whereby the gold and tellurium are at once dissociated.

At the present time the local reduction works are buying ores on a basis of \$19 per oz. for their gold contents, less a treatment charge as low as \$8 per ton on certain grades. This rate is for ore delivered at the works. The cost of transportation from the mines to the works, which is comparatively high on account of the abominable condition of the wagon roads, ranges from 75c. to \$1.50. The grade of ore that can be profitably shipped depends for the rest upon the cost of mining, but even under the most favorable circumstances it can hardly be as low as 0.60 oz. per ton, and probably is nearer 0.75 oz. There is little prospect of improvement on these figures.

The summer now ending has not been on the whole a prosperous one for the Cripple Creek district, owing chiefly to the protracted rainy season. This has been a decided drawback to prospecting enterprises and the operation of small mines, where affairs are conducted wholly in the open. The production of the larger mines is checked, on the other hand, by inability to ship their ores, the roads being so deep with mire as to be impassable for heavy wagons. Finally the Florence & Cripple Creek Railway, which is the chief dependence for coal, was completely washed out for 12 miles or so one day in July, and more than a month elapsed before trains were running again. The local and Denver papers are loudly trumpeting the prospects of the district, predicting a largely increased output in 1895; but it is the fact, nevertheless, that certain of the mills and sampling works have been hard pressed lately to secure the supply of ore necessary to keep them running at full capacity. This is not to be construed, however, as being indicative of an impoverishment of the mines, but merely as one of the results of the conditions under which mining at Cripple Creek is carried out. Many of the mines, perhaps the greater part, have been opened and are now operated by lessees, who possess but little capital and are unable or unwilling to provide adequate machinery or to open the mine in proper manner. As a consequence of this, operations are likely to be interrupted at any time by inflows of surface water, or roads so bad that ore cannot be shipped; the production of a mine is likely to be variable, moreover, through neglect of advance exploration work or gutting as the end of a lease draws near. So far as the permanency of the Cripple Creek mines is concerned the signs are good.

There are a number of large companies operating in the district which have well-equipped plants and maintain a fairly regular output. These are the Independence, Portland group, Isabella, Victor, Elkton, Catherine, Moose, Anaconda, and C. O. D., most of them being dividend payers. There are many of the smaller mines which pay very well, and on the whole the exploration of the Cripple Creek district has probably been profitable.

ABSTRACTS OF OFFICIAL REPORTS.

Broken Hill Proprietary Company, New South Wales.

This company's report for the half-year ending May 31st, 1895, says: "The net profit for the half-year amounts to £344,760, of which sum £288,000 has been distributed in dividends, the balance being carried to the credit of the profit and loss account, which now stands at £657,196. The sum of £15,760 has been expended in construction account and £31,779 written off as depreciation on the various plants. After making due provision for all outstanding liabilities, there remain surplus assets in cash, bullion, coke and convertible stocks, representing a total value of £619,362, as against £545,832 for the previous half-year."

The manager's report gives the quantity of ore treated in all at 300,558 tons, of which 147,614 tons were treated at the mine furnaces, 37,305 tons at the British Company's furnaces at Broken Hill, 49,641 tons at the Port Pirie furnaces, 7,686 tons at the refinery furnaces at Port Pirie. In addition to the 242,246 tons treated in the furnaces there were 14,021 tons passed through the amalgamating plant and 20,825 tons passed through the leaching plant. There were also 28,740 tons passed through the concentrating plant, producing 3,371 tons of concentrates. The gross production from this ore treated included 6,233,720 oz. silver and 19,359 tons of lead. Besides this there were produced 2,040 tons copper matte, containing 521 tons of fine copper.

The net amount received for the product of the mine was £959,300. The total expenses were £614,540.

The averages per ton of ore treated reduced to American currency were: Product, \$15.32; cost of treatment, \$9.82; net profit, \$5.50.

The refinery at Port Pirie treated 11,687 tons of bullion from which, besides silver and lead as reported above, there were saved 2,914.6 oz. of gold. This is a higher proportion of gold than has been saved for some time.

In the smelting plant the proportion of the different classes of ore worked was: Lead ore, 10% of the total; silicious iron and kaolin ore, 69%; iron ore, 16%; sulphide ore, 5%. The plant now in operation consists of 15 60 in. x 112 in. blast furnaces, and one circular blast furnace of 48 in. diameter, situated on the mine itself, and of three 56 in. x 132 in. blast furnaces leased from the British Broken Hill Proprietary Company, Limited, and situated on their property.

The mining manager reports that in pursuance of the sulphide prospecting scheme authorized in February, a number of crosscuts have been driven in various portions of the existing levels, and this exploration work has added largely to the known reserves of this class of ore. In the open cut department there was a considerable extension of the work accomplished. The quarries have been worked to better advantage on account of the demand for silicious ores for treatment, as these ores can now be raised and handled as they occur without the necessity of leaving blocks untouched.

The water supply was ample during the half year, about 55% being obtained from the company's own dams and the balance from the Broken Hill Water Supply Company. The chloridizing plant of eight revolving furnaces has not been worked to its full capacity, owing to difficulties met with in leaching the chloridized ores. These difficulties have now been overcome, however, and the complete plant will hereafter be worked. The results obtained from the amalgamation plant have not been very satisfactory owing to difficulty in separating the special class of ore required. The concentrating plant was started about the end of October, but the results have not been altogether satisfactory, since, while a fair percentage of lead was recovered, a large proportion of the silver passed off with the tailings. The cost was also high, owing to the large number of small machines employed in the work, but a great reduction, it is expected, can be made in the new plant now under construction.

As to the future prospects of the mine at the close of the half-year the report of General Manager A. Stewart, who has succeeded Mr. John Howell, makes the following statement: "The prospecting of the ore bodies in the sulphide zone is being vigorously carried out, the rate of progress being accelerated by the application of machine drills, and it is hoped that before the time arrives when it will be necessary to treat sulphide ores on a large scale sufficient information will have been yielded to be able to decide the important questions connected with the extraction and treatment of these ores. It is still too soon to prepare reliable estimates, but there can be no doubt of the existence of large bodies of sulphide ores, some of which can be treated to profit by existing methods, and, judging from the number of processes now being submitted for the treatment of these ores to effect a good recovery of the high total metal value contained, it would seem that future operations may be faced now with much more confidence. The work of the past six months within the oxidized zone has shown that the estimates of these ores made as at September 30th last have been fully maintained, but there has been no new development of sufficient importance to warrant the alteration of these estimates at this time.

The silicious iron and kaolin ores treated by the smelting plants in the past half-year have been of a very highly siliceous nature, much more so than at any former period. In addition to some better quality of silicious iron ores, large quantities of manganic iron ore have been produced from the open cut workings, which have assisted in smelting the highly silicious ores; but it is now known that the available quantity of these ores of good fluxing qualities is limited, and will barely suffice to supply the necessary quantities for the smelting of the remaining oxidized ores. The high-grade kaolin still left is very silicious, and to obtain the greatest benefits from the remaining oxidized ores, it is very desirable to reduce the proportion of this ore now being treated, so that the maximum economy in the smelting operations may be attained.

The weekly yields have been maintained throughout the half-year, but with the many varying qualities and grades of ore which have to be dealt with, this high level of production has been, and can only be, continued at some sacrifice in economy in working costs. From all that is known of the remaining oxidized ores, their smelting qualities will not improve in the future, and I am strongly of opinion (taking also into account the lower grade of the ore left) that greater total profits from the oxidized ores will accrue by diminishing to some extent the present rate of production.

As is well known to all who have followed the mine's operations from the commencement, a series of "creeps," which now practically embraces the whole length of the lode, commenced in the year 1891; since then the movement has been progressing, showing itself with more or less intensity throughout the whole length of the workings. This movement still continues, and must be expected to continue more or less till the whole area affected reaches a point of final settlement by being, or becoming, filled so solidly as to resist the down and sideward pressure of the broken strata, or till those portions of the mine, in which it is practicable to do so, have been open cast to an extent that will entirely remove such pressure. While this state of matters is certainly not a desirable one, still it does not involve any special risk to the underground workings, or to the workmen, and there is no reason to fear the loss of any ore as the result of these movements. All practicable means are being used to limit the intensity of any future subsidence, and there is nothing in the present state of the mine to give rise to the fear that operations may be interrupted from this cause, or that such movements will pass beyond the limits of control.

There still remains a considerable amount of work to be done in removing and altering plant, principally in connection with the extension of the open-cut operations; but, after completion of the ore dressing plant, now in course of construction, the expenditure on account of plant will practically cease till the time arrives for treating sulphide ores on a large scale."

THE LARGEST DIAMOND EVER FOUND.

The accompanying illustration is reproduced from a photograph of the largest diamond yet discovered. The photograph, of course, is much reduced in size from the original stone, and we regret to say that we have not the exact dimensions, but the appearance of the diamond is faithfully reproduced. We are indebted for it to Messrs. Victor Bishop & Co., of New York.

The diamond in question weighs 3,100 carats, and is, therefore, as we have said above, by far the largest ever known. The great Jagersfontein diamond, which was found in South Africa about two years ago, and which was said to be the largest known to be in existence up to that time, weighed about 970 carats.

The stone illustrated was found in the Carbon district, the old diamond fields of Brazil. It is of the class known as "black diamonds," or commercially as carbon, which are used in diamond drills and for similar purposes, their color not adapting them to ornament.

The original finder is, we believe, not known. At the present time the stone is in the hands of the jewelry firm of Kahn & Co., of Paris, and the Brazilian government is negotiating for its purchase for the National Museum. The stone was offered to Messrs. Bishop & Co., but they declined to purchase it, as it is difficult to say how such an exceptionally large stone will turn out when cut into commercial sizes, and the price demanded was too great. The value is placed by experts at between \$30,000 and \$40,000. The price paid for it by the present owners is somewhat uncertain, one account putting it at \$26,000, while another says that they paid 52s. 3d. (English) per carat, which would make the price nearly \$40,000, or not far from its probable maximum value. There is little doubt



THE LARGEST DIAMOND.

that it will eventually be placed in the Brazilian Museum, as no private firm could afford to pay the amount asked for it by the present holders, or which would be likely to be asked by any commercial house into whose hands it might pass.

FRACTIONAL PRECIPITATION OF GOLD FROM A SOLUTION CARRYING GOLD AND COPPER, WITH HYDROGEN-SULPHIDE GAS.

Written for the Engineering and Mining Journal by John E. Rothwell.

Heretofore, one of the chief objections urged to the use of hydrogen-sulphide gas as a precipitant for gold from a chloride solution, has been that if there is copper present in the ore, and, therefore, in the solution, the copper will be precipitated as a sulphide with the gold, thereby forming a bulky and unmanageable precipitate that would require special and extensive arrangements for its reduction and separation.

The following results, from actual work, seem to show that it is possible to carry out a very perfect fractional precipitation with hydrogen-sulphide, and thus what is considered the best and most convenient, as well as economical, precipitant known.

Recently in the treatment of an ore—an analysis of which was as follows: SiO_2 , 88.35; Al_2O_3 , 2.65; Fe_2O_3 , 6.05; CaO , 0.55; Sb , 0.05; Cu , 0.35; As , trace; MgO , 0.25; S , 0.90, the copper being present in the ore as both $(\text{CuCO}_3 \cdot \text{CuH}_2\text{O}_2)$ and $(\text{Cu}_2\text{SFe}_2\text{S}_3)$ —the ore was crushed dry to 24 mesh and then roasted in a Pearce turret furnace to reduce the percentage of sulphur; in this roasting, copper was converted to an oxide and a small amount of sulphate.

The chlorination was made in a large-sized barrel, using 100 gallons of water, 40 lbs. of sulphuric acid (66°) and 15 lbs. of calcium chloride per ton of ore. There was always an excess of free chlorine at the end of the chlorination, showing that a lesser amount of the calcium chloride could have been used, but, for other reasons, this was not deemed advisable. The solution was leached out in the barrel in the usual way, and was of a rich, yellowish-blue color, strongly acid. The precipitating was done in tanks having a capacity of 7,500 gallons. Sulphurous acid gas is used first to decompose the free chlorine, being passed into the solution through a single 1-in. rubber hose; the hose has a weight on the end sufficient to sink it to the bottom of the tank, and keep it there, while the gas is being forced through. The hydrogen-sulphide gas is passed into the solution through two lines of 1½-in. lead pipe, placed parallel to each other, across the bottom and up one side of the tank, about 5 ft. apart, and connected at the top of the tank to the main line from the generator. A valve is placed in the pipe to shut off the gas at any time.

The lead pipe is raised about 2½ in. above the bottom of the tank, and is

perforated with holes about ½ in. in diameter, 6 in. apart, on a horizontal line on each side of the pipe. The holes pitch slightly downward, so as to strike the bottom of the tank at a point about 9 in. from the line of the pipe; a perfect distribution of the gas and agitation of the liquor is obtained in this way. Each tank of solution represents 24 tons of ore treated, and, as the extraction of the copper is about 75% of the amount in the ore, the amount of copper in the tank of solution would be about 126 lbs.; the gold contents about 72 oz.

The amount of precipitants used was: Roll sulphur, 5 lbs., burned in the usual way, with a current of air in a closed vessel and forced through the hose into the solution; this amount was found sufficient to decompose all the free chlorine, and partially precipitate the gold in a fine metallic condition; then a charge of 4 lbs. of iron sulphide and 15 lbs. of sulphuric acid, with from 60 to 70 lbs. of water, is put into the generator, and the cover closed tight; a current of air is turned in, and the gas, H_2S , as generated, forced through the solution. In a few minutes a sample in a beaker shows the rest of the gold precipitated in a heavy flocculent form, having apparently gathered up the fine metallic precipitate already precipitated by SO_2 .

To test the liquor, a sample is taken in a beaker and filtered through filtered paper; then it is divided evenly between two beakers of 3 oz. capacity placed on a sheet of white paper, and a few drops of FeSO_4 added to one. The faintest trace of gold can be detected in this way, after a little practice, but, as a check, a sample is frequently taken and evaporated, then scorified and cupelled; this test has seldom shown more than a microscopic trace in 200 cc. of solution, approximately estimated at 1 dwt. to the tank, showing practically a complete precipitation of the gold.

The precipitate is allowed to settle from one hour to an hour and a half, then the supernatant, from about 4 in. above the bottom of the tank is run through the filter press; the clean up is made once a week in the usual way, the precipitate collected in trays, roasted in a muffle furnace, and fused with borax, soda and niter in a No. 125 graphite crucible.

About 70% of the roasted sulphide is reduced to bullion. This bullion when melted into a bar runs from 830 to 980 fine gold, showing that very little copper has been precipitated.

There was also another advantage gained by this fractional precipitation: as water was scarce it was possible to use the filtrate from the filter press over again in the barrel, both as charging water and for leaching purposes, without any deleterious effect in the working of the charge, and giving quite as low tailings as when charged with fresh water.

My idea of the reason of this fractional precipitation is that in operating on a large quantity of solution, such as this is, the reactions are much slower, thus giving time to determine exactly the point at which the last of the gold and the first of the copper precipitates, because there seems to be a distinct line of demarcation between the two metals. In the laboratory when operating on two or three litres it is almost impossible to precipitate one metal without the other, but when treating from 5,000 to 7,500 gallons in a tank the point can be very distinctly noticed.

THE GEORGIA MINERAL EXHIBIT AT THE ATLANTA EXPOSITION.

Written for the Engineering and Mining Journal by our Special Correspondent.

(Concluded from page 298.)

IRON ORES—BROWN HEMATITE (LIMONITE), RED HEMATITE.

Catoosa County.—Specimens of red fossiliferous ore, from the surface of various points along Dick's Ridge and Dogwood Valley. No openings have been made on any of these deposits, and consequently no estimate can be made as to the quantity.

Specimens of red fossiliferous ore from Taylor's Ridge, owned by the Georgia Mining and Manufacturing Investment Company. No development has been made on the property.

Specimens of limonite from the surface outcropping on West Peavine Ridge. No development.

Chattooga County.—Specimens of red fossiliferous ore from the Dirtcellar Mountain mines, owned by the Rome Iron Company, of Rome, Ga. Average shipments 50 tons per day to the company's furnace at Rome. Average thickness of the vein, 13 in. Maximum thickness, 3 ft. The ore underlies Dirtcellar Mountain and neighboring ridges.

Specimens of limonite from J. D. Taylor's property in Summerville. Ore found associated with bauxite. Undeveloped.

Specimens of red fossiliferous ores, from Taylor's Ridge, six miles north-east of Summerville, property of Dr. Jones. Specimens taken from surface ore. No development.

Bartow County.—Specimens of limonite from the Big, Specular and Connor banks near Rogers' Station, owned by the Georgia Mining and Manufacturing Investment Company, of Chattanooga, Tenn. Leased by S. Mumford, of Cartersville. Average product of washed and lump ore 150 tons per day, treated at Rising Fawn furnace.

Specimens of limonite from the Hurricane Hollow mine, owned by the Etowa Iron Company, located about four miles northwest of Cartersville, near the old River furnace, where this ore was used previous to 1880.

Specimens of limonite from the property of the Tallapoosa Ore Company near Altoona. At present these mines are idle, together with the washer which was erected some years since, when an average of 50 tons per day was mined and shipped to Tennessee.

Specimens of limonite, from the Emerson brown ore mine, owned by C. M. Jones, of Emerson, operated under lease by the Central Mining Company, of Cartersville. Average shipments of wash and lump ore, 50 tons per day shipped to the Tennessee furnaces.

Cherokee County.—Specimens of limonite from the property of the Chattahoochee Land Company, four miles north of Canton. This ore is bedded in semi-crystalline slate formation, and is slightly magnetic. The body has been traced for four miles east and west, and at places reaches a maximum thickness of 20 ft. Although not developed as a producer, it has been prospected at certain points by open cuts and extent and grade partially determined.

Dade County.—Specimens of red fossiliferous iron ore from Rising Fawn mine, owned by the Georgia Mining and Manufacturing Company, of Chattanooga, Tenn. This property has been mined very extensively

for several years past, and the product manufactured at the Rising Fawn coke furnace in the immediate vicinity of the mine.

Specimens of red fossiliferous ore from the property of the New England Coal and Iron Company, of New England City. This ore is found in the change of ridges bordering Lookout Valley on the east and west sides. Although prospected to a limited extent, the property has never been developed for production.

Heard County.—Specimens of limonite from the property of H. A. Tomokins, lot 77, district 13. This property is undeveloped, but has been prospected to a limited extent. The ore, so far exposed, carries too large a percentage of silica to possess any great commercial value.

Paulding County.—Specimens of magnetite from the property of Major Singleton, of Rockmart. This property is located about 12 miles northerly from the town of Villa Rica. The ore body, as exposed by a series of open cuts, averages about 3 ft. thick for a distance of some 300 ft. along the line of strike in a northeasterly and southwesterly course, and dips almost vertically. The prospecting has up to date been shallow and not sufficient to warrant any expression as to value or extent. This is the only body of magnetite so far known, in this section of Georgia, unless the ore on the property of the Chattahoochee Land Company, in Cherokee County, should prove to be valuable and classed as this variety.

Polk County.—Specimens of limonite from the properties owned by the Real Estate, Mining and Manufacturing Company, formerly the Etna Furnace Company, of Etna. President, D. B. Hamilton, Jr.; secretary, Harper Hamilton, of Rome, Ga. These properties are known as Hematite and Etna mines. Ore is being shipped from both to the Tennessee furnaces, and to the Bass charcoal furnace, Rock Run, Ala. Av-

Specimens of limonite from the Pittman and Vandeventer mines, near Esom Hill, in this county, operated under lease by Frank Fitch, of Cedartown, who ships an average of about 40 tons per day, screened and lump ore, exclusively to the charcoal furnaces.

Specimens of limonite from the Ledbetter & Peek mines, near Cedartown, operated under lease by the North Georgia Mining Company, which has erected ore washers, having a shipping capacity of 400 tons of ore per day. A conservative estimate places the total quantity of ore shipped from these mines up to date, at 300,000 tons.

Specimens of limonite from the property of the Cherokee Iron Company, at Grady Station, on the East & West Railroad, of Alabama. This property was acquired by General West, about 25 years since, when the ore was mined by convict labor and treated at the furnace of the Cherokee Iron Company, which was erected at about the same time at Cedartown. After the furnace was blown out, in 1890, the mines were continued in active operation until 1893, the ore being shipped to the Coke Furnaces of Tennessee.

Specimens of limonite from the Munford mines at Grady Station. This property is operated and leased by the Central Mining Company, of Cartersville, and the products of the two washer plants, located on the property, is shipped to the Tennessee Coke Furnaces.

Specimens of limonite from the Linsey mines, operated and leased by R. T. Poole, of Cedartown. This property is being prospected to ascertain its value and capacity as a producer. The ore has a concretionary structure very much like the structure of bauxite, and very similar to the bauxite ore on Dr. Myer's plantation, near Trion factory in Chattooga County.

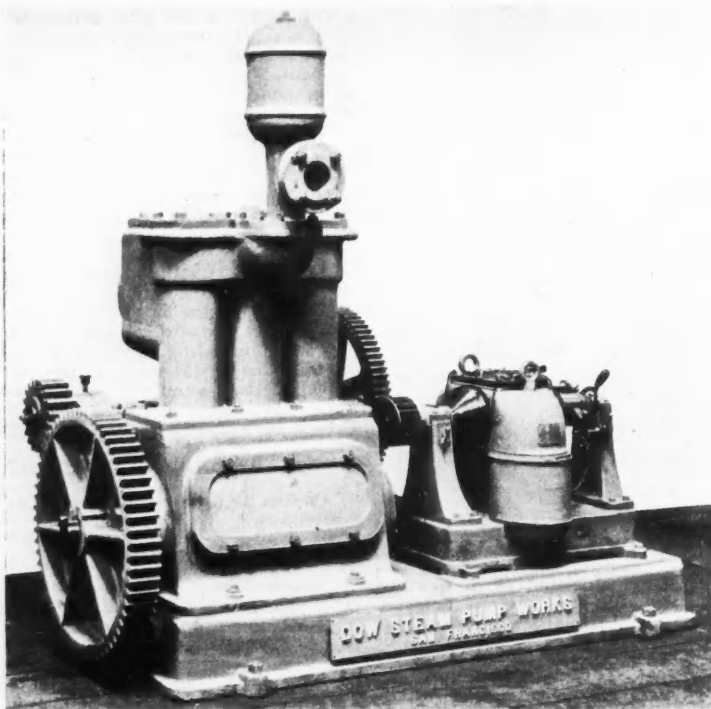


FIG. 1.—VERTICAL TRIPLEX PLUNGER PUMP WITH ELECTRIC MOTOR.

erage shipments from the two properties, of washed ore from Etna and lumped and screened ore from Hematite, 100 tons per day.

Specimens of limonite from the Oredell mines, owned by E. W. Marsh & Son, of Priors Station, Ga. This property was operated quite extensively in the early days of the iron industry in the South, and on a limited scale at various periods since then. In 1893 the owners erected a very extensive washer plant, bringing the water 14,500 ft. through a 10-in. pipe to furnish the supply for washing. A large proportion of the ore on this property carries such a low percentage of phosphorus that it is in demand by the charcoal furnaces. Capacity of the new plant, 300 tons per day.

Specimens of limonite from Reed & Wood's ore banks, located near Cedartown, owned by the Augusta Mining and Investment Company, of Cedartown. Capacity of washing plants, 400 tons washed ore per day. Because of the low percentage of phosphorus and about 4% of alumina carried by the ore in the Reed Bank, it has been used at the Rome charcoal furnace regularly since that plant was erected in 1890.

Specimens of limonite from the property of the Cedartown Land Company, leased and operated by Chas. A. Clark, of Cedartown. The bulk of the ore on this property is a very fine grade of low-phosphorus gravel ore, and when properly washed has commanded 40 cents per ton in the open market more than is paid for any other ore in Georgia. During 1894 8,000 tons of this ore was shipped to Round Mountain charcoal furnace, in Alabama.

Specimens of limonite from the Wray mine, owned by T. F. Burbank and associates of Cedartown, leased and operated by G. A. Lane, of Cedartown. While this property has been prospected on a very limited scale, years back, it is only during 1895 that it has been developed and become a producer.

Specimens of limonite from the Shifflet & Duke Mines, located near Cedartown, operated and leased by Frank Fitch, of Cedartown, who ships lump and screened ore to Round Mountain and other charcoal furnaces in Alabama. Average shipments 40 tons per day.

Walker County.—Specimens of red fossil ore of both the hard and soft varieties from Shinbone Ridge mines, owned by C. E. Bueck, of Richmond, Va. Lessees and operators, Dayton Coal and Iron Company, Dayton, Tenn. This is the only iron ore property in Georgia, which is mined from a vertical shaft. The lowest level in this mine is 200 ft. deep. The vein of ore averages 3 ft. in thickness, dipping nearly vertically. About 3,000 ft. of drift have been run, and the ore stopped out of the 146-ft. level. Average shipment 100 tons per day to the furnaces of the Dayton Coal and Iron Company, Dayton, Tenn.

Specimens of soft red fossil ore from the property of Dickson & Cameron, located on Shinbone Ridge, near Bronco Postoffice. Average shipment 20 tons per day.

Specimens of red fossil ore upon the property of the Kensington Coal and Iron Company, near Shaw Postoffice, and known as the Owl Hollow, Pigeon Mountain and Estelle mines. Lessees and operators, Georgia Ore Company, of Shaw, and Brown & Baker, of the same place. Average shipments per day of the former, 200 tons. The latter lessees were opening their mines, ready to make an average shipment of about the same quantity.

Specimens of red fossil ore from the property of the Chickamauga Coal and Iron Company, of Chickamauga. The iron ore mines are located in Round and Lookout Mountains, but beyond some limited prospecting work, no development has been performed.

SPECULAR IRON ORE.

Bartow County.—Specimens of specular iron ore from the property of the Etowa Iron Company, located on the east side of the Etowa River. These mines were worked and the ore treated in the old stone glass furnaces of this company, in the fifties. So far as at present known, the quantity of this class of ore in Bartow County, in fact, in the State, is quite limited.

MANGANESE ORES.

Bartow County.—Specimens of manganese ore from the property of

the Etowa Iron Company, located on the west side of the Etowa River, near Cartersville. This property was a large producer of manganese until it was confiscated by the government during the war, and when it was bought from the United States by the present owners, a large washing, sizing and jigging plant was erected, and about six miles of railroad built across the property. But these were never actively operated, and passed into the hands of a receiver, with the entire property, where they still remain.

Specimens of manganese ores from the property of W. P. Larimore, near Cartersville, on the west side of the river. This property is a producer on a limited commercial scale, the ore being shipped to the Carnegie Works in Pennsylvania.

Specimens of manganese from the property known as the Dobbins property, located five miles north of Cartersville, also from Harris & Milner mines adjoining; the property of the Georgia Manganese and Iron Company, three miles northeast of Cartersville, and the R. B. Sattlefield property, 2½ miles northeast of Cartersville. All of these are producers on a limited scale, being operated by lessees, who mine on a royalty of \$1 per ton, paid to the owners of the property, and sell the product to the local brokers at the rate of about \$4 per ton.

Haralson County.—Specimens of manganese from the surface and shallow pits from the property of Judge Tomlinson, located about five miles west of Buchanan. This property has merely been prospected on a limited scale.

Paulding County.—Specimens of manganese from the Singleton mines, near Dallas, owned by Major Singleton, of Rockmart. This property has been prospected only on a limited scale, and has never been a producer because of the distance from the railroad.

LAZULITE.

Lincoln County.—Specimens from Graves' Mountain, which is the only locality in the State, so far as at present known, where this mineral occurs.

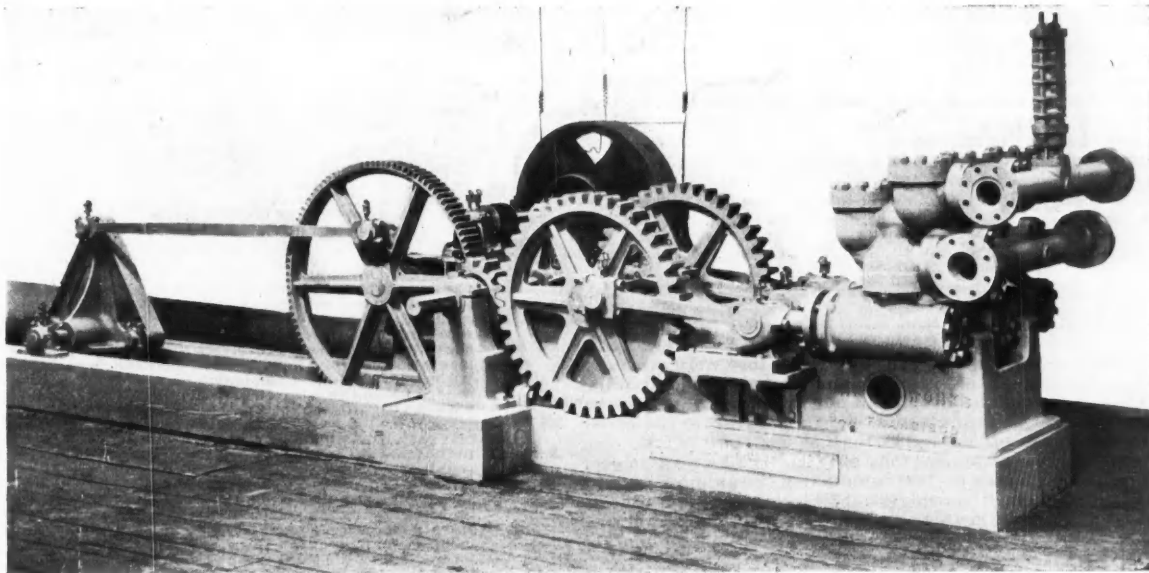


FIG. 2.—HEAVY HORIZONTAL PUMP, WITH SINKING PUMP ATTACHMENT AND ELECTRIC MOTOR.

PYROPHYLLITE.

Lincoln County.—Specimens of this mineral, obtained at Graves' Mountain, where it occurs in association with lazulite and rutile.

RUTILE.

Lincoln County.—Specimens from Graves' Mountain, the only locality in the State where this mineral occurs or has been discovered, so far as is known, in quantity on a commercial scale. Several tons were mined and shipped from here some years ago, but the demand being limited, and the property being remote from the railroad, operations were suspended and have never since been resumed.

OCHER.

Bartow County.—Specimens from the property of Capt. J. J. Calhoun, lot 461, district 4, section 3. Also from the property of Mrs. Kitty P. Leary, located on the east side of the Etowa River about a mile and a half from the town of Cartersville. This mineral has been mined quite extensively on both these properties and prepared for market in mills erected for that purpose both in Cartersville and Emerson. At present the mill at Emerson, owned and operated by the Peruvian Ocher Company, is the only one in operation.

PYRITES.

Carroll County.—Specimens of iron pyrites from the property of Dr. M. K. Phillips, lot 259, district 7, section 5, near Bremen. This body of ore occurs in a mica schist formation and is 3 ft. thick at the surface, having a north and south line of strike and nearly vertical dip. Several shafts were sunk some years back in prospecting for copper.

Specimens from the old Jack Travis copper mine, four miles north of Carrollton. Work was performed here in 1870 and has since ceased, so that no idea can be formed of the extent or value of these pyrites, which are a combination of iron and chalcopryrite.

Paulding County.—Specimens from the Singleton property, near Dallas. This occurrence of pyrite is quite extensive, but the ore is of a granular character, known as "fines," and although the percentage of sulphur, as determined from sample carload lots, will average about 50%, yet the demand for this class of ore is so limited, and the property so remote from railroad facilities, that at present it is not being operated. All the Southern acid plants, except one in Charleston, are built for burning massive lump pyrites, and are not adapted for the use of fines.

ELECTRIC MINING PUMPS.

The application of electricity to long-distance transmission of power has made available water-powers hitherto considered practically worthless, and in no section are the advantages of this fact more apparent than in the Pacific Coast States. Electrical mining apparatus is in demand and manufacturers are meeting the requirements as they come up.

The Dow Steam Pump Works, of San Francisco, have given particular attention to the designing of electrically-driven pumps, and are manufacturing this class of apparatus on a large scale. So active is the demand that in eight months, from a small beginning, the manufacture of electric pumps has become an important adjunct to their business.

The illustration, Fig. 1, shows a vertical triplex plunger pump, which is built in sizes ranging from 50 to 300 gallons per minute capacity, and heavy enough for any lift not exceeding 300 ft. The motor shown with this pump in the illustration is a bipolar machine with a double reduction in the gearing from armature pinion to main pump shaft. The sizes of motor used depend, of course, upon the work expected of the pump.

Fig. 2 shows a heavy horizontal type adapted to heads of from 300 to 1,500 ft., and the design of the pump, as well as the selection of the materials for its construction, have received careful attention and consideration. The pump is built in capacities of from 25 gals. per minute upward. The illustration shows the pump equipped with a multipolar motor, and, as in the case of the vertical pump, the motor is mounted on a heavy iron extension base with the pump. Fig. 2 also shows an addition to the regular type of this pump for operating a sinking pump, below the station pump, both from one unit of power. The large gear wheel shown, carrying the connecting rod which operates the rocker arm, can be removed if this attachment is not used.

A feature of all these pumps is that the crank shafts and connecting rods are operated in closed chambers in which oil is retained and the connections made self-lubricating. As no lost motion is found the pumps

are run at a high rate of speed without pounding or detrimental wear. The slight wear inseparable from reciprocating machines is made self-adjusting, and therefore does not require, as is usually the case, constant and careful adjustment.

The Dow electric mine pumps are in use, among other places, at the Standard mine, near Bodie, Cal.; at the Gover mine, Amador City, Cal.; and at the Idlewild mine, near Greenwood, in California.

RUSSIAN OIL EXPORTS.

The Russian Finance Ministry has issued the following statement of the exports of petroleum from that country for the year 1894. The amount is given in poods of 36 lbs. each:

	Poods.
Illuminating oil	33,544,599
Raw oil	6,631,526
Heavy oil	1,370,579
Lubricating oil	4,892,960
Naphthas	2,006,524
Total	48,446,388

The total exports to European countries were 24,923,840 poods, which were divided as follows: Austria, 6,413,039; Turkey, 6,195,234; Great Britain, 5,959,032; France, 2,217,589; Belgium, 1,784,527; the Balkan States, 966,033; Italy, 593,622; Holland, 579,262; Germany, 120,450; Greece, 69,233; Gibraltar, 25,819 poods.

Exports to countries outside of Europe amounted to 15,262,285 poods, and are classified as follows: To Port Said or order, 5,848,521; India, 2,861,638; Japan, 2,809,757; China, 1,822,036; Java, 1,195,320; Philippine Islands, 142,900; Asiatic Turkey, 116,105; other countries, 466,008 poods. These only include the exports by sea. Those put down as going to Port Said or order are usually for China, Japan or the East Indies. The statement calls attention to the fact that the increase in Russian exports last year was 12 5/8% over 1893, while that in the exports of the United States was only 2 6/8%. The obvious inference being that Russian petroleum is obtaining an increasing proportion of foreign trade, especially of the Eastern trade. In addition to the exports by sea, noted above, there is a considerable trade in petroleum overland to Persia, with a small quantity going to Afghanistan.

MINERAL PRODUCTION OF THE UNITED KINGDOM.

From advance sheets of the Bluebook containing the mineral statistics of the United Kingdom for 1894 which is now ready for publication we take the following statement of the mineral production of the United Kingdom including the Isle of Man. The values given are at the mines or quarries, and the ton is, of course, the long ton of 2,240 lbs.

MINERAL PRODUCTION OF THE UNITED KINGDOM.

Mineral.	1893.		1894.	
	Quantity.	Value.	Quantity.	Value.
Alum clay (Bauxite).....Tons	8,740	£1,150	7,970	£5,618
Alum shale....."	2,115	261	3,972	496
Arsenic....."	5,976	57,694	4,891	48,614
Arsenical pyrites....."	3,036	2,948	3,288	3,823
Barytes....."	22,343	25,363	20,656	21,410
Bog ore....."	10,747	2,683	7,893	1,951
Clays (excepting ordinary clay)....."	3,063,209	817,419	3,263,768	823,701
Coal....."	161,325,795	55,809,808	188,277,525	62,730,179
Copper ore....."	5,316	12,911	5,752	13,909
" precipitate....."	230	2,210	241	2,313
Fluor spar....."	215	161	126	69
Gold ore....."	4,489	7,657	6,693	13,573
Gypsum....."	143,486	59,369	153,450	66,355
Iron ore....."	11,203,476	2,827,917	12,367,308	3,190,647
Iron pyrites....."	15,837	7,292	15,523	8,012
Jet.....Lbs.	888	177	479	48
Lead ore.....Tons	40,808	280,539	40,599	266,995
Lignite....."	3,264	816	334	83
Manganese ore....."	1,536	762	1,809	740
Ocher, umber, etc....."	10,534	13,880	8,516	14,040
Oil shale....."	1,956,520	489,130	1,986,385	486,598
Petroleum....."	260	488	49	92
Phosphate of lime....."	3,300	5,771	700	1,277
Salt....."	1,944,029	735,222	2,235,512	763,329
Slates and slabs....."	438,993	1,107,626	461,673	1,171,366
Soapstone....."	.....	.....	10	45
Stone, &c....."	.....	7,773,743	.....	7,685,716
Strontia sulphate....."	5,812	2,325	6,823	1,962
Tin ore....."	13,689	637,053	12,910	4,752,323
Uranium ore....."	25	50	19	815
Wolfram....."	22	420	.....	.....
Zinc ore....."	23,754	81,270	21,821	67,311
Total values.....	.....	£70,767,651	.....	£77,898,938

The total value of the mineral output of the Kingdom showed, according to this statement, an increase of £7,181,287 over that for 1893, nearly all of which resulted from the gain in coal production. The year 1893, however, as compared with 1892 showed a decrease of £11,533,000. There was therefore a reduction last year from 1892 in value, and a still larger one from 1891, as is shown by the following table giving the value of the output in four years:

	1891.	1892.	1893.	1894.
England.....	£65,334,539	£58,476,010	£19,992,042	£569,54,496
Wales.....	15,061,012	13,372,812	11,222,528	12,299,750
Scotland.....	10,356,054	9,837,740	9,327,855	8,419,510
Ireland.....	394,273	387,128	170,396	174,312
Isle of Man.....	86,194	77,940	65,600	50,870
Total.....	£91,238,032	£82,350,760	£70,767,651	£77,898,938

It must be remembered, however, that values in 1894 were generally low in England as well as in this country and that a reduction in the money amount does not necessarily represent one in the actual amount of mineral raised. The most notable changes shown last year, as compared with 1893, were an increase of 23,951,730 tons of coal, of 1,163,833 tons of iron ore, and an increase of 311,883 tons of salt. The increase in coal was chiefly due to the fact that in 1893 production was almost stopped for a time by the great strike of the miners.

The statement regarding the metals obtained by smelting is as follows. The values in this and preceding tables are taken at the average market price:

Metal.	1893.		1894.	
	Quantity.	Value.	Quantity.	Value.
Copper.....Tons	426	£20,522	446	£19,482
Gold.....Ozs.	2,309	8,691	4,235	14,811
Iron.....Tons	3,978,694	9,333,797	3,347,472	9,999,186
Lead....."	29,698	29,402	29,687	28,624
Silver.....Ozs.	274,100	40,687	275,696	33,313
Tin.....Tons	8,838	785,741	8,327	604,500
Zinc....."	9,274	167,770	8,130	131,029
Total values.....	.....	£10,649,610	.....	£11,086,945

From the British iron ore—12,367,308 tons—raised in 1894 there were made 4,347,472 tons of pig iron as reported in the table above. This, however, does not represent the total production of pig iron in the furnaces of the Kingdom, as there were used also 4,875,689 tons of foreign ore imported, and the total production of pig iron was 7,427,342 tons, against 6,977,000 tons in 1893, and 6,709,300 tons in 1892. It will be seen that there was an increase in pig iron production in spite of unfavorable circumstances in many respects. The quantity of coal reported as used for the production of pig iron was 14,884,800 tons.

The Lake Erie & Ohio Ship Canal.—The preliminary surveys and estimates for the Lake Erie & Ohio River ship canal and the general feasibility of the project are to be submitted to a commission composed of Gen. H. L. Abbot, Corps of Engineers, U. S. A., retired; Mr. N. H. Hutten, late Chief Engineer of the Harbor Board of Baltimore, and Prof. Lewis M. Haupt, late of the University of Pennsylvania. The two last-named engineers recently reported upon the proposed ship canal between Philadelphia and New York.

Gold Mining in Wales.—Great Britain is not generally considered a gold producing country, yet we find from the mineral statistics of that country that in 1894 there were four gold mines in operation in Wales. From these mines 6,603 tons of ore were extracted, from which 4,235 oz. of gold were obtained. The British gold mine (formerly the Morgan) produced 3,063 oz., and the Clogau, 956 oz. The average total yield was 0.64 oz. per ton. In recent years the quantity of ore mined has varied very much. In 1893 it was 4,489 tons; in 1892, 9,990 tons, and in 1891, 14,117 tons; but in 1890 it had almost disappeared, the yield being only 575 tons of ore, though in 1889 it was 6,226 tons, or not much less than in 1894. Nothing is said as to the cost of obtaining this gold, and it is therefore, impossible to say what the profits of gold mining in Wales are.

Filling Trestles by Sluicing.—Filling in trestles by sluicing is being practiced with success on the Cascade Division of the Northern Pacific, says "Engineering News." A powerful water jet from a monitor, as used in placer mining, breaks down the material of the hill and washes it down through flumes. Longitudinal planks are laid on small banks or ridges of earth mixed with straw and hay built along the slope of the fill as it progresses, so as to arrest the material washed down, the top of the ridge being kept about 12 in. above the surface, the water flowing over the ridge. The material is directed to any desired part of the work by planks fitted with braces so that they stand on edge. The work is said to cost only about 5c. per cu. yd. of bank.

PATENTS RELATING TO MINING AND METALLURGY.

United States.

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

TUESDAY, SEPTEMBER 24TH, 1895.

- 546,655. Mechanical Drier. Franklin D. Cummer, Cleveland, O., Assignor to Eliza F. Cummer, same place. Combination of a drying cylinder set within the walls of a furnace and having a series of hooded inlet openings between its ends through which the products of combustion enter the cylinder, a conveyor for the dried material outside of the rear wall of the furnace and drying chamber, and an opening in the cylinder outside the wall discharging into the conveyor.
- 545,697. Apparatus for Distilling Liquid Hydrocarbons. Paul Dvorkovitz, London, England. Combination of a furnace, three superheaters located side by side within the furnace, a steam generator connected with the intermediate superheater, a crude-hydrocarbon reservoir and a tar reservoir connected respectively with the other superheaters, two retorts provided with means for heating them, spray pipe leading from the superheater into the retorts, and a separate condenser for each retort.
- 546,702. Process and Apparatus for Manufacture of Gas. William A. Koneman, Chicago, Ill. The process consists in maintaining the fuel under suction to the heat of the electric arc and projecting the arc into the bed of fuel.
- 546,716. Method of and Apparatus for Preparing Fertilizers. William A. Shepard, New York, N. Y. The method consists in passing superheated steam through an airtight chamber to separate and remove ammoniacal and other offensive gases therefrom, condensing the gases in water, removing the solid matters, and mixing the dehydrated and cooked material with lime.
- 546,726. Machine for Cutting Metal Strips, Rods, etc. John Bott, Youngstown, O. Combination of wheel or drum arranged in the line of feed and adapted to be driven at a peripheral speed approximately equal to the onward movement of the strip or rod, one or more pairs of cutting blades arranged transversely of the face of the wheel or drum, and means for operating the cutting blades during the rotation of the wheel or drum.
- 546,739. Method of Making Porous Plates or Electrodes. John Johnson and James H. Robertson, Brooklyn, N. Y. The method consists in heating the metal until brought to a molten condition, and then adding and kneading the inert substance to the metal, whereby the air in the porous substance is expanded and caused to produce air spaces.
- 546,749. Amalgamator. George M. Urie, San Francisco, Cal. Combination of a receiving, revolving screen, stationary screens of finer mesh, to receive the screenings from the revolving screen, and rotary conveyers, revolving magnetic cylinders, located below the same, amalgamating pan provided with riffle plates and amalgamated plates, an oscillating electrode suspended above the pan, and conductors connecting the pan and electrode with the negative and positive poles of a generator.
- 546,776. Brick-kiln. Walter P. Grath, St. Louis, Mo. Combination of a front and rear part, beneath the floor of the kiln and flues in the front part leading to the front of the kiln and communicating with a return flue leading to the smoke-stack.
- 546,780. Metallic Alloy. William H. Kemler, Ashland, Ky. An alloy containing zinc, copper and aluminum, the zinc being present in greater proportion than the aluminum, and the aluminum greater than that of the copper.
- 546,790. Apparatus for Reloading Coal. Frank H. Symons, Boston, Mass. Combination of an inclined runway, a coal tub running thereon, and means for slackening the runway while the tub is filling and afterwards tightening it.
- 546,815. Carburetor. Ralph B. Hain, Grand Rapids, Mich. Combination of an inlet pipe having its upper end near the top of the vessel and extending outside the same, and its inner end, vertically movable, and increasingly immersed in the liquid as it descends, and a float supporting the movable end of the pipe.
- 546,873. Process of Treating Zinc-bearing Ores. Edgar A. Ashcroft, Broken Hill, New South Wales. Process consists in first leaching the oxidized ore with a solution containing a ferric salt, precipitate the iron from the solution and dissolve the zinc, secondly electrolyzing the resulting zinc-bearing solution by first passing it around metallic cathodes to precipitate the zinc from the zinc-bearing solution, and then around iron anodes to impart a ferrous salt to the solution, and subsequently raising the ferrous salt to the ferric state and thereby regenerating the original ferric salt solution.
- 546,885. Grab for Excavating and Elevating Clay, Coal, etc. George J. Hone, London, England. Combination of a guide frame provided with a block carrying sheaves and having a central hole with a cross-head sliding in the guide frame and provided with sheaves, rods connecting the blades with the cross-head, and a hauling chain.
- 546,894. Thermocauter. John E. Lee, Conshohocken, Pa. Combination of a blow-pipe torch adapted to be held adjacent to the carburetor and cauterizing point, and consisting of an open top receptacle of porous or spongy material adapted to take up combustible liquid, an air-supply pipe leading into the receptacle below the material, and a cock on the air supply side of the carburetor to supply air to the pipe leading to the torch.
- 546,933. Cementation Compound. William J. Miles, Jr., Marion O. Consists of carbonate of lime, charred bone, and uncharred or raw bone, the ingredients being combined together.
- 546,934. Brick-kiln. Thomas L. Myers, St. Louis, Mo. Combination of fire-boxes arranged on opposite sides of the kiln, a central curtain wall, dampered exit flues, located centrally in the kiln and on opposite sides of the curtain wall, the base of which forms the dividing wall for the flues, bag walls on opposite sides of the kiln, forming updraft flues, bridge walls forming down-draft flues, and dampers in the up and down draft flues.
- 546,935. Limekiln. Silas W. McLoon, Rockland, Me. Combination of a draft flue, in connection with a fire box, having a hollow arched top with a dome, a pipe leading from this dome into the flue above the fire box, an automatic valve in the pipe whereby the steam will pass into the draft flue at a predetermined pressure, and a water supply-pipe connected to the hollow arch.
- 546,952. Apparatus for Withdrawing Gas from Natural-Gas Wells, etc. George C. Danforth and William H. Sencenbauth, Washington, D.C., assignors, by direct and mesne assignments, to said Danforth and Wm. C. Hart, Chicago, Ill. Consists of a gas delivery pipe having induction and discharge ends and having a contracted throat, a long discharge pipe commencing at the contracted throat and of the same diameter, and a steam jet having its discharge end located at the contracted throat and pointing in the direction of the discharge.
- 546,963. Manufacture of Bronze Tincture. Heinrich Schlenk, Nuremberg, Germany, Assignor to the Firm of Carl Reich, same place. Process consists in dissolving resin in tetrachloride of carbon, subsequently neutralizing the liquid and adding bronze color thereto.

PERSONAL.

Mr. E. J. Reed, of Denver, Colo., has just returned to that city from a visit to Alaska.

Mr. H. J. Kruse, of Denver, Colo., has been inspecting several mines in the Vermilion district in Gilpin County.

Mr. Thomas P. Lowe, of Denver, has been placed in charge of the Foxhall tunnel in Clear Creek County, Colorado.

Mr. William Stein, of Shenandoah, has been appointed Mine Inspector for the Sixth Anthracite district, Schuylkill County, Pennsylvania.

Mr. August R. Meyer, president of the Consolidated Kansas City Smelting and Refining Company, has been elected president of the Commercial Club, of Kansas City.

Mr. Frank S. Mitchell, of Butte, Mont., has been appointed master mechanic for the Montana Ore Purchasing Company, and will have charge of the erection of all new machinery.

Mr. Theodore B. Comstock, mining engineer, and recently head of the University of Arizona, has removed from Tucson to Prescott, Ariz., where he will remain for some months.

Mr. J. Fitzgerald, a Tasmanian miner, has been engaged by the Governor of New Guinea to explore the interior of that island with special reference to the examination of its natural wealth.

Mr. John B. Farish, of Denver, and Mr. Frederick G. Corning, of New York, have been appointed the experts and managing engineers of the American Mining and Financial Syndicate, of New York.

Mr. Charles A. Little has resigned his position with the Rico Smelting and Refining Company, at Rico, Colo., to accept a position with the Japan Mining and Milling Company, of San Miguel County.

Mr. James McNaughton, for some time past superintendent of the Chapin iron mine, has been appointed manager of all the mines on the Gogebic and Mesabi ranges owned by the Corrigan-Rockefeller syndicate.

Mr. Oscar Szontag, for some time past connected with the Lemhi Mining and Milling Company at Gibbonsville, Idaho, has accepted a position in the new smelting works of Guggenheim Brothers at Perth Amboy, N. J.

Mr. W. Weston, mining engineer, has just returned from a trip to the White Hills mining district in Arizona, where he went to inspect and report on some mines for investors. Mr. Weston will open an office in Cripple Creek.

Mr. Joseph Beaubien, who was one of the pioneers of Gilpin County, Colo., but has been for a number of years past in Montana and Idaho, has returned to Central City, Colo., and proposes to engage in mining again in that vicinity.

Mr. Chas. Stocks, the well-known foreman at the Empire mine, Grass Valley, Cal., is soon to leave for Johannesburg, South Africa. He has received a flattering offer to take charge of certain property belonging to a large corporation there.

Mr. J. D. Hague, of New York, and Mr. Elsworth Daggert, of Salt Lake City, Utah, are at present engaged in examining the Anaconda copper mines at Butte, Mont., for the European syndicate, which has arranged for the purchase of a large block of the stock of the Anaconda Company, as announced in the "Engineering and Mining Journal" of September 28th.

OBITUARY.

A recent dispatch from Butte, Mont., reported that Morgan Jones, a miner from Camp Creek, came into Butte and surrendered himself to the Sheriff, saying that he had shot and killed Joseph Henault in a quarrel over mining claims. Mr. Henault was a mining engineer who has resided for a considerable time in Butte and other towns in the vicinity and was well known there.

Capt. John Trevorrow died in Greenland, Mich., September 18th, aged 62 years. He was born in Cornwall, England, came to America when about 30 years old, and had ever since resided in the Lake Superior region. He had been mining captain in several of the copper mines of that region, and was well known and much respected throughout the district. At the time of his death he was looking after the property of the old Belt mines.

General Orlando M. Poe died October 2d at his home in Detroit, Mich. He was born in Navarre, Stark County, Ohio, 1832. He was graduated from the United States Military Academy in 1856 and was assigned to the Engineer Corps. In 1861 he was commissioned Colonel of the Second Michigan Volunteers, and a Brigadier General of Volunteers in 1862. March, 1867, he was made Major of Engineers; Lieutenant-Colonel 1882, and Colonel 1888. General Poe rendered valuable service to commerce on the lakes. Some of the most important light stations, including the famous Stannard Rock Light, were designed and constructed by him. He also constructed the new and famous lock at the

Sault Ste. Marie. He had general charge of all river and harbor improvements. He had been ill for several days, and his death was caused by erysipelas brought on by a severe fall.

Eli Whitney Blake, who died at his residence in Hampton, Conn., October 1st, was born in New Haven, in 1836, his father being the well known inventor of the same name. He was graduated at Yale in 1857, after which he spent a year at the Sheffield Scientific School and several years in Europe, where he studied chemistry and physics in the universities of Heidelberg, Marburg and Berlin. Returning to this country, he was made professor of chemistry and physics in the University of Vermont. From 1868 to 1870 he was professor of physics and mechanic arts at Cornell University. During a portion of the same time he was acting professor of physics at Columbia College, New York, and from 1870 until last June he filled the chair of physics at Brown University, in Providence. He was a fellow of the American Association for the Advancement of Science and a member of other scientific bodies to whose proceedings he frequently contributed valuable papers.

News has been received of the death on July 18th last at Cruzeiro, in the Province of Minas Geraes, Brazil, of Paul Ferrand, a young French metallurgist and mining engineer of much promise. M. Ferrand graduated at the Ecole de Mines in Paris in 1880, and for a time was employed in the ironworks at Batignolles, in France. In 1882 he went to Brazil as professor of construction in the School of Mines at Ouro Preto but for the last eight years he has held the chair of metallurgy in that institution. He was an indefatigable worker and spent all his vacations in exploring the country. At the time of his death he was engaged in the inspection of a section of the province heretofore but little known, but believed to contain much mineral wealth. He had published several works, including a treatise on the "Application of Mechanical Principles to the Study Resistance of Minerals" (in Portuguese), and several studies on the mineral resources of the Province of Minas Geraes, and on the gold mines of Ouro Preto.

SOCIETIES AND TECHNICAL SCHOOLS.

Michigan Engineering Society.—The ballot for officers has resulted as follows: President, George L. Wells, St. Louis; Vice-President, Frank T. Rogers, Port Huron; Secretary, Francis Hodgman, Climax; Directors, Dorr Skeels, Grand Rapids; W. B. Sears, Sagittaw, and William Appleton, Lansing.

Western Society of Engineers.—At the special meeting held in Chicago, September 24th, the result of the letter-ballot on withdrawing from the Association of Engineering Societies was announced. Of the members voting a large majority were in favor of the withdrawal, and the society in consequence will no longer be a member of that association. After the routine business had been transacted, Mr. A. V. Powell read a paper on the "Dry Docks of the Great Lakes," in which he gave an especial description of the large new "dry dock" of the Chicago Shipbuilding Company recently completed. The paper was discussed by members present.

American Society of Civil Engineers.—At the regular meeting in New York, September 18th, Mr. John D. Van Buren read a paper on "High Masonry Dams," in which he advocated a triangular section. Written discussions were presented by Mr. Edward Wegmann, who says that failures of high masonry dams have generally been caused by faulty execution of the works, most frequently by lack of proper care in the foundations. Mr. Lindenthal in discussing the paper verbally referred to the necessity in some countries of making provision against earthquakes, and suggested that a network of heavy iron rods be built into the masonry. Mr. Skinner described a dam now being built in California in which the core is a sheet-iron wall coated with asphalt, and its ends cemented into narrow slots in the narrow walls of the valley. On each side of this iron wall is a 24-in. wall of concrete, outside of which are built up masses of dry masonry or riprap. The discussion was continued for some time.

National Irrigation Congress.—At the fourth congress, held at Albuquerque, N. M., recently, Mr. Wm. E. Smythe, Chairman of the National Executive Committee, detailed the progress of irrigation during the past year. Since the passage, in August, 1894, of the Congressional act providing for the cession of 1,000,000 acres of government land, under certain conditions, to each state in the arid region, Wyoming, Colorado, Idaho, Montana, Washington and Nevada have passed the necessary legislation to accept the grant, but Nevada has not provided funds and administrative machinery for the purpose. A year ago only Colorado, Wyoming and South Dakota, of the Western States and State engineers, but since that time Kansas, Nebraska, Texas, Idaho, Montana and Washington have established engineering departments. A number of papers were read during the congress, and a lengthy address to the American people was reported by the committee on resolutions. The next place of meeting will be Phoenix, Arizona. Mr. E. B. Moses, of Kansas, was elected as chairman of the National Committee.

Engineers' Club of St. Louis.—The first meeting of the season was held in St. Louis, September 18th,

and after the transaction of the usual routine business, Mr. A. L. Johnson opened the discussion which had been announced for the meeting on the "Inspection of Structural Steel." He stated the ordinarily accepted definitions of the terms "elastic limit," "yield point," and "breakdown point." He showed the extreme difficulty of determining these characteristics, particularly with very high grade steel, such as is used in drawn wire. He doubted, seriously whether any existing method gave us an exact determination of these points. He doubted, furthermore, whether it was necessary to know them, as the ultimate strength and elongation told us all that was really essential for us to know about any material. In his opinion, advanced practice would warrant the omission of the elastic limit in all specifications. The discussion was continued by Prof. J. B. Johnson, who called attention to the fact that for all commercial purposes the three points of elastic limit, yielding point and breaking-down point, were one and the same, and need only be considered separately in the abstract scientific study of the subject. A number of other members joined in the discussion, the general opinion being that the ultimate strength and elongation of iron and steel could be readily and accurately determined, and that usually the elastic limit bore a certain relation to the ultimate strength, which does not vary materially.

INDUSTRIAL NOTES

The blast furnace of the Wisconsin Furnace Company at Fond du Lac, Wis., was damaged by fire on September 23d.

The Wheeling Iron & Steel Works, at Benwood, W. Va., have granted an advance in wages varying from 10% to 15%, according to the class of employees.

The Illinois Steel Company employed during August 11,669 men, and the pay-roll amounted to \$665,267. The September pay-roll promises to be quite as large.

The Weimer Machine Works Company at Lebanon, Pa., has notified its employees of an increase in wages, which will be equivalent to 10%. A large number of men are affected.

The New York officers of the Atlantic Dynamite Company of New Jersey, have been removed from 245 Broadway to the new Fidelity & Casualty Building at No. 99 Cedar street.

The property of the Bluffton Land, Ore and Furnace Company, at Bluffton, Ala., was sold recently at public auction and was bought in for account of the creditors at a nominal price.

The Damascus Steel Company has been incorporated at Des Moines, Iowa, with \$500,000 capital stock for the purpose of manufacturing castings under the process lately patented by S. K. Dawson.

The Watts Iron and Steel Syndicate, of Middleboro, Ky., has, it is reported, purchased the Cambria iron ore property at Cambria, Tenn., including a railroad connecting the mines with the East Tennessee, Virginia & Georgia line.

The Big Stone Gap furnace at Big Stone Gap, Va., is to be put in order and started up as soon as possible. The property was recently sold to Charles Ballard and others, of Louisville, Ky., who will organize a company for the purpose of operating the furnace.

At a recent meeting in Washington of the Co-operative Town Company, of Elizabethton, Tenn., Robert P. Porter was elected president and C. W. Adams general manager. A committee was appointed to prepare a contract for the construction of the proposed steel plant at Elizabethton.

The S. R. Smythe Company, of Pittsburg, has just completed the new open-hearth still plant for Jones & Laughlins, in the same city. The company is also building a basic open-hearth plant, including all machinery, for Worth Bros., at Coatesville, Pa., and has a great variety of other work on hand.

Efforts are being made to adjust the affairs of the West Superior Iron & Steel Company, and to take the property out of the hands of the Receiver. The plant is said to be that all the creditors should pool their interests and place them in charge of one man who will operate the works for their benefit.

The Link Belt Machinery Company, of Chicago, reports that the electric coal cutting and haulage plant which they recently installed for the Essen Coal Company, near Pittsburg, and which has been described in these columns, has been accepted and paid for, having met all requirements and guarantees, and being entirely satisfactory to the Essen Company.

The Racine Hardware Company, Chicago, has recently shipped a 10 x 10 in. horizontal center crank engine to Raleigh, N. C., for use in the electric plant. The company has also shipped two engines to Lower California for use in mines. Many engines of this type are now in use in mines in the West and have so far given satisfaction. The company is now enlarging its works at Racine, Wis.

At the annual meeting of the Gracey-Woodward Iron Company in Nashville, Tenn., September 23d, Julian Gracey, of Clarksville, Tenn., was chosen president; W. H. Woodward, vice-president, and T. D. Luckett, secretary. It was decided to put the

furnace, which has been standing idle for about two years, in order and to start it up as soon as possible. It will probably be ready about November 1st.

The Cambria Iron Company has declared a stock dividend of 12½%, payable November 1st, as registered October 2d. No fractional shares will be issued. Those entitled to fractions will receive payment for the same at the sale of \$60 per share. This is the dividend which was provided for by the plan for increasing the capital stock. The subscribers to the new issue of stock have paid for their shares and are, therefore, entitled to participate in the stock dividend.

TRADE CATALOGUES.

S. D. Kimbark, of Chicago, issues a catalogue and price list showing an extraordinary variety of small tools, blacksmiths' and machinery supplies and similar articles.

"Sparks from a Crescent Anvil" is the title of a publication issued at intervals by the Crescent Steel Company, of Pittsburg. Each number contains some notes on steel, many of them useful, and also some items concerning the special qualities of the Crescent steel.

The latest circular issued by the Joseph Dixon Crucible Company refers to the use of graphite in lubrication. A number of instances are given of its use, especially in locomotives and fast running engine work. The merits of good graphite as a lubricant are beginning to be appreciated in this country more than ever before, and the Dixon Company is taking full advantage of this in pushing the sale of its excellent compounds.

The Frick Company, of Waynesboro, Pa., has issued a new catalogue describing and illustrating its high speed automatic engines. The book has some very handsome engravings showing the interior of the works and several engines of different classes. The details of the valve gear, governors and cut-off are also fully illustrated and described. The engines of the Frick Company are well known and their manufacture includes some very large and heavy machines in use in refrigerating plants and for other purposes.

"Atlas Powder" is the title of a new catalogue issued by the Repauno Chemical Company, of Wilmington, Del. In this catalogue a new departure has been taken and it is one of the handsomest documents of the kind that we have seen for a long time, the illustrations being very fine. The reader may wonder how a powder can be illustrated, but the engravings given here include views of the works outside and inside, and a number showing where explosives made by the company are used and the method of applying them in excavation in quarries, mines and elsewhere. There are also some curious engravings from photographs showing the effect of explosives under water. The Repauno Company manufactures a variety of these dangerous but essential agencies, including "Atlantic" powder, "Judson" powder, and special fumeless gelatine powders for tunnel work, and in fact, explosives adapted for mines and quarries of all classes.

MACHINERY AND SUPPLIES WANTED.

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

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

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

GENERAL MINING NEWS.

ALASKA.

Alaska Mexican Gold Mining Company.—This company reports the clean-up for the month of August, as follows: Period since last return, 31 days; bullion shipment, \$19,279; ore milled, 6,988 tons; sulphurets treated, 134 tons. Of the bullion there came from sulphurets, \$6,698. The working expenses for period were \$11,489, leaving a balance of \$7,789 as profit for the month.

Mining on Sheep Creek never looked better than at present, says the Juneau "Record." The Silver Queen 10-stamp mill is pounding a way steadily, five stamps running on Silver Queen ore and five on Gould & Curry ore. Superintendent Hammond has succeeded by concentration of the Silver Queen ores in saving at least 95% of the metals. Very coarse screens are used, the object being to pass the metals out of the batteries to the vanners before it is crushed into slimes. Heretofore, under the old management, at least 50% of the metals were lost through using screens that were of too fine a mesh. Of course the sliming of ores of such character cannot be wholly averted, but nearly all of this very rich substance, which floats upon the surface of the water like grease, is saved by letting the water underneath the vanners pass through sacks.

On the Silver Queen the cross cut has tapped the vein about 120 ft. deep, which is now the lowest point of the workings. Even at this depth the vein is considerably shattered through some break that has occurred in the whole formation, and although the ore is fairly well mineralized, it is not as rich as at points above where the formation is solid. At this depth, too, the foot-wall vein and center vein come together. The Queen now has 12 miners at work in three levels, and a fair grade of ore is now being run through the mill. Superintendent Hammond expects an air compressor and a gasoline engine, which will be put up at the mine to be used in running in the lower cross-cut tunnel on the prospect.

The best showing of rich ore on Sheep Creek is now in the Glacier mine, which is being worked by Al. Noyes and Andy Anderson, says the Juneau "Journal." In the upper works are two tunnels, in nearly 100 ft. each, which run along the foot walls of the hanging-wall and center veins. The ore has been left standing. Another tunnel now in about 90 ft. has been run lower down hill and taps the center vein 70 ft. deeper than the upper tunnel, the vein at this lower point being about 4 ft. wide and well mineralized. About 20 ft. farther down a tunnel is now in about 90 ft. on the foot-vein and the workmen are taking out rich ore. Mr. Noyes will soon have a wire tramway and a five-stamp mill on the ground, when he will begin stoping and running down the large amount of ore that is now in sight. One or two of these tunnels will be driven through during the winter to the Emma, the upper extension of the Glacier, and the tramway extended up the mountain to the present surface workings, and next summer this location will be added to the list of producing mines on Sheep creek, as will also the Ascension, which is a parallel claim carrying the foot-wall vein. These workings will also bring the gold ores on the Golconda mine within easy reach.

The upper basin group of locations, says the Juneau "Record," comprise the Bullion group, now being developed by John Reagan; the Climax, Enterprise and Star of Bethlehem, owned by Messrs. Rust & Burrows, two bankers of Saginaw, Michigan; L. L. Williams, A. P. Swineford and Frank E. Howard; the Last Chance, owned by T. D. McMannus, Archie Burns and others; the Sheridan, Mamie and Gray Eagle, owned by Rust & Burrows, Johnson & Heid, L. L. Williams, A. P. Swineford, Fred Hyde and F. E. Howard; the Cliff lode, owned by Oscar and Thomas Ashby; the Little Queen and west extensions, owned by Wm. McLernon and J. F. Malony, and the Little Queen Extension east, owned by Wm. McLernon, Pat Evoy, Johnson & Heid, Fred Hyde and Frank E. Howard. These locations are extensions and parallel claims running along the belt, and is the easternmost point of discovery of pay ore, although rich float has been found still farther east on the head of Grindstone creek emptying into Takou inlet.

Last Chance.—A recent discovery has been made in this mine and upon what has been termed for the past six years the Sheridan vein. This vein in places has produced some rich galena and gray-copper ores, but its principal showing was in white quartz and a red decomposed gangue matter which was considered worthless, and as the galena-bearing chutes did not produce sufficient quantities to warrant work for shipments, development work has been delayed upon the claims for a past number of years, and it was not until T. D. McMannus commenced doing this year's assessment work on his Last Chance location, and then through chance, that the existence of paying gold ores in that end of the basin was discovered, it was through looking carefully over the vein matter for galena indications that free gold was seen in the white quartz. The Last Chance is now opened up by a 20-ft. shaft showing in the bottom of a 4 ft. vein on a contact between well-defined walls. At this point on the surface the formation is considerably shattered, showing surface croppings of vein matter only from 1 in. to 1 ft. in width, but in gaining a little depth the vein gradually widens, small shattered feeders come in and when 20 ft. in depth is gained the vein shows up 3 ft. of solid quartz. About one ton of ore will be shipped to the sampling works below to make a thorough test of its value. This sample lot has not been assorted, but carries the ore the entire width of the vein. This location is the west extension of the Sheridan, the present workings being about 70 ft. below the Sheridan end line, and a scheme is now on foot between the owners of the two locations to join issues and tap the vein from below through a tunnel. This tunnel will be run in so as to tap the vein near the end lines at a depth of about 200 ft., its length being about 250 ft. and its mouth located at a point free from any winter snowslides and within easy reach of the valley below.

ARIZONA.

Cochise County.

Copper Queen Consolidated Mining Company.—The new roaster of this company at Bisbee has been put into operation, and is said to be working very successfully. The company has given its employees an increase of 50c. a day in wages. This action was taken without solicitation, and was somewhat unexpected.

Maricopa County.

Coarse Gold Mine.—At this mine, 12 miles north of Wickenburg, owned by David Goldberg and others, some rich ore has recently been found and work on the mine is being actively pushed.

Mohave County.

Local papers report the discovery of placer deposits several miles below Fort Mohave, and a number of miners are going to the spot.

Yuma County.

Harquahala Gold Mining Company, Limited.—The following is the estimated return for the month of August: Crushed during the month, 360 tons; estimated value of gold produced, \$4,150; additional and final clean up of mill, \$4,450; treatment of tailings, 2,872 tons, yielding, \$6,400; miscellaneous revenue, \$300; total, \$15,300. The estimated total expenses were, \$10,000, leaving an estimated profit for month of \$5,300. The cyanide plant is working to its full capacity, saving 80%. The Secretary adds, that the following cablegram has been received from Mr. Harvey at Kalgoolie, Western Australia. Have driven through the (lode) 35 ft. veins of iron ore in the vein formation, 30 dwts. per ton. Main shaft should be sunk on the vein 200 ft. South shaft has reached a depth of 100 ft. Commenced cross-cutting; looks very favorable.

CALIFORNIA.

The Mineral Lands Committee of the California Miners' Association has agreed upon a letter to be sent to W. H. Mills, of the Southern Pacific Company, in answer to one recently received from him that where the two proposed experts fail to agree on the character of lands, they shall appoint a third one, a majority vote to be binding. It also says that the arrangement shall only affect the disputed land which the Association has in charge, as it has no power over individual contestants. In addition it is stipulated that the acts of the experts shall be binding on both parties to the agreement, and that both parties discontinue, respectively, all efforts to either patent or protest the issuance of patents to disputed land until the experts make a report and solve the matter one way or another.

Calaveras County.

(From Our Special Correspondent.)

Boston.—This mine, 2½ miles Northeast of Moke-lumne Hill on Indian Creek, was formerly known as the Esperanza. The new ditch and pipe line have been completed. The south drift has reached a point under the winze from the west tunnel and an upraise will be made to connect the level and shaft with the winze for ventilation. The ore is high grade, rich in free gold and sulphurets. A 20-stamp mill and chlorination works are in course of erection; 35 men are employed.

Fellowcraft.—This mine is located at San Andreas. Hoisting works are being erected to be run by water power. The tunnel is being pushed rapidly through hard rock.

Mariposa County.

(From Our Special Correspondent.)

Merced Gold Mining Company.—A large force is employed on the property of this company at Coulterville. A dam 30 ft. high has been built across Black Creek, also two large tanks on high ground, to which water is being pumped. A three-compartment shaft has been sunk on the Malvina Mine and hoisting works erected. The shaft is connected by tunnel with the Potosi Mine. There is also a three compartment shaft on the Louisa Mine.

Napa County.

Aetna Consolidated Quicksilver Mining Company.—This company paid dividend No. 4 of 10c. per share October 1st. This required \$10,000, making \$40,000 paid in dividends to date by the present management. The mine is near the Napa Consolidated and is now under the same management. Under the former management it paid in all about \$70,000 in dividends.

Napa Consolidated Quicksilver Mining Company.—This company paid October 1st dividends Nos. 69 and 70 each of 10c. per share, making a total of \$20,000. The whole amount of dividends paid by the company up to date is \$740,000.

Nevada County.

(From Our Special Correspondent.)

Tip Top.—This gravel claim adjoining the West Harmony on the west has been purchased by Robert McMurray, who has also purchased the buildings and machinery on the West Harmony land as it is his intention to work through the workings of that mine. About 50 men will be employed when the mine is opened up.

W. Y. O. D. Mining Company.—At the annual meeting in Grass Valley the following directors were elected: J. R. K. Nuttall, Joseph Weissbein, Jacob Weissbein, Louis B. Parrott and P. T. Simmonds. J. R. K. Nuttall was chosen president; Joseph Weissbein, vice-president and manager; Jacob Weissbein, secretary; Weissbein Bros. & Co., bankers, treasurer; Thomas H. Simmonds, superintendent.

Siskiyou County.

Nebraska Gold Mining and Milling Company.—Messrs. Dern and Heimrich, of Salt Lake City, Utah, recently inspected this property in order that they might decide upon the work necessary for the development of the ore bodies. This group of mines were bought for \$50,000, but to date no very extensive work has been done on it. Several shipments of ore were made to Salt Lake City, and the tests

that followed in a Crawford Mill are said to have given good returns in gold. Orders were left with the foreman in charge to put a force of men at work on the development.

COLORADO.

Mineral surveys approved by the United States Surveyor-General for Colorado during the week ending September 21st, 1895: Survey No. 9730, Land District of Denver, Eclipse placer; 9697, Garfield, Belle of Titusville mill site; 9698, Leadville, Little Annie C. C.; 9667, Pueblo, Keepsake; 9716, Leadville, Fairy Eitel No. 1, Fairy Eitel No. 2 and Fairy Eitel No. 3 lodes; 9717, Pueblo, Buffalo; 9725, Leadville, Nest Egg; 9602, A. and B., Denver, Dolphin and Bell Boy lodes and Dolphin mill site; 9634, Pueblo, Kirly Fraction; 9720, Pueblo, Raaler; 9615, Montrose, Neodesha; 9629, Pueblo, Katie B. and St. Louis lodes; 9658, Pueblo, Ouray; 9661, Pueblo, Minnie H. and Moss Back lodes; 9709, Pueblo, Table Rock; 9709, Pueblo, Big Sall; 9723, Denver, King Cyrus and Pennsylvania lodes; 9431, Pueblo, 4 per cent.; 9669, Pueblo, New; 9675, Pueblo, Antelope; 9679, Pueblo, Lucetta, Amended work (G. L. O.); 4430, Am., Denver, Castle Creek placer; 4377, Garfield, Fall River, Iron King, Iron Mountain, Boy Star, Cincinnati, Mammoth and Hidden Treasure lodes; 1844, Am., Leadville, Heytrossar; 8945, Pueblo, Little Joe; 9274, Leadville, Mark, Jr., Emma and Rosanna lodes. Affidavit \$500 expenditure issued; 8861, Pueblo, Tigon; 8827, Pueblo, Thanksgiving.

Boulder County.

E. L. Doyle sold his mining interests at the foot of Bald Mountain, consisting of about 60 acres of lode and placer ground, to W. W. Hulings recently; consideration unknown. The property is being worked steadily with two men. Mr. Hulings has erected a trestle about 50 ft. high for dumping purposes in working the Ward mine.

Melvina.—This property, situated at Salina, is being cleaned out and refitted with new machinery. The work is in charge of J. J. Harris.

Scotia Gold Mining and Milling Company.—This company recently filed articles of incorporation to transact a general mining business, with offices in Denver, and a branch in Boulder. Hiram C. Russell, James Cannon, Jr., and Edward S. McKinlay are the directors. Capital stock, \$100,000.

Clear Creek County.

Pullitzer.—This mine, near the Lamartine, is showing new signs of life. Parties have secured a lease on the dump with the view to working the same for gold values. This property has been regarded as silver entirely, but the recently wonderful gold development in the Lamartine made it quite probable that the ores of the Pullitzer should be largely gold.

Trait Creek Gold Mining Company.—This company has been organized to operate the Berthoud group of mines. Work has commenced and several thousand feet of rails, an ore car and other supplies are on the ground. It is expected that a large force will soon be added to the number now at work. The directors of the company are C. H. Pickett; M. F. Taylor and J. C. Rice, all of Denver.

Cripple Creek District.

(From Our Special Correspondent.)

Anchors.—This mine, on the north slope of Gold Hill, is being worked by lessees in systematic manner. The Hight lease recently made a shipment which netted over \$2,000. The shaft has been sunk on the vein 160 ft. The Maloney lease shaft has been sunk 230 ft. and improves with depth. The shipments from this lease are about 90 tons a week of \$35 ore. Rich seams of tellurium are often found which assays \$30,000, but such ore is sacked separately.

Blue Bird.—The lessees on the north end of the Blue Bird shipped 126 sacks to day which is expected to average \$400 per ton. This ore was taken from the shaft in sinking 65 ft. The lessees on the south end are doing better and breaking a higher grade ore than for some time past.

Blue Jay.—This mine, adjoining the Blue Bird, shipped a carload of ore recently of about 4-oz. ore. The shaft has been sunk 65 ft. and drifts are being extended both north and south. The property keeps improving and machinery will soon be erected.

C. O. D.—This mine, in Poverty Gulch, gives employ to 35 men, and ships about 400 tons of ore a month, of the usual grade. The new machinery on the new shaft will soon be in running order.

Deerhorn.—This mine, on Globe Hill, was recently sold by the French syndicate to some local people for a reported sum of \$100,000. This property was located in August, 1891, by an old carpenter and prospector, who sold it in 1892 to some Denver parties for \$36,000; the latter after working the property for several months and extracting \$125,000, sold it to the French syndicate for \$80,000, and they in turn sold to the local people for cash. The shaft has been sunk 375 ft. During the past two weeks four properties have been sold involving an outlay of \$300,000, and all to strictly local people—Colorado Springs and Cripple Creek parties—in spite of representatives from rich firms who desire gold properties and claim they cannot get any.

Doctor.—This mine, on Raven Hill, shows no diminution in value in the rich ore shoot. A recent shipment of less than 18 tons netted \$83,000, and was the richest carload of ore ever sent from the camp, or, for that matter, from any camp, without any sorting, and was taken out in less than two weeks

by four men, at a total expense of less than \$200, costing about 0.482 cent per ounce, less than one-half a cent to produce an ounce of gold. The next shipment, which will take place in a few days, has been sorted a little and expected to realize a still better price. These are facts which any one can verify for themselves, and does not necessitate a month's horseback riding from civilization, across prairies and deserts, in some unknown region, but in a camp accessible by two railroads.

Eagle.—The Boston Company, which has secured control of this mine, is arranging to put up its own mill for the treatment of ores by the concentrating process. Rolls, jigs and buddies are to be used, and the daily capacity will be 50 tons a day. A mill site has been secured on Clear Creek, and the ores will be brought down by a rope tramway.

El Paso.—This mine, owned by the Gold King Company, is erecting new bins, and the surface improvements generally are keeping pace with the underground developments. The output, as well as grade of ore, is increasing.

Freeland.—The Redonda Mining Company has found the Freeland vein, between the first and second levels, which was lost by the older company. The new company began crosscutting some time ago into virgin ground, and within 40 ft. opened out a body of ore. They propose crosscutting from all of the lower levels, and the present intention is to remove the old machinery and put in a new plant, with air compressors for running air drills. The Redonda company is composed of stockholders in the Union Leasing and Mining Company of Leadville.

Foxhall Tunnel.—Thomas P. Lowe, of Denver, has taken charge of this undertaking for a Boston company, and is drifting on the tunnel toward the Seaton mine. A blind lead has been cut, and the indications are that it is one of the big mineral-bearing veins on Seton Mountain.

Joe Dandy.—This claim, on Raven Hill, worked under lease, made its initial shipment the past week and gave over 20 oz. per ton. This will call attention to a section of Raven Hill which has not produced any regular shippers to date. The rich seam is fully 9 in. wide.

Little Albert.—After lying idle for several years this property has been started up by Denver parties, who are developing and opening it out.

North Star.—This mine, one of the properties of the Gold Standard Company, and situated on Raven Hill, is doing well in the way of rich ore. The shaft has been sunk 150 ft. and nearly 100 ft. drifting on the vein when the shoot was encountered which averages close to 50 oz.

Santa Fe.—Parties have recently resumed work on this mine and are sinking a new shaft. A big chute has been reached, and ore running 40% lead is being shipped.

Stanley.—The company owning this property is pushing development work with air drills. The road level is now into the mountain 3,000 ft., and for several hundred feet a solid body of mineral, 3 ft. wide, has been showing. In the sixth level a 15-in. streak of copper ore has just been cut. A connection has been made with the big flume recently put in, and the power at the mill will be changed from steam to water.

Williams.—This property belongs to the Crown Point people, and lays parallel with the Crown Point & Virginia lode. The Williams was recently reached by a crosscut at a greater depth, and the pay streak is showing 8 ft. wide, mostly concentrating ore, although they are taking out daily from 3 to 5 ft. of smelting ore. Forty tons is the daily output for the mills. The shaft on the Crown Point is being sunk another 100 ft., where other drifts will be run.

El Paso County.

Defender Gold Mining Company.—Arthur Carnutt, R. Harding Loper and Edwin Arkell have incorporated this company to operate in El Paso and Fremont counties, with offices in Colorado Springs. The capital stock is \$1,250,000.

Hillsdale County.

Black Wonder & West End Gold Mining Company.—This company has filed notice of incorporation in Colorado. It is a consolidation of the Black Wonder and the West End mining companies, and takes the property of both companies, including the mining claims and stamp mill. The consolidated company has a capital of \$2,000,000, divided into shares of \$1 each. The officers are Henry A. Stearns, president; E. C. Davis, vice-president; Joseph H. Allen, treasurer, and Joseph L. Clough, secretary.

Lake County.

Alps Consolidated.—Lessees have opened up several feet of good mineral. The stuff runs very well in gold.

Big Six.—Development work is carried on by lessees through the Nettie Morgan and Big Six shafts and in addition to exploration work about a ton of good ore is hoisted daily.

Bohn.—Connections have been made with the Bon Air property, and at the same time extensive development work has been carried on.

Burnett Mining Company.—T. S. Wood, H. I. Higgin and J. H. Cragg have incorporated this company, to operate in this county, with a capital stock of \$200,000. The offices of the company will be in Leadville.

Chemung.—At a depth of 175 ft. good contact mat-

ter has been encountered, and drifts are being sent out to explore the ground.

Coronado.—The machinery is nearly all in place and sinking will be resumed soon. The shaft is now down nearly 475 ft. and is on top of the contact. The shaft will be sunk 200 ft. deeper.

Denargo Mining Company.—These people are operating the Mike & Starr shaft and have five properties under their control. The ground is being developed through the Mike shaft at a depth of 475 ft. Low grade iron sulphides are found in great quantities but the Denargo people are also developing for gold ore bodies.

Excelsior.—Six feet of iron has been opened up, also a nice streak of carbonate.

Pennsylvania.—The shaft is down 75 ft., and the lessees are putting in a fine plant of machinery, preparatory to pushing down to contact.

Shipments from this camp are at present averaging about 1,250 tons a day. This impetus in output is due to the working of a number of iron leases that have been idle for a long time, and as long as there is a demand for iron ore the production of the camp will keep up.

Triumph.—No shipments are being made at present, but some important development work is being pushed forward.

Mineral County.

Beauty.—On this claim at East Willow a body of ore was recently opened up.

Messenger Mining and Milling Company.—This company has resumed operations on its property in the King Solomon district, near Creede. It is reported that driving resumed in the tunnel which closed down some time ago has revealed the existence of a large body of low grade free milling gold ore, and exploration is to be carried on to ascertain the probable extent of this deposit.

Rio Grande.—On this mine, near Creede, Messrs. Jacobson & Wheeler, the lessees, are driving the old tunnel, and hope to reach the vein in about 50 ft., as the work is being carried on from the end of the Ethel tunnel.

Saunders Group.—Arrangements have been made to work this group of properties in Maggie Gulch through the winter. They are owned by J. F. Saunders, of Leadville, E. H. Crawford and Julius Rodman, of Creede. The principal claim is the Maggie, from which considerable ore has been taken, the others being the Banner of Liberty, Banner of Hope and the Star Spangled Banner.

Ouray County.

(From Our Special Correspondent.)

Agie.—This property lying just over the range was recently sold by its owner, John Millet, to Creede parties, the consideration being \$30,000, of which \$15,000 is paid down and the balance in ninety days.

American Nettle.—The force of miners at this point is being gradually reduced, with the intention of closing down indefinitely unless more ore is encountered in the near future.

Grand View.—Some very good gold ore has just been encountered in the Great Western tunnel and the force has been augmented by several men.

Grizzly Bear.—Another very rich strike was made in this property a few days ago, and shipments are largely on the increase.

Little Ida.—This property shipped its first carload of ore last week, and promises to be a regular producer hereafter.

M. & S.—Fifty tons of ore were shipped recently to the public sampler of Denver for a trial test. If results prove satisfactory shipments will hereafter continue regularly.

San Juan Chief.—This company has relinquished its lease on the Engineer, and is now pushing development on the Chief and Ben Butler properties. The mill is crowded to its utmost capacity, and yet is unable to handle the output.

Wedge.—Senator Carney is pushing operations at this point and expects to encounter an extension of the Bachelor chutes in the near future.

FLORIDA.

Polk County.

Clear Springs Phosphate Company.—This company is making arrangements to start up its plant near Bartow.

IDAHO.

Elmore County.

Atlanta Gold Mines, Limited.—This company is making good progress in building its new mill, which is on the Yuba River, five miles from Atlanta. There are now 115 men employed in the mines and mill.

Shoshone County.

Hunter Mine.—In this mine at Mullan about 55 men are now employed, and the machinery is fully at work. Mr. Charles Llewellyn is foreman in charge. The "Coeur d'Alene Miner" says: The lode is reached at a distance of nearly 1,000 ft. from the mouth of the tunnel. It may be mentioned here that owing to the early mismanagement of the mine tunnel No. 5, which is now the lowest and principal point of exploration, runs nearly parallel to the vein, and not more than from 50 to 75 ft. from it, for a considerable distance. Superintendent Curria intends shortly to take advantage of this condition and put in a crosscut several hundred feet back from the intersection of the tunnel. The Hunter

and the Yolande patents cover two distinct veins running the whole length of both these claims. These are 26 to 30 ft. apart, and owing to their locations, they are known as the north and south veins. The drift continuing from the tunnel has been run on the north vein for a long distance from its intersection, the distance from the mouth of the tunnel to the breast of the drift being over 2,000 ft. The two stopes now being worked are one on the north and one on the south vein, about 1,900 ft. in round numbers from the mouth of the tunnel. The stope on the north vein is 80 ft. above the tunnel level, and the ore vein is 30 ft. in width. Three steam drills are at work here, for the ground is very hard. The ore vein is mainly concentrating ore, and has a good healthy appearance throughout. Fourteen men find employment in this stope, which as yet is only about 100 ft. in length. Directly below this stope a crosscut communicates with the south vein where a stope has been worked up to a height of 80 ft. Here there is one power drill and four or five men taking out ore. Ten to a dozen men are engaged in timbering in different parts of the mine. There is some fine ore in the stopes in the next level above, a considerable amount of which has been broken down. This is not available until a chute connecting the two levels, which has suffered from the two years' dormancy, has been repaired. These levels are nearly 300 ft. apart. In addition to operations on the upper level, the vein will be operated by a crosscut from the tunnel, so that extensive developments are in store at the Hunter during the coming winter. The mill is operating on but one shift, but as soon as one or two more power drills and a few necessary preparations are made, which will be within a day or two, it will run continually on two shifts. It has a capacity of 200 tons of crude ore per day. The machinery consists mainly of 18 Hartz jigs, four Frue vanners and one round slime table. When in full operation it employs 20 men. The ore is brought down from the mine, three-quarters of a mile, by a tramway.

ILLINOIS.

Clinton County.

Mentor Coal Mines.—The Empire top works of these mines, situated on the Baltimore, Ohio & Southwestern Railway, 35 miles west of Carlyle, were destroyed by fire on September 23d. The mine is the property of the Consolidated Coal Company, of St. Louis. The loss is between \$8,000 and \$10,000.

Montgomery County.

Coffeen Coal and Coke Company.—The miners on strike at the coal mines of this company at Coffeen have applied to the State board of arbitration to settle their grievances. They desire an increase of wages.

INDIANA.

The block coal operators and miners of the Brazil district met in Brazil October 1st to arrange a new schedule of mining rates. The operators granted the miners' demand of 70c. per ton and work in the mines will be resumed at once. The advance was granted to the miners in face of a rumor that Ohio and Illinois operators would not grant an increase to the miners and that a strike would be called in those States and probably several others soon.

MICHIGAN.

Copper.

Calumet & Hecla Mining Company.—The Red Jacket perpendicular shaft of this company is now reported down nearly 4,500 ft. and work still continues. This is a greater depth than has been reached by the famous shafts of the Tamarack Company.

Centennial Mining Company.—In the Circuit Court at Houghton, September 27th, an order was granted postponing the sale of the Centennial mine under foreclosure from September 25th until December 2d. The order was granted on motion of the Stockholders' Protective Committee, and the committee expects before that time to have the reorganization completed, and to be in a position to pay off the debt.

Pontiac & Mesnard.—These copper mines have gone into the hands of Carl Sheldon, of Boston, as receiver, on application of some of the old stockholders and creditors.

Tamarack Mining Company.—There will be no annual report of this company covering operations for the year ended June 30th, as in former years. Instead a report will be issued in April, covering 18 months' operations. The fiscal year has been changed, and is now the calendar year.

MINNESOTA.

(From Our Special Correspondent.)

Shipments of iron ore from Two Harbors for September were about 300,000 gross tons, and from Duluth about 175,000 tons, while 60,000 tons more were shipped from Superior. This is rather more than had been expected for the month, on account of high freights and a diversion of vessels to the coal and grain trades.

The ore men's agreement of last spring has been the only cause of the reason for not starting the blast furnace at Duluth on a run of Bessemer pig. It was able to get all the Mesabi ore it wanted, but needed about 75% of the mixture from the Vermilion hard ores. This it could not get and will not start until spring. In the mean time the furnace will be put in order and heavier machinery will be put

in. It is expected to make from 100 to 130 tons a day.

Contracts for 1,700,000 ft. of Pacific timber for the Duluth, Missabe & Northern new ore dock; for 5,000,000 ft. of Minnesota pine, 2,000 piles and for the iron work of the dock, have been let. The structure is to be put up by day labor. The road has specifications for 200 ore cars now in the hands of builders for bids, with the probability that this number will be largely increased.

Iron.—Mesabi Range.

(From Our Special Correspondent.)

Canton Iron Company.—At this mine the Barnhart shovel loaded 110 23-ton cars from stockpile in 10 hours, most of the ore being frozen. The mine is pumping an immense amount of water, and developments are steadily pushed.

Franklin Mining Company.—At this mine the new Vulcan steam shovel has just cleaned up the stock pile, and has proved a great success. It is able to make a cut of 50 ft. in width and 23 ft. in height, and is loading cars regularly at the rate of 20 23-ton cars an hour. Stockpile grounds for both Nos. 1 and 2 are being cleared, and a new shaft will be sunk this winter near the site of several buildings which are to be moved. At the Bessemer, which is a part of the same property, a second shaft will be sunk, and stockpile room is being cleared. The mine is raising about 500 tons daily, and all from the underground developments. Indications are that it will be extensively mined the coming winter. The Victoria, to the southeast of the Franklin and south of the Bessemer, has begun small shipments from development work, the railroad having reached the mine last week. The new main shaft at this mine is some 70 ft. in ore, with a surface of 50 ft. A second shaft will be sunk as soon as the first is out of the way. These three properties are under the control of Corrigan, McKinney & Co., and together will be an immense shipper in 1895. They have a time contract, five years in all probability, with the Duluth, Missabe & Northern, for handling their ore via Duluth. They will be able to raise not far from 400,000 tons for next year's shipping, if necessary.

Mountain Iron Company.—This mine is working about 175 men and will soon put at work a fourth steam shovel, preparing for next season's business.

Wyoming Iron Company.—This mine will be developed and operated the coming winter by the Minnesota Iron Company. It is a large property.

Iron.—Vermilion Range.

(From Our Special Correspondent.)

Pioneer Mining Company.—This company has shipped to date about 30,000 tons, and will get out little more this season. Very extensive surface improvements are now going on and the mine is employing 230 men.

St. Louis County.

A mica mine has just been discovered on Kettle River, two miles above Kettle Falls. The locators are W. R. Miller of Biwabik and P. H. Tetrault and James Finley of Ironwood, Mich. The vein is imbedded in sandstone granite walls, says the "Chicago Chronicle." The work of development is being pushed, and already specimens are being mined in which the sheets will measure 6 by 8 in. A company has been organized and the necessary capital is forthcoming. The owners of the mine have made arrangements in Chicago for a market for all their product.

MISSOURI.

Jasper County.

(From Our Special Correspondent.)

JOPLIN, Sept. 30th.

The miners are slowly but surely pumping out the mines that were flooded by the recent deluge, but the output is still very light and may be so for some weeks yet.

The top price paid for zinc ore was \$26.50 per ton. Lead sold at \$18 per thousand. The following are the sales: Joplin, zinc, 802,070 lbs.; lead, 331,790 lbs.; value, \$16,025. Webb City, zinc, 339,810 lbs.; lead, 41,430 lbs.; value, \$8,068. Cartersville, zinc, 1,233,120 lbs.; lead, 165,420 lbs.; value, \$18,576. Spring City, zinc, 98,020 lbs.; lead, 690,000 lbs.; value, \$1,425. Oronogo, lead, 4,400 lbs.; value, \$58. Zincite, zinc, 7,320 lbs.; value, \$92. Alba, zinc, 31,440 lbs.; value, \$362. Springfield, zinc, 44,000 lbs.; value, \$550. Aurora, zinc, 672,000 lbs.; lead, 50,000 lbs.; value, \$7,121. Galena, Kan., zinc, 2,000,000 lbs.; lead, 690,000 lbs.; value, \$34,020. Total output for the district, zinc, 5,383,790 lbs.; lead, 1,294,490 lbs.; value, \$86,297.

Victor Mining Company.—This company's plant at Cartersville was burned on the morning of September 29th. This was one of the largest plants in the district and cost in the neighborhood of \$40,000. The loss is almost total, as only \$6,000 insurance was carried. The company will probably rebuild at once.

Western Zinc Company.—The land operated by this company is to be sold at receiver's sale on or before December 1st. The upset price is \$65,000. This is what has been known as the "Oswego" land and has produced large quantities of ore. Parties are here now looking over the property.

MONTANA.

Lewis & Clarke County.

Piegan Mining Company.—The annual meeting of this company was held at its office in Marysville recently, and the following board of trustees was

elected: George W. Padbury, John Stemple, Gus Zsweiger, J. D. Conrad and Frank Trudell.

Silver Bow County.

The Anaconda Mining Company began a suit September 26 against the Butte & Boston Mining Company, for the west 250 ft. of the Bell claim, says the Butte "Inter-Mountain." The workmen in the High Ore having broken into a portion of the Gray Rock workings, the claim was then made by the Anaconda people that the Gray Rock owners were on the Bell ground. In the suit now filed the Anaconda Company claims that the Butte & Boston people have worked 250 ft. east of the end line of the Gray Rock mine, and an injunction to prevent them from further working that portion of the ground is applied for. The ore in that part of the mine is very rich. On September 27th the court issued a temporary restraining order against the Butte & Boston company covering the west 250 ft. of the Bell claim. The suit brought is precursory to a suit for damages which will be instituted after a survey of the ground is made and the amount of ore alleged to have been extracted is estimated. Work will be continued at the Gray Rock as usual, with the exception of the place which is in dispute.

Montana Ore Purchasing Company.—This company is putting up a new Webster, Camp & Lane engine, with cylinder 21x48 in., at its Rarus mine, and is making other improvements.

NEVADA.

Elko County.

Nevada Reduction Company.—This company has filed articles of incorporation with office at Elko. The capital stock is \$30,000, divided into shares of \$100 each. The purpose of the company is to carry on the business of milling and reducing ores and buying, operating and selling mining property. The directors are William Willis, J. B. Fitzgerald, W. T. Smith, J. A. McBride and M. H. Miller.

Storey County.

Brunswick Exploration Company.—The superintendent's weekly report says that shaft No. 100 Hale & Norcross ground near the Chollar north boundary has been sunk for a distance of 12 ft. on the incline; formation of quartz and porphyry showing some value; total depth, 131 ft. Shaft No. 2 on the boundary of the Consolidated California & Virginia and Best & Belcher mines has been sunk for a distance of 12 ft. on the incline; total depth, 89 ft.; bottom in porphyry. Tunnel No. 1, on Savage ground, started at a point 75 ft. north of Sutro Tunnel shaft No. 3, has been extended 27 ft., passing through class, porphyry and quartz; total length, 322 ft.

Storey County—Comstock Lode.

The following are extracts from the latest weekly official letters of the mine superintendents:

Alpha.—The east crosscut started from south lateral drift 60 ft. south of the main west drift 430 level, has been advanced 12 ft. during the week; total length, 70 ft. passing through quartz and porphyry, quartz showing small assays; face in porphyry and quartz.

Belcher.—There have been extracted during the week 24 tons of ore, the average top car sample of which shows an assay of \$24.55 per ton.

Best & Belcher.—East crosscut No. 3, started at a point in the main north drift, 363 ft. from south boundary, was advanced 13 ft.; total length, 154 ft.; passing through hard porphyry.

Bullion.—The west drift from the station 820 level has been advanced during the week 13 ft.; total length, 1,749 ft.; face in hard porphyry.

Confidence.—Crosscut No. 1 from the surface tunnel has been cleaned out and repaired for a distance of 72 ft., making its total distance 122 ft. from the tunnel. In the face of the west crosscut, from the top of the raise from the surface tunnel, we are now cutting out for a second set of timbers to the westward, and the ground in this direction still shows ore of good quality. We have hoisted from the face of the crosscut and stored in the ore house at the mine 12 tons of ore, the average samples of which show an assay value of \$56.08 per ton.

Consolidated California & Virginia.—The official returns of the ore worked and bullion produced at the Morgan mill for account of this mine for the month of September, 1895, are as follows: Ore worked, 1,118 tons 660 lbs.; bullion produced, gross assay value, \$26,136, of which \$11,718 was gold and \$14,418 was silver. Yield in bullion per ton: Gold, \$10.47, and silver, \$12.80; total, \$23.37. Assay value of the ore per ton, per battery samples: Gold, \$10.51, and silver, \$16.99; total, \$27.51. Assay value of the above ore per ton, per railroad car samples, \$32.93.

Consolidated Imperial.—West crosscut No. 1 from the surface tunnel is now out 23 ft., having been advanced 10 ft. during the week. The face shows porphyry and quartz, the latter showing some value.

Crown Point.—Owing to the falling off of water in the Carson River we were again compelled to suspend the extraction ore. There are about 500 tons of ore on hand in the dumps at the mine and at the Mexican mill. Started a crosscut to the west on the 700 level, 200 ft. south of the shaft, for the purpose of raising to the ore on the 11th floor.

Gould & Curry.—The West crosscut No. 5, which was started in the northwest drift, 432 ft. from the

main west drift, was advanced 8 ft.; total length, 1,559 ft.; face in hard porphyry.

Sierra Nevada.—In the Layton Tunnel the upraise from the northeast drift, at a point 120 ft. in from the north drift, has been raised during the week 15 ft.; total height 23 ft.; top in quartz and porphyry.

NEW MEXICO.

(From Our Special Correspondent.)

The New Mexico Annual Fair was held at Albuquerque during the week beginning September 16th. The meeting of the Irrigation Congress added zest to the efforts of exhibitors, and the result was a display which surprised all unfamiliar with the resources of the Territory. Sierra County made the largest display of ores and minerals, taking first prize for the greatest variety. The Cochiti district had a magnificent display of auriferous quartz, as-aying from \$18 to \$400 per ton. Capt. Fitch, of Kelly, had a fine exhibit of carbonates, pulverulent and well crystallized. Kelly is a constant and profitable producer, in spite of the low prices prevailing. From the vicinity of Socorro there was some very fine auriferous quartz exhibited, and from near Magdalena, the only dry milling ore at the Fair. The copper display from San Pedro attracted much attention. The display of coal, anthracite and bituminous, from Los Cerrillos, Gallup, White Oaks and other points in the territory was a revelation to the Eastern visitors. The White Oaks district had the most interesting exhibit. The display of gold, quartz and placer by far surpassed everything else. They displayed three varieties of sandstone—one a brown, similar in every respect to the famous Arizona sandstone of the same color. The exhibit of black marble from this district was magnificent; two pieces, about 14 in. square, in cross sections, and 3 ft. long, were shown polished. The color is a deep blue black, susceptible of high polish; large pieces without blemish can be produced; pieces delicately mottled with white are also occasionally obtained. The deposit from which the specimens came is about 100 miles from the railroad.

Bernalillo County.

Lone Star.—This property, owned by Colorado men, is now working night and day taking out ore that will run over \$25, says the Albuquerque "Citizen." To facilitate the handling of their ore they have recently erected an ore chute 400 or 500 ft. in length. In this mine there is a large ore body now in sight.

Santa Fe County.

Johnson.—H. C. Kinsel, of Los Carrillos, recently sold his interest in this gold mine, near San Pedro, to J. N. Tholl, of Dallas, Tex., for \$10,000.

NEW YORK.

Fulton County.

A mining craze seems to have started in the northern part of the State, and within the past few weeks 40 claims to alleged gold and silver mining properties have been filed with the Secretary of State at Albany. Most of these are in the neighborhood of Johnstown, but there are also several near Gloversville.

OHIO.

Summit County.

A despatch from Akron says that 2,000 coal miners in the Silver Creek district to-day went out on a sympathy strike. The operators have granted them the 9c. advance demanded, but they will remain out until all the miners of the district receive the advance.

OREGON.

Baker County.

Bonanza.—Superintendent Geiser, of this mine, arrived in Baker City recently with 300 oz. in gold, or \$4,800, the output of this mine for two weeks.

Grant County.

In this county there is in course of construction a mile and a half ditch to tap Gunnery & Spencer's placer on Jones creek, a mile ditch in Galie district, a 16 mile ditch for the Illinois Mining Company, a supply ditch on the Clark placer on Grave creek, a five-mile ditch on the upper Grave creek for the Hampton mine. A five-stamp mill will be erected on the Sunrise lode on Dry diggings and considerable excitement is reported at the Steamboat mine, 13 miles above Williams, in consequence of the old tailings assaying \$800 to the ton. A seam of rich ore about 1 1/2 in. thick accompanies a "blanket ledge" for several hundred feet.

PENNSYLVANIA.

Anthracite Coal.

Delaware, Lackawanna & Western Railroad Company.—All of this company's collieries have been put on full time schedule for the first time in a year. It is said that they will continue to run full time for several weeks at least.

Enterprise Colliery.—This colliery, which has been idle several months on account of the breaker having been destroyed by fire, will resume operations on October 10th.

Kingston Coal Company.—The air-shaft in the Gaylord mine of this company caught fire September 27th. The shaft and the four cages were soon enveloped, and the air carried the flames further down. The linings were on fire for at least 300 ft. The loss will be large. This is the shaft where thirteen men were entombed on February 13th, 1893. At latest accounts the fire was under control.

Luke Fidler Colliery.—This colliery, which has been idle during the past year owing to the disastrous fire in which five men lost their lives, will start again about the middle of October.

Philadelphia & Reading Coal and Iron Company.—The collieries drawn to return prices of coal sold in September make a return averaging \$1.979. The rate of wages paid for the last half of September and the first half of October will accordingly be 17% below the \$2.50 basis.

Red Ash Colliery.—A notice has been posted at these mines notifying the employees that the works will start as soon as there is sufficient water. The mines were shut down several weeks ago on account of dullness in the coal trade.

Northampton County.

Fairview Hard Vein Slate Company.—This company is now working its quarry near Portland actively, and recently made its first shipment of roofing slate. New machinery and hotting works are to be put up this fall so as to enable the company to employ a larger force of men.

Hoboken Quarry.—This slate quarry near Bangor has been leased to John C. Messenger and J. Frank Smith, who began operations October 1st. The overburden is being removed and the area of the quarry extended.

Star Slate Company.—This company at East Bangor is working on contracts for heavy slate for Government buildings at Omaha, Neb., and Salina, Kan.

SOUTH DAKOTA.

Custer County.

Arrangements it is said are being made to work the deposits of fullers' earth known to exist in this county. Some trial lots have been collected and shipped to Chicago, and a report on its quality is expected very shortly.

Lawrence County.

Cleopatra.—The development on this property continues to show and place in sight with each day's work a still greater ore reserve. Though the grade would not be called rich, yet, taking the quantity into consideration, that is, the size and number of ore chutes and the extent of territory included in this property, the grade is considered good, says the Deadwood "Pioneer." So far four chutes have been found that vary in size from 4 to 14 ft. in width and from 5 to 12 ft. in thickness that have been followed from 50 to 250 ft. The verticals that always accompany the refractory ore bodies in this country have in two instances on this group been sunk upon a number of feet, and, so far, the development shows that they go down in the shales strong. The ore chutes here are found from 50 to 75 ft. apart. The main tunnel is now being driven ahead in the direction to cross their course or strike. This cross-cut will have to be driven over 1,000 ft. in its present course before the side lines are reached. The workings are situated about 150 ft. above the running waters of Squaw Creek and are capped with 600 or 700 ft. of sand and limestone. The owners are Messrs. W. L. McLaughlin, James Munn, W. Kramer and Thos. Sutton.

Homestake Mining Company.—The case of the United States against this Company, known as the Homestake timber case, has again been postponed at the instance of the prosecuting attorney, C. L. Wood, who, as stated by the Deadwood "Times," does not sufficiently well understand the matter and evidence therein to safely proceed to trial. The case will come up in the next term of the court at Deadwood, which convenes in February 1896.

Starke County.

Moffitt Mining and Milling Company.—Articles of incorporation of this Company were filed recently with a capital stock of \$500,000.

Pennington County.

Adonis.—On this group work is now being pushed on cross cutting on the 100 ft. level on the Sunshine No. 1, which work is now expected to be completed within a short time. The Adonis group is made up of 15 claims and is located about 20 miles from Rapid City. Mr. John Donnelly is in charge.

TENNESSEE.

Cumberland Oil and Mining Company.—This company was recently formed in Cincinnati, O., as follows: President, W. G. Strubbe; vice president, Charles Davis; treasurer, W. E. Hutton; secretary, Frank Van Winkle; directors, Strubbe, Hutton, Van Winkle, Oliver Kinsey and Charles Kahn. The company has purchased 112,000 acres of coal and oil lands on the Cumberland River, along the dividing line between Kentucky and Tennessee. It intends to close contracts for opening 26 wells, having made arrangements with the Standard Oil Company to take the output. There is to be a tank on Edwards Mountain, from which the pipe will start. The wells already in operation are giving a good flow of oil. The development along the Cumberland promises to give employment to a large number of men.

Morgan County.

Press dispatches report that Mr. Henry Kimber, who is a director in the English settlement made some years ago at Rugby, Tenn., has negotiated a sale of the property to the Standard Oil Company; the price is not given. The Rugby colony was never successful, and but few people have remained there. Oil and gas, however, have recently been discovered on the tract, and the value has largely increased in consequence.

TEXAS.

Coleman County.

Vining Coal Mines.—Arrangements, it is said, have been about completed for the sale of this property to Boston parties, who intend to develop it and to build a short line of railroad to connect the mines with the Gulf, Colorado & Santa Fe Railroad.

Palo Pinto County.

American Coal Company.—This company has just completed a track from its new coal mines at Strawn to the main line of the Texas & Pacific Railroad. Col. J. P. Johnson is president of the company.

Webb County.

Hardie Quarry.—This quarry, at Ochoa, 32 miles from Laredo, is being opened on a considerable scale by Mr. M. Hardie, the owner.

UTAH.

Beaver County.

Horn Silver Mining Company.—P. T. Farnsworth after an inspection of this mine in Frisco, states that the underground work is being rapidly caught up with and the mine put in shape to increase its output. The boiler capacity of the concentrator has been recently doubled, and a large additional heater to economize on fuel and water is now being built by Haynes & Son, of Salt Lake City. This will materially reduce an important item of expense, as the company is now paying out over \$4,000 per month for water alone.

Juab County.

Ada Consolidated Mining and Milling Company.—This company, whose mines are located in the Fish Springs Mining District, has let a contract to J. L. Miles, of Salt Lake City, for the running of a tunnel on the property. The recent assessment levied on the capital stock has provided the company with means to push developments, and the board of directors propose to put the mine in a condition to produce ores. The tunnel now to be run will go into a depth of 350 ft., and will tap the vein at a good depth.

West Cable Mining Company.—The big shaft of this company in Eureka is now down to a depth of 325 ft. and at last accounts the formation was changing somewhat and showing evidences of lime mixed with the country rock. The West Cable lies directly west of and about 2,100 ft. distant from the Bullion-Beck, and is supposed to be located above the faulted portion of the Bullion-Beck vein, which is broken at a point near the shaft of that company and was evidently carried down the gulch to the southwest. The management of the company now have a common-sense horse-whim for a hoist.

Whitaker & White Cloud.—E. N. Jenkins, of Salt Lake City, has leased and bonded the above mines for a term of two years. These properties lie east of the Mammoth, and are owned by Messrs. Whitaker, Rustand, Wilson & Leyshon.

Millard County.

Ibex Mining and Smelting Company.—Receiver Humphries, of this company, has presented his report and also the report of the referee in the suit of the receiver against the Horn Silver Mining Company. The hearing on the reports was set for September 26th. A motion by attorneys for the receiver, for judgment on behalf of the receiver in his dispute with the Horn Silver was made. The motion is made on the ground that the conclusions of law as arrived at by the referee are not warranted by his findings of facts and upon which he found the issues in favor of the Horn Silver Company.

Salt Lake County.

The total amount of dealings in ore and bullion at Salt Lake for the week ending September 21st was \$276,233; an increase of \$7,675 over the preceding week.

New Tintic Mining and Smelting Company.—A call has been issued for a special meeting of the stockholders to be held in Salt Lake, October 11th, for the purpose of voting on a proposed increase in the capital stock. The company has now 120,000 shares of \$5 each, and it is proposed to replace these by 1,000,000 shares of \$1 each, thus increasing the total amount of the stock \$400,000. The increased capital is to be used in building a smelter for the purpose of working the company's ores.

Tooele County.

Geysers.—New arrangements having been made these mines and mill will be operated before the completion of the Gold Belt Water Company's system. The work will be in charge of Superintendent Stuart, who is authorized to resume operations in both the mines and mill. Glen R. Bothwell, one of the owners of the Geysers, and a holder of the lease and bond on the Hecla, will go to the Mercur for the purpose of personally placing the new boiler which is to furnish steam for the operation of the pump on the Hecla shaft. The water raised will be sent down to the Geysers mill in order that the operation of the latter may be made possible.

Mercur Gold Mining Company.—Salt Lake papers report that the stock held by H. W. Brown amounting to 24,000 shares has been transferred to Messrs. Dern, Airis and Heinrich, who now own a controlling interest in the stock of the company. There have been reports of the sale of the property to a Boston syndicate, but these have been denied and it is said that the offers made have been refused.

VIRGINIA.

Botecourt County.

Roanoke Land and Manganese Company.—This company has been organized with \$50,000 capital

stock to develop manganese miner. The officers are John H. Wright, president; J. S. Smith, secretary, and E. B. Crabill, treasurer.

Chesterfield County.

An explosion occurred in the coal mines at Winterpock, September 25, in which two men were killed and several others injured. The bodies of the dead were recovered.

Rockbridge County.

Rapp Quarry.—This property has been sold to Sifers & McBride, of Indianapolis, Ind., who have begun operations to develop it on a large scale. The quarry produces marble of good quality.

WYOMING.

Albany County.

(From Our Special Correspondent.)

Little Ella.—This property has been prospected during the summer and over 100 ft. of work done. The ore, which is a sulphide associated with quartz, has assayed high in gold and copper. Recent tests show a value of \$44 in gold. The owners of the property, Messrs Fox & McKee, of Laramie, are now pushing development as rapidly as possible, and hope to put teams on the road very soon to haul the ore a distance of 35 miles to the railroad.

Laramie County.

(From Our Special Correspondent.)

The onyx marble quarries which were discovered last season in the lower canyon of the North Platte River, near Fairbanks, have been sold to a company which intends to open them and place the stone on the market.

Sheridan County.

(From Our Special Correspondent.)

Fortunatus Mining Company.—This company owns extensive gold placer grounds at the head of the Little Horn River in the Big Horn Mountains. Last year and the previous one experiments were made with various methods of working a conglomerate containing gold. This season a stamp mill was put up and the first clean up, which was made a few days ago, is claimed to be even above their expectations.

Sweetwater County.

(From Our Special Correspondent.)

Union Pacific Coal Company.—This company has recently closed a contract with Anaconda parties to furnish 1,000 tons of coal per day. This coal will be all mined at the company's mines at Rock Springs.

Uinta County.

(From Our Special Correspondent.)

Harris Fork Coal Mines.—P. J. Quealy and associates have purchased a hoisting and pumping plant, and are now sinking an incline on their coal property. The coal is a superior fuel and forms a tight coke. The company has demonstrated that the coal found to the north makes a better coke than on the south side of the field and that there is a possibility of the field developing a good coking coal.

FOREIGN MINING NEWS.

BRITISH GUIANA.

The total amount of gold exported for the eight months ending August 31st was 74,614 oz., valued at \$1,322,337. This shows a decrease of 2,087 oz. from the corresponding period last year.

MEXICO.

Sonora.

Pan-American Mining and Milling Company.—The stockholders of this company at a meeting recently elected the following officers for the ensuing year: R. H. Officer, president; W. J. Houston, vice-president; Ernest G. Roxton, treasurer, and E. H. Scott, secretary. These, with W. A. Graves, of Salt Lake, Dr. E. G. Palen, of Philadelphia, and J. A. Brown, of Charleston, Ia., constitute the board of directors. At the meeting the 538,317 shares of the capital stock, out of a total of 600,000 shares, were represented, and in addition to the election of the directors and officers, a committee was appointed to examine and audit the books of the treasurer.

The mines of this company are of gold properties, and there is a cyanide plant with a capacity of 100 tons per day. Since the mill started to operate in 1892 there has not been a single month passed in which two shipments of the product have not been made, and the company expects to continue and increase these shipments. For reasons best known to the company no statement of earnings has been or will be published.

NOVA SCOTIA.

(From an Occasional Correspondent.)

During the past few weeks coal mining has pursued its usual even way. The companies, with the exception of the General Mining Association, are said to be behind their output up to this date last year. The new pier of the Dominion Coal Company at Louisburg has been completed, and it is expected that on the close of the Gulf business several large shipments will be made from it. There has been extensive prospecting by various parties at the head of Langan Bay, and it is expected it will result in an extension of the coal field. The Burchell Brothers, at New Cambellton, claim to have found the celebrated Sydney mines seam in their property. The North Sydney Mining Company has completed a small pier, and is ready for shipments.

In Pictou County the Intercolonial Coal Company

is completing a large coal crushing and washing plant. The Acadia Company, presumably moved by the prospect of a government inquiry into the large extent of workings owned by it and lying idle on account of fires, etc., has commenced repairs to the fan shaft leading to the abandoned mines. At Springhill the work of repairing the damage to the North slope caused by fire about a year ago, is being completed.

In iron mining the furnaces at Londonderry and Ferrona are running steadily. The Steel Company has sent engines and material to Belle Isle, near St. John's, Newfoundland, to equip a red hematite mine there. The company expects to supply its own furnace as well as to ship ore to England.

In gold mining several properties are working with fairly satisfactory results. Among the August returns are 183 oz., from 200 tons quartz, by the Brookfield Mining Association; 109 oz., from 200 tons, from the Springfield mine, Sherbrooke; 439 oz., from 600 tons, New Eg rton mine; 211 oz., from 210 tons, South Uniacke mine. The dryness of the season has hindered a number of mines from crushing, and rain is anxiously awaited.

RUSSIA.

Caucasian Quicksilver Company.—This is the name of a concern which has lately been organized to develop the quicksilver mines in the Kjurkish district of the Government of Daghestan, in the Caucasus.

SOUTH AFRICA.

Transvaal.

South African Gold Recovery Company.—This company announces that 61,000 oz. of gold were recovered in the Witwatersrand and 7,100 oz. in other districts of the Transvaal, making a total of 68,100 oz. saved in the month of August by the MacArthur-Forrest cyanide process. This is an increase of 3,600 oz. over the month of July. The company has placed £40,000 to its reserve fund during the past year and carries over a balance of about £37,000 to its new account. A dividend of 10% has been declared, payable October 28th.

WESTERN AUSTRALIA.

The gold exported from Western Australia for the month of July amounted to 20,165 oz.; an increase of 4,068 oz. over June. Of the total amount 9,339 oz. were from the Coolgardie district, and 6,519 oz. from the Murchison district.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Oct. 4.

PRODUCTION OF BITUMINOUS COAL, in tons of 2,240 lbs., for week ending Sept. 28th, and year from January 1st:

Shipped East and North:	1895.		1894.	
	Week.	Year.	Week.	Year.
Allegheny, Pa.	38,925	2,713,697	41,575	2,852,996
Beacon Creek, Pa.	50,635	1,918,850	44,575	1,415,575
Broad Top, Pa.	6,830	286,950	7,800	272,000
Clearfield, Pa.	77,490	3,856,556	84,500	3,824,673
Cumberland, Md.	69,169	2,423,146	72,000	2,183,096
Kanawha, W. Va.	↑	↑	↑	1,911,518
Phila. & Erie R. R.	425	41,230	425	51,516
Pocahontas Flat Top	167,075	12,033,890	167,075	2,485,132
Total	310,319	13,275,629	310,319	10,998,176

↑ Week ending Sept. 21st. † Returns not received.

Shipped West:	1895.		1894.	
	Week.	Year.	Week.	Year.
Monongahela, Pa.	15,573	606,831	15,573	514,518
Pittsburg, Pa.	44,200	1,397,803	44,200	1,018,315
Westmoreland, Pa.	33,050	1,397,806	33,050	1,155,432
Total	92,823	3,402,440	92,823	2,688,265

Grand total..... 402,914 16,678,069 13,686,481

Production of coke on line of Pennsylvania Railroad for the week ending Sept. 28th, 1895, and year from January 1st, in tons of 2,000 lbs.: Week, 1,230,4 tons; year, 4,206,258; to corresponding date in 1894, 2,291,784 tons.

Anthracite.

In spite of all that has passed, and in spite of all the good advice which has been lavished upon the coal trade, it is to be feared that it has not learned wisdom. The present situation is a waiting one entirely, and the increase in prices which we noted last week was rather forced upon the trade by circumstances than brought about by any action of the managers. Even now that it has taken place there seems to be no effort to make it permanent, and if the conditions permitted, there is little doubt that coal would be ruled upon the market in such quantities and competition would be worked up so actively that another break would be inevitable.

Just now, Providence seems to be fighting for the trade. The drought in the anthracite region still continues, and the lack of water is very serious. At some points the supply is so short that there is not enough to supply the locomotives, and coal cars cannot be moved, because water is reserved for the passenger engines. Throughout the Lehigh region the supply is exceedingly limited, and the only collieries working full time are those of Cox Brothers & Co., which have an abundant supply, thanks to the foresight of the late E. K. B. Cox. Some other operators who laughed at what they called his extravagance in putting down a number of artesian wells, have this season changed their views materially.

Orders have been given by several of the companies to put the collieries on full time, but these orders have not been carried out, simply because they could not be. Some collieries are not working at all; some are running three or four days a week; only a very few are making full time. The water

question just now is the controlling one everywhere, until there is more water shipments cannot materially increase; and if the coal were ready to ship the railroads could not carry it. Even now there is some complaint of shortage of cars.

In the continued absence of official reports we are unable to state just how shipments are running. A careful review of the known facts, however, makes it safe to say that there is not over one-half the coal coming to market which the companies can forward when in full working order—and perhaps not over half of the amount which they would now be putting out if they could. If natural conditions did not prevent, there is little doubt that September and October would have been months of very large shipments. As it is, even if rain should come in a few days, it will be late in the present month before full work can be resumed and coal rushed forward.

Could the coal have been placed if it had been mined and shipped? This is very doubtful indeed. The weather conditions have not been at all favorable. The cold wave which followed the extreme hot weather of late September has been of very short duration, and not sharp enough to stimulate sales. People are talking of a late fall and an open winter, and the general testimony of dealers is that orders for "winter coal" are very slow in coming this year. The average householder is only buying for his present needs. With the thermometer as high as it has been, not even the threat of higher prices will make him do more.

The New Eng and coastwise trade has been stimulated into some activity by the low freight rates which have prevailed for vessels; but the all-rail trade to interior eastern points continues light. Under these circumstances, and with the hope of a coming break in prices, dealers continue slow in ordering. They have not been slow, however, in increasing prices from yards and a general rise of from 25 to 50c. per ton has been made in yard prices in New York and neighborhood.

The Delaware, Lackawanna & Western, as we noted last week, has led in advancing prices, and its quoted rates, New York harbor points, are \$3.50 for broken, \$3.60 for egg, \$3.75 for stove, and \$3.60 for chestnut. Very little, if any, coal has been sold at these prices. They are not maintained by the other companies certainly, and it is very doubtful whether the Lackawanna itself has placed any coal at its last circular. The ruling current prices are more nearly \$3.50 for egg and stove, on board, and \$3.25 for broken and chestnut. Even these may be shaded 25c. a ton for good orders.

There is too much reason to believe that the present improvement in the trade is only temporary, because, as we have said, it is due only to unusual natural causes, and not to any real concurrence of action among the operators; nor does there appear to be any present prospect of an agreement.

Bituminous.

There is little or no change in the soft coal market. Coal is being pushed forward in as large quantities as for weeks past, from all regions, and for the same reasons, principally a desire to take advantage of the low ocean freights. There has been a slight stiffness in the vessel market, and perhaps a advance, but this has not had the effect of checking shipments; in fact, the reverse, as producers have, if anything, put out more strenuous efforts to cover the balance of their delivered contracts.

There have been a few orders in the market this week, but there has not been the avidity shown in taking them that appeared some time ago. Some of the producers claim that they had enough tonnage to take care of before an advance in ocean freights occurs, and were not in a position to compete closely for this new business, but this does not cause the new business to go begging.

New York Harbor trade is taking somewhat more coal than it did, as is trade local to the shipping ports. What little South American trade has been in the market has been covered pretty well by charters. All rail trade is quiet except to those points which are on roads foreign from the main lines which transport from the mines.

Transportation from mines to tide is not as good as it has been, though it cannot be complained of, as the time made is about as usual. Some roads are better than others in their transportation. This also applies to car supply, which on some roads is up to the desires of patrons, while there are some complaints on other roads of a short supply of cars at the mines.

In the coastwise market vessels are in fair supply. The prevailing high winds have allowed both loaded and light vessels to make quick trips to their destinations, and in the East we hear of a large number of arrivals in a short period, from which there will be probably large demurrage bills, as the railroads at the discharging points are not prepared to take the coal as fast as it has arrived. Some vessels have been obliged to wait for berths so long that their demurrage time has commenced running before they have commenced to discharge. A few vessels are reported tied up waiting the advance in freights, but this has had little effect on the market.

We quote coastwise vessel rates as follows: Philadelphia to Boston and Salem, 60@65c.; Portland and Portsmouth, 65c.; Providence, New Bedford and other Sound ports, 55@60c.; Newburyport, 70c.; Wareham, 85c.; Lynn, 80c.@81; Dover, \$1.20 and towage; Saco, 95c. and towage; Bath, 70c.; Gardner, 70@75c. and towage; Bangor, 75c.; Baltimore, Norfolk and Newport News, 50@10c. above these rates.

Buffalo. Oct. 3.
(From Our Special Correspondent.)

During the past week anthracite coal was on good demand for family use, induced by the report of the advance of quotations. Orders from near by points came in also quite freely. Bituminous coal fairly active, and the supply more than adequate for the consumption. Manufacturers continue quite busy. Lake freights firm at unchanged figures, with larger shipments for the week than any previous one this season.

Severe storms have again visited the Lake regions, with losses of lives, vessels and cargoes, including many tons of coal.

The following are the present quotations for anthracite coal per 2,240 lbs., delivered free on board vessels at Buffalo: \$4.30 for grate and \$4.55 for egg, stove and chestnut; delivered on cars at Buffalo or Suspension Bridge, \$4 for grate and \$4.25 for egg, stove and chestnut. Retail within city limits, delivered per 2,000 lbs., \$4.50 for grate, \$4.75 for egg, stove and nut, \$4 for pea. Blossburg sells at \$4 per net ton, delivered. Coke is quoted at \$3.50 for Connellsville and \$3.25 for Reynoldsville, per 2,000 lbs. in car lots.

For bituminous coal per 2,000 lbs., in car lots on tracks, nominally as follows: Reynoldsville region—\$1.90 for select lump, \$1.80 for lump and nut mixed, \$1.85 for run of mines and screened nut, and \$1.40 for slack; Fairmont region—\$1.95 for screened lump, \$1.85 for lump and nut mixed, \$1.70 for run of mines and screened nut, and \$1.35 for slack; Pittsburgh region—\$1.95 for screened lump, \$1.85 for lump and nut mixed, and \$1.35 for run of mines; Mercer County region—\$1.80 for screened lump, \$1.75 for lump and nut mixed, \$1.60 for run of mine and screened nut, and \$1.20 for slack; Allegheny Valley region—\$1.60 for screened and lump, \$1.50 for lump and nut mixed, \$1.40 for run of mine, and \$1.15 for slack. Brier Hill lump, \$6.

Chicago. Oct. 2.
(From Our Special Correspondent.)

Anthracite.—The market here continues to show improvement, more coal having been disposed of the past week than for any other week in a long time. This is due mainly to the unusual spell of cold weather that paid Chicago a visit the earlier part of the week, and which was with us for several days. The first touch of winter made many realize that they ought to lay in their winter's supply of coal, and consequently the retailers have had about all they could attend to during the week. Prices are being maintained fairly well, though it is noted that there is a little cutting here and there. The retail prices, said to be official, are for furnace sizes, \$5.75, and stove 25c. above furnace. These rates are 25 and 50c. higher than those of last week, and it looks as though the raising of hard coal prices was being a little overdone.

Bituminous.—Prices have been raised from 25 to 50c. per ton, this raise having been in contemplation for some time by the dealers, and it is presumed that all will stick by the increased rates. On very large contracts it is possible that the advanced rate will not hold, but the market has shown a decided improvement within the past few weeks, and should it continue, dealers will undoubtedly hold to the circular rates.

Pittsburg. Oct. 3.
(From Our Special Correspondent.)

Coal.—Until we have boating water on the Ohio there will be little done on the river worthy of notice. Unless navigation is resumed the Southern consumers will have to dance to the combine's tune. The sugar planters commence to grind their cane about October 15th, so that the operators here at the best will not be able to get their coal into the lower markets before that time in case a rise should come, which does not look very promising at present. The companies which have entered into the combine have agreed among themselves to maintain a certain price, and if any of the local dealers refuse to maintain the price fixed their source of supplies will be shut off, which will be equivalent to forcing them out of the business. The affair has caused considerable indignation among consumers throughout Louisiana, but as long as the river continues low the Alabama coal men will be in their element.

Reports received by the miners' officials indicate that the new rates went into effect at all the railroad points in the Pittsburg district.

Connellsville Coke.—The advance of 6%, making 2 1/2% in six months, made thousands happy. The price of furnace coke was advanced from \$1.35 a ton to \$1.40; no change in Crushed and Foundry. H. C. Frick Coke Company was the first to mine; this firm employs 13,000 men; the McClure Coke Company followed and no doubt the balance of the plants will join in the good work. It is estimated that fully 20,000 men will be benefited either directly or indirectly.

The summary of the region for the week shows 15,203 ovens in blast and 2,622 idle. The active list was increased 50 ovens from the new block of ovens built at the Coalbrook plant of the McClure Company. The present outlook is that there will be little change in the active or idle list for the present. There are evidently enough ovens in blast to supply present demands for coke. The trade conditions look favorable for a good trade, and is likely to keep close up to a weekly output of 160,000 tons. The product of the region in tons for the week, estimated upon the ovens drawn, amounted to 149,277 tons as against 152,887 tons the week previous, a decrease of 3,610 tons. The average made by the 75 plants in

blast in the region was 5 6/11 days against 5 9/10 days the preceding week. The shipments from the region amounted to 90,037 cars as follows: To Pittsburgh and way points, 2,463 cars; to points East, 1,879; to points West, 4,672 cars.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Oct. 4, 1895.
Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending				From Jan. '94.	From Jan. '95.
	Oct. 5 1894	Oct. 4 1895.	Oct. 5 1894	Oct. 4 1895.		
	F'ces.	Tons.	F'ces.	Tons.	Tons.	Tons.
Anthracite.	36	19,548	49	21,050	612,487	815,018
Coke...	111	125,365	149	167,700	3,559,664	5,650,891
Charcoal...	22	4,942	21	4,650	161,947	163,315
Totals	169	149,855	219	203,400	4,364,098	6,659,227

The general tone of the iron market continues strong although there is an absence of excitement. Buying of all sorts of material continues steady, and, as for several weeks past, there is a real scarcity of some varieties of iron and steel, which promises a firm market for some time to come. The attempt to engineer a reaction in prices of raw material which was started in Pittsburgh and Cleveland, and which we regret to say, had the support of certain local "organs" of the trade, was continued to some extent this week, but has been substantially a failure. In spite of "wash" sales and telegraphed reports, there has been no real decrease in prices, and no diminution in the volume of business.

The time has passed, however, when furnace owners were taking the chief profit from increasing prices. Those who are not supplied with ore under old contracts are already paying higher prices, and contracts for next season will be made at higher rates, unless a very unexpected change in conditions should occur between now and the close of the year. The Connellsville operators have advanced the price of furnace coke to \$1.60 per ton, and it is probable that this rate will be closely maintained. The railroads are looking for their share, and the advances on iron rates are now operative or will become so on October 15th, while further advances are already under discussion. When the general increase in wages is considered also, it is evident that the increase in prices will be pretty well divided up.

We continue to hear of contracts for foreign iron ore for eastern furnaces, and the importation of these ores this winter will be considerable. Most of these contracts are on private terms, and it is difficult to give any general statement of prices. Arrivals at Baltimore and Philadelphia continue to be reported.

The railroads are coming more upon the market, and some large contracts for steel rails are reported this week. Contracts for 1896 delivery are now being made at \$28 at mill.

Birmingham despatches report that the tests of Southern pig iron made by the Carnegie Steel Company have resulted satisfactorily, and that the orders given by that company to Alabama furnaces have consequently been confirmed; while more orders of the same kind are in prospect.

The Louisville & Nashville announces new rates on pig iron at \$3.15 per ton from Chattanooga and \$3.40 from Birmingham to Indianapolis; \$3.60 from Chattanooga, and \$3.85 from Birmingham to Chicago.

Notice is given that on October 15th there will be a general advance in rates on pig iron from Southern furnaces to Central Traffic Association points. An advance of 20c. per ton will be made in the proportional rates on pig iron from Cincinnati to Eastern points.

THE LOCAL MARKET.

The New York market continues active, and there is a very good demand for iron and steel of all kinds. The local foundries and machine shops are all, as a rule, busy, and the same can be said of those in New England and other nearby points which draw supplies from this market. The influence of the general market is felt and, of course, helps the local activity, while the abundance of new building projects, large and small, is an especial feature.

Pig Iron.—Small orders continue to come in and prices are steady. The total bulk of business continues large. Some foundries claim to be holding back in the certainty of a break of prices, but there is no probability of such a change at present, and makers say they cannot fill their orders and are not worrying about new business.

We quote for Northern brands as follows: No. 1 X, \$14@14.50; No. 2 X, \$12@13.50 gray forge, \$12.50@13. For Southern iron, prices are: No. 1 foundry, \$13.75@14; No. 2 foundry, \$13.25@13.75; No. 1 soft, \$13.75@14; No. 2 soft, \$13.25@13.75; forge, \$12.50@13. All prices are for tidewater delivery, and there is no shading.

Cast Iron Pipe.—Outside of several New England and State orders, all small, no new business is reported. An order of 4,500 or 5,000 tons is said to be pending for a Southern seaport town.

Steel Billets.—The market is quiet in the absence of pressing demand, but we hear of no reduction in prices. Quotations are \$28.50@27 at tide water. Some lower quotations have been given, but they are entirely nominal and no actual business can be done on them.

Spiegeleisen and Ferro-Manganese.—The market is quieter, and few sales are noted for the week. We quote foreign spiegeleisen \$26@26.50 per ton; ferro-manganese \$53@53.75.

Merchant Steel.—The market continues firm, with prices a shade higher in some grades. Demand is steady. We quote: Bessemer machinery, 1'60@1'70c.; open-hearth machinery, 1'75@1'90c.; soft steel bars, 1'45@1'55c.; steel hoops, 1'60@1'75c.; steel axles, 1'55@1'70c.; links and pins, 1'70@1'80c.; tire steel, 1'85@1'95c.; spring, 2'10@2'25c., all delivered.

Structural Iron and Steel.—The market is quiet, but steady. There are no large contracts talked of just now, but plenty of small orders and the mills are well supplied. Quotations are steady. Angles, 1'80@1'90c.; beams up to 15 in., 1'80@1'90c.; channels, 1'90@2c.; tees, 1'90@2c.

Plates.—There is still a good demand and no material change in prices, though parties needing small lots for immediate delivery have had to pay above the market. Orders coming in keep the mills full for some time ahead. Universal mill plates continue at 1'90@1'95c. For steel plates we quote: Tank, 1'95@2c.; boiler shell, 2'05@2'15c.; flange, 2'10@2'25c.; firebox, 2'50@2'70c., according to size and quality.

Steel Rails and Fastenings.—It is now announced that the price of \$28 per ton at mill, or \$23.75 at tidewater will be made on 1896 deliveries. Some large contracts are reported from outside, but few are made in New York. There are several inquiries for street rails on the market, most of them for small lots. For rail fastenings we quote: Fish and angle-plates, 1'45@1'50c.; spikes, 1'80@1'85c.; bolts, square nuts, 2@2'15c.; bolts, hexagon nuts, 2'10@2'20c.

Scrap.—The demand for foundry scrap is a little less active, but good lots find buyers quickly without trouble.

Buffalo. Oct. 2.

(Special report of Rogers, Brown & Co.)

There has been unusual activity in Lake Superior charcoal iron in this district during the past week. Several large malleable iron works and car wheel concerns have been in the market for their winter's supply of this metal. Some of the leading charcoal furnaces have advanced their prices from 25c. to 75c. per ton, and report fair-sized orders at the advanced figures. It looks very much as though the stocks of charcoal iron at lake ports were going to be cleaned up as soon as navigation closes. This is partially due to the increased business taken by malleable and car wheel works, but mainly due to the fact that Bessemer coke iron which has of late years entered largely into malleable work, has advanced to a point that makes the charcoal iron the cheaper. The advance of iron \$1 to \$1.50 per ton in Ohio silveries has had a tendency to stop sales of that class of iron. We revise our quotations to the following basis, cash f. o. b. cars Buffalo: No. 1 Foundry Strong Coke Iron, Lake Superior ore, \$15.25@15.75; No. 2 Foundry Strong Coke Iron, Lake Superior ore, \$14.75@15.25; Ohio Strong Softener No. 1, \$16.25@16.75; Ohio Strong Softener No. 2, \$15.25@15.75; Jackson County Silvery No. 1, \$16.25@17; Lake Superior Charcoal, \$16.25@16.75; Southern Soft No. 1, \$15.15@15.65; Southern Soft No. 2, \$14.65@15.05; Hanging Rock Charcoal, \$18.50.

Chicago. Oct. 2.

(From our Special Correspondent.)

The past week has been very quiet in several lines of iron and steel, dealers having found business the poorest of any week for some time. Prices in most lines remain firm, though some show a slight tendency to move down.

Pig Iron.—This has been the poorest week in a number of months in the pig iron trade of Chicago, and the aggregate sales will not foot up 1,000 tons of both Northern and Southern material for the week. The largest sale of the week was a couple of carloads Northern iron, single carloads being all the demand. The call for Lake Superior charcoal iron has fallen off to almost nothing. Southern coke iron has been in light demand. Inquiries are slim, but prices continue firm. They are as follows: Per gross ton f. o. b. Chicago: Lake Superior charcoal, \$16; Lake Superior coke No. 1, \$14@15; No. 2, \$14@14.50; No. 3, \$13.50@14; Local Scotch No. 1, \$13.50; No. 2, \$13; No. 3, 12.50; Jackson County silveries, \$15.50@16; Southern coke, foundry, No. 1, \$13@13.50; No. 2, \$12.75@13; No. 3, \$12.50; Southern soft, No. 1, \$13@13.50; No. 2, \$13; Southern car-wheel iron, \$17.50; Tennessee silveries No. 1, \$14; No. 2, \$13.50; Tennessee charcoal No. 1, \$13@13.50; Bessemer, \$13.50@14; Ohio strong softeners, \$13.50@14.

Structural Material.—The buying of structural material has been but small during the week, building shapes only having been in demand. Prices are for universal plates, 1'90@2c.; beams and channels, 1'90@2c.; angles, 1'85@1'90c.; tees, 1'90@2c.

Merchant Steel.—There has been a fair week's business, and sales aggregating several hundred tons have been made. Those using this material appear to be coming into the market right along. Quotations are: Tool steel, \$7@7.50c.; Bessemer bars, 1'60@1'70c.; smooth finished machinery, 1'80@1'90c.; tire steel, 2@2'10c.

Bar Iron.—There continues a good demand for bar iron, though no especially large contracts are being made. A couple of sales of 100 tons each are reported. Inquiry is good. Price of bar iron is for common, 1'50c. and refined, 1'60@1'65c.

Billets and Rods.—Sales aggregating 12,000 tons of billets were made during the week, and 6,000 tons of rods were placed. Inquiry is excellent, but the

local mills are about out of the market for delivery the rest of this year. Billets are selling \$26@27.50 and rods \$34@37.50 according to specification.

Steel Rails.—The demand for rails is heavy, but the local mills cannot book any for this year's delivery, as they are filled up on contracts already made. The Illinois Steel Company will undoubtedly manufacture more rails in October than in any previous month in its history. September would have shown up well had it not been for the hot period, the heat greatly interfering with the workmen. Rails are quoted \$27@29.50, according to specification.

Cleveland, O. Oct. 3.

(From Our Special Correspondent.) There are not vessels enough to bring down the ore that is being mined in the Michigan and Minnesota ranges, and both shippers and furnacemen are in despair. The wheat trade is bidding sharply for the vessel tonnage. The conviction seems to be settling down upon some of the furnacemen that they will not have ore enough to keep their stacks in blast until navigation opens next year. Practically everything that is now on the Lake Erie docks, much of it having been there for several years, is sold. The ironmakers are taking everything that is in sight and are asking for more.

Comparatively little ore has been sold this week but solely for the reason that there is none for sale. The mining companies are actively engaged in getting out product and hope to bring down considerable ore yet this season, but the quantity, in view of uncertain weather and the vessel requirements for grain, is highly problematic. The extent of future sales will depend largely upon those conditions. For several small lots of hard Bessemer \$5.25 per ton has been paid this week. It is doubtful whether lots of 100,000 tons would command that figure and \$5 is perhaps a fairer maximum quotation.

During the past two days lake rates have taken another spurt upward. Tuesday vessels were secured by ore shippers at \$1.40 per ton from Lake Superior to Ohio ports, but yesterday \$1.50 was offered and even at that advance very few boats could be secured. The wheat shippers are offering 4 1/2 c. per bushel, which is equivalent to \$1.68 per ton.

The Escanaba rate is now 9c. and Marquette \$1.15. The indications are that they will both advance. It is reported that some 60,000 tons of foreign ores have been sold in territory usually supplied from Lake Superior, for consumption this year, and about 200,000 tons for delivery after May 1st next year. These inroads are made largely because of the present ability of Lake Superior to meet the wants of the furnacemen. The foreign products represent a valuation equivalent to about \$4.50 for Superior ores.

Receipts of ore at the five Lake Erie ports of the Cleveland district for September were, by the custom house reports 973,977 tons, as against 1,066,222 tons for August. Total receipts of ore in the Cleveland district for the season to October 1st amount to 5,036,888 tons. For the entire season of 1894 the ore shipments to these ports were only 4,902,744 tons.

Quotations for the week on Lake Erie docks follow: Standard Bessemer specular, \$4.75@5.25; Standard Bessemer hematites, \$4.25@4.50; Standard non-Bessemer specular, \$3.70@4; Standard non Bessemer hematites, \$3.25@3.50.

Pittsburg. Oct. 3.

(From Our Special Correspondent.) Raw Iron and Steel.—Business during the week has shown moderate activity. Bessemer pig shows a slight falling off in prices, with demand steady. The halting tendency in the market was less noticeable in regard to values. A wide difference continues to exist; one party contends that prices have reached the top, and are bound to react. On the other hand, producers point to the fact that Bessemer ore has advanced over \$1.25 a ton; that dating from October 1st the cost of coke goes up 25c. a ton, hence the increase in the cost of pig iron is really over \$2 a ton. Taking these facts into consideration, we fail to see how the price of pig iron can be reduced. The combine that undertook to break the Bessemer and billet market, failing to carry their point, has retired for the present, but may resume operations at some other time. It was rather costly to the combine, as all the offers to sell at a decline were readily disposed of. From this time forward the iron ore market will be closely watched. The purchasers of foreign ore on Eastern account may have the effect of checking a further advance; the future will decide. The reports from the Sheuango and Mahoning valleys are of a very healthy description. The Brier Hill Iron and Coal Company is having its stock delivered in the new dumping cars secured by the Pennsylvania Company. With the use of these eight men are able to unload from 50 to 60 cars a day. The Struthers furnace, owned by the Brown-Bonnell Iron Company, has passed into possession of W. C. Runyon, of Cleveland; the price paid was \$150,000. The four muck mills of the Brown-Bonnell Iron Company started up, and every department of the extensive plant is in full operation. Reports received from the other mills are to the effect that they have all the orders they can fill. There has been a steady run of orders for finished material, with several important contracts under negotiation. Mill men speak with great confidence of the future, and apparently expect large railroad buying in the near future.

Latest.—Bessemer pig is weaker; the lowest Valley sale was \$15.75, equal to \$16.40 here. Pittsburg lowest, \$16.75; highest, \$16.90. Billets are lower; demand fallen off; lowest sale at mill, \$23.25; highest, \$24. Gray Forge shows signs of weakness; Valley sales, \$12.75, equal to Pittsburg delivery, \$13.40. With regard to other articles, no change was perceptible. Sales show a wide range in prices.

Table with multiple columns listing various iron and steel products, their specifications, and prices. Includes items like Bessemer Oct., Valley, Gray Forge, Skelp Iron, Skelp Steel, Muck Bar, Blooms, Billets and Bar Ends, Sheet Bars, Ferro Manganese, Steel Wire Rods, Old Rails, Scrap Material, and Charcoal.

Philadelphia. Oct. 4.

Pig Iron.—The oversold condition of the iron trade continues, particularly in crude iron. Very little selling will be done for a while. The only thing that will start it will be a rush of steel rail orders, by which furnace capacity would be turned to the making of material for rails, and this could be done only to a limited extent in the anthracite iron region. Standard Bessemer iron rules very high, \$15.50@16 at furnace; gray forge iron is \$12 for ordinary to \$13 for Standard; No. 2 is \$13@13.50, and No 1 is \$14@14.50. Producers and consumers are sleeping on their arms, to use a military phrase. Everybody expects some developments. Mills and furnaces have a good deal of iron under contract and consumption now exceeds any former record.

Steel Billets.—In the face of a falling market there is no business to report, but quotations are nominally given at \$26.

Merchant Iron.—While mills are busy and are gaining ground every week, fewer orders are being sent to mills. Shaded rates for big early winter orders are reported to have been made, and small buyers are going to wait and see. Refined bars 1 1/2 @1 1/5.

Skelp.—A fair amount of business has been done this week, but the hope of lower quotations is holding back the big orders. Several parties have asked for quotations since Monday.

Pipes and Tubes.—The new discounts are, of course, lived up to for the present. Sheets.—Sheet iron orders might be booked for December delivery at a shading, as mill owners show anxiety to keep a good block of work ahead. Prices are all right in a retail way.

Merchant Steel.—All kinds are holding up well. The hardware and general factory requirements are helping out our merchant steel mills the brokers say; in fact one large concern says there will be a rush for shapes long before cold weather sets in.

Steel Rails.—This week's orders foot up 75,000 tons, divided between four or five mills at full quoted rates. There are inquiries for some 40,000 tons more, but no statements will be given for publication until sales are fully made.

Old Iron Rails.—Quoted at \$16.50. Demand continues active.

Scrap.—All kinds are moving. Railroad is quoted at \$15; steel scrap, \$15@15.50; No. 1 wrought, \$14 @14.50 per ton.

Plate.—The plate mills betray no signs of dullness. In fact, the orders that were sent in since Monday have more than compensated for deliveries. Tank steel is quoted at 2c.; heavy plates, 2@2.10;

shell, 2.10@2.20; flange, 2.25. These are all delivery prices.

Structural Material.—The mills are making large deliveries of stuff and are not loading up quite as fast, though no trouble is likely to come to manufacturers on that score. There will be plenty of work all winter.

METAL MARKET.

NEW YORK, Friday Evening, Oct. 4, 1895, Gold and Silver.

Prices of Silver per Ounce Troy.

Table showing prices of silver per ounce troy for September, October, and November, including columns for Sept., Oct., and Nov. with sub-columns for St. Ex., London Pence, N. Y. Cts., and Value of \$1.00 in \$.

The market has absorbed supplies at a slightly increasing figure. The Eastern exchanges have been maintained and consequently buyers of silver have purchased with more confidence. Reports from the East indicate an expansion of business, which ought at least to promote steadiness in the price of the white metal.

The United States Assay Office at New York reports the total receipts of silver at 101,000 oz. for the week.

Gold and Silver Exports and Imports.

At all United States ports, August, 1895, and years 1885 and 1894 in coin and bullion:

Table showing Gold and Silver Exports and Imports for August 1895 and years 1885 and 1894. Columns include Gold Exports, Gold Imports, Silver Exports, Silver Imports, and Total Excess or Imp.

Imports and exports of gold and silver in ores for the eight months to August 31st are reported as follows:

Table showing Gold and Silver Imports and Exports in ores for 1894 and 1895. Columns include Gold Imports, Gold Exports, Silver Imports, Silver Exports, and Total Excess or Imp.

These imports and exports in ores are not included in the table of exports and imports of coin and bullion given above.

Adding the exports and imports in ores to those in coin and bullion, we have the following statement for the eight months of the present year to August 31st:

Table showing Gold and Silver Exports and Imports for August 31st. Columns include Gold Exports, Gold Imports, Silver Exports, Silver Imports, and Total Excess or Imp.

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

Gold and Silver Exports and Imports, New York

For the week ending October 4th, 1895, and for years from January 1st, 1895, 1894, 1893 and 1892:

Table showing Gold and Silver Exports and Imports for New York for the week ending October 4th, 1895, and for years 1895, 1894, 1893, and 1892. Columns include Gold Exports, Gold Imports, Silver Exports, Silver Imports, and Total Excess or Imp.

The gold exported for the week went nearly all to the West Indies, the silver to London. The gold imported came from the West Indies; the silver from South America.

FINANCIAL NOTES OF THE WEEK.

Without presenting any specially marked features for the week, business continues to show a good general condition and a quiet, steady growth which promises well for the future. The conditions of growing demand, and a general firmness and upward tendency of prices show no material change. The crop reports are fully up to the level of previous anticipations. The clearing-house returns from the larger cities show an increasing volume of business, and the reports of railroad earnings are also generally favorable. On the whole it may be said that the improvement in trade shows no drawbacks of any moment.

The political campaign, which usually begins to be a disturbing element about this time, is this year confined chiefly to local issues in those States where elections are to be held. Efforts have been made by the party managers on both sides to draw attention to national issues, in preparation for next year's election, but the great body of voters apparently takes no interest in these efforts and is more disposed to attend to present business.

In the speculative markets matters continue comparatively quiet. The "bear" clique on the New York Stock Exchange is still strong, but is finding increasing difficulty in carrying out its purposes.

Moreover, this party is finding out once more the truth of the old maxim that the general public is naturally a "bull." Speculation for a fall does not attract outside buyers, and depressing rumors, whether they have any basis of truth or not, have a tendency to keep all but professional speculators away from the stock markets. Moreover, business men generally are finding employment enough just now in looking after their own increasing trade and have little opportunity for outside operations.

Gold exports seem to have ceased for the present, and no gold has been taken for shipment this week, with the exception of \$100,000 for Canadian account. The supply of cotton bills continues to meet the demand for exchange, and a few grain bills are coming on the market. Sterling rates are lower, practically below the gold exporting point.

An increasing interest in American securities is reported abroad, though the great speculation in mining stocks continues to absorb speculators, and the recent gold exports have had a somewhat unfavorable effect. The present demand is chiefly for bonds, and stocks are not much inquired for. A transaction reported this week is the placing of \$3,000,000 Louisville & Jeffersonville bridge bonds, which were taken in Amsterdam at 94. Some other transactions of considerable amount are reported to be in negotiation.

The statement of the United States Treasury on Thursday, October 3d, shows balances in excess of outstanding certificates as below, comparison being made with the corresponding day of last week:

	Sept. 26.	Oct. 3.	Changes.
Gold.....	\$93,213,152	\$92,717,557	D. \$495,595
Silver.....	22,186,983	17,296,301	D. 4,890,682
Legal tenders.....	33,140,096	45,758,611	I. 12,618,515
Treasury notes, etc.....	55,824,511	31,910,021	D. 23,914,490
Total.....	\$187,374,742	\$190,682,490	I. \$3,307,748

Government deposits with national banks on the same date amounted to \$14,680,212, an increase of \$283,600 during the week.

Total United States Treasury notes issued under act of July 14th, 1890, in general circulation and in the Treasury, \$143,809,280. Against these are held in the Treasury 19,807,518 coined standard silver dollars, and silver bullion purchased at a cost of \$124,001,762, making a total of \$144,021,280.

The Treasury receipts for September, considering that it was a month with five Sundays and one holiday, were fully up to the expectations of Treasury officials. Receipts for the month aggregated \$27,300,000, while expenditures were about \$24,500,000. This shows an excess of receipts over expenditures during September of about \$3,000,000, with September as the first month of the current fiscal year that has brought a surplus of receipts into the Treasury. Of the receipts \$14,653,000 was from customs, \$12,260,000 from internal revenue and \$635,000 from miscellaneous sources. Expenditures included \$11,708,000 for pensions and \$276,400 on account of interest on the public debt.

The amount of each of the various kinds of money in circulation on the 1st of the present month and on October 1st a year ago as estimated by the Treasury Department is shown by the following table:

Circulation.	1895.	1894.
Gold coin.....	\$169,884,062	\$500,126,248
Standard silver dollars.....	53,116,527	54,276,243
Subsidiary silver.....	61,409,543	58,214,768
Gold certificates.....	50,645,539	61,790,439
Silver certificates.....	330,434,857	330,520,719
U. S. notes.....	107,035,425	121,495,374
Currency certificates.....	240,364,416	297,283,481
National bank notes.....	63,840,000	55,755,000
Total.....	\$1,585,593,509	\$1,655,038,982

The net estimated decrease in circulation for the month of September was \$17,989,519. The estimated circulation per capita on October 1st was \$22.57.

Acting Comptroller of the Currency Tucker on September 30th issued a call for a report of the condition of National banks at the close of business Saturday, September 28th. He also issued a special call on National banks for a report of the amount of taxes of all kinds paid by them during the fiscal year ended June 30th, 1895. This is the first time such information has been asked for, and it will form a feature of the Comptroller's report this year.

At the annual meeting of the New York Clearing House Association this week, Mr. William A. Nash, president of the Corn Exchange Bank, was re-elected president, and William H. Porter, vice-president of the Chase National Bank, was re-elected secretary. Edward H. Perkins, Jr., President Importers and Traders National Bank; George G. Williams, President Chemical National Bank; Henry W. Cannon, president Chase National Bank; James T. Woodburn, president Hanover National Bank; A. B. Hepburn, president Third National Bank. Manager Sherman presented his annual report, from which the fol-

lowing statistics are condensed. The Clearing House transactions for the year were:

Exchanges.....	\$28,261,379,126
Balances.....	1,896,574,349
Total transactions.....	\$30,160,953,475

The average daily transactions were:

Exchanges.....	\$92,670,095
Balances.....	6,218,277
Total.....	\$98,888,372

Total transactions since organization of Clearing House (42 years) have been:

Exchanges.....	\$1,073,513,117,948
Balances.....	49,463,653,583
Total.....	\$1,122,976,771,531

The Clearing House Committee reappoints Mr. William Sherer manager of the Clearing House and Mr. William J. Gilpin assistant manager.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending September 28th gives the following totals, comparisons being made with the corresponding weeks in 1894 and 1893:

	1893.	1894.	1895.
Loans and discounts.....	\$392,494,400	\$197,561,000	\$511,376,200
Deposits.....	390,980,400	596,658,375	549,136,500
Circulation.....	14,395,600	19,803,375	14,102,000
Specie.....	80,785,200	92,010,500	61,677,500
Legal tenders.....	41,679,400	115,439,700	97,932,800

Total reserve..... \$121,865,600 \$207,450,200 \$159,580,300
Legal requirement.... 97,745,100 146,658,375 137,284,125

Surplus reserve... \$24,120,500 \$60,791,825 \$22,296,175

Changes for the week were decreases of \$174,325 in surplus reserve, \$5,866,700 in loans, \$293,100 in specie, \$2,186,200 in legal tenders, and \$9,327,900 in deposits; an increase of \$301,500 in circulation.

For convenience of comparison, we have grouped together in the table below the specie holdings of the leading banks of the world at the latest dates covered by their reports. The amounts are reduced to dollars, and comparison is made with the holdings at the corresponding dates last year:

	Gold.	Silver.	Total.
Asso. Banks of New York 1894.....	.....	.....	\$61,677,500
1894.....	.....	.....	92,010,500
Bank of England.....	\$213,861,575	.....	213,861,575
1894.....	187,275,145	.....	187,275,145
Bank of France.....	401,109,800	\$249,825,104	650,934,900
1894.....	380,176,566	250,808,063	630,984,629
Imp. Bank of Germany.....	.....	.....	228,430,000
1894.....	.....	.....	229,770,000
Austro-Hungarian Bank.....	109,960,000	65,830,000	166,790,000
1894.....	67,960,000	76,457,000	144,417,000
Netherlands Bank.....	21,371,000	34,392,000	55,763,000
1894.....	20,751,000	34,238,000	55,089,000
Belgian National Bank.....	.....	.....	21,731,000
1894.....	.....	.....	23,124,000
Bank of Spain.....	40,022,000	59,375,000	99,397,000
1894.....	29,817,000	47,454,000	87,271,000
Bank of Italy.....	60,693,000	9,290,000	69,983,000
1894.....	.....	.....	.....
Imp. Bank of Russia.....	355,560,000	57,500,000	409,060,000
1894.....	.....	.....	.....

The return for the Associated Banks of New York is of date September 28th; all the others are of date October 3d, except the Bank of Italy, whose report is dated August 31st, and the Bank of Russia, August 16th-28th. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England reports its gold only, not considering silver at all. The Imperial Bank of Germany and the Belgian National Bank do not report gold and silver separately.

Some deliveries of gold—the amount is not stated—are being made to the Austrian government by the syndicate which took a large block of 4% bonds some months ago. The present deliveries are in completion of the contract then made. It may be noted that as the time for resumption of specie payments in Austria Hungary approaches Vienna exchanges are falling, and the rate of exchange on London, Berlin and Paris is now but little above par.

Shipments of silver from San Francisco to the East or the month of September were as follows: Bar silver, \$863,850; Mexican dollars, \$2,623,014; Peruvian soles, \$2,200; total, \$3,489,064. Shipments of gold for the month were \$14,051, making a total of \$3,503,115. The total shipments, including both gold and silver, for the nine months ending September 30th, were \$12,425,360 an increase of \$3,192,155 over the corresponding period last year.

Shipments of silver from London to the East for the year to September 19th are reported by Messrs. Pixley & Abell's circular as below:

	1894.	1895.	Changes.
India.....	\$2,980,715	\$2,756,680	D. \$224,035
China.....	2,119,573	1,323,024	D. 836,549
The Straits.....	949,916	612,103	D. 337,813
Total.....	\$7,050,204	\$4,719,807	D. \$2,330,397

Shipments for the week included \$139,000 to Bombay and \$30,000 to Japan in bar silver, and \$19,000 to Hongkong in Mexican dollars, a total of \$188,000. Receipts amounted to \$163,000, including \$3,000 bar

silver from the West Indies, \$150,000 bar silver, and \$10,000 in Mexican dollars from New York.

The settlement of the rupee-paper speculation having mainly been made, and the demand on Chinese account having ceased for the time Indian Exchange has fallen. The demand for Council bills was barely sufficient to take up the 50 lakhs offered and the price has fallen a fraction, to 13 $\frac{7}{10}$ d. per rupee. A further fall is probable.

The foreign merchandise trade of Great Britain for the eight months ending August 31st, is given by the Board of Trade reports as below:

	1894.	1895.
Imports.....	\$274,430,409	\$273,390,885
Exports.....	182,934,294	188,369,504

Excess in imports..... \$91,496,115 \$85,021,381

For the same period the imports and exports of the precious metals were as follows:

	Gold.		Silver.	
	1894.	1895.	1894.	1895.
Imports.....	\$20,438,609	\$21,455,571	\$7,634,998	\$7,084,480
Exports.....	4,604,411	13,261,078	8,754,419	6,754,299

Excess. I. £15,834,168 I. £7,194,433 E. £1,099,421 I. £239,881

The most notable point in this statement is the large increase in exports of gold this year. Imports of silver exceeded the exports this year also, an unusual condition.

Domestic and Foreign Coins.

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

	Bid.	Asked.
Mexican dollars.....	\$0.53 $\frac{1}{4}$	\$0.53 $\frac{3}{4}$
Peruvian soles and Chilean pesos.....	.48	.50
Victoria sovereigns.....	4.87	4.90
Twenty francs.....	3.87	3.90
Twenty marks.....	4.75	4.80
Spanish 25 pesetas.....	4.78	4.85

Other Metals.

Copper.—There has been a decided improvement in the market, stimulated mostly by the higher prices cabled from London, and necessitated also by the reduced stocks in manufacturers' hands, which shrunk quite considerably during the period of dulness which we experienced during the last four or five weeks. Considerable business has resulted, and if somewhat lower prices have in some instances been accepted, the market on the whole has a very healthy aspect. Several hundred thousand pounds of Lake copper have been sold from first hands at 12c., but the larger companies have refused to meet that price. Electrolytic copper, also, has been obtainable at a slight concession, and some business has resulted at about 11 $\frac{1}{2}$ c., the exact terms not having been reported. For casting copper we have still to quote 11 $\frac{1}{2}$ c. @ 11 $\frac{1}{2}$ c., with a good consumer's demand. Arizona copper is held above the market, the prices asked being 10 $\frac{1}{2}$ c. @ 10 $\frac{3}{4}$ c. The foreign market has been very strong, and Chile bars closed at the best at £47 7s. 6d. @ £47 10s. for spot and £47 15s. @ £47 17s. 6d. for three months prompt. For refined and manufactured we quote: English tough, £50 10s. @ £51; best selected, £51 @ £51 10s.; strong sheets, £57 10s.; India sheets, £54 @ £54 5s.; yellow metal, 4 $\frac{1}{2}$ d. Consumers abroad have bought more freely, and reports to hand all show that the consumption is very satisfactory. The statistics for the second half of September have decreased 1,100 tons, mostly on small shipments from this side.

Copper Exports.—The exports of copper from the port of New York during the week ending October 4th, 1895, as reported by the New York Metal Exchange, were as follows.

Copper:		
St. Petersburg—Martello.....	Ingots	150 tons
Bremen—Havel.....	"	20 "
Liverpool—Campania.....	"	15 "
Hayre—La Champagne.....	"	13 "
.....	Plates	8 "
Rotterdam—Obdam.....	"	167 "
".....	Cakes	41 "
".....	Bars	25 "

Matte:
Swansea—Boston City..... 90 tons.
Liverpool—Campania..... 66 "

This is a total of 439 long tons of copper, and 156 tons of matte exported for the week. Arrivals for the week included 25 tons of ingots from Swansea and 149 tons bars from Liverpool, a total of 17 tons.

Tin.—A good consumptive demand continues and prices have again hardened somewhat. We close at 14 $\frac{7}{8}$ for spot, and 14 $\frac{1}{8}$ for the next three months. Shipments from the East continue fairly heavy, and the statistics for the past fortnight have increased 800 tons.

The London market shows quite an improvement and closes at £66 12s. 6d. for spot, and £67 2s. 6d. for three months prompt.

Lead is quiet and there is no more pressure to sell. Business has been done at 3 $\frac{3}{8}$ @ 3 $\frac{5}{8}$, and considerably larger contracts could have been placed had consumers not been so stiff. Very little is offered from the West.

The European market is very strong, and Spanish lead has advanced to £11 @ £11 2s. 6d., and English lead 2s. 6d. higher.

The total arrivals of lead at the port of New York during the month of September as compiled by the New York Metal Exchange were as follows in tons

of 2,240 lbs : From Europe, 2,703 tons; Mexico, about 3,750 tons; total, 6,433 tons. Exports of Mexican lead in bond amounted for the month to 1,973 tons, of which 53 tons went to Canada, and 1,920 tons to Europe. The stock in bond at New York and nearby ports on September 30th is estimated at 11,691 tons.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is quiet at about 3 10c., with retail sales only at that figure. Some brands of common lead have even been offered at low as 3 07 1/2c. The market is dull.

Spelter.—A marked decline has set in. At the high prices asked consumers abstained from buying, and some spelter having accumulated in speculative hands in St. Louis was discovered to have been sold below actual rates. This induced producers to sell also, and 4c St. Louis has been accepted. No business has taken place here on the spot, but the metal is obtainable at 4 25@1.30.

The market abroad is quiet, and the quotations are £15 7s. 6d. for good ordinaries, and £15 10s. for specials.

Antimony continues exceedingly dull, with only a retail business doing. Quotations are: Cookson's, 7 1/2@8c.; Hallitt's, 7 1/2c.; U. S. French Star, 7 1/2c.; Japanese, 6 1/2c.

Aluminum.—The standing quotations, according to producer's price list, are given below, the three prices named being respectively for small lots, for orders of 100 lbs. or over, and for orders of one ton or over: No. 1 metal, over 98% pure, in ingots ready for rolling, etc., 60c., 58c. and 55c. per lb. No. 1 metal, in ingots for remelting, 55c., 52c. and 50c. per lb. No. 2 metal, over 94%, but less than 98%, in ingots for remelting, 53c., 50c. and 48c. per lb. Rolled sheets, No. 1 metal, 80c. @ \$1.40 per lb., according to size and thickness. Wire, \$1 @ \$2.50 per lb., according to gauge. Tubes, from 14c. @ \$3.15 per linear foot, according to thickness and diameter. Castings, from 90c. per lb. up, according to pattern and size of order.

Abroad the price is fixed by the Neuhausen Company, which quotes 5 fr. per kilo.—equivalent to 45c. per lb.—at works in Switzerland for small orders; a discount is made on large sales. Quotations in Paris, for large orders, are 5 fr. per kilo. for ingots; 6 fr. per kilo. and upwards for sheets; 10 fr. per kilo for wire, 0.5 mm. and over; 15 fr. per kilo. and upwards for sheets. For small orders the quotations are 6 50@7 fr. per kilo.

Bismuth.—Prices are unsettled, and quotations vary from \$1.35 to \$1.95, according to grade and order. Probably a large order could be filled at \$1.30, New York.

Iridium.—The demand is very small, and only occasional sales are made. The price varies from \$25 to \$35 per ounce, according to order and quality.

Magnesium.—The maker's prices are as follows, at works in Germany: 27 mark per kilo.—equivalent to \$2.94 per lb.—for ingots; 26 marks per kilo. for bars; 38 marks per kilo. for powder, and 38 marks for ribbon and wire. For orders of less than 10 kilos., 1 mark per kilo. must be added for ingots of bars, and 2 marks for wire, etc.

Nickel.—Prices are still unsettled, but demand is better and we continue to quote 34@37c. per lb.

In London quotations are a shade lower, say 12@13d. per lb. Paris quotations are unchanged at 4 fr. per kilo. (equal to 35c. per lb.) for pure metal, and 2@2 25 fr. per kilo for copper-nickel alloy, 50% nickel. These prices are shaded on large orders.

Phosphorus.—Quotations current are 50@52 1/2c. per lb., New York or Philadelphia.

Platinum.—Prices have an upward tendency still, and we quote \$12 per ounce, New York, for large lots. The London price is higher, 46@47s. per ounce.

For chemical ware, best hammered metal, Messrs. Elmer & Amend, New York, furnish the following quotations, the prices given being respectively for orders of over 250 grams; for orders of over 100 grams and less than 250 grams, and for orders of less than 100 grams: Crucibles and dishes 46c., 47c. and 48c. per gram. Wire and foil are 43c., 44c. and 45c. per gram. The current retail price for crucibles is 63c. per gram.

Quicksilver.—The market is active and supplies light. A rise may be expected at any time, but at present the quotation continues \$39.25 per flask, New York. The London price is £7 5s. per flask, and no reduction from second hands is quoted.

Sodium.—In England makers' price is equal to 90@96c. per lb., according to quantity. Occasional sales only are reported here, usually on private terms.

Tungsten.—The following quotations for this metal and its compounds are furnished us by the manufacturers: Tungsten metal (powder) 98% pure, 70c. per lb., tungstic acid, 45c. per lb.; tungsten salt (tungstate of soda), 30c. per lb. (these quotations are for large lots. For ferro-tungsten the quotations are for ton lots of the various grades as follows: 60% metal 60c. per lb.; 50% alloy, 45c. per lb.; 37% alloy, 33c. per lb. There has been no recent change.

Imports and Exports of Metals.—Imports of metals into this port for the week ending September 28th, as reported by the New York Metal Exchange, were as follows: 19,371 boxes and 215 tons tin and black plates, and 12 1/2 casks antimony from United Kingdom; 100 tons Straits tin from Holland; 132 tons Belgian lead, duty paid, from Antwerp;

114 casks antimony from Japan, and 157 bags antimony from China.

Exports of metals from the port of New York for the week were: 11 tons lead, in bond, to Canada; 67 tons tin scrap to Antwerp; 4 tons nickel to St. Petersburg; 48 tons sulphate of copper to Mexico; 10 tons brass to Cuba; 38 tons tin scrap to Holland, and 2 tons nickel to Havre.

Arrivals at Philadelphia for the week ending September 28th were 3,100 tons iron ore from Cuba, and 2,650 tons copper ore from Spain.

Arrivals at Baltimore for the week ending September 28th were 3,937 tons iron ore from Cuba; 147 tons ferro-manganese, and 15,311 boxes tin and black plates from United Kingdom; 35 cases antimony from Hamburg.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, October 5th.
Heavy Chemicals.—The market is rather quiet, as buyers are inclined to wait for the result of the expected conference between English and American manufacturers; nevertheless, considerable business has been done, and there is a tendency to better prices. Holders are not anxious to make sales for future deliveries until matters are settled, and the demand is good, so that the market generally has a good tone. In certain lines supplies are not abundant, and there is a general anticipation of higher prices. Orders have been received from foreign makers stopping sales after October, which is believed to indicate some arrangement for avoiding competition. We quote: Caustic soda, 2 15@2 25c. for spot; futures uncertain. Carbonated soda ash, 48%, is 95 @1c., according to quantities and deliveries. Alkali is 90@1 05c., according to test. Bleaching powder, \$1.85@1.95, with little offering at those prices. Sulphuric acid, 70@80c.

Acids.—Trade is fairly active and prices are firm, as stock are not heavy, and manufacturers show no disposition to make concessions. In some lines sales have been very good. We quote, per 100 lbs. in New York and vicinity, in lots of 50 carboys or over as follows: Acetic acids (in barrels), \$1.40@1.70, according to make and size of order. Muric acid, 18° 75@90c.; 20°, 90c. @ \$1.15. Nitric acid, 36°, \$3.50 @ \$4; 40°, \$4 @ \$4.50; 42°, \$4.75@ \$4.25. Oxalic acid, \$7.10@ \$7.60. Mixed acids, according to mixture. Sulphuric acid is firm and stocks are light. Makers look for an increasing demand. We quote, for 66°, 75@85c. A demand is reported for bulk 50° chamber acid, with large sales. Quotations are \$6.50@ \$7.25 per ton at factory. Blue vitriol is in demand, with sales at \$3.90@ \$4.10 according to size of order.

Brimstone.—The market is unsettled and futures are in demand. We quote for best unmixed seconds, \$13.50@ \$16 according to delivery. Thirds are 25@ 50c. less. There is a discussion going on over the future market. It is said that the Sicilian producers have succeeded in making a combination and that a large part of the output will be stored at the ports and held for better prices. On the other hand it is claimed that the producers' need of money will not permit any considerable movement of this kind. Shipments recently have been rather light, and production is apparently decreasing.

Fertilizing Chemicals.—The market is steady and prices are well supported though there has been no material change. Some advances are expected, but for the present prices continue as follows: Sulphate of ammonia, gas liquor, \$2.65; bone, \$2.55. Dried blood, high grade, \$1.85@ \$1.90; low grade, \$1.65@ \$1.75, per unit. Azotine, \$1.85@ \$1.90. Concentrated phosphate (30% available phosphoric acid), 70@71 1/2c. per unit. Acid phosphate, 13° to 15°, av. P₂O₅, 57c. per unit at seller's works in bulk. Dissolved bone black, 17° to 18°, P₂O₅, 99@92c. per unit. Acidulated fish scrap, \$12, and dried scrap with few or no sales, nominally \$21 f. o. b. fish factory. Tankage, high grade, \$19@ \$2; low grade, \$13@ \$19. Bone tankage, \$21; ground bone, \$19@ \$20. Bone meal, \$21 @ \$22.50.

In lots of 50 tons on contracts we quote, per 100 'bs.: Double manure salts, 48-53% (basis of 48%); New York, Boston and Montreal, \$1.10; Philadelphia and Norfolk, \$1.12 1/2; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$1.15. Sulphate of potash, 90%, and minimum, 96%, respectively (basis of 90%); New York, Boston and Montreal, \$2.08@ \$2.10; Philadelphia and Norfolk, \$2.10 1/2, Charleston, Savannah, Wilmington, N. C., and New Orleans, \$2.13.

Muriate of Potash.—Quotations for lots of 50 tons are as follows: 80-85% and minimum 95%, respectively (basis of 80%); New York, Boston and Montreal, \$1.78; Philadelphia and Norfolk, \$1.80 1/2; Charleston Savannah, Wilmington, N. C., and New Orleans, \$1.83.

Kainit.—Prices for kainit (minimum 23%) are as follows for invoice and actual weights respectively: New York, Boston and Philadelphia, \$3.30; Norfolk, \$3.15; Charleston, Savannah, Wilmington, N. C., and New Orleans, \$3.55.

Nitrate of Soda.—This market is firmer. We quote spot, \$1.80@ \$1.85; shipments, \$1.75@ \$1.77, according to position.

Liverpool. Sept. 24. (Special Report of Joseph P. Brunner & Co.)

There is practically nothing new in the position of heavy chemicals since our last report.

Soda ash firm, but not much fresh business reported. The nearest spot range for tierces is about as

follows: Leblanc ash, 48%, £4@ £4 5s. per ton; 56%, £4 5s @ £4 10s. per ton. Ammonia ash, 43%, £3 10s. @ £3 15s. per ton; 58%, £3 15s. @ £4 per ton, net cash. Bags, 5s. per ton less.

Soda Crystals in moderate demand at £27s. 6d. @ £2 10s. per ton, less 5% for barrels.

Caustic soda quiet but steady. We quote nearest spot range: 63%, £3 5s. @ £3 10s. per ton; 70%, £7 5s. @ £7 10s. per ton, net cash; 74%, £8 5s. @ £8 10s. per ton; 78%, £9 5s @ £9 10s. per ton, net cash.

Bleaching powder in good request, and outside makes cleared to the end of this year. For hardwood casks, £7 5s. @ £7 10s. per ton, net cash, is nearest range, according to export market.

Chlorate of Potash inactive and 4 1/2d. per lb. may be called about nearest value for any position.

Bicarb. Soda maintains its position, and the finest quality in 1 cwt. kegs is still held for £3 15s. per ton, less 2 1/2%, with usual allowances for larger packages.

Sulphate of ammonia is slow of sale, and £9 7s. 6d. @ £9 10s. per ton, less 2 1/2%, for good gray 24 and 25% in double bags f. o. b. here, represent nominal spot values, as to quality.

Nitrate of Soda in limited demand at about £3 @ £3 5s. per ton, less 2 1/2% for double bags f. o. b. here, according to quantity and quality.

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

Messrs. Mortimer & Wisner, the well-known brokers of this city, send us the following statistics of nitrate of soda, under date of October 4th:

	1895.	1894.	1893.
	Bags.	Bags.	Bags.
Imported into Atlantic ports from West Coast of S. A., from Jan. 1, 1895, to date	610,265	466,167	579,394
Imported into Atlantic ports from Europe, from Jan. 1, 1895, to date.....	.....	.....	16,712
	610,265	466,167	596,106
Stock in store and afloat Oct. 1, 1895, in New York.....	73,283	57,741	53,096
Boston.....	1,900	1,691	.....
Philadelphia.....	409	.....	.....
Baltimore.....	1,000	6,000	6,000
Norfolk, Va.....	360	.....	.....
Charleston.....	.....	.....	.....
To arrive, actually sailed	230,000	234,000	205,000
Vis. supply to Jan. 15, 1896	306,943	299,432	261,656
Stock on hand, Jan. 1, 1895.	58,367	44,938	15,454
Deliveries past month....	72,215	73,892	75,412
Deliveries Jan 1 to date..	591,629	445,673	552,504
Total yearly deliveries 1895.....	.....	701,202	744,500
Prices cur., Oct. 1, 1895	1'8 @ 1 82 1/2	2'02 @ 2'05 1/2	1'7 1/2 @ 1'90

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

MINING STOCKS.

Complete quotations will be found on pages 338 and 339 of mining stocks listed and dealt in at: New York. Colorado Springs. Paris, France. Boston. Duluth, Minn. Mexico. Philadelphia. Helena, Mont. Shanghai, China. Denver, Colo. Salt Lake, Utah. Valparaiso, Chile. Aspen, Colo. St. Louis. London, England.

New York, Friday Evening, Oct. 4.
Perhaps dullness is hardly the proper term for the mining stock market this week. Deadness would be a more appropriate term, for there was not live enough in it to keep it moving. What can be said of a market in which the total sales for the week footed up only 3,150 shares, that is only a trifle over 500 shares a day? In fact, we find only 11 stocks dealt in, and several of those show sales of only 100 shares. The most active, if it can be called activity, was Comstock Tunnel, of which 700 shares changed hands at 8@10c.; next followed Brunswick and Standard Consolidated, 500 shares of each having been dealt in; Brunswick at 13c., and Standard at \$2 25. There were 300 shares of Lacrosse which changed hands at 10c.

Of the Comstocks, Consolidated California the Virginia shows a single sale of 200 shares at \$2 7 1/2. Sierra Nevada is quoted at \$1 for 100 shares. Ophir shows 200 shares at \$1.80, and Potosi 100 shares at 75c., while Gould & Curry brought 60c. per share for 150 shares.

Alice of Montana made its appearance and 100 shares were sold at 30c. Kingston & Pembroke was also called for, 200 shares being sold at 30@35c.

It goes without saying that the market was uneventful. A dead market could not be expected to show anything worth reporting.

Boston.

(From Our Special Correspondent.)
There has been very little doing in the copper stocks outside of the Montana group, the past week, but the market has been active for this class, and they have recovered from the depression of the past month, and to-day sold up to the highest price for the week.

Boston & Montana opened at \$32 1/2, and has steadily advanced, reaching to-day \$35 1/2, losing \$1 in the closing hour; sales about 25,000 shares. Hattie & Boston declined in early dealings to \$17 1/2, but ad-

vanced in sympathy with its neighbor to \$19%, losing only 3/4% in final sales. There is considerable gossip regarding Boston & Montana's next dividend, some parties asserting that it will be \$5, but more conservative houses look for \$4 as the more probable figure.

Calumet & Hecla advanced from \$315 to \$325 on the talk of another \$5 dividend next month, which, if declared, will make \$25 for the year against \$15 last year. In later dealings the stock sold ex-dividend \$5, and declined to \$315. Quincy has ruled quiet this week, but fairly steady at \$142 to \$143. Tamarack declined from \$150 to \$147 on small sales. Osceola declined to \$31 but rallied in later dealings to \$33 1/2 and closed at \$33. Franklin advanced from \$17 1/2 to \$19 1/2, with sales of 200 shares only. Kearsarge was in good demand on the rumor that a dividend was possible before the year closed, and sold up from \$19 to \$21 1/2, losing the fraction in final dealings. Atlantic dropped to \$21, but recovered to \$22 1/2 to day. Centennial advanced from \$1 to \$1 1/2 on the postponement of the foreclosure sale, and declined to \$1 1/2 later. Wolverine sold at \$7, and advanced to \$7 1/2. Tecumseh sold at \$4; Arnold at \$2, and advanced to \$2 1/2, and National sold at \$1. Tamarack, Jr., was heavy, and sold off to \$20, with recovery to \$21 in to-day's dealings.

Lake Superior Iron sold at \$29. The gold stocks have been active this week. The Gold Coin mines stock was listed this week, and sales were made at the opening at \$1.20, and the price advanced to \$1.35, receding to the former figure. The Cripple Creek Mining Company was started to-day at \$1.35, but the desire to sell was so great that the price was forced down to 85c. at the close. Santa Rosa sold at \$2 1/2, and a small sale of Merced was reported at \$38. Pioneer has not been listed yet, and there are no public quotations. Napa quicksilver sold at \$8 for a small lot.

3 P. M.—The market closed fairly steady, with a good demand at the closing prices.

Colorado Sprngs.

BY TELEGRAPH.

Messrs. Gardner & Co. wire us the closing quotations for the week ending October 3d as follows:

Name of Company.	27	28	30	1	2	3
Anaconda	.60	.61	.58	.63	.65	.63
Argentum-Juniata	.11	.10	.13 1/4	.14 1/2	.15 1/2	.15 1/2
Consolidated	.14	.14 1/2	.15 1/2	.14 1/2	.15 1/2	.15 1/2
Isabella	.28	.29 1/2	.26 1/2	.25 1/2	.20	.20
Mollie Gibson	.61	.60	.58	.55	.54	.53
Portland	1.70	1.68	1.70	1.69	1.70	1.70
Summit	.23	.21	.22	.20	.19	.20
Union	.21	.21 1/2	.22 1/2	.21 1/2	.20 1/2	.20 1/2

San Francisco.

Sept. 23.

(From our Special Correspondent.)

The market opened rather strong, but owing to holidays in the Jewish Church and other causes it was very quiet and dull throughout the week. Prices kept up fairly well, but very little business was done. At the close to-day there was some revival, enough to keep up prices, but not to make up for the dullness of the earlier days.

Closing quotations are: for Consolidated California & Virginia, \$2.60@3.65; Confidence, \$2@2.05; Opbir, \$1.70@1.75; Hale & Norcross, \$1.45@1.50; Best & Belcher, \$1.05@1.10; Mexican, 7/4@7 1/2; Challenge, 68@69c; Yellow Jacket, 45@46c; Savage, 41@42c.

Bodie Consolidated closes at 33@35c; Bulwer, 8c; Mono, 12c.

A Glasgow syndicate has bought the Trevaskis mine in Nevada County, and the company will be known as the Red Hill Limited Mining Company.

Colonel E. D. Boyle reports that good progress is being made in running the tunnel which is to drain the old mines of Como district, Nevada.

A Virginia City despatch says that the Sutro tunnel has suspended operations, and the shift of five men has been laid off. The cause of the suspension is said to be a lack of ready money to pay expenses with. The company has been unable to pay the wages of the men for a couple of months. Funds will probably soon be forthcoming to resume operations on.

The Omsha Gold Quartz Mining Company, of Nevada County, has declared its 35th dividend, at the rate of 15c. per share.

Representatives of Colorado capitalists are inspecting the St. John quartz mine at Grass Valley, with a view of purchasing the property.

The Palo Alto Mining Company of Butte County has levied an assessment of 1/2c. per share, delinquent November 9th.

BY TELEGRAPH.

SAN FRANCISCO, Cal., Oct. 4.—The opening quotations to-day were as follows: Best & Belcher, 9c.; Bodie, 29c.; Bulwer, 4c.; Consolidated California & Virginia, \$2.45; Chollar, 52c.; Eureka, 5c.; Gould & Curry, 44c.; Hale & Norcross, \$1.40; Mexican, 66c.; Mono, 11c.; Opbir, \$1.50; Savage, 38c.; Sierra Nevada, 84c.; Union Consolidated, 54c.

London.

Sept. 21.

(From Our Special Correspondent.)

During the past fortnight the mining stock market has been suffering from the action of certain financial houses which have refused the ordinary facilities for carrying over stocks at the fortnightly settlements. This action has been caused no doubt in some cases by the desire to weed out irresponsible bulls, and so far as that cause is concerned no one can find fault with their action. But in most cases the maneuver has been adopted so as to throw large blocks of stock on the open market at the settle-

ments, and thus to secure a substantial fall in the prices. The market has therefore been in a somewhat nervous state, and but for the prompt action of several capitalists who are interested in the South African market, some serious relapses would have taken place. As it was the support of Mr. Barnato and others, prevented any appreciable fall, and on the fortnight prices remain substantially unaltered. The market was also sustained by the influx of large buying orders from France, and by the report of the output of the Rand for August. This output again broke the record, being 203,573 oz., as compared with 199,453 oz. in July, and 174,977 oz. in August, 1894.

In the American department some little stir has been caused by the announcement that the directors of the Elkhorn Company have decided to pay no further dividends at present. As, however, the mine is making a small profit, it is supposed that the directors are accumulating funds to enable them to purchase a new property. Already it is rumored that West Australia is the new field of enterprise. The Harquahala company has already gone there, and possibly Elkhorn will follow suit. It is no good a mining man recommending a valuable property unless the property is in a locality that is the fashion. No doubt the mining engineers and directors who are recommending their shareholders to desert the Rocky Mountains for West Australia, are students of human nature, and know that the average capitalist and investor are like sheep who go with the crowd.

In your pages it has already been announced that Mr. Hamilton Smith has been visiting Cripple Creek district. In certain restricted circles where fashions do not lead, considerable interest has been evinced in this important gold mining district, and several companies have been formed to develop mines there. I would point out to your readers that a most egregious error is made by most Americans bringing over Cripple Creek, and other propositions to this country. They offer options lasting only a month, and expect people to purchase properties on the vendor's report, instead of offering to send out an independent expert to examine the properties.

Paris.

Sept. 22.

(From Our Special Correspondent.)

With some excitement in view of the increasing amount of speculation, there is generally a weaker market, and prices are a little lower for almost all stocks. The reaction has been most apparent in the copper stocks and the shares of the other metal companies, and least so in those of the coal and iron companies. On the whole, our iron trade is stronger and more promising than for some time past, and the coal trade sympathizes with it.

The South African gold stocks continue to be the real leaders here, and interest in them is unabated, though there has been no special incident during the week. Just now a great discussion is going on in our financial papers and those of London as to the amount of French capital invested in these stocks. All sorts of estimates have been put forward, some authorities naming sums ranging between 1,500,000,000 fr. and 2,500,000,000 fr. These are simply wild guesses. For myself, I find it impossible to give anything like exact figures, because so much of the buying was done through London brokers and outside agencies, and so few of the stocks are directly dealt in on our Bourse. Nevertheless, I am inclined to take the more conservative figure of M. Leroy-Beaulieu, and put the amount actually invested at somewhere between 600,000,000 fr. and 700,000,000 fr. As much of the buying was done when prices were lower than at present, it is not unlikely that these investments may represent a present selling value of 1,000,000,000 fr. It is an enormous sum, this; the question is, what return will our investors receive?

The Paris Chamber of Commerce has issued lately a most interesting history of these commercial bodies, beginning with the institution of the Paris Chamber in 1667. The greater part of the work is devoted to France, but there is also an account of these institutions in other countries. It may not be known generally with you that the French chambers of commerce are not voluntary associations, as with you; they are rather syndicates or parliaments, representing the merchants and elected by them under government supervision. They have certain official functions, partly legislative and partly judicial, and receive subventions from government funds to be used for appropriate purposes. Their powers and proceedings are regulated and their authority prescribed by law.

I may add that besides the authority which our chambers of commerce possess over local merchants and brokers as to the issue of licenses, decision of disputes, etc., they are consulted by the Government constantly on questions of commercial regulation, tariffs and similar matters, and projects of law are often submitted to them for discussion before they are introduced in the Chamber of Deputies. The Paris Chamber owns a remarkable and very valuable library.

It appears also from this volume that there are in existence five international chambers of commerce composed of merchants of various nationalities resident at certain commercial centers. The oldest of these is at Constantinople, and is protected by various treaties. Two others are in the far East, at Canton and Yokohama, and two in South America, at Lima and Guyana.

The Lyons Chamber of Commerce has just sent a commercial mission to China headed by M. Rocher, who has passed many years in that country. It is composed of 13 members, several of whom are en-

gineers, and its object is not only to promote trade with that country, but also to look for opportunities for investment in transportation lines, mines, etc. Much is expected from this mission, which has been carefully organized, and is well provided with funds.

During the eight months ending August 31st the imports of gold into France amounted to 216,077,103 fr., and the exports to 102,314,007 fr., showing a balance of imports amounting to 113,763,096 fr. in all.

There is some uneasiness again over the unsettled condition of affairs in the far East, and the possibility of war between Russia and Japan. Turkish affairs also threaten trouble, as the Armenian question is not by any means an easy one to solve.

AZOTE.

MEETINGS.

Idlewild Gold Mining Company, annual meeting at the office in San Francisco, October 9th, at 3 p. m. Transfer books close October 7th at 3 p. m.

Nevada Queen Mining Company, annual meeting at the office in San Francisco, October 9th, at 1:30 p. m.

DIVIDENDS.

Aetna Consolidated Quicksilver Mining Company, dividend No. 4, of 10c. per share (\$10,000), paid October 1st.

Cambria Iron Company, dividend of 12 1/2%, payable in stock November 1st to stockholders of record on October 2d.

Delaware, Lackawanna & Western Railroad Company, dividend of 1 3/4%, payable October 21st. Transfer books are closed from October 2d to October 22d.

Napa Consolidated Quicksilver Mining Company, dividends Nos. 69 and 70, of 10c. per share (\$20,000 in all), paid October 1st.

ASSESSMENTS.

Name of Co.	Loc'n.	No.	Delinq.	Sale.	Amt.
Alta	Nev.	50	Oct. 21	Nov. 11	.10
Brunswick Con.	Cal.	9	Sept. 30	Oct. 30	.02
Bullion	Nev.	5	" "	" "	.10
Bunker Hill	S. D.	7	Oct. 10	" "	.02
Golden Gate	Alaska	1	" "	Nov. 14	.01 1/4
Gray Eagle	Cal.	41	" "	" "	.05
Hite	"	1	Sept. 28	" "	.08
Mount T. Grav.	"	7	Oct. 21	" "	.02
Nevada Queen	Nev.	9	" "	" "	.05
Rainbow	S. D.	8	" "	Oct. 30	.000 1/4
Savage	Nev.	87	" "	" "	.12
Seg. Belcher	"	16	" "	Nov. 4	.10

DIVIDENDS PAID BY MINING COMPANIES, AUGUST AND YEAR 1895.

NAME OF COMPANY.	Loca-tion.	Paid in August.	Paid in since Jan. 1.
Am Dev & Mg. Co.	Mont.		\$24,240
Alaska-Mexican	Alaska		25,500
Alaska Treadwell	"		150,000
Amethyst	Colo.		36,000
Argentum-Juniata	"	\$39,000	78,000
Bald Butte	Mont.		12,500
Bangkok-Cora Belle	Colo.	6,000	48,000
Belden, F. E. Mica	N. H.	4,900	54,000
Boston & Montana	Mont.		300,000
Bullion-Best & Champion	Utah		275,000
Calumet & Hecla	Mich.	500,000	1,000,000
Centennial-Eureka	Utah	30,000	240,000
Champion	Cal.	3,400	27,200
Con. Cal & Va.	Nev.		162,000
Copper Queen Con.	Ariz.		150,000
Copis	Nev.		1,000
De Lamar	Idaho	100,000	444,000
Elkhorn	Mont.		50,000
Elkton	Colo.		7,500
Forepaugh	"		16,000
Gold & Globe	"		11,250
Golden Fleece	"	6,000	90,000
Hecla Con.	Mont.		115,000
Homestake	So. Dak.		218,750
Hope of St. Louis	Mont.		10,000
Horn Silver	Utah		110,000
Iron Mountain	Mont.	10,000	90,000
Jackson	Cal.		2,000
Kennedy	"	43,000	184,000
Mayflower Gravel	"	6,000	48,000
Mercur	Utah	25,000	150,000
Mollie Gibson	Colo.		50,000
Montana, Ltd.	Mont.		82,500
Mont. Ore Purchasing Co.	"		120,000
Morning Star Drift	Cal.	16,800	134,400
Moultrn	Mont.		30,000
Mt. Rosa	Colo.		5,000
Napa Con. (Quicksilver)	Cal.		70,000
Nugget	Colo.		5,000
Osceola Con.	Mich.		100,000
Portland	Colo.		120,000
Quincy	Mich.	200,000	600,000
Silver King	Utah	37,500	112,500
Smuggler	Colo.		350,000
Standard	Cal.		30,000
Tamarack	Mich.		200,000
Union	Colo.		12,500
Utah	Utah	1,000	11,000
Victor	Colo.	20,000	180,000
Victor L. & M. Co.	"		6,000
War Eagle	B. C.	50,000	182,500
W. Y. O. D.	Cal.	3,000	24,000
Total		\$1,081,700	\$6,574,400

Readers of the "Engineering and Mining Journal" will confer a favor on the publishers if they will notify the "Journal" of any errors or omissions in the above table.

STOCK QUOTATIONS.

NEW YORK.

Table with columns: NAME OF COMPANY, Location, Par val., Sept. 28, Sept. 30, Oct. 1, Oct. 2, Oct. 3, Oct. 4, Sales. Lists various mining and industrial companies like Alice, Best & Belcher, Brunswick, etc.

* Official quotations N. Y. and Con. Stock and Petroleum Exchanges. Total shares sold, 3,450.

COAL AND COAL RAILROAD STOCKS.

Table with columns: NAME OF COMPANY, Par value, Sept. 25, Sept. 30, Oct. 1, Oct. 2, Oct. 3, Oct. 4, Sales. Lists companies like Balt. & Ohio, Ches. & Ohio, Col. C. & I. Dev, etc.

* Official quotations N. Y. Stock Exchange. Total shares sold, 185,166.

BOSTON, MASS.

Table with columns: NAME OF COMPANY, Locg. Mon., Par val., Sept. 27, Sept. 28, Sept. 30, Oct. 1, Oct. 2, Oct. 3, Sales. Lists companies like Arnold, Atlantic, Bost. & C. C., etc.

* Official quotations Boston Stock Exchange. Total shares sold, 57,034.

INDUSTRIAL AND TRUST STOCKS.

Table with columns: NAME OF COMPANY, Par value, Sept. 25, Sept. 30, Oct. 1, Oct. 2, Oct. 3, Oct. 4, Sales. Lists companies like Adams Exp, Am. Exp, Am. Sug. Ref., etc.

* Official quotations N. Y. Stock Exchange. Total shares sold, 216,063.

COLORADO SPRINGS MINING STOCKS.

Table with columns: NAME OF COMPANY, Par val., Sept. 23, Sept. 24, Sept. 25, Sept. 26, Sept. 27, Sept. 28, Sales. Lists companies like Alamo, Anaconda, Argonaut, etc.

* Official quotations Colorado Springs Mining Stock Association. All the companies are located in Colorado. Total sales, listed, 325,432; unlisted, 1,273,258; value listed, \$34,951.52.

COLORADO SPRINGS, COLO.

Large table with columns: NAME OF COMPANY, Par val., Sept. 3, Sept. 24, Sept. 25, Sept. 26, Sept. 27, Sept. 28, Sales. Lists numerous mining companies like Anaconda, Anchor-L, Aola, etc.

* Official quotations Colo. Spr'gs B'd of Trade & M. Exch. All the companies are located in Colo. Sales: listed, 1,660,957; miscellaneous, 1,182,352; total cash value, \$106,361.59.

HELENA, MONT.

Table with columns: NAME OF COMPANY, Location, Company's office, Par value, Bid, Asked, Shares sold, Price, Date. Lists companies like Am. Dev. & M. Co., Bald Butte, Benton Group, etc.

* Special report of Samuel K. Davis. Total shares sold, 2,100.

ASPEN, COLO.

Table with columns: NAME OF COMPANY, Location, Par value, Bid, Asked, Sales, Price. Lists companies like Alta Argent., Aspen Contact, Aspen Deep Mining, etc.

* Special report of Arkel, MacMillan & Stewart. Total shares sold, 112,250.

DENVER, COLO.

Table with columns: NAME OF COMPANY, Location, Par value, Opening, High, Low, Closing, Bid, Ask, Sales. Lists companies like Addie C., Alamo, Aola, etc.

* Clearing House Report, Colo. Mining Stock Exch'ge. Total listed, 1,187,600; unlisted, 4,231,700.

ST. LOUIS, MO., STOCKS.

Table with columns: NAME OF COMPANY, Location of Works, Company's Office, Par value, Bid, Asked, Last Dividend. Lists companies like Central Lead Co, Cons. Coal Co, Kan. & Tex. Coal, etc.

PITTSBURG, PA.

Table with columns: NAME OF CO., Par, Sale, Bid, Ask. Lists Gas Stocks: Allegheny, Chartiers Valley, People's Nat. Gas, etc.

* Official quotations Pittsburg Exchange.

DULUTH, MINN.

Table with columns: NAME OF CO., Par, Price, Bid, Asked. Lists Adams Iron, Biwabik L. M., Clev. Cliffs Iron, etc.

* Official quotations Duluth Exchange.

LONDON. Sept. 21.

Table with columns: NAME OF COMPANY, Par value, Quotations (Buyers, Sellers), and NAME OF COMPANY, Par value, Quotations (Buyers, Sellers). Includes sections for AMERICANS, AUSTRALIANS, INDIANS, SOUTH AFRICANS, and COPPER STOCKS.

MEXICO. Week ending Sept. 27.

Table with columns: NAME OF COMPANY, State, No. of shares, Last dividend, Last assessment, Opening, Closing. Lists various Mexican mining companies and their financial details.

NOTE.—In most Mexican mining companies the shares have no fixed par value. The capital is formed of a certain number of shares, the total value not being named. Prices are in Mexican dollars.

Philadelphia, Pa.* Oct. 2.

Table with columns: Name of Co., Par., Bid., Ask., Sales. Lists Philadelphia-based companies and their market activity.

Shanghai, China.* Sept. 6

Table with columns: Name of Co., Par., Last div., Price. Lists Shanghai-based companies and their market activity.

CURRENT PRICES.

Table listing various commodities and their prices, including acids, alcohols, ammonias, and other chemicals.

Table listing various commodities and their prices, including chlorines, chromes, cobalts, and other minerals.

PARIS. Week ending Sept. 20.

Table with columns: NAME OF COMPANY, Country, Product, Capital Stock, Par value, Divs. last year, Op'ning, Closing. Lists Paris-based companies and their market activity.

VALPARAISO, CHILE.* Week ending Aug. 17.

Table with columns: Name of Company, Capital, Share value, Last dividend, Bid., Asked, Last sale. Lists Valparaiso-based companies and their market activity.

* Special Report of Jackson Bros. Values are in Chilean pesos or dollars.

SALT LAKE CITY, UTAH.* Week ending Sept. 21.

Table with columns: Name of Company, Par value, Bid., Asked, Actual selling price. Lists Salt Lake City-based companies and their market activity.

* Special report of James A. Pollock. † All the companies are located in Utah.

THE RARER METALS.

Table listing various rare metals and their prices, including arsenic, barium, boron, cadmium, calcium, cerium, chromium, cobalt, columbium, didymium, erbium, gallium, germanium, glucinum, indium, iridium, lanthanum, lithium, manganese, niobium, osmium, palladium, platinum, potassium, rubidium, selenium, silicon, strontium, tantalum, tellurium, thallium, titanium, uranium, vanadium, and zirconium.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES

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

G., Gold. S., Silver. L., Lead. C., Copper. B., Borax. * Non-assessable. † The Deadwood previously paid \$275,000 in eleven dividends and the Terra \$75,000. Previous to the consolidation in August, 1884, the California had paid \$31,320,000 in dividends, and the Cons. Virginia \$42,330,000. ‡ Previous to the consolidation of the Copper Queen with the Atlanta, August, 1885, the Copper Queen had paid \$1,350,000 in dividends. § Previous to this company's acquiring Northern Belle, that mine paid \$400,000 in dividends against \$425,000 in assessments.