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Table with columns for PAGE and article titles. Includes sections like Mining News, Foreign Mining News, Markets, Metals, Chemicals, Building Materials, Iron, Mining Stocks, and Advertisers' Index.

We are informed by Mr. DAVID R. WALKER, Chief of the Electrical Bureau of Philadelphia, that the underground electric wire problem is being solved there as follows: The Bell Telephone Company is building a conduit three feet wide through the main streets and avenues of the city...

We illustrate and describe in detail on another page the Pearsall water engine, which presents a marked improvement over the ordinary hydraulic ram in the ingenious methods in which the shocks, which limit the applications of the ram, are avoided.

of the machine or engine to compressing air renders it a very valuable aid to miners who, have water power within reach. The engine has received the indorsement of Mr. SCHÖNHEYDER, an English hydraulic engineer of experience, who is an authority on such matters, after thoroughly testing one of these engines in operation at Wolverhampton, England...

We regret to note the delay which is occurring in the passage of the Nicaragua Canal bill. It was passed by a large majority in the Senate, and has now been up for discussion several times in the House.

There can be no question of the national importance of the undertaking, and for this reason, if for no other, it should obtain its charter from Congress. The construction and ownership of the canal should also be in American hands...

The company can of course get a charter under any of the State laws, but a national charter would be much more satisfactory, to foreigners at least, and we hope it will be granted before Congress adjourns.

MEXICAN PROGRESS.

We have received in the recent numbers of the Economista Mexicano the full text of President DIAZ's message to the Mexican Congress last month, and we find it a very statesmanlike and interesting document.

The whole address really constitutes a very satisfactory review of the administration, and of the development of the country during the past four years, and conclusively stamps the policy of the government as one of liberal progress and marked appreciation of and attention to the material interests of the nation.

After referring to the good results from lowering the rate of postage, he deals with the development of the railroad system and the harbor works, and says on the subject of mining: "Mining matters are being fully developed. The law of June 6th last may have operated to diminish the number of denunciations of mines, while it increased the number of contracts made with the Executive for the development of the mineral zones."

We could not wish more complete corroboration of our remarks, in our issue of September 22d, on Mexico as a field for American enterprise.

SUGAR REFINING BY ELECTRICITY.

Much attention has been drawn to this patented and secret process by the English newspapers, but, strange to say, although it is an American invention and the experiments or tests have been conducted in Brooklyn, little notice has been taken of it here.

One thing is certain, some of the shareholders have made large profits out of the speculation in the shares, which are dealt in at Liverpool. The company was incorporated in 1884 with a capital of \$1,000,000, in shares of \$100 each, but it does not seem to have met with any measure of success, financially or otherwise, until the early part of this year...

risen in Liverpool to \$325. In September they reached \$520, and on the 17th inst. they stood at \$490. The process is, of course, a secret; but we are informed that it is an entirely dry one, and no bone black or ordinary method of refining is used. The loss in refining is stated to be only one tenth per cent, and no syrup or second quality sugar is produced. The cost of refining is said to be 50 cents per barrel, exclusive of cost of handling, barreling and delivery. At a trial made last month 13 barrels of 325 pounds each are said to have been refined in one hour and ten minutes, and a refinery is now being erected by the company in Brooklyn. The inventor, Professor HENRY C. FRIEND, of this city, died some months ago.

MINE PROMOTION IN LONDON.

We noticed in our London exchanges of the early part of September that a company was floated to purchase a group of mines "in Leadville" under the title of the Leadville Mines Limited, to the incorporation of which we referred in our issue of June 23d of this year. At the time we were under the impression that our English cousins were being treated badly by either American or London promoters in being asked to pay \$1,000,000 for some mines which had no reputation as being worth anything like that sum, and with the additional bad feature that nearly all the capital of the company was absorbed in paying for the property, only \$50,000 being left for working capital. With the past experience of mines in the neighborhood of Leadville, where large sums are required for exploration work, this appeared totally inadequate. We have taken pains to ascertain the facts in the case, and give them for the benefit of those whom they concern, and with the desire to restrain promoters from injuring the real mining interests of this country.

The mines, or rather the mining claims, are situated on Little Ella Hill, which has an unfortunate reputation for having been the scene of more mining swindles and failures than any other in the district. The New Years is the principal mine of the group, the others, with one exception, being added for acreage. The New Years mine is adjacent to the Little Ella, and receives the Little Ella ore chute through its side lines at a distance of 1000 feet from the surface. No paying ore is encountered in the mine until this point is reached. This chute has been explored in the New Years mine for a distance of 600 feet. The chute is about 150 feet in horizontal length and 10 feet in thickness, and about one half of its cubic contents is shipping ore, carrying 7 to 10 ounces in silver, $\frac{1}{2}$ to $1\frac{1}{2}$ ounces in gold, and from 25 to 35 per cent in lead. The lower workings, however, now show large quantities of galena, and at that depth the ore no doubt changes from carbonate to sulphide. From this it is evident that the mine has some merit, but is enormously overvalued at \$1,000,000, and the enterprise can only result in disappointment to those who invest in it on this basis.

Another mining deal, that of ex-Governor TABOR, has just been consummated in London, but in this case the value of the property is much better known and acknowledged here than in the former, in addition to which the directors of the English company are fortified by a report from Prof. W. P. BLAKE. The property in question consists of Governor TABOR's claim on the Vulture Lode in Maricopa County, Ariz., and the price agreed to be paid is \$900,000. A working capital of \$100,000 is held in reserve, which should be sufficient, as the property is well developed and there is already a mill of 80 stamps with concentrators in operation. One thing, however, in this report strikes us as being unusual, and to a suspicious mind would be unsatisfactory, Professor BLAKE avoids the responsibility of saying anything on his own authority as to the amount of ore in sight, and contents himself with quoting the calculations of Mr. GRIBBLE, the other engineer, on this point. We mention this because we think, in the interest of every one concerned, reports which form the basis of commercial transactions can not be too explicit, and every expert should be responsible only for his own statements, and should not avoid responsibility by quoting from some one else what he should know of his own knowledge and should state on his own authority.

The terms of the sale are very unusual, and present a good basis for future transactions when the vendor has faith in the value of his property, and is satisfied that he is asking only a fair price for it. The conditions are reported to be as follows:

"If within six months the mines shall not—in the sole opinion of the directors—prove as valuable as represented by the vendor, they are empowered to call upon him to reimburse the company all expenses, so that the subscriptions may be returned in full to the shareholder, and should he fail to comply within 30 days of a notice requiring him so to do, the directors are empowered to sell the property by auction; the balance realized by such sale (if any), after paying in full all expenses incurred, to be paid over to the vendor. No part of the purchase consideration, either in cash or shares, is to be paid to the vendor until the directors have finally determined to take over the property for the company, and the mines are to be operated by the company as from September 1st."

The sale of the Bear's Nest group of claims in Alaska, to an English syndicate which was reported in the ENGINEERING AND MINING JOURNAL,

August 4th, was not made, as our San Francisco contemporary, the *News Letter*, assumes, on the report of Mr. HAMILTON SMITH, Jr., or Mr. HENRY JANIN, nor was the price paid \$2,500,000. The arrangement was as follows: The several properties were put in a company having a capital of \$2,500,000 on the basis cited in this journal, August 4th, and a seven per cent mortgage for \$1,500,000 was placed upon the property, all the stock being put in escrow until the mortgage is paid off. These mortgage bonds were sold to the syndicate at 75 per cent, realizing \$1,125,000, which the vendors receive and out of which they agree to put up the necessary works, open the mine, etc., in fact, provide the working capital for the company, and which may, according to some estimates, amount to \$300,000. This would leave the cash received by the vendors at about \$800,000, no doubt a large price for undeveloped property, though our information indicates that it possesses considerable value.

When the profits of the mine shall have paid off the mortgage bonds at par, which is to be within five years, we believe, then the stock is to be distributed, \$1,000,000 to the vendors of the property and \$1,500,000 to the English syndicate.

As the entire property could have been purchased outright here just before it was taken to England for about \$500,000, the arrangement with the English syndicate cannot be considered "bed rock" or even "ground floor," but it is not as bad as many, in fact, as most, of the mining schemes brought out in London, and the property will, we believe, become a valuable one when developed. The adjoining mine, the Tredwell, is, we understand, now paying at the rate of between \$800,000 and \$1,000,000 a year in profits from the treatment of about 600 tons of ore a day.

We believe Messrs. SMITH and JANIN had nothing to do with the sale of the Bear's Nest group, and the figures asked for the Tredwell are understood to have been beyond their ideas.

THE OUTLOOK IN THE COPPER MARKET—A WARNING TO INVESTORS.

It is now about a year since the French copper syndicate commenced its operations of controlling the copper markets of the world, and our weekly reports and the balance sheets of our mining companies show how well it has succeeded. The English papers and many rumors in this country, also announce that the syndicate, most of whose present contracts run in one form or another over three years—except the very important one with the Anaconda mine—is now endeavoring to make new contracts extending over much longer time, from six to twelve years, the unauthenticated rumors say, and at prices which are stated to be higher than those now running, but with, it is said, a clause permitting the syndicate to curtail the output of the mines.

The pages of the ENGINEERING AND MINING JOURNAL in the past abundantly testify to the desperate condition into which the low prices of 1885-6 and 1887 brought the copper mining industry throughout the world. Only a few concerns, like the larger Lake Superior mines and the Anaconda, of Montana, were able to live, with Lake copper selling at 10 cents a pound, and it was quite evident that any permanent ruling of such a price would not only close most of the world's copper mines and destroy the large investments made in them, but it would not encourage the development of new properties. The time would therefore come when the large mines becoming exhausted on the springing up of any large demand for the metal, there would result an actual famine of copper, and the price would consequently rise to abnormal figures during the two or perhaps three years required to open up new sources of supply.

Such a state of affairs would be unhealthy and highly injurious to every interest connected with the copper trade, so it was natural that when the proposition was made to regulate and steady the price at a higher and remunerative level, the manufacturers were pretty generally quite as willing as the producers to see the syndicate succeed. Since M. SECRETAN's plans have been in operation, he has also been daily the recipient of the most fervent blessings of the stockholders of all copper companies the world over, and of all mine promoters, which is far less important.

It is true there has been a good deal of incredulity as to the long duration of the "boom" and of the life of the syndicate, but there has been practically none as to the final outcome of this or any other scheme should abnormal or unreasonable prices for the metal be maintained.

Are present prices of say 16 $\frac{1}{2}$ to 17 $\frac{1}{2}$ cents "abnormal" or unreasonable? If we measure them by the average prices of the last 22 years they certainly are not, at least as concerns Lake copper, for the average price of Lake in New York from 1866 to 1887, both years included, was 19 $\frac{1}{2}$ cents per pound, as shown in the accompanying table. We have purposely omitted from this average the years of high prices—1860 to 1865, inclusive.

The average price of Chili Bars in London during the same period was \$66 $\frac{1}{2}$ per ton. It must, however, be remembered that the cost of pro-

duction has steadily decreased during these years, and figures which at one time may have been moderate or even quite unprofitable, would now be justly classed as "unreasonable" and excessive.

AVERAGE PRICE PER POUND OF LAKE COPPER AT NEW YORK.

Year.	Jan. cts.	Feb. cts.	Mar. cts.	Apr. cts.	May. cts.	June. cts.	July. cts.	Aug. cts.	Sept. cts.	Oct. cts.	Nov. cts.	Dec. cts.	Year. cts.
1860..	23 3/4	23 3/4	23 3/4	23 3/4	22 1/2	22 1/2	21 1/2	21 1/2	21 1/2	21 1/2	20 3/4	20	22 1/4
1861..	19 1/2	19 1/2	19 1/2	19 1/2	19 1/2	19 1/2	17 3/4	15 3/4	15 3/4	15 3/4	15 3/4	15 3/4	19 1/2
1862..	27 1/2	27 1/2	27 1/2	27 1/2	27 1/2	27 1/2	25 3/4	25 3/4	25 3/4	25 3/4	25 3/4	25 3/4	27 1/2
1863..	35	35	35	35	35	35	30 1/2	30 1/2	30 1/2	30 1/2	30 1/2	30 1/2	35
1864..	40 1/2	40 1/2	40 1/2	40 1/2	40 1/2	40 1/2	49 1/2	49 1/2	49 1/2	49 1/2	49 1/2	49 1/2	40 1/2
1865..	48 1/2	48 1/2	48 1/2	48 1/2	48 1/2	48 1/2	50 1/2	50 1/2	50 1/2	50 1/2	50 1/2	50 1/2	48 1/2
1866..	40	40	40	40	40	40	32 1/2	32 1/2	32 1/2	32 1/2	32 1/2	32 1/2	40
1867..	28 1/2	28 1/2	28 1/2	28 1/2	28 1/2	28 1/2	25	25	25	25	25	25	28 1/2
1868..	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	23 1/2	23 1/2	23 1/2	23 1/2	23 1/2	23 1/2	22 1/2
1869..	25	25	25	25	25	25	22	22	22	22	22	22	25
1870..	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	20 1/2	20 1/2	20 1/2	20 1/2	20 1/2	20 1/2	21 1/2
1871..	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2
1872..	27 1/2	27 1/2	27 1/2	27 1/2	27 1/2	27 1/2	33 1/2	33 1/2	33 1/2	33 1/2	33 1/2	33 1/2	27 1/2
1873..	34 1/2	34 1/2	34 1/2	34 1/2	34 1/2	34 1/2	29 1/2	29 1/2	29 1/2	29 1/2	29 1/2	29 1/2	34 1/2
1874..	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	24 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	21 1/2	24 1/2
1875..	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	22 1/2	23 1/2	23 1/2	23 1/2	23 1/2	23 1/2	23 1/2	22 1/2
1876..	23 1/2	23 1/2	23 1/2	23 1/2	23 1/2	23 1/2	20	20	20	20	20	20	23 1/2
1877..	19 1/2	19 1/2	19 1/2	19 1/2	19 1/2	19 1/2	18 1/2	18 1/2	18 1/2	18 1/2	18 1/2	18 1/2	19 1/2
1878..	17 1/2	17 1/2	17 1/2	17 1/2	17 1/2	17 1/2	16 1/2	16 1/2	16 1/2	16 1/2	16 1/2	16 1/2	17 1/2
1879..	15 1/2	15 1/2	15 1/2	15 1/2	15 1/2	15 1/2	16	16	16	16	16	16	15 1/2
1880..	23	23	23	23	23	23	19	19	19	19	19	19	23
1881..	19 1/2	19 1/2	19 1/2	19 1/2	19 1/2	19 1/2	18 1/2	18 1/2	18 1/2	18 1/2	18 1/2	18 1/2	19 1/2
1882..	20 1/2	20 1/2	20 1/2	20 1/2	20 1/2	20 1/2	18 1/2	18 1/2	18 1/2	18 1/2	18 1/2	18 1/2	20 1/2
1883..	18	18	18	18	18	18	15 1/2	15 1/2	15 1/2	15 1/2	15 1/2	15 1/2	18
1884..	14 1/2	14 1/2	14 1/2	14 1/2	14 1/2	14 1/2	14	14	14	14	14	14	14 1/2
1885..	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2
1886..	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	10	10	10	10	10	10	11 1/2
1887..	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	10	10	10	10	10	10	11 1/2

An average price of 12 cents a pound for Lake copper would be fairly remunerative to the producers, and would certainly promote the increasing consumption of the metal. The price of 16 1/2 or 17 cents may not greatly restrict consumption, although it certainly does to some extent, nor have the manufacturers much complaint to make for steady prices, even if rather high, are more advantageous to them than fluctuating low prices. Their desire is to see prices rule steady at moderate figures, and they certainly do not wish for the collapse of the syndicate. Consumers in some lines are affected seriously by the high price, but in others are but little interested. The copper sheet prices, for example, have remained steady during the advance in ingot, having been controlled by a combination at a high arbitrary figure before the French syndicate commenced operations. Every one in the trade, except some brokers and some consumers, would regret to see the syndicate fail in its control. The wild speculation which has set in in copper mine stocks makes it necessary for the ENGINEERING AND MINING JOURNAL to point out some very formidable rocks which lie in the stream ahead of the syndicate, and to foreshadow the results which may possibly come to the over sanguine investors in copper shares.

Within the year stocks of copper abroad have more than doubled, and most of the Montana and much of the Lake copper is being stored in this country, so that the load (estimated at about 110,000 tons) is becoming very heavy and is steadily increasing.

While the present prices are maintained, new mines will be opened with feverish haste, and already dribbles of copper are coming in from several new sources. These dribbles will before long grow into rivulets, and, should the syndicate maintain prices where they are, the rivulets will become torrents which no combination of even ROTHSCHILDS can stem or absorb. No doubt, a reduction in the output of the present large producers—which we are told is to be brought about by an advance in their contract price—would bring temporary relief and postpone the evil day, but there can be no permanent safety to the syndicate, and with it, to the producers and shareholders, in anything short of such a reduction in prices as will lessen the opening of new mines and the output of old mines which are not limited by contract.

The basis of the syndicate contracts in this country has been generally 13 cents per pound, which, we are told, is to be increased to 13 1/2 cents as an offset to a reduction in output. But 13 1/2 cents would leave no profit to the syndicate, so the market price will have to be put above this. Yet, even at 13 1/2 to 15 cents for Lake, and, say, £70 for Chili Bars, new mines will be opened at an extraordinary rate in this country, in Canada, in Mexico and several South American countries, in Australasia, in Africa, in Japan, and in other lands, so that long before the expiration of the ten or twelve years now spoken of as the duration of the contracts, and probably before the expiration of the three years of the existing agreements, the new mines would be able to supply most of the world's requirements.

It is not difficult to imagine the inevitable consequence of such a state of affairs. In the interest of investors in copper shares, of the trade, and of the syndicate itself, we believe it our duty to point out the dangers which await all under the continuance of the high prices now ruling, or of those that are foreshadowed in the proposed new arrangement.

The investors in copper shares who are buying those quoted in Boston at figures which would represent a value of some \$60,000,000, may well consider the outlook for the future in estimating the basis of real values.

CORRESPONDENCE.

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

Manufacture of Iron in Mexico.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Referring to a letter signed W. G. S., which appeared in your issue, No. 14, October 6th, I beg to say that besides the Old Durango works there has been in operation for nearly three years a blast-furnace at Zimapan, in the State of Morelos. They turn out a fair grade of iron, flat and round bars. It sells readily in Middle and Southern Mexico.

In this State good iron ore exists in large bodies, Hematite and Limonite. The latter, which I have been using as flux in lead smelting, averages 55 per cent Fe. Good coke costs here \$19. Mexican silver (\$12.50 United States currency); coal, \$9.50, United States currency.

Bar iron sells in Chihuahua, for from 7 to 8 cents per pound, United States currency. Charcoal scarce and dear. A. G. CHIHUAHUA, Mex., Oct. 13, 1888.

Electric Lighting in Mines.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I am much encouraged by the views expressed in the ENGINEERING AND MINING JOURNAL. The few obstacles in the way of adapting the incandescent light to the illumination of mines can, and will no doubt, be promptly removed. The chief among these is cost. This may be largely reduced in coking collieries by utilizing the gas from the coke ovens for making steam, not only for the power required for the dynamos for lighting, but for haulage and hoisting also, in which considerable progress has already been made. For adaptation in the anthracite and non-coking coal regions, ingenuity will, no doubt, accomplish the necessary reduction of cost to insure its ultimate adoption. I propose the application of the incandescent light, not only to mine-ways, but to rooms and headings also, using for this purpose a thick annealed bulb, to prevent breakage by concussion, with a steel wire guard and reflector. One lamp of thirty candle power placed thirty feet distance, with a suitable reflector, would illumine the face of a twenty foot breast, and the intervening space, in the most perfect manner, and could be arranged to be advanced from time to time. The labor would thus be changed from one in semi-darkness into one comparative with daylight, free from the exhalations of burning oil around the head of the miner, and beyond the reach of a "blower" which the head lamp would set ablaze. Of course the advantage of the system, like most modern appliances, would no doubt be to some extent commensurate with the magnitude of the mining operations; but, as previously stated, its adoption is a question chiefly of cost, and it is only with the hope of directing the ingenuity of our electricians into this field of usefulness, which is great, that my suggestions and inquiries have been made. It should, I think, be the aim of the engineer to impart the greatest possible efficiency to the labor that comes under his charge. This can obviously be accomplished by improving the conditions under which that labor is to be performed. If improving those conditions be attended with an amelioration of the life of the laborer, it becomes also a progress of humanitarianism. We may therefore exercise both economy and humanity. All properly conducted operations require the one, and labor has a right to the other. CORDOVA, Ala. HIRAM HAINES.

The Harney Peak Tin Prospects.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I received yesterday anonymously a dozen or more papers all containing marked articles treating upon the Black Hills tin claims, and among them were five copies of the London Mining Journal, which pretend to give "the truth about the Harney Peak Tin Deposits;" also Professor Vincent's report on these notoriously embryonic mines, which I have taken time to read.

The London Mining Journal of the 6th inst. has done me the honor to republish my communication to the ENGINEERING AND MINING JOURNAL of the 15th ultimo, in its efforts "to establish beyond dispute to the minds of reasonable business men the payable character of the tin deposits in the Harney Peak District of Dakota."

Now, I object most earnestly to such a use of the letter in question, because it was intended simply and solely to treat upon the value of labor. It had nothing to do with the merits or demerits of the Harney Peak scheme, excepting in so far as it treated upon the question of labor alone. To be arrayed, even innocently, on the side of those who are endeavoring to perpetrate what is commonly and reasonably believed to be a fraud upon the British public demands this protest, and I trust you will permit me to use the columns of the ENGINEERING AND MINING JOURNAL in making it.

My reasons for joining in the belief that the Harney Peak mines (?) are not all that is claimed for them by those who are interested in their sale are: first, because of disinterested information obtained from miners who have worked on some of the claims, and from friends who have examined some of the deposits professionally; second, because Professor Vincent's report itself practically condemns the property, as a remunerative investment, on the basis of the present showing of ore.

A perusal of this report by one who can honestly say "Aye" to the Cornishman's question, "Do 'e know tin," supplemented by an examination of the nondescript ore that is found in the Black Hills, can lead to but one honest opinion, and that is this: tin ore, possibly, will be found there in "payable" quantities; it even may be said to be probable, but, so far, all the developments made disclose nothing but indications.

It is true that a considerable quantity of ore has been collected together, and some has been shipped to England, but in what manner this ore has been obtained, and what expenditure it represents, is presumably beyond the power of Prof. Vincent to state of his own knowledge.

His entire report of 120 pages is, to my mind, condensed into less than three lines on page 68, and which I will quote: "Your properties, con-

sidered as a whole are, in my opinion, capable of furnishing tin on a degree of magnitude difficult to compute" (the italics are mine). This opinion may be considered highly favorable by the would-be vendors of the property, but the British public would be safer in taking the opposite view.

In comparing the Black Hills deposits with those of other districts Prof. Vincent speaks only of the general geological characteristics of the enclosing or country rock; it would be interesting to know what similarity he has discovered between the "granitic" or "greisens" dykes, which he calls veins, of the Black Hills and the lodes of Cornwall. Before me, on my desk, are two pieces of ore, one was a part of a shipment from the Black Hills to England, the other came from the Dolcoath mine, Cornwall; and it would be difficult to imagine two more dissimilar pieces of tin ore; and each is characteristic of the district from whence it came.

Though it may be foreign to the subject matter of this letter, permit me to say a word in regard to Mr. Thos. H. White, of Deadwood, whose letters to the London *Financial News* so effectually checked the progress of the (then) pending negotiations for the sale of the Harney Peak claims. I ask this because the London *Sunday Times* of the 9th ult., one of the papers sent me, contains an article greatly derogatory to his character, and which is as contemptible as it is unjust.

I have a personal acquaintance with Mr. White, but we have not now, nor have we had, any interests in common. My intercourse with him gave me sufficient reasons for believing his subsequent removal from the position of deputy United States Mineral Surveyor was a most unwarranted act, and was undoubtedly caused by spite on the part of those closely connected with the Harney Peak Company, because he dared to tell the truth, and honestly endeavored to prevent a sale for \$10,000,000 of a lot of "favorable indications," "encouraging character," "well situated for working," "appearances would lead one to suppose," "evidently of great productive power and value," etc., etc., *ad nauseam*. All honor to brave Tom White!

Finally it is not unreasonable to say that if tin ore was known to exist in the Black Hills in the quantities and of the richness that the Harney Peak crowd would like the London public to believe, the roar of the stamp-mill would now be heard where all is stillness save for the sound of the pick of the lonely prospector, or an occasional shot, perhaps, of those who are employed to do compulsory assessment work on the claims of the Harney Peak Company that are being held for the benefit (?) of our English cousins.

If the London *Mining Journal* is sincere and honest in its expressed desire to tell "the truth about the Harney Peak tin deposits" it will accord to this communication at least as prominent a place in its columns as was given to my little note on labor.

NEW YORK, 32 Liberty street, Oct. 17.

W. DE L. BENEDICT.

MINERAL RESOURCES OF NICARAGUA.

In our issue of September 29th we referred to the land grant of 1,000,000 of acres which the government of Nicaragua has agreed to give in aid of the construction of the Canal, as a valuable asset after the completion of the work. We may with safety go further than this, and assert that this land becomes a very valuable property to the Canal company from the date of the commencement of the work.

By the terms of the concession the Canal company can at its option select mineral land, carrying with it the right to the minerals, and, as this description of property is likely to be first benefited by the improved communication which even the commencement of the canal works will bring about, there is no doubt that some valuable mining property will pass into the ownership of the company. As this will virtually be opening up a new field for the engineering profession and adventurous miners and investors of this country, we give the following interesting extract from the work of Mr. E. G. Squier, formerly Charge d'Affaires of the United States to the Republics of Central America, being the best published authority on Nicaragua. Since Mr. Squier's residence in the country, however, we are under the impression that some development has taken place in the mining industries, and we know of one English company with a capital of \$500,000 which has been operating in the Chontales district for a number of years.

The northern districts of Nicaragua, viz.: Segovia, Matagalpa, and Chontales, adjoin the great metalliferous mountain regions of Honduras, with which they correspond in climate, and with which they are geologically connected. They are rich in gold, silver, copper, iron and lead, the ores of which are abundant and readily worked. Under the crown, the mines of these districts yielded large returns, but they have now greatly diminished, and, unless taken up by foreign enterprise, capital and intelligence, are likely to fall into insignificance. No data exist for estimating the present value of their produce, but it probably does not exceed \$250,000 annually.

The mines most celebrated are those in the vicinity of the towns of Depilto and Maqueliiso, in Segovia. There are here more than a hundred veins or veins, bearing different names. Most of them yield their ores in the form of sulphurets, bromides and chlorides. One, El Coquimbo, gives argentiferous sulphurets of antimony, a rare occurrence. The yield varies greatly, ranging from 40 to 1300 ounces to the ton. This mineral district is very well watered, abounds in pine and oak timber, produces readily wheat, potatoes, and many other of the fruits and grains of higher latitudes, and is, moreover, cool and salubrious. Nearly all of the streams to the eastward of the town of Nueva Segovia, falling from the mountains of Honduras into the Rio Coco, or Wanks, carry gold in their sands in greater or less quantities. The Indians, and a few adventurers from other parts of the State, carry on washings in a small and rude way, and consequently without any great aggregate result. In the neighborhood of Matagalpa, on the headwaters of the Rio Escondido, there are also gold washings, worked in like manner by the Indians. Here, too, are mines of silver, and several rich veins of copper ore, yielding, it is said, 25 per cent of the metal, with a fair percentage of silver in combination.

An English traveler named Byam, who seems to have visited Nicaragua

for mining purposes, states that the silver mines which he observed "were fine, broad, but rather irregular veins, the ore combined with sulphur and lead. The ore is hard, but clean." The copper ores, he informs us, "are almost uncombined with sulphur, or any other combination which requires calcining to be got rid of. They may all be smelted in a common blast-furnace, with the aid of equal quantities of iron-stone, which lies in large quantities on the surface of all the hilly country. They are what the Spanish miners call 'metal de color,' red and blue oxides and green carbonates, with now and then the brown or pigeon-breasted. They cut easily and smoothly with the knife, and yield from twenty-five to sixty per cent. The copper veins are generally vertical, and the larger ones run east and west."

In the district of Chontales, among the mountains separating the waters flowing into Lake Nicaragua from those falling into the Rio Escondido, the ores of gold are found in abundance. There are numerous evidences that the mines were largely worked by the aborigines. The metal occurs chiefly in quartz veins. Attempts were made in 1856-'57 to introduce proper machinery for crushing the rock and extracting the metal, but the political condition of the country has been such as to break up and discourage all enterprises of this kind. Whenever order shall be permanently established, Chontales will, no doubt, command increasing attention. Its accessibility from the shores of Lake Nicaragua, and through the navigable waters of the Rio Escondido, point it out as the region most favorable for mining establishments in Nicaragua. That portion bordering on the lake is chiefly undulating prairie ground, now only occupied by scattered cattle estates, but capable of supporting a large population, and furnishing unbounded supplies. It is stated that deposits of coal resembling anthracite have been found in Chontales, but the evidence upon that point is not conclusive.

Some explorations of "Indian River," flowing into the Caribbean Sea, on the Mosquito shore, a short distance above the port of San Juan, disclosed the fact that gold exists in that stream, as it does unquestionably in all the rivers falling from the mountains of Honduras into the Atlantic. It may be questioned, however, if the gold, except in peculiar localities, can be obtained in sufficient quantities to repay the cost and labor of obtaining it.

The methods of mining in Nicaragua, as in every other part of Central America, are exceedingly rude, and it is not surprising that the results are so often unsatisfactory.

APATITE MINING IN CANADA.

The importance which the mining of apatite or phosphate of lime has assumed in Canada makes the following description of the principal mines in Ottawa County interesting. The shipments of crude rock last year amounted to 23,690 tons, valued at \$319,815, and as at the present price of the mineral there seems to be a fair profit on the operations, and the deposits are undoubtedly large, the industry may be expected to expand considerably. The market for the product is principally in England so that it does not come at present into direct competition with our phosphate rock or coprolites from South Carolina. We take the description from the *Mining Review* of Ottawa:

The Emerald mine, one of the earliest opened, has been one of the most productive, and is worked on thoroughly scientific principles. It is situated some nine miles from Buckingham village, is owned by the Ottawa Phosphate Company, and has changed hands several times, each succeeding purchaser paying higher prices, the last sale clearing the owners over \$50,000, before any large works such as are now carried on there were undertaken. Drifts are now in the side of the hill to the main shaft, by means of which the refuse as well as the mineral are run out on tramways. The Little Rapids mine is a very valuable property, some three miles north of the previous mine. A large number of openings have been made on the property, all of which have yielded very good returns. Several deep shafts, two of them extending to a depth of over 200 feet each, have been sunk, and drifting carried on at various levels with great success. This mine is owned by Mr. W. A. Allan, of Ottawa. It is well equipped with the latest and most improved machinery. A well constructed tram-line from the pit's mouth to the river landing was built last year. The North Star mines, owned by an American company, contiguous to the previous mine, is yielding good returns for the outlay on them, and here a deep shaft of 600 feet has been sunk. All the above mentioned mines lie on the eastern bank of the Lievres River. Some eight miles further up, on the left or western bank, are to be found the High Rock mines. These are probably the most extensive of all, and belong to the Phosphate of Lime Company, of London, England, under the management of Mr. W. W. Pickford. The profits of the three years 18-2-3-4 were sufficient to cover all the outlay and to admit of a dividend of 25 per cent on the capital stock, besides setting apart \$10,000 as a reserve. The principal operations are conducted in their large tunnel, and as an instance of the abundance of this mineral in the workings at this point, it may be said that no later than on the 11th of June last, 55 tons of high grade ore were taken out from one blast. At present the yield is richer than at any previous time since the mines were first operated. A large number of openings are also being worked on different portions of the property. The annual output from these productive mines may be fairly stated as at 7000 tons per annum. Tramways along the face of the mountain, on which these works are situated, carry the refuse to points where it is easily dumped into ravines and so away from the site of any probable future openings. The offices and buildings for the miners' accommodation are scrupulously looked after, and the company has provided a reading room well supplied with books, papers and periodicals for their employees' use when not working. The number of men employed by this company ranges from 100 to 150. The Canadian Company's mines adjoin those owned by the High Rock people. This company was organized in London in the beginning of the present year with a capital of 110,000 shares at £1 each, and now operates the property formerly worked by the Union Company of New York. The property includes some 1285 acres, and embraces the Star Hill, Williams and Ruby mines. The latest machinery and the most modern practices are used; many new buildings have been erected, including a large cobbing house with revolving screens

and a wire rope tramway from the pit to the landing is at present under construction. The escarpment which forms the walls of this ravine shows the course of numerous veins of the mineral all trending eastward and running into the mountain, and the main works are carried on by literally quarrying the hillside, and cutting it away in solid masses. Three years ago on the site of the Canadian Company's mines there was nothing but rock and unbroken forest; to-day there are numerous dwellings, substantial offices and storerooms, tramways and good roads. The number of men employed here ranges from 100 to 125.

There are numerous other mines being worked all through the apatite district, especially in Templeton, where both Canadian and American capitalists are interested, and new mines are being opened. In the Templeton district may be mentioned the celebrated Blackburn mine, the oldest and most productive in this section, the Templeton and Blanche River Company, the Canada Industrial Company, the Anglo-Canadian Company, and Mr. Jackson Rae's mines. Extensive operations are also carried on at the Otty Lake mines, in Perth; by Mr. James Foxton and others at Sydenham; and also by Captain Boyd Smith and others in the Kingston district. The description given of the mines above mentioned, however, shows sufficiently the magnitude of the various enterprises.

The usual color of crystals is green. Some, however, approach white, while others are of a pink, yellow or violet tint, and others nearly black. The color appears to be purely accidental and is due to various impurities mechanically mixed with the minerals. Thus the red and brown varieties contain minute crystals of hematite; the blue and green, scales of chlorite, and the yellow and blue owe their tints to organic substances.

A wealthy American company commenced operations last year at the junction of the Lievres and Ottawa rivers for grinding and pulverizing crude phosphate, either for acid treatment or for use in the pulverized

ARKANSAS MINES.

State Geologist Dr. John C. Branner Answers the Boomers.

The following letters explain themselves. They fully confirm and justify the comments made on several occasions in the ENGINEERING AND MINING JOURNAL:

STATE OF ARKANSAS, EXECUTIVE OFFICE, LITTLE ROCK, Sept. 13.

Hon. John C. Branner, State Geologist:

SIR: Herewith I hand you copies of certain petitions and statements which I have received regarding your preliminary report upon some of the mining properties of the State. I shall be glad to have you give them the attention to which they are entitled. Yours respectfully,

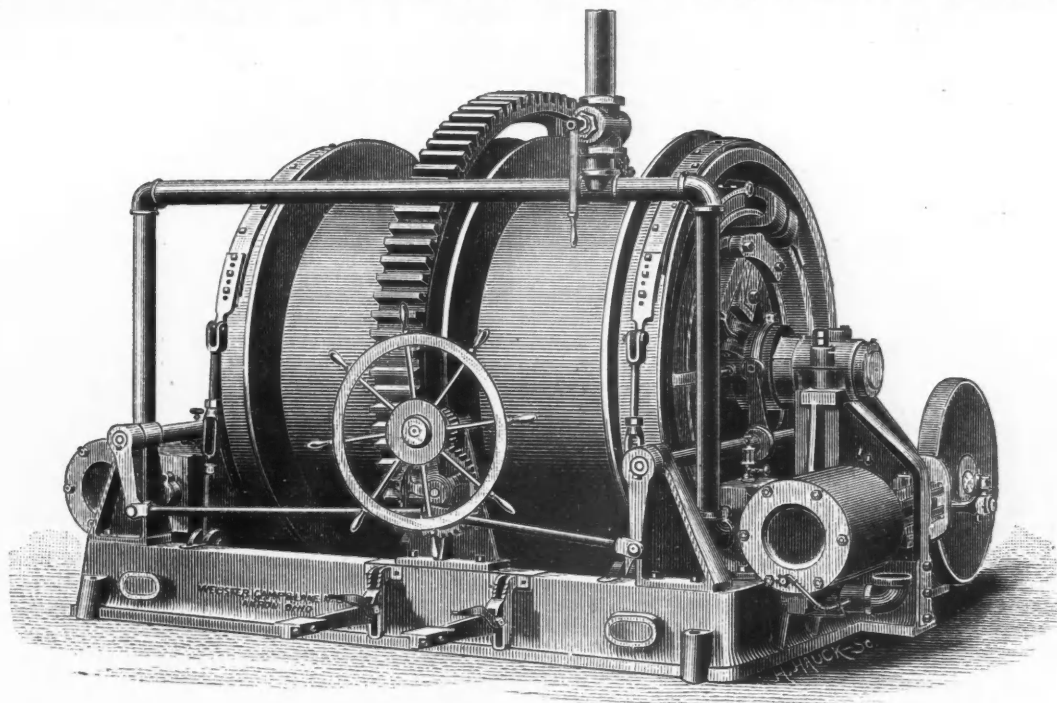
SIMON P. HUGHES, Governor of the State of Arkansas.

OFFICE OF THE GEOLOGICAL SURVEY OF ARKANSAS,
LITTLE ROCK, Ark., Oct. 15.

To His Excellency Hon. Simon P. Hughes, Governor of Arkansas:

SIR: In reply to yours of the 13th ult., inclosing documents containing complaints and charges against this survey and against the State geologist on account of the recent preliminary report upon the region in which mining for gold and silver has been prosecuted, the following is respectfully submitted:

The charges, as far as they are specific, are to the effect that the report is not based upon the personal observations of the State geologist; that the assistant charged with the work did not examine some of the properties reported as worthless; that his examination was too hasty to be trustworthy; that the survey's results do not agree with those of certain assayers; that sufficient time has not been allowed to develop the condemned properties; that the report



TAIL ROPE HAULAGE MACHINE.

state. These works are capable of grinding 50 tons per day, and an idea of the fineness of the work done may be formed from the fact that the powder has to pass through an 80 mesh bolt and blowers for separating the mica, leaving only a phenomenal quantity of that worthless and troublesome ingredient. The company have made arrangements by which the ground article can be delivered at cities along the south shore of Lake Erie, where all they can manufacture has been contracted for at a rate of freight of \$1.40 per ton.

IMPROVED TAIL ROPE HAULAGE MACHINE.

The accompanying illustration shows the latest improvements made in the Band Friction Tail-Rope Haulage Engines, made by the Webster, Camp & Lane Machine Co., of Akron, O. In general design it is similar to those formerly built by this company, having double engines connected to same shaft and mounted on one bed-plate. The two cast-iron drums are loose on shaft, having a driving friction gear keyed to shaft between them, and each drum having a driving disk keyed on shaft outside of drums. The drum bearings are filled with removable bushings of composition which may be removed without taking out drums.

The mode of operation is simplified greatly in the later machines by connecting the operating levers of the two loose clutches, either one or the other of which can be thrown in, but not both at the same instant, it never being necessary to do this with the tail rope system. The brake bands are each operated by foot levers placed in convenient position so that either brake may be set or released while operating the clutches. This simplifies the working of the machine very materially. This plant is very compact, a machine having 12-inch by 15-inch cylinders, and 60-inch diameter by 30-inch face drums, only occupying a space of 10 feet by 12 feet.

The stiff bed-plate, to which engines and drum housings are fastened by reamed bolts, renders it practically impossible for the machine to get out of alignment, and requires but little foundation. Plants larger than this have drums set forward of engines.

is harsh, hasty and sweeping to an unwarranted degree; that it will cause certain government lands to be withdrawn from entry under mineral laws; that it will cause capitalists to hesitate about investing in Arkansas; that a former statement to the effect that the report upon the region in question would be important was misleading; that no mention is made of certain minerals known to occur in the State, and that persons engaged in legitimate mining are "denounced as swindlers, thieves and frauds." I shall take up these complaints and charges in their order.

1st. That the State geologist never having visited the mines mentioned, the report is not based upon his personal observation. It is manifestly impossible for the State geologist to do all the work of the survey. Assistants are wisely provided for, and have been selected with a view to obtaining the services of persons best fitted to do the work entrusted to them. To examine the districts said to yield gold and silver Professor Comstock was selected as the one who, by acquaintance with the geology of hot spring regions, and by years of experience as an expert mining engineer of high standing, was best qualified to perform the work. As long as the work is properly done, it is of but little importance whether it is done by the State geologist or by one of his assistants. Had the report been signed by the assistant geologist instead of by the State geologist, the dissatisfaction would have been none the less dissatisfied.

2d. That the assistant who was charged with the examination of the mines did not visit several of those mentioned. This statement is false. Professor Comstock visited and examined every property mentioned in the report. In one single case, that of the Silver World, the conclusions are based upon the knowledge of the geology of the surrounding country and upon the ore which had been taken from the mine. This mine was closed by the sheriff, but Professor Comstock had the benefit of the foreman's intimate knowledge, and from him learned the location of each ore streak. The deductions, however, are those of Professor Comstock, who did not rest satisfied with his observations at the mine, but traced the formations for long distances. His proofs are clear, and his detailed report leaves no room for doubting his conclusions.

3. That the examination made was too hasty to be relied upon in deciding questions of so much importance. The value of an examination

does not always depend upon the time employed in making it. There are those who might spend ten years in a given region without being able to furnish trustworthy information regarding its geological structure or its value for mining purposes, and there are others who can decide these matters after a brief but careful inspection in connection with the study of their collections. Much depends, however, upon the character of the country. In cases where there are values, as for instance, in the Silver City District, but where it is not clear whether they are sufficient to warrant development, the determination of worth becomes a matter requiring more time and prospecting. But in a region so palpably deficient in gold and silver as those reported to have no value the problem is very simple.

4. *That the results reported by this survey do not agree with those of certain assayers who have examined material from these mines* These favorable results are said to come from Prof. W. B. Potter, of St. Louis; E. C. Jewett, U. S. Assayer, St. Louis; E. E. Burlingame, of Denver; the Assayer of the Bank of England, and from many others, as well as from several reduction works. This leads us to inquire into the responsibility of assayers and of milling and reduction works in determining the values of mines.

I should say, in the first place, that there is a grave misapprehension among many people about the value of "specimens" or samples in determining the value of mining property. No judicious business man thinks for one moment of buying mining properties on the strength of samples shown him by interested parties. The report of a reliable mining engineer is worth more to him than any quantity of samples which, for aught he knows, may have come from anywhere else than from the property they are said to represent, while assays of such samples are equally useless without an absolute knowledge of the source, quantity and accessibility of the material.

As to the stress laid upon the high values reported by various authorities from material sent, or said to have been sent, from the properties mentioned in my report, I may say that no reputable assayer will claim that assays alone can determine the value of mining properties. The limits of an assayer's responsibility are perfectly well understood by most people, but in order to show those who are inclined to believe that such assays alone are decisive, that their reports cannot possibly, taken alone, determine the values of these properties, I quote from letters from some of the very gentlemen, whose certificates, it is claimed, show that the survey's conclusions are erroneous:

Prof. W. B. Potter, of St. Louis, Mo., under date of August 27th, 1888, writes: "During the past five or six years, and especially during the past year, a large number of samples have been assayed in my laboratory, which, according to the statements of the parties submitting them for examination, have come from the State of Arkansas. Of course I have no knowledge whatever concerning the locality from which the samples have come beyond the statement of these parties. A few of the many samples submitted to me as above were found to contain some gold and silver. Whether they came from the State of Arkansas or some other locality, I have no knowledge whatever. In making and reporting assays of samples submitted to me my responsibility is limited entirely to the accuracy of the assay of the particular sample submitted, and does not extend in any sense to an opinion, either of the locality from which the sample has really come, or to the value of the sample as fairly representing the ore to be obtained in commercial quantities from any mine or deposit."

Mr. Eliot C. Jewett, United States Assayer at St. Louis, who is also quoted, writes under date of August 29th, 1888: "The only responsibility which I conceive that I assume in assaying an ore is to make that assay carefully and accurately. It is manifestly impossible for an assayer to know whether the sample handed him comes from the mine whose name is marked on it, unless he has himself been employed to procure it, which is rarely the case, as you know."

Certificates by E. E. Burlingame, of Denver, are also cited as substantiating the claims made for some of these mines. Under date of August 31st, Mr. Burlingame writes: "I neither assume any responsibility or pass an opinion upon the value of a piece of mining property, except where I take my own samples and make my own examination. Because, 1st, I do not know positively whether the samples come from the property represented; 2d, I do not know that they represent a fair average; 3d, quantity is just as essential as quality in determining the value of a piece of property, and without a personal examination I would have to take the word of other parties."

All trustworthy assayers hold the same opinions as those expressed by these gentlemen. Reducing, smelting and milling works are in a precisely similar position, except that in milling tests larger quantities are dealt with. There are no means of knowing where the material submitted comes from, how much there is of it, or whether it has been "salted" before reaching them. Such tests can be relied upon only when the runs are too large to admit of salting, as, for example, when hundreds of tons have been treated. The only reliable test is the report of a competent and disinterested mining engineer after the necessary examinations and assays of his samples made by capable and honest assayers.

5th. *That although the condemned districts have not yet yielded important values, it requires many years to develop such a region, the statement being made, as extenuating the case, that it required fifteen years or more each for the Leadville and the Comstock districts to produce a carload of bullion.* Whether a district, after several years of work, has or has not yielded returns is a question which should properly command the attention of investors. This phase of the case, however, has been entirely neglected in this survey's endeavor to ascertain the status of the properties in question. As to comparing the Hot Springs and Bear City districts with those of Leadville and the Comstock, we have not thought of doing so. A carload of bullion, too, is an unnecessarily large standard of measurement, for a 40,000 pound carload of gold is worth \$12,340,000.*

6th. *That the report is harsh, hasty and sweeping to an unwarranted degree.* The statement that "the geology of the State is not favorable

for the production of the precious metals" is the only one in the report which can be regarded as sweeping. Inasmuch as the statement was made in the presence of the recognized possibility of the Silver City and Kellogg districts yielding silver in paying quantities, this objection seems hypercritical. The occurrence of silver in a few places in the State, however, does not conflict with the general fact the geology of the State as a whole is not favorable to its production.

As to the haste with which the report was made, I may say that Professor Comstock entered upon his duties June 28th, 1887, and that the examination of his material and the study of the facts obtained by him have occupied his time since his field work ended September, 1887. Not a single property has been reported upon without having received a careful preliminary survey as was necessary to determine its status. The charge of harshness I shall refer to under the 11th head.

7th. *That the report will cause certain government lands to be withdrawn from entry under mineral laws.* The classification and entry of lands under mineral laws is a matter with which the State geologist has nothing whatever to do. The United States Land Commissioner has his own agents, who decide such questions, as far as I am aware, independently of the conclusions of this survey.

8th. *That it will make capitalists hesitate about investing in other mines of the State.* Capitalists will never be wanting to put money into legitimate enterprises of any kind in this State so long as they feel assured they are being honestly dealt with, and that they can depend upon the statements of those from whom they have a right to expect the straightforward truth. The duty of the State geologist is done when he publishes the facts as he finds them. Arkansas has nothing to gain by concealing the truth, and nothing to lose by publishing it, but she has much to lose by false and extravagant representation.

We have in this State a great many promising fields for intelligent investment in mining operations, but we have been so overshadowed by questionable speculations that legitimate operations have, very naturally, been looked upon with suspicion by capitalists. It is only by the united efforts of good citizens in discouraging such schemes that worthy enterprises can be built up.

9th. *It is objected that a former statement to the effect that the report upon these mines was important was misleading.* The statement referred to occurs in the first annual report, and is as follows: "His (Comstock's) report * * * promises to be of interest and value to the State and to capitalists." Let those who were anticipating investing in the Bear City and Hot Springs mines say whether the report is valuable to them. Those who disregarded the announcement made by the survey will know later whether the report might have been of value to them. This value is, of course, a negative one, but it is value none the less.

10th. *That the report omits to mention several minerals which occur in this State in commercial quantities, and that such omission will lead the world to suppose that they do not exist here.* I did not undertake, and no one seriously believes for a moment that I undertook, in the report referred to, to publish a complete list of all the sources of revenue in the State.

11th. *That the State geologist "has denounced as swindlers, thieves and frauds" persons engaged in legitimate mining operations.* If there are those who believe that my report contains a single word which is disrespectful to the miners of the State, they are asked to read it. If there is a class of persons concerned in this matter for whom I have profound sympathy it is the miners—the men who, for years, have been sinking their all, impoverishing themselves and their families, in digging useless holes in the ground. That the values reported from the properties mentioned in my report as worthless have been the result of "salting," no candid person can, with the testimony before him, doubt. Who did it? Surely those who are mining in earnest could have no object in salting themselves. Do the miners and those who have put money into these mines wish to know who are responsible for the false returns? If so, let them read it on pages 63 and 64 of the ENGINEERING AND MINING JOURNAL of July 28th, 1888, or the same documents republished in the *Arkansas Gazette* of August 9th. It is there shown by documentary evidence how two of the most prominent assayers of the Bear City district were detected at salting Arkansas "ores." If one of them still doubts, it is because he doesn't intend to be convinced.

If, to any citizen who is identified with the interests and good repute of this State, the report appears harsh to an unwarranted degree, it is because he is not aware of the extent and character of the evidence in my possession, showing how the fair name of Arkansas has been traduced and traded upon. When the honor of one's household is assailed, mild terms do not meet the requirements of the case.

But while the above complaints are worthy of respectful consideration and answers, I beg to suggest that in the main they have but little to do with the question at issue, namely: whether the mines referred to in my report do or do not yield gold or silver in paying quantities.

Now, a geologist is a judge and not an advocate. It is his duty to balance the evidence in cases submitted to him and to come to unbiased conclusions, such as are warranted by the evidence, regardless of whether those conclusions be the ones most desired or not. Whatever investigations are made by this survey are conducted, and will continue to be conducted, in this spirit. When the study of the region in question commenced there were many reasons for believing that these properties were valuable. Certainly the survey had and could have no motive for passing an adverse opinion upon them. If there was any temptation to deviate from the truth it was in the direction of a favorable report.

But the survey's study of the geology of the region, the examination of the formations said to yield precious metals, and the analyses and assays of the material therefrom led to the inevitable conclusion that those mines do not contain such values. Many of the persons concerned are evidently not convinced that the work done is to be trusted.

If it be admitted that the evidence considered was incomplete, that there is an error in the course of our reasoning, and that the conclusions of the survey are untrustworthy, it becomes important to know how correct ores can be reached.

If those interested are willing to pay the expense of another independent examination, it can be reached very easily and simply. Below are the names of eleven geologists and mining engineers, all of them of

* As a matter of fact the statement regarding the yield of the Comstock and Leadville mines is not correct. The Comstock produced \$48,000,000 of gold and silver during the first five years succeeding its discovery, while the Leadville mines, in the seven years from 1877, when its first smelter was built, to 1884, produced gold, silver and lead to the value of \$95,864,000.

the highest professional standing. Let the committees sent from Hot Springs and Bear City to protest against my report, or a committee of those concerned who will hold themselves responsible for the expenses of the investigation, select one or more of these men to examine and report upon the properties mentioned:

1. F. C. Blake, 61 Fourth Avenue, Pittsburg, Pa.
2. Geo. W. Mavnard, 35 Broadway, New York City.
3. James E. Mills, 2106 Van Ness Avenue, San Francisco, Cal.
4. Dr. J. S. Newberry, Columbia College, School of Mines, New York City.
5. E. E. Olcott, 10 Cedar street, New York City.
6. Prof. W. B. Potter, 1,225 Spruce street, St. Louis, Mo.
7. Prof. Raphael Pumpelly, Newport, R. I.
8. R. W. Raymond, 13 Burling slip, New York City.
9. Dr. P. de P. Ricketts, Columbia College School of Mines, New York City.
10. Chas. M. Rolker, 18 Broadway, New York.
11. R. P. Rothwell, 27 Park place, New York.

Whatever the results of this independent investigation may be, I shall be glad to publish them in the survey's reports. If it is shown that I have made a mistake, it will give me the greatest pleasure to correct it and to give the correction all possible publicity. I have the honor to remain your excellency's obedient servant,

JOHN C. BRANNER, State Geologist.

THE PEARSALL HYDRAULIC ENGINE.

By T. Wain-Mor an Draper, C.E., M.E.

The advisability of pumping water instead of obtaining the supply by gravity has often been suggested when the necessary water-power for the purpose of pumping is available. But the expense of the machinery

others had been in operation for more than a year. His design, however, was as expensive as a combination of turbines and pumps would have been, and it is therefore easily understood why the success which he attained has not led to the general use of his machinery. By the method of construction, devised by Mr. Pearsall, one machine of the same size as one of Sommeiler's will under the same circumstances do as much as ten of his machines did. This statement is startling, but it will be clearly seen by the explanation below that this is the fact. The defects which were discovered in the practical working of Sommeiler's machines have also been efficiently provided against.

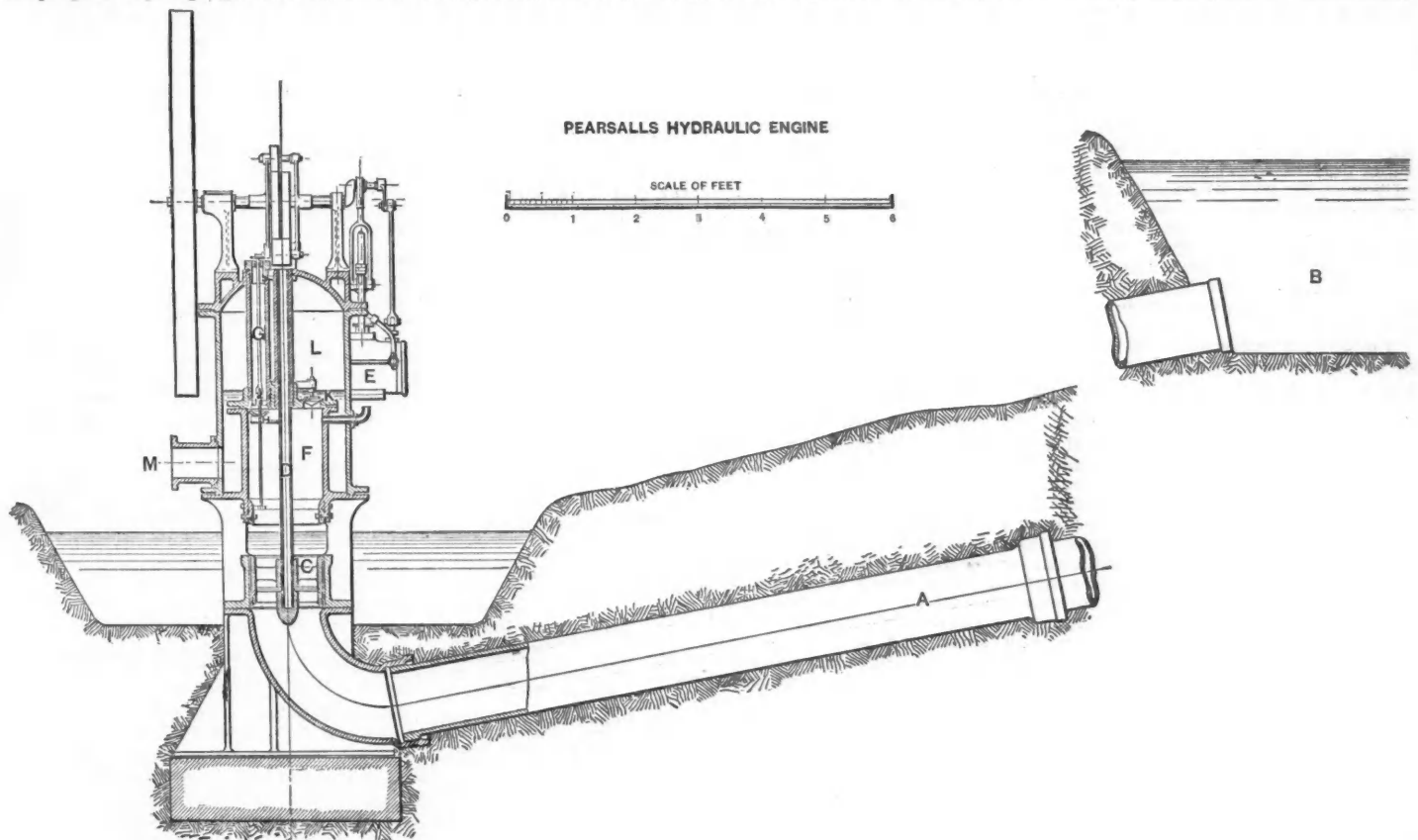
The machinery, in its perfected and practically working form, I shall here describe.

The engine acts on the principle of the hydraulic ram to the extent "that both obtain their pumping power by the arrest of a column of water, which has been previously set in motion by gravity."

The Pearsall engine differs so much in construction from the ram that the objections to which the latter is open are not applicable to the new machine. The ram cannot handle the quantities of water in question; the Pearsall engine is doing so successfully, and has been for some time.

The feature of rams, which has restricted them to a small size, is their violence. In the new machine this is not only reduced, but is absolutely done away with. It works as smoothly as a well-constructed engine.

By using the fundamental principle of the ram, we are able to do what we cannot do in any other way, pump water by the agency of water-power directly by one machine, instead of using turbines to obtain power, which turbines have then to drive pumps. Moreover, this one machine is a far simpler one than the pumps alone, which would otherwise be required, and as it works very slowly, it requires very few repairs. It is also more economical in the use of the water-power. The same power will do 50 per cent more pumping when used in these



and its complication, involving skilled attention and great wear and tear, has hitherto prevented a successful attainment.

It was a case of this kind in Colorado which led the inventor, Mr. H. D. Pearsall, C.E., to experiment. A large supply of water was required for an extensive placer mine, 300 feet above the level of the stream from which the supply was to be drawn.

The usual method would have been to take a ditch off from the river some miles up. In this case it would have been necessary to go 15 miles to get the required level. But the discharge of the river being very much greater than the supply required, it became a question whether it would not pay better to use this water power to pump the required quantity than to build a fifteen-mile canal and bring the water by gravitation.

The cost of pumping by turbines and power pumps was on investigation found to equal the cost of the canal. It then suggested itself to Mr. Pearsall that the pumping might be done on the principle of the hydraulic ram. On applying to the principal makers of rams in the United States and England, he found that they could not supply him with any such machinery on the scale required.

The greatest advance towards the true method of construction of such machines on a large scale was made by the celebrated engineer Sommeiler, in the machinery he made for the Mount Ceniz Tunnel. His design was a great departure from all other types of rams, and avoided their chief defects. It proved the possibility of using the principle on the largest scale, and his designs had sufficient success to cause the erection of twenty large machines, ten of which were erected after the

machines than it will do when used by means of turbines and pumps, as the efficiency is higher.

The Pearsall engine has other advantages of great importance. It will work with very dirty water. The head of water used and its quantity, may vary considerably, even during working, without affecting the result. The wear and tear is very slight. Little supervision is required.

The drawing shows the present construction: A is the flow-pipe, which conducts water from the source of supply B to the engine. C is the main valve. The water flowing down the flow-pipe freely escapes through valve C when it is open, as shown in the figure. D is a rod attached to C, and by which C is moved up and down at proper intervals of time, by means of the motor E described further on. F is a chamber or receiver immediately above the valve C and at the period of the stroke of the engine which is represented in the figure, this chamber contains only air and communicates freely with the atmosphere by the pipe G. At the base of pipe G there is a valve which carries a float H.

The whole of this arrangement is supplementary to the valve C, as will be seen below, and forms a contrivance by which the valve C can close without checking the flow of water during the act of closing.

When the main valve C is raised and closed, it of course shuts off the flow of water, but it does not interfere at all with the flow of the water until it is completely closed, because, until the chamber F is filled with water up to the float H, the valve J remains open, giving free communication between chamber F and the atmosphere; consequently the air freely escapes from the chamber and the water freely rises in the chamber. This action takes place during the closing of the main valve C. The con-

sequence is, that no power is wasted in forcing water through the narrow orifice, an effect which is always found with ordinary waste valves, and is the reason why great loss is caused if the valves are not shut instantaneously. A second consequence is that there is no necessity to close this valve with great rapidity (as in hydraulic rams). As a matter of fact it is closed by a gradually retarded motion, and so comes to rest without any concussion.

When the water touches the float *H* it closes the valve *J*, shutting off the passage for the escape of air; the pressure in chamber then rises to the point where the valves *K* open, and some of the water flows into the air vessel, from which it is of course constantly flowing through delivery pipe *M*. A little air still remains in the chamber. This air is compressed and enters the air vessel and is used to drive the motor which actuates the main valve. This motor is a small cylinder similar to that of an ordinary steam engine.

The column of water flowing in the flow-pipe is thus brought to rest entirely by the elastic resistance of air. When it has ceased to flow the main valve is again opened, the water, with which the chamber *F* is now filled, escapes, the air valve *J* falls open, admitting outside air, and the water again begins to flow and to escape through valve *C*.

The above description applies to an engine for raising or forcing water. When these engines are to be used for the compression of air, the chamber *F* is much larger and the float *H* is placed lower, so that the air valve *J* is closed while there is still much air left in chamber *F*. The momentum of the water then compresses this air and forces it into the air vessel.

By means of the exact regulation of the position of the float *H*, which is attained by the screw *P*, the quantity of air retained in chamber *F* is made exactly equal to that which the power of the water is able to compress, and thus the water is caused to come to rest at the moment when all the air has been forced into the air vessel, and so no water but only air enters the air vessel.

Other modifications of the construction admit of the pumping of other water than the power water, and for using only a part of the head of water which is available. For example, using water from a main having a pressure of 100 feet, 20 feet may be used of this pressure, and the waste water still have a pressure of 80 feet.

These machines are available whenever any considerable water-power is to be utilized either for raising or forcing liquids, or for compressing air. They also afford a good means for obtaining motive power for any other purpose where the power is required at a distance from the source of power, the power being transmitted either by water under pressure, or by compressed air. The arrangement also constitutes an inexpensive means of utilizing water power which is not constant in its action, such as tidal power. From the small cost of very large pumping machinery on this plan, a large quantity of tidal water may be passed through such a machine at extreme high and low tides, raising part of such water to a reservoir on any convenient elevation, whence a constant water-power may be drawn.

I repeat that a considerable variation of head and quantity of supply, even during the working, does not affect the efficiency, and if these factors vary inversely at the same time, the quantity and pressure of water pumped remains the same.

It is not necessary that the water-power should be near by, as compressed air in pipes can be conveyed considerable distances; this would make the engine of great use in mining and rock tunneling.

The following circumstances, among many others, occur in practice where this system can be advantageously applied.

1. *Raising or Forcing Water.*—Filling a high level reservoir from a stream at a low level. In supplying a district with water, instead of all the supply being at a pressure sufficient for the highest parts of the district, the water used in the lower parts may sometimes economically force water to the higher parts. Raising sewage—as for sewage farms. Irrigation above the level of adjacent waters. Draining swamps. Utilizing tidal power. The discharge from locks may be used in the same way. Supplying hydraulic machinery, cranes, etc., from a stream of water with a moderate fall, or from service mains. Similarly supplying fountains. Supplying high-pressure water at any desired elevation for hydraulic mining, without the necessity for the long and expensive ditches or canals, which have hitherto been unavoidable.

2. *Compressing or Exhausting Air.*—For working rock-drills. Shone's sewage system. Ventilation, as for mines. Refrigeration. Blast-furnaces.

3. *Motive Power.*—Compressing air for tramway engines. Using a fall of water to force either water or compressed air to a distance for use in water-pressure or air engines. It is well known that the greatest hindrance to use of water-power for motive purposes hitherto has been that "it exists in the localities where nature has placed it, and not in places where it can be most conveniently used," and that if the transmission of energy were easier, the importance and value of water-power would be greatly increased. This machinery so readily converts the force of falling water into a form which can conveniently be transmitted to a distance that there is no doubt many water-powers will be utilized which are now running to waste.

Mr. Schönheyder, one of the ablest mechanical and hydraulic engineers in England, thus expresses himself in writing to Mr. Pearsall, after examining several times the hydraulic engine in operation at Wolverhampton.

"From the mode of construction and action of the engine, and its adaptability to varying conditions, it is evident that it should find application for many of the various purposes suggested by you; it should also be extremely durable on account of the absence of shocks or vibrations, and its efficiency should be high, as the losses which exist are few and of small account. It is entirely self-acting, and only requires occasional inspection for oiling, &c. The tests I made convinced me that, as compared with turbines or water-wheels combined with pumps (for air or water), it will have enormous advantages both in first cost and in the percentage of power utilized, as well as in respect of wear and tear."

Speculation in Electric Sugar Shares.—Electric sugar shares still remain at a high figure in Liverpool. They closed recently at 86½ for the £20 share, and as much as £20 per share is bid for the call at 86 to the end of November.

Railroad Construction in Japan.—The Governor of Yokohama is negotiating with Austro-Hungarian Lloyd Company for the transport of railway material to be bought in Austria for a railway line which will be constructed in one of the provinces of Japan. The line will be 125 miles long, and is to cost \$3,800,000.

State Action to Annul Trusts.—Judge O'Brien, of New York, on October 8th granted permission to Attorney General Charles F. Tabor to bring action against Havemeyer & Elder, sugar refining company, to annul its charter, upon the ground that it has violated the act under which it was incorporated and has exercised privileges and franchises not conferred upon it by law. This company, with thirteen others, is a member of a sugar trust combination.

The Great Log Raft Scheme.—Mr. Leary has instructed his agent, Angus McDonald, to sell the timber used in frames and other materials on hand at the Finger Board, as he will build no more rafts. The expense of constructing and then of breaking up the rafts, more than the cost of transporting, renders the big raft system more expensive than vessels. In our issue of August 18th we referred to the safe arrival of the great raft launched July 28th.

Prize for an Electric Meter.—The Municipal Council of Paris offer a prize of 10,000 francs to the inventor of an electric meter giving entire satisfaction, and five prizes, of 2000 francs each, to the five whose meters have made the most progress. Should a meter only be suitable for measuring one kind of current only half the prize will be given. The city of Paris is to have the right to manufacture for its own use free of royalty any of the meters to which prizes are awarded.

The Compressed Carbonic Acid Gas Industry in Germany, in consequence of the running out of the patent rights two years ago, is now worked in ten factories instead of in two as formerly. The Berlin Limited Company, the first of the kind, which has also works on the Rhine, has an annual sale of about 500,000 kilos; of the compressed gas about 70,000 kilos, are used in Berlin daily. The price, with the increased competition, has fallen from M. 16 for an 8 kilo. bottle to M. 7, and finally to M. 5.

A Toad in Solid Coal.—The correspondent of the *Colliery Guardian* reports a case which, if true, must be interesting to geologists. In the Coleford district of the Forest of Dean a small colliery has recently been opened, and while a collier was engaged in breaking up a fall of block coal he found a toad in the center. It seemed firmly embedded in the coal, and it was alive. Its form was imprinted upon the face of the mineral, and the animal is still living. The incident has occasioned much interest in the neighborhood.

The English Fast Train Record.—During the recent railway racing to Edinburgh and Glasgow the Northeastern Company made no change in their engines; the regular engines that had been on the Scotch service were used all the time, and in nearly all cases these were compound engines. They had a pretty heavy train throughout, and well filled with passengers and luggage. On the last day of the accelerated running they ran into Edinburgh thirty-four minutes before time; the run was done from Newcastle to Edinburgh—125 miles—in 128 minutes by compound engine No. 117. This is at the rate of 58·6 miles for the whole run, and beats the record.

PATENTS GRANTED BY THE UNITED STATES PATENT-OFFICE.

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

PATENTS GRANTED OCT. 16TH, 1888.

- 391,018. Apparatus for Burning Petroleum and other Liquid Hydrocarbons. Joseph W. Budd, New York, N. Y.
 391,034. Device for Refining Metallic Ores. Henry H. Eames, Baltimore, Md.
 391,070. Dynamo-Electric Machine. Myron W. Parrish and William R. Cole, Detroit, Mich., Assignors to the Parrish Bros. & Peck's Electrical Company, same place.
 391,071. Rotary Motor. Charles A. Parsons, Gateshead-on-Tyne, England.
 391,079. Pump. Clinton P. Rinker, McCook, Neb., Assignor of one half to Delos Griggs, same place.
 391,082. Grate. Zebadiah Sargent, Rochester, N. H., and Milton Chase and Alonzo W. Cram, Haverhill, Mass., Assignors to themselves and Samuel P. Bancroft, Swampscott, Mass.
 391,110. Manufacture of Sodium. Henry S. Blackmore, Mount Vernon, N. Y.
 391,114. Safety Attachment for Electric Motors. Charles F. Brush, Cleveland, Ohio.
 391,151. Ore-Heating Furnace. Albert C. Johnson, Wilmington, Del.
 391,157. Coal-Drill. Warren C. Johnson, Oskaloosa, Iowa.
 391,158. Apparatus for Making Chlorine. John A. Just, Syracuse, N. Y.
 391,159. Process of Making Chlorine. John A. Just, Syracuse, N. Y.
 391,179. Artificial Fuel. George S. Montgomery, Atlantic, Iowa.
 391,189. Oscillating Pump. Leon J. P. Pontallie, St. Malo, France.
 391,223. Chain Conveyor for handling Coal. Ambrose J. B. Berger, Philadelphia, Pa., Assignor to James M. Dodge, same place.
 391,229. Separator for Electric Batteries. Herbert W. Butler, Brixton, England. Assignor by mesne assignments to the Electric Accumulator Company, of New York.
 391,257. Ore-Concentrator. David H. Masters, Azotea, N. Mex.
 391,270. Dynamo-Electric Generator. Gustav Pfannkuche, Cleveland, Ohio, and Alfred Pfannkuche, Exeter, N. H.
 391,310. Furnace. George F. Gallagher, Rochester, N. Y., Assignor of one half to Thomas R. Moore, same place.
 391,319. Regulation of Electric Motors. Lander S. Harris, Detroit, Mich.
 391,320. Cut-Off for Steam Engines. Carl P. Henriksen, Prentiss Bay, Mich.
 391,335. Apparatus for Restoring the Spent Properties of Charcoal. Charles L. Porter, Chicago, Ill.
 391,338. Gas or Caloric Engine. Arthur Rollason, London, England.
 391,341. Concentrator. George W. Starr and Richard M. Kinley, Grass Valley, Cal.
 391,359. Steam-Boller. Patrick F. Dundon, San Francisco, Cal.
 391,360. Apparatus for Chloridizing Ores. Henry H. Eames, Baltimore, Md., Assignor to John J. Kelly, same place.
 391,361. Apparatus for Transferring Metal from One Set of Rolls to Another. David Evans and Arthur Harrison, Barrow-in-Furness, England.
 391,386. Process of Manufacturing Water-Gas. James M. Rose, Allegheny, Pa., Assignor to the Rose Gas Generator Company, of N. J.
 391,387. Apparatus for the Manufacture of Water-Gas. James M. Rose, Allegheny, Pa., Assignor to the Rose Gas Generator Company, of New Jersey.
 391,389 and 391,390. Feed-Water Heater. William H. Rushforth, Rutherford Park, N. J., Assignor to the Rushforth Feed-Water Heater Company, New York, N. Y., and Jersey City, N. J.

REISSUE.

10963. Feed-Water Purifier. Omar H. Jewell, Chicago, Ill., Assignor to the Jewell Pure Water Company, same place.

PERSONAL.

Mr. Courtney de Kalb, mining engineer, has gone to Virginia to examine gold mines in Fauquier County.

Mr. A. B. Gibson, of Messrs. Gibson Brothers, mining engineers, Honda, U. S. of Colombia, is on a visit in New York.

Mr. Gordon Abbott, of the firm of Messrs. Jere Abbott & Co., agents of the Société des Métaux at New York, sailed for Paris on the 13th inst.

Mr. George B. Wheeler, a well known civil engineer, formerly superintendent of the water-works, died at New Bedford, Mass., on the 14th inst.

Mr. William Church, for many years Resident Manager of the Detroit Copper Company, of Morenci, Arizona, has resigned and gone to Denver, Colo.

Mr. Thomas Wardell, a land owner and coal operator, was shot and instantly killed at Bevier, Mo., on the 12th inst., by a number of striking miners.

Professor J. E. Clayton, mining engineer, of Portland, Oregon, is at present examining the property of the Sierra Buttes Gold Mining Company of California.

Mr. Harvey Shaw, Secretary and Treasurer of the Barclay Coal Company, of Philadelphia, Pa., died in Morristown, Pa., on the 12th inst., aged seventy years.

Mr. Ottokar Hoffmann, mining engineer of Alameda, Cal., has gone to Cusibuirachic, Mexico, on professional business. He expects to return in about four weeks.

The proposed establishment of a National Institute of Mining Engineers in England is apparently not meeting with great favor by many of the leading professional men.

Professor Thomas Price, of San Francisco, Cal., has just returned from a professional tour through the mining districts of Oregon, Montana, Idaho, and Washington Territory.

Mr. Henry H. Derr, of Wilkes-Barre, Pa., died there on the 12th inst., aged fifty-nine years. Mr. Derr was a director in the Vulcan Iron Works, and interested in many other enterprises.

Mr. Thomas H. Leggett, mining engineer, has resigned the management of the Mudsill Mining Company, Limited, of Fairplay, Colo., and will shortly leave for the United States of Colombia.

Mr. Edward A. Greene, C.E., of Alexandria, Va., has resigned his office of Chief Engineer of the Zan'sville & Ohio River Railway, the Shawnee & Muskingum River Railway, and the New York & Shawnee Coal Company, to engage in contract work.

Mr. John W. Mackay left San Francisco for New York on the 13th inst. Mr. Mackay intends to be gone about 30 days. On his way back to San Francisco he will visit the mines of Quijotoa District, Ariz., in which he is interested, and which he has not inspected for several years.

Mr. Abraham K. Lissberger, a retired metal merchant of New York, died on the 11th inst., aged 57 years. He started a lead pipe manufactory in Boston and continued in that business till 1880, when, on account of poor health, he came to New York. In this city he was engaged in the metal business till a year ago, when he retired.

Dr. Francis Wyatt, Consulting and Analytical Chemist, of this city, has gone to Canada in the interest of a New York and Washington syndicate, to inspect pyrites mines in Sherbrook and phosphate mines in Buckingham, Province of Quebec. While there he will also plan and arrange for their works in Montreal. He can be addressed at the Windsor of that city.

Mr. Frank P. Davis, C.E., of Washington, D. C., has accepted the appointment of Professor of Civil Engineering in the Corcoran Scientific School of Columbian College, Washington. Mr. Davis was for several years an assistant engineer in the Sewer Department of Washington, and only recently returned from Nicaragua, where he was a division engineer on the survey of the proposed canal.

Prof. R. Kondo, of the Mining University of Japan, is about to visit Lake Superior, Mich., to examine the copper mines of this district. His principal desire is to obtain a thorough knowledge of the mining machinery used, and for this purpose he has visited California, Arizona, Nevada, and Colorado. After visiting the Lake Superior mines he will return home by way of England, France, and Germany.

The trustees of the Hoagland Laboratory, at Henry and Pacific streets, Brooklyn, N. Y., announce its completion and equipment for practical work. The lectures on bacteriology, already announced, will be postponed until the return of Dr. George M. Sternberg. Practical instruction will be given in bacteriology by George T. Kemp, Ph.D., of Johns Hopkins University, and Dr. Sternberg during the winter and spring.

The organization of the American Geological Society has resulted from the meeting of geologists that took place at the Cleveland meeting of the American Association for the Advancement of Science in August last. On that occasion a committee, consisting of Alexander Winchell, Professors John I. Stevenson, Charles H. Hitchcock, John R. Procter, and Edward Orton, was selected to prepare a provisional constitution, and before the close of the Cleveland meeting this was done and approved along with the by-laws for the regula-

tion of the society. Professor Stevenson, of the University of the City of New York, is the Secretary, to whom applications for fellowship should be addressed.

Mr. Benjamin B. Chamberlin, who had been ailing for some years, died suddenly at Nyack, N. Y., on the 13th inst., aged 57 years. Mr. Chamberlin was born at Keeseville, Maine, March 13th, 1831. He was the son of the Rev. Parmalee Chamberlin, a Methodist clergyman formerly well known in New York, and Governor Chamberlin and President Chamberlin, of Bowdoin College, sprang from the same family tree. He was graduated from the Irving Institute and also attended the Peekskill Military Academy, where, with General Adam Badeau, he carried off the honors for scholarship and general excellence. After leaving school he was apprenticed to Benj. J. Lossing, then an engraver in New York, and subsequently went to Cincinnati to embark in business for himself. Meeting with success, about 1865 he returned to New York, where the field was broader. At the time of Morgan's raid he served on the Home Guard for one year, but was retired on account of a slight deafness.

While in Cincinnati he turned his attention to collecting, his first hobby being medallions, and after his return to New York he took up the study of minerals, making a specialty of collecting those of New York and vicinity. For this work he had exceptional facilities, as the Fourth avenue improvement was then in progress, and blasting was going on in many parts of the city now built over. Such was his enthusiasm that he often neglected his business to watch the operations of the blasters. His researches extended into the suburbs, and his collection contained many fine specimens from the Delaware, Lackawanna & Western and West Shore tunnels, and from the mineral localities of Staten Island and Westchester County. He leaves one collection at the Nyack Library. His foreign collection he sold recently to Mr. Edward Pearson, for the new school at Cloudfand, N. J. The principal work of his life was his collection of New York Island minerals, now deposited in the American Museum of Natural History. His contributions to local mineralogy have been published from time to time in the Transactions of the New York Academy of Sciences, and during the past few months his paper on the Mineralogy of New York Island, a pamphlet of 25 pages, appeared in the Academy proceedings, and has been reprinted in separate form. He was a fellow and curator of the New York Academy of Sciences, treasurer and one of the founders of the New York Mineralogical Club, member of the Agassiz Association of Nyack and of the West End Literary and Scientific Society of New York. He was a man of considerable artistic talent, had exhibited pictures at the Academy of Design, and made a large number of paintings, both in water and oil, of interesting suburban scenery. As a sketcher, he was quick and accurate, and his keen sense of humor furnished no end of amusement to his many friends. He leaves albums filled with sketches made by him during his service at the time of Morgan's raid, and on his many jaunts in search of specimens.

He was very companionable, full of pleasing anecdotes and cheerful under all circumstances, even when suffering pain. Among the scientific, literary and aesthetic circles of New York he had hosts of friends.

INDUSTRIAL NOTES.

After a suspension of several months the large steel mill of the Pottsville Iron and Steel Company, Pottsville, Pa., started up on the 15th inst.

The Thompson Manufacturing Company, of Cleveland, O., are securing some of the Mexican trade in their specialty of "corrugated iron" for the roofs of buildings, having just shipped a car-load to Minas Prietas, Sonora, for stamp-mill and buildings.

It is reported that the Fort Wayne Jenny Electric Light Company, of Fort Wayne, Ind., has made arrangements for consolidation with the Thomson-Houston Company, of Boston. Mr. R. T. McDonald, general manager of the Fort Wayne Company, is said to be at the head of the movement.

The committee in charge of the construction of the Soldiers and Sailors' Monument, at the plaza entrance of Prospect Park, Brooklyn, N. Y., to which we referred in previous issues of the ENGINEERING AND MINING JOURNAL, opened thirty-seven designs on the 13th. A decision will not be made for some time, but the designs will be on exhibition in the rooms of the Park Commissioners in the City Hall of that city.

In the United States Circuit Court at Philadelphia, Pa., on the 16th inst., a verdict was given for the defendant in the test suits brought by John W. S. Earnshaw and Naylor & Co. against John Cadwalader as Collector of the Port to recover alleged excesses of customs duties on importations of iron ore. The point in dispute was whether in assessing the 75 cents duty per ton on iron ore an allowance ought not to be made for the moisture the ore contained.

Sir Henry Tyler, M. P., of London, England, President of the Grand Trunk road, has been discussing the work, with the other officers, of tunneling the St. Clair River from Port Huron to Sarnia. The tunnel will be a mile in length, and will cost \$2,500,000. The plant for boring and electric lighting is now on the ground, and the work will be completed within a year and a half. The Canadian Government is said to have given a bonus of \$375,000 toward the project.

The Magnetic Iron Ore and Steel Company, composed of capitalists from Atlanta and Birmingham

which was recently chartered in South Carolina, has just purchased for \$60,000 the greater part of the magnetic iron ore tract, near the town of Black's in York County, South Carolina. It was known that there was iron ore in this section, but nothing was done toward utilizing it until the Charleston, Cincinnati & Chicago road was run through there. The company will at once build a steel furnace and rolling mills, on the line of the Charleston, Cincinnati & Chicago Railroad.

GREAT FIELD FOR AMERICAN TRADE.—Col. Jacob T. Child, of Missouri, United States Minister to Siam, and who is now on a visit to this country, states that "the commerce with America has increased wonderfully in the last few years." All the petroleum used in Siam comes from America; the country is supplied with flour from San Francisco; much American machinery is used, and a great quantity of cotton and woollen fabrics bought. American goods are liked better than any others, as is proved by the fact that German and English manufacturers commonly counterfeit our trademark. There is a great field for American trade in Siam.

At the annual meeting of the stockholders of the firm of Carnegie Bros. & Co., in Pittsburg, Pa., on the 16th inst., Henry Phipps, Jr., resigned his position as Chairman; Vice-Chairman D. A. Stewart was elected Chairman; J. G. Leechman was elected Vice-Chairman. Mr. Phipps retains his interest in the firm, and retires from active duty for a period of rest. At a meeting of the stockholders of the firm of Carnegie, Phipps & Co., John Walker resigned the Chairmanship, and William L. Abbott was elected to succeed him. H. M. Curry was elected Vice-Chairman. Mr. Walker retains his business interest in the firm, but the cause for his retirement has not yet been announced.

The following extract from a note just received from one of the jurors of the Brussels Exhibition shows that though the number of American exhibitors was not as large as it should have been, the reputation of American artisans for ingenuity and talent was fully sustained by those who represented them. The writer, under date of the 5th of October, says: "I have just finished the duties of juror at the exhibition, and must let you hear of the returns. In the agricultural machines, on which division I was put, we got for the United States three diplomas of honor—the highest award—and one gold medal; in other words, a diploma of honor for each exhibitor but one, and he really only deserved the gold medal. The other exhibitors fared equally well, for out of 73 expositors, 54 got distinctions of greater or less degree. I think we have reason to congratulate ourselves."

CONTRACTING NOTES.

Our list of machinery and supplies wanted will be found on page xiv. Manufacturers of machinery, engineers and contractors should consult our directory of "Contracts Open" on the same page. This week, proposals are invited for the following new contracts: No. 1126, Dredging; No. 1127, Removal of Ledge; No. 1128, Removal of Ledge; No. 1129, Dredging; No. 1130, Granite Ashlar; No. 1131, Dredging; No. 1132, Furnishing Wire Strand; No. 1133, Sewerage Construction; No. 1134, Construction of Viaduct; No. 1135, Water Works; No. 1136, Iron Railway; No. 1137, Bridges.

The town of Las Animas, Colo., has voted bonds, \$30,000, for water-works purposes, and we have been officially requested to call the attention of contractors and others to that fact. For further information, see Contracts Open, page xiv.

The Construction Committee of the Aqueduct Commission met in New York City on the 16th inst. and decided that O'Brien & Clark, the contractors, have been over paid \$316,414.75 in accordance with the opinion of the corporation counsel.

The longest electric railway in this country is now under contract. It is at Topeka, Kansas, and the Thomson-Houston Company has agreed to have five cars in operation by January 1st, 1889. The length of the road is 14 miles, and will require 50 cars for the whole system.

The Sprague Electric Railway and Motor Company of New York has closed another important contract, viz., for the electrical equipment of the Tacoma, Washington, Ter., Street Railroad. The system will be the Sprague overhead, and the cars will be lighted by electricity, and will be protected from lightning by improved lightning arresters.

GENERAL MINING NEWS.

Shipments of iron ore from the mines of the districts mentioned below for the season up to and including October 10th, as reported by the Marquette Mining Journal, were as follows:

	Tons.	Tons.
	1888.	1887.
Marquette, Marquette District	669,477	697,025
St. Ignace, " "	97,090	80,654
Escanaba, " "	661,859	743,511
Menominee District	884,960	976,675
Gogebic District	152,792	
Ashland, " "	880,268	930,316
Two Harbors, Vermillion District	327,439	330,464
Total tons	3,673,885	3,758,645

The certificate of consolidation of the Union Pacific, Lincoln & Colorado Railway Company in Kansas, representing a capital stock of \$20,000,000, and the

Union Pacific, Lincoln & Colorado Railway in Colorado, representing \$7,500,000 worth of stock, has been filed with the Secretary of the State of Colorado. The name of the new corporation is the Union Pacific, Lincoln & Colorado Railway Company. No increase of stock is made.

The Kansas company owned a number of lines starting from Salina, the main line of which was to extend to the west line of the State, while from either side various branches had been built, and some are still in course of construction. The Colorado company intersects its line with the Kansas company at the latter's western terminus in Arapahoe or Elbert County, running west to Denver, with a branch to Manitou, also a branch from the east line of Bent County, thence southwest through Pueblo and Fremont County to Canon City, with spurs running to the coal mines and stone quarries, thence south through Bent and Las Animas counties to the south line of the State.

The Manitoba road will begin November 10th a daily train service to Montana points, thereby entering the lists with the Northern Pacific on an equal footing. This step has been long contemplated, but was postponed from time to time because of the non-arrival of suitable equipment, especially in the matter of dining cars. Each train will be provided with regular sleepers, colonist sleepers, dining cars and first and second class coaches.

STANDARD OIL COMPANY.—The warehouses of this company, at Duluth, Minn., caught fire from sparks from a locomotive on the 16th inst., and were consumed, together with 22,000 barrels of oil and an oil train which had just been switched in. The loss is estimated at \$130,000.

ARIZONA.

PINAL COUNTY.

SILVER KING MINING COMPANY.—Official advices to us show that the production for September amounted to 102,088.59 fine ounces of silver.

TABLE MOUNTAIN.—This group of copper mines, situated some 70 miles north from Tucson, and which have been almost continuously worked for the preceding six years, have been sold to Col. John Weir, of New York. The group comprises six full claims, the Table Mountain, La Porte, New York, Greenville, Capital, and Bridwell mines. It lies on the eastern edge of Pinal County, in the Galiuro Mountains, and is beautifully situated, at an altitude of 5200 feet, in a thick growth of oak, juniper, and cedar trees. Springs of clear, cold water run out of every hill. The ores are oxide in character, carrying a high per cent in copper. Dr. Alexander Trippel has made an exhaustive report on the mines.

YAVAPAI COUNTY.

KAISER GOLD MINES, LIMITED.—This company has been organized in London, with a capital stock of £200,000, shares £1 each, to lease and operate a group of 12 gold mines, 11 of them 1500 feet by 600 feet, and one of them 1000 feet by 600 feet. Several veins traverse the lands. Four only have been worked to any extent, and these are known as the Talmadge, Conklin, Van Buren and Sherman mines, all on the Vulture Lode. The mines are all owned by Hon. Horace A. W. Tabor, of Denver, Colo., who guarantees the validity of the titles.

The mill and machinery, which are in working order and constantly running, comprise 80 stamps driven by an engine of 125 horse-power, with all requisite winding engines, and an engineer's shop, assay office, buildings, tools and plant. The original cost is stated to have exceeded \$50,000. The bullion averages 780 fine gold, worth \$16.50, or about £3 8s. per ounce. Until recently the free gold only has been saved, and the sulphurets have been allowed to pass away with the tailings. It is stated that there are upon the property tailings amounting to at least 300,000 tons, and that the average yield would exceed \$5 per ton.

The mines have been inspected and reported upon by Mr. Cyrus Gribble, M. E., and by Professor W. P. Blake, M. E. In order, however, to provide against the possibility of error, the directors have, with the entire concurrence of the vendor, arranged to take over and operate the mines for six months upon the following exceptional terms: (a) If within the period of six months the mines shall not, in the sole opinion of the directors, prove as valuable as represented by the vendor, they are empowered to call upon the vendor to reimburse the company all expenses of every kind and nature (so that the subscriptions may be returned in full to the shareholders), and should he fail to comply therewith within 30 days of a notice requiring him to do so, then the directors are empowered, to sell the mines, mining claims, plant, machinery, tools, stores, etc., by auction. (b) The balance realized by such sale (if any), after paying in full all and every expense incurred in and about the company, to be paid over to the vendor. (c) No part of the purchase consideration, either in cash or shares, to be paid to the vendor until the directors have finally determined to take over the property for the company. (d) The mines are to be operated by the company as from the 1st September instant, from which date all profits realized to belong exclusively to the company upon the directors finally electing to take over the property.

A contract has been entered into dated September 7th, 1888, between Hon. H. A. W. Tabor (the registered owner of the property) of the one part and the company of the other part, for a lease of all the real property for a period of 99 years, at a nominal yearly rent of £10 for each of the twelve claims, and for the sale of the equipments, all for the sum of £180,000, payable as to £15,000 in cash, and as to £66,666 in shares, and the balance, viz., £98,334, in cash or shares at the option of the directors.

The directors are the Right Hon. Lord Gifford,

V. C., Alfred James Lambert, Alexander Matheson, the Hon. Horace A. W. Tabor.

ARKANSAS.

PULASKI COUNTY.

SILVER AND LEAD MINING COMPANY.—This company has been incorporated by John B. Weiner, Anthony Koener and Joseph Collins to develop the Kellogg mines near Little Rock. The authorized capital stock is \$1,000,000.

CALIFORNIA.

AMADOR COUNTY.

AMADOR GOLD MINE.—Local papers state that the preparations for the building of the 60-stamp mill at this mine are making satisfactory headway, and it is expected to have the mill in running order about Christmas. At present there are 30 men employed at the mill and 25 at the mine.

SUTTER CREEK GOLD MINING COMPANY.—The official report of the superintendent for the week ended the 6th inst., shows that the ore in the drift is looking better, as it is extended in the mountain. Some rich strata have been encountered while taking up the bottom of the drift. The ore bin is now full, and the ore is being stored on the outside.

NEVADA COUNTY.

NORTH STAR MINING COMPANY.—Another of the famous Grass Valley mines is now being brought forcibly to the attention of the mining world. The North Star property which was originally opened in 1851, and at which work was carried on at intervals for a period of 26 years, or until 1877, when it was abandoned and the machinery sold. In 1884 it was reopened, the water was pumped out and new machinery put in. The greater part of the year 1884 was spent in development work. After that, the mine was worked steadily until the early part of 1887, when Mr. Jas. D. Hague, a well known mining engineer, purchased the property. More machinery was then put in and previous improvements were paid for. The production since the reopening of the mine in 1884 is as follows: 1884, \$2176.15; 1885, 8 months, \$47,343.71; 1886, \$147,304.48; 1887, \$287,939.38; total, \$484,763.72.

This year the record promises to be unusually good. For the first nine months of the year the production amounted to \$239,246.72. During the month of January, twenty days were lost by a stoppage of water. The September product does not include unsold sulphurets valued at \$3000 or \$4000. The clean up for the first half of October, as reported on the 17th inst., amounts to \$17,500. One dividend of fifty cents per share, or \$47,000, was paid last July, and we are informed that one of like amount will be paid this month. Work at the mine is progressing favorably. The 1800-foot level is now being opened up, and by the 1st of December ten more stamps will be added to the thirty-stamp mill now on the ground.

COLORADO.

BOULDER COUNTY.

RECLUSE.—This mine, on Sugar Loaf Hill, has been sold to capitalists who have formed a stock company with a capital stock of \$500,000, shares \$25 each. John Herrick, of Arapahoe County, is General Manager, and George W. Teale, of Boulder, the General Superintendent. The company is to put up a large mill at the mine, with a capacity of 100 tons a day, the crushers to be used to be of the Huntington centrifugal pattern. This mill will be on North Boulder Creek. The mine is a free gold mine, soft rock.

CLEAR CREEK COUNTY.

CLARISSA GOLD MINING COMPANY LIMITED.—The Clarissa gold mine, situated at Idaho Springs, has been taken over by this company, of London, and work will be actively prosecuted upon it. The mine has been idle since 1886, when it was worked by tributaries. Owing to complications existing between the owners and the tributaries, work was suspended until an arrangement could be arrived at. The property is now fully vested in the Clarissa Gold Mining Company, Limited. It is stated that the cost of putting this mine on a paying basis will be trifling. Mr. Lee, in his report, says: "The present main or working shaft from the present sink, 162 feet additional, or to a full depth of 262 feet from the surface, will cost £500; cross-cuts to veins 1 and 2, £100; taking up dead work at the junctions of present levels, and cutting and timbering station before sinking below present level, £50; total, £650. . . . It has been proven on all sides and on the surface that the ore is uniformly rich. I feel safe in predicting an output of 200 tons of ore per diem. The product of ore below 135 feet will be smelting, and shipped direct to the market; but from 125 feet to the surface it is entirely free milling and concentrating. The Clarissa mine has long since passed the exploration, or prospecting, period of existence. Large, well-defined veins are known to exist. Exploration has not only demonstrated this, but the ore values as well." The company has offered shares, which have been subscribed privately in Colorado and London.

EAGLE COUNTY.

Our correspondent at Red Cliff sends us the following:

BELLE SHAFT.—Through the courtesy of the lessees upon the Belle Shaft, on the Iron Mask property, your correspondent visited the workings of this mine. The shaft is a perpendicular, 330 feet, one, sunk through the lire to intercept the chutes penetrating the quartzite strata from the surface. The bottom of the shaft, on tapping the true contact, immediately encountered open ground pitching at a sharp angle into the Belle ground from the Polar. The east side-line of the Polar passes those of the Belle for 100 feet or more into the hill, and in this case the Belle's incline was pushed parallel with the Polar side-line into

the mountain, so that after it has achieved a point beyond the Polar corner, an unlimited scope of territory lays itself liable to exploration. On both sides of the main incline, adjacent to the shaft, extend large caves of open ground, filled with a good grade of ore, some of which the lessees have put in shape for stoping later on. The breast of the incline is in about 6 or 7 feet of talc ore and has been almost from the time they drifted from the shaft. The incline is apparently traversing diagonally an immense ore channel. Water is coming in the breast a little more rapidly than heretofore, but the new Deane pump controls the volume with ease, and this advent is regarded very favorably, as it is an indication of more open territory ahead. For nearly 100 feet along the main incline in the cave adjacent and parallel to it occurs an immense detached strata of quartzite. Between the trachyte and the top of this mass is found some black manganese, wet, running heavily in silver and lead, while beneath, and lying upon the white floor, is a large body of talc ore, with a stripe of yellow ochre sand streaking it, in some instances barren, but in others bearing crystallized lead in rich quantities. Some large bodies of iron have been followed from the shaft with the chute, increasing in value from \$15 to \$20 to \$250 and \$300 per ton. The ore channels here, as formed, are very regular and tending strongly into the mountain, and every evidence points conclusively to the fact that larger and richer bodies await the hammer and pick of the miner further into the hill.

GROUND HOG GROUP.—Messrs. J. J. Young and F. Gillilan have opened up in their lease on this property a large outcrop of ore running 6.5 ounces of gold and 6.5 ounces of silver within two feet of the grass roots, without any signs of playing out at a depth of 25 feet. I will visit the Polar-Accidental next week.

IRON MASK.—A body of sulphides have been encountered here, assaying 364.5 ounces silver and 16.4 ounces gold.

ROCKY POINT.—Your correspondent was taken through the Rocky Point this week by Mr. Edwards, its lessee. This is a mine in the quartzite which has been alternately worked by the company and lessees for three years. It is at present being operated with three (3) shifts. A great area of ground has been exposed, in which appear large caves, as are usual in the strata, and as has been the experience of nearly all the quartzite mines, the ore-bodies frequently break up into the trachyte. The breast of the main incline, which was straightened recently, has gained a depth of 550 feet. In drifting at right angles from near the breast, sulphides in heavy conglomerate masses have been encountered, streaked with a dark galena running 55 and 65 per cent lead and some silver. These are extracted in almost a native state. The bulk of the ore found here runs \$50 to \$60 per ton. Though large chutes of a very high-grade character have been opened up, a cross-cut to intersect a chute of fine ore penetrating the strata beyond and immediately behind is now being driven. A pump holds the small volume of water down. Mr. Edwards is at present putting up new oil houses and placing the mine in the proper shape for extracting mineral in a systematic manner. The outlook now bids fair to repay him in a handsome way.

GILPIN COUNTY.

CASHIER MINING COMPANY.—For some time past Prof. Thos. A. Edison has been experimenting with an electric extraction process, which has been applied to ore from the Cashier mine very successfully, it is said. This ore is very refractory and the cost of treating it by ordinary processes is said to be \$20 per ton. By Professor Edison's method it is hoped to reduce this to \$5 per ton. Concerning the work at the mine, Mr. Bradstreet, of the firm of Bradstreet & Curtis, of New York, one of the largest stockholders, said to a representative of THE ENGINEERING AND MINING JOURNAL: "For the past two months we have nearly covered expenses. Our main shaft is now down about 340 feet and considerable drifting work has been done. We have spent nearly \$60,000 on development work since we assumed control of the property. This expense has been met by five or six of the largest stockholders, who believe that the mine is a valuable one and would prove very profitable if the ore could be treated at a less cost than \$20 per ton. We wish it to be strictly understood that we are not in this company for stock-jobbing purposes, although at the start there was foolish speculation among the brokers on the Exchange."

GUNNISON COUNTY.

The great iron mine of White Pine has been rebounded to the same parties of Gunnison who had the bond on it formerly, and for the same figures—\$40,000. A forfeit of \$1000, we understand, says the Pitkin Miner, was put up. This transaction is the result of a renewal of the iron and steel works project that has been frequently agitated for Gunnison City.

HINSDALE COUNTY.

HAMILTON.—It is reported that the Hamilton mine, of Camp Carson, and two other claims owned by the Hamilton company, have been transferred to a syndicate from the East for \$200,000.

MAID OF CARSON.—The Lake City Sentinel reports an important sale made in Hinsdale County. Messrs. Coleman, Fitzpatrick, Flowers and Woods have transferred their interest in this mine at Camp Carson to M. E. Pollard for a consideration of \$50,000. Mr. Pollard represents a St. Louis company. Men and supplies are being sent to the mine, and work will be pushed vigorously during the fall and winter.

LAKE COUNTY.

DUNKIN MINING COMPANY.—The company is producing and shipping about 75 tons of iron ore per day. The output goes to Denver and Durango smelters.

Considerable new prospecting work is to be done. The most important now in progress is the west drift No. 1 of the third level, which is intended to prospect the ground northwest of the shaft. The main north drift of the third level was driven 90 feet from the shaft some time ago, and from the breast a raise made to the dolomite, ten feet of very good iron being cut under it.

IRON SILVER MINING COMPANY.—At the mines there is very little new of importance, except that considerable prospecting work has been commenced in various parts of the property. The concentrating mill is running as usual on low-grade ore from the old dumps.

LA PLATA SMELTING COMPANY.—The smelting works have been leased for the term of seven years to an English syndicate which proposes to resmelt portions of the whole of the old dump. The dump is said to be rich in lead shot and matte in some places, and steps will shortly be taken in regard to commencing work.

LITTLE CHIEF MINING COMPANY.—A few leasers are working in this property, but very little work is being done there, only a small amount of iron being mined. None at all was shipped last month. A new shaft has been sunk into a block of virgin ground in the Chief. Low-grade iron was struck at a depth of about 130 feet, and a prospecting drift is now being run through the iron.

POCAHONTAS.—This mine, on Carbonate Hill, is practically shut down, only the pumps being run to keep out the water. Chicago parties, who are shareholders in the Colorado Mining Company, which has been operating the mine, are expected in Leadville shortly to decide upon future operations. The Pocahontas is located over what is probably the continuation of the Evening Star ore chute, west of the Carbonate fault. Some ore has been found in the Pocahontas, and a few tons shipped, but no good body has yet been found.

SILVER CORD COMBINATION COMPANY.—The mine is doing well, and is now producing and shipping nearly 50 tons of ore daily.

SMALL HOPES CONSOLIDATED MINING COMPANY.—The secretary reports to us that work at the mines is progressing favorably. For the month of September, the value of the ore product amounted to \$11,813.72. The cash balance at the Leadville office on October 1st was \$11,493.40.

WARD CONSOLIDATED MINING COMPANY.—This company, which owns the Olive Branch mine, now being worked under lease by the Lee Basin Company and the El Paso mine, leased by Mr. D. H. Moffat and the El Paso Leasing Company, has received over \$40,000 in royalties from the Olive Branch mine and will shortly begin to receive from the El Paso. The Leadville *Herald-Democrat* says that the company has no expenses of any consequence, receives good royalties from its mines, and now has considerable money in its treasury, and is likely to declare a dividend before the end of the year. There are 200,000 shares of stock in the company, which are chiefly owned in New York.

PITKIN COUNTY.

ASPEN.—Press dispatches state that one of the most rich and marvelous strikes that have been made in Colorado has just been made in the Aspen mine, at Aspen. On the 17th a cave was struck which is 30 feet long and about 70 feet high. Lying on the wall is a bed of ore 7 feet thick that is enormously rich. At the far end of the cave a crevice running across the formation was found, of an unknown depth. A strong current of air comes up through the fissure. This is found in the first level, which was formerly known as the "rich" drift. After passing through the ore that gave it this name the drift is in about 300 feet, and has now opened the new bonanza found in the cave. This mine hoisted 76 tons of ore in three hours on the afternoon of the 17th inst., from 1 o'clock until 4, valued at nearly \$40,000.

PUEBLO COUNTY.

PHILADELPHIA SMELTING COMPANY.—Work is progressing at this plant now being built at Pueblo. Two bucket elevators and conveyor belts for elevating copper matte and an elevator for elevating bullion are being put in. It is a steel screw winding machine, run by belt. Two boilers made of Otis steel, each 5 feet diameter and 14 feet long, with 42 tubes 4 inches diameter have been ordered. A Berryman feed-water heater and a Deane pump are being put in, and over 3000 feet of water pipe, some of it 10 inches diameter, is being laid. All stop valves in water mains, as well as fire hydrants, will be the "Chapman," steam and water valves above ground will be the Jenkins Brothers, most of them gates. The company will use the "Eclipse" friction clutch pulleys for driving most of the crushers, rolls, elevators, etc. When the new plant is completed the whole works will use about one million gallons of water daily. The works will have electric lights.

SAGUACHE COUNTY.

There are several mines in the Crestone district now laying idle with only yearly assessments being done, which would pay a good profit were it not for the expensive transportation. Being 30 miles to the nearest railroad point from any of these the people are waiting patiently for a railroad which should be and will be sooner or later built from the Wet Mountain Valley country through Music Pass to Saguache, thence through Cachotopé pass to the Gunnison country.

SAN JUAN COUNTY.

MONITOR.—The difficulties of the owners of this mine, which has been in litigation for eight years, have been settled, and the result will be that the mine will be worked steadily hereafter.

DAKOTA.

HARNEY PEAK TIN MINING COMPANY.—This company has put men to work on a number of tin locations owned by it in the vicinity of Custer. It is probably the intention of the company to do no more work upon the claims than the amount required by law, but it is believed by many, says the *Custer Chronicle*, that operations will be continued indefinitely upon one or more of the most prominent properties. A report that forty men will soon be employed at the Etta mine is regarded as being as uncertain as it would be gratifying in its realization. Mr. Myron Willie, the resident superintendent of the company in the Hills, has established an office in the Bank of Custer building at Custer.

STEVENS TIN MINING COMPANY.—Mr. W. L. Henwood, resident superintendent, with property located near Hill City, states that assessment work will shortly be commenced on the claims owned by the company.

TIN MOUNTAIN MINING COMPANY.—A rumor is current, says the *Custer Chronicle*, that this company, in which Chicago parties are interested, to which the *ENGINEERING AND MINING JOURNAL* referred in its issue of June 23, 1888, will soon resume operations with new machinery. We give the rumor for what it is worth, hoping it may presage the advent of operations in tin reduction at Warren's Gulch that will mark a higher degree of success than has hitherto been attained in that district.

GEORGIA.

The sale of the Hand gold mines for \$1,250,000 is reported.

IDAHO.

ALTURAS COUNTY.

ALTURAS GOLD, LIMITED.—The directors of the company have published a notice in London papers that until October 1st they would receive applications, at par, for £30,000 mortgage debentures of £10 each (£15,000 of which have been already subscribed), carrying interest at 10 per cent per annum, payable half yearly, on the 31st March and 30th September, and redeemable on 30th September, 1893, at par, or earlier, at the option of the company, at £110 per cent. The debentures are secured upon the whole undertaking and property of the company.

BINGHAM COUNTY.

THE AMERICAN PLACER COMPANY.—This company, which was organized a few months ago by Mr. C. J. Clark, of the Cariboo Mining Company, with a capital of \$5,000,000, shares \$10 each, owns 5000 acres placer ground extending twelve miles along McCoy Creek, and ranging from five to eighty feet deep. It was only recently that the titles were all made clear and the placers fully possessed by the new company, which has now 300 men and sixty teams making a ditch seven feet wide at the bottom, eleven at the top and five feet deep. This ditch will be twelve miles long and tapping various small streams along the line, also Jack-knife and Tin Cup Creeks, will convey 7000 inches water to the placers, which, with the 4000 inches already supplied, will be ample to run a dozen or fifteen giants three months in a season. There is ample fall for all purposes, except in some of the leveler ground, where it is proposed to put in hydraulic elevators to properly dispose of the gravel. The fall is so great that water can be used through giants twice in two miles. The gold is coarse, and some runs up to nuggets of \$30 or \$40. The gravel is very easily washed out the banks. The company has started in on a very large scope, having four surveyors to set the flumes, and among other things lay out a road to bring Soda Springs within thirty-five miles of Cariboo instead of fifty-six as now by the old road. A sawmill has been put on the ground to cut lumber for the flume and a building is being erected and supplied with machinery to make up the 150 tons of sheet iron into piping. This iron is being shipped, and will be converted into pipe during winter. They propose putting in twenty-five or thirty miles more ditching next spring, and they confidently expect to make this one of the largest placer mining operations in the country. Chicago, Michigan and Ohio men are interested. Alfred Kid-dor, of Marquette, Mich., is President, and W. S. Dal-liba, General Manager.

IOWA.

INDEPENDENCE NATURAL GAS AND COAL COMPANY.—This company has filed an amendment to its articles of incorporation, which increases the capital stock to \$23,500.

KANSAS.

LEAVENWORTH COUNTY.

HOME.—This new mine, near Leavenworth, is now down over 250 feet and with the present rate of progress a large force of men will be at work taking out coal in January.

STATE.—This mine near Leavenworth, is employing 300 men and it is said, could employ 300 more if they were to be had. The product is being shipped into Western Kansas, where there is a good demand for coal.

KENTUCKY.

A correspondent writes us that the Louisville, St. Louis & Texas Railway, which will be completed in November, will be an important factor in the coal-carrying trade of Western Kentucky. It has the nearest field of bituminous coal to Louisville, and, besides, will get the entire tonnage of Breckenridge canal coal. This gas canal is now being marketed to gas companies all over the United States, and is exported to South American ports, and its business will be a valuable acquisition to the Louisville, St. Louis & Texas Railway.

LIVINGSTON COUNTY.

According to reports a flow of natural gas has been struck at Smithland at a depth of 800 feet

MARYLAND.

OAKLAND COAL AND COKE COMPANY.—This company is building a number of coke-ovens at Oakland. The capacity of each oven will be 4½ to 5 tons.

MICHIGAN.

A company has been organized to work a vein of graphite that lies about a mile south of the Taylor mine, on the north half of the northeast quarter of section 16, 49-83. The company is composed of Detroit capitalists. The vein, it is said, has been traced for a considerable distance, and samples taken from it yielded 78 per cent in pure graphite. Hitherto hardly anything has been done in the way of developing and utilizing the deposits that are known to exist here.

ROPES GOLD AND SILVER MINING COMPANY.—The rock now being milled comes from the fourth, seventh and eighth levels and from the shaft. As yet the seventh and eighth levels are not opened up sufficiently to yield the rock they are capable of. Winzes are being sunk between the two upon both sides of the shaft and by the middle of the present month good stopes will be had. The rock from this portion of the mine is the best that has yet been secured.

COPPER MINES.

The following statement published by the Boston *Transcript* gives the product in "Mineral" carrying about 75 per cent copper of the mines mentioned for September and for nine months of 1888, and a comparison with the outputs of the same mines in the preceding year:

Mines.	September, 1888.		Jan. 1 to Sept. 30, 1887.	
	Tons.	Tons.	Tons.	Tons.
Calumet & Hecla.	3,685	2,100	22,396	22,788
Tamarack.	600	211	5,601	2,943
Quincy.	356	200	2,986	2,021
Atlantic.	201	217	2,051	1,851
Oscola.	195	182	1,849	1,509
Franklin.	180	187	1,843	1,794
Huron.	120	125	1,069	612
Kearsarge.	101	...	173	...
Central.	101	66	824	831
Copper Falls.	80	* ...	567	330
Total 10 mines.	5,019	3,288	39,161	34,714

* Mill not running.

MINNESOTA MINING COMPANY.—This mine will, it is now expected, soon be put into shape for a full development.

PEWABIC MINING COMPANY.—The company's suit, involving the question of the legality of the company's reorganization, came up for a hearing in Lansing on the 16th inst.

A correspondent writes us from Houghton under date of the 13th inst.: "I have just returned from a visit to several of the mines in the immediate vicinity, and send you the following items of interest regarding their present workings:

At Dollar Bay, the rolling mill of the Tamarack-Oscola Copper Manufacturing Company has its hands full filling orders. The new wire mill is covered in and work there will be started up shortly. The new smelting buildings are well along, one being about completed and the other with the walls showing eight feet above ground.

ALLOUEZ MINING COMPANY.—The work of renovating the plant is about complete, and it is expected that stamping will be commenced about the middle of the present week. Everything above ground has been put in thorough repair. No. 1 shaft, which is sinking to the 9th level, has been retimbered to the 8th level; No. 2 shaft is down to the 18th level and has been retimbered to the 10th level; the skip roads have been put in thorough repair. The mill runs three head of stamps, and it is intended to mine sufficient rock to keep them all busy.

CALUMET & HECLA MINING COMPANY.—The work of sinking the vertical shaft at the Calumet & Hecla, which is situated a short distance northwest of Red Jacket, is being carried forward. It is now down about 35 feet, the first 12 or 13 feet being in earth and the remainder in rock. The rock is being used to grade the road-bed from the shaft to the mine, which will be about a mile long. There will probably be a combination-shaft and rock-house erected at the shaft and the rock sent direct to the mill. From present indications I look to see a noticeable increase in the product for the present month. I should not be surprised to see the output reach 3500 tons, or better, of mineral carrying about 75 per cent copper.

KEARSARGE MINING COMPANY.—The work of drifting is being pushed south of No. 2 shaft. The lode looks well, but is not as yet carrying much copper; the drift, however, has only as yet been extended a few feet from the cross-cut. The character of the rock already gone through indicates better development ahead. Drifting is also being carried on south of No. 1 shaft at sixth level; lode at this point is also looking well, but, as at No. 2, does not carry much copper. A winze is being sunk from the sixth to the seventh level. They are stopping at the second, third, fourth and fifth levels south of No. 2 shaft. Here the ground is turning out very satisfactorily.

OSCEOLA MINING COMPANY.—The Opechee shaft at this mine has been put in good condition and the work of sinking is under way.

PENINSULA MINING COMPANY.—At this mine No. 1 and No. 2 shafts are being sunk, one drill being worked in each. There is some good looking copper rock being hoisted from the sinking of the shafts, and a nice little stock pile is accumulating in the rock house. The mine looks as if it might turn out a good monthly product when more fully opened. One or two drifts will shortly be started.

QUINCY MINING COMPANY.—The site for the new stamp-mill, work on which is well under way, is situated on Torch Lake. The work of grading the railroad from the mine to the mill is about half done and will probably be completed by the middle of next month. The mill sits back from the lake shore about 600 feet. The railroad track will run along the bluff just in the rear of the mill and the rock will be dumped from the cars directly into the rock bins, thus obviating the need of an elevated track. The water from the lake is conducted by an adit 5 feet wide at the bottom, 4 feet at the top, 6 feet high and about 500 feet long to a well under the pump-house. This adit is 5 feet 2 inches below the lake level when it enters the water and 6 feet below lake level at the well in pump-house. The pipes to convey the water from the pump-house to the mill will run through an elevated roadway, crossing the railroad track and county road at an elevation of about 20 feet. Weather permitting, the foundation for the mill will be completed this fall.

TAMARACK MINING COMPANY.—The mine is looking well. No. 1 shaft is down to the 10th level, and a cross-cut from that point is well under way toward the lode. No. 2 shaft is being sunk at the rate of a little better than 80 feet per month, and has now reached a depth of about 1700 feet.

TAMARACK JUNIOR MINING COMPANY.—The spur track from the main line of the Hancock & Calumet Railroad is being graded, and the work of laying the rails will commence shortly. This track will run to both shafts. The work of erecting a boiler house, engine house, etc., at No. 1 shaft is being pushed forward.

IRON MINES.

METROPOLITAN IRON AND LAND COMPANY.—This company, which owns and operates the Norrie mine, is considering the advisability of providing a line of steam barges to handle the product of this mine. The plan, which will be considered at a special meeting of the shareholders, to be held for that purpose shortly, is to increase the capital stock, issuing the shares to the present stockholders at a par value of \$25 each, for an amount sufficient to provide the vessels needed.

MINNESOTA.

WHITE IRON LAKE IRON AND WATER COMPANY.—This company has been organized for the purpose of smelting, reducing, refining and working iron ores and other metals and of marketing the same. The officers are Frank W. Eaton, president; Edgar Brown, vice-president, and H. H. Bell, secretary and treasurer. The principal place of business is at Duluth. The capital stock is \$1,000,000, shares \$10 each.

MISSOURI.

MASON COUNTY.

The coal miners' strike at Bevier will probably end without further trouble. The operators and the miners' committee announced themselves ready to arbitrate, and the operators offered a slight advance, about one-third of the demand made by the miners. The indications are that the proposition will be accepted.

MONTANA.

CHOTEAU COUNTY.

MONTANA SMELTING COMPANY.—The company has started up its sampler, and will, it is expected, have the first section of its smelting plant ready for operation within a few weeks. The company is now ready to purchase ores.

DEER LODGE COUNTY.

ANACONDA COPPER COMPANY.—The company is to derive a revenue from its electric plant by furnishing the city of Anaconda with an electric lighting service. Twelve lights, with a capacity of 200 candles each, are to be furnished for one year at \$16 a month for each light.

LEWIS & CLARKE COUNTY.

MONTANA COMPANY, LIMITED.—The official statement just issued by the company shows that the production for September amounted to \$70,700, and the working expenses to \$38,800. The Jubilee chute in the 500-foot level has been reached. The face is in promising quartz. The company is now upraising to the 400-foot level for air.

SILVER BOW COUNTY.

ALICE GOLD & SILVER MINING COMPANY.—The new 60-stamp mill was damaged by fire last week to the extent of about \$5,000.

BUTTE & BOSTON MINING COMPANY.—The company is making preparations to sink a shaft on one of its properties north of the Wake-Up-Jim.

We have received the following from a Butte City correspondent, dated the 10th inst.:

BOSTON & MONTANA CONSOLIDATED COPPER COMPANY.—In the official report of the Tamarack Mining Company, signed by Mr. J. W. Clark and A. S. Bigelow, I notice that these gentlemen consider the Boston & Montana sulphuret concern as an essential part of the great Anaconda lode, etc., but they ought to know better, especially if they had consulted their able superintendent, Mr. Couch. It has been claimed that Mr. Larabie, the former owner of the "Mountain View," struck the Anaconda-St. Lawrence vein in the Mountain View. This is not true. Like Columbus, who sailed west to reach East India and found and discovered America, so Mr. Larabie based his calculations in sinking the shaft on the Mountain View 500 feet, on the expectation of striking the Anaconda-St. Lawrence vein.

He did not find it, of course, but discovered instead two new veins running almost parallel with the Anaconda St. Lawrence, viz.: the South Mountain View vein and the North Mountain View vein. The latter forms the large Colusa vein, running through the Shannon into the West Colusa, Liquidator, Clark's Colusa, East Colusa, and from there further west, all owned by the Boston Consolidated.

Lately, parties connected with the Boston Consolidated bought the Pennsylvania and Johnston lode, better known as the Harrison Lloyd tunnel, situate exactly east and southeast of the St. Lawrence and south of the Shannon and Colusa.

The tunnel enters these two properties from the south, runs north and crosses five distinct well defined copper veins. They are small yet, but doubtless will become larger when a depth corresponding with the depth of the workings in the St. Lawrence mine has been reached.

Mr. Ben Tibbey, Superintendent of the Parrot, who has for several years past made it a special study to trace the copper veins of Butte, had long ago called my attention to the different course of the Anaconda and the Mountain View vein. Not only unmistakable surface indications (outcroppings), but also recent developments on the different claims confirm his statement. The course of our Butte veins is essentially east and west, with slight alterations to the southeast and northeast, and a look on the map will show at once the impossibility of the Mountain View vein being identical with the Anaconda-St. Lawrence.

The following five veins cross the tunnel (1200 feet long):

1. The Bellona vein (south of the Parrot).
2. The North Parrot vein; and 3, the South Parrot, forming the Parrot Company's properties, these running through Ramsdell's, Shakespeare, and the two Parrot properties owned by the old Montana Copper Company.

4. The Anaconda vein, running through the St. Lawrence for about 600 feet in an easterly direction, then turning its course for 600 feet to the southeast.

5. The South Mountain View vein, about 400 feet north of the St. Lawrence and parallel with same, while the North Mountain View vein, due northeast, forms the Colusa vein, and runs in a northeasterly direction.

The production of the Boston & Montana Company amounted in August and September to 2,200,000 pounds of fine copper per month, and in October the output will probably be 2,500,000 pounds fine copper.

The old plants formerly owned by the Montana Copper Company and W. A. Clark show only little improvement in the shape of some additional furnaces and a Brückner calciner.

A new plant is proposed, but the site is not yet selected.

S. E. R.

NEVADA.

ELKO COUNTY.

NEVADA QUEEN MINING COMPANY.—A general summary of the second annual report for the year ending October 1st, 1888, shows that 913 tons of ore have been shipped to the mills, which amount has been milled, yielding a product in bullion of \$162,735.09, besides about \$20,000 estimated value which remains in the mill, no clean-up having been made. The greater part of the ore milled during the past year, excepting about 300 tons from the 200-foot level, was taken from the 350-foot level. There are about 6000 tons on the dumps at the mine, most of which was extracted from the 350-foot level stopes. The average assay, as taken from car samples, gave returns of \$26.39 per ton.

There is a large amount of supplies, such as lumber, timbers, fuel and charcoal, on hand, enough to last until next May.

The concentrating plant is about finished, and can be started about November 1st, or as soon as the water company can furnish water.

The erection of the new mill is progressing favorably. The superintendent states that the increased facilities available in the coming year for treating the ores will greatly assist in the economical reduction of the large ore reserves now in sight, and return a larger profit than heretofore possible.

The Secretary's financial statement shows the receipts during the past year to have been \$50,000 from an assessment and \$162,735.09 in bullion from the mine. The company has paid \$8000 towards the new mill and \$8000 to the Tuscarora Water Company.

STOREY COUNTY—COMSTOCK LODE.

BEST & BELCHER MINING COMPANY.—It is reported that the discovery of ore on the 300-foot level is proving more important and valuable than was at first supposed.

CONSOLIDATED CALIFORNIA & VIRGINIA MINING COMPANY.—At the annual meeting held at San Francisco on the 9th inst. the following directors were elected: Charles H. Fish, A. B. Hull, George R. Wells, W. S. Lyle and A. W. Havens. Charles H. Fish was reappointed President; A. B. Hull, Vice-President; A. W. Havens, Secretary; D. B. Lyman, Superintendent, and Bank of Nevada, Treasurer.

The Secretary's report shows the receipts and disbursements of the company for the year ending October 6th, 1888.

Receipts—Balances outstanding last annual meeting, \$69,623.49; bullion samples, \$1,715.22; gross product yield of the mine for the year, \$4,060,978.78; total receipts, \$4,132,317.49. Disbursements—Virginia City, \$1995.20; S. F. office, \$152.60; bullion in Nevada Bank, \$26,802.80; advertising, \$327; legal expense, \$1098.56; salaries and wages, \$548,506.32; interest and exchange, \$9852.50; expenses S. F. office, \$3,522.95; supplies, \$257,876.59; assay office, \$6036.84; Virginia office, \$989.57; team expense, \$145.88; hauling and freight, \$13,105.03; taxes, \$42,495.30; compressed air, \$9,728.35; books and stationery, \$192.65; water, \$6600; hoisting, \$40,077.17; Suro Tunnel royalties, \$149,081.46; bullion on hand and unsold, \$172,869.02; reduction of ore, \$1,043,570.25; bullion freight, \$13,334.90; bullion discount, \$632,064.47; surveying, \$322.50;

insurance, \$1905.50; *dividends Nos. 12 to 21, inclusive, \$1,080,000; real estate, \$10,075; ore purchase, \$9594.08; fire extinguishment, \$50,000; total disbursements, \$4,132,317.49.

The report of Superintendent D. B. Lyman contains the following information of interest: There was extracted from the various levels of the mine during the fiscal year 148,302 tons and 150 pounds of ore, all of which, together with 779 tons 780 pounds from the Ophir mine, accounted for by the Con. Cal. & Va. to the Ophir Company, has been milled by the Comstock Mill and Mining Company, and from this ore (total 149,081 tons and 930 pounds) there has been produced bullion of the assay value of \$4,060,978.78, which shows an average yield of \$27.24 to the ton. This bullion carried \$1,812,412.60 in silver and \$2,248,566.18 in gold.

The report notes the cutting through of 10 feet of ore on the 1300 level further west than any before found on that level. This development is yet unexplored. The fillings on the 1400 level have proved to be valuable.

On the 1435 level a body of high-grade ore is stripped a length of 120 feet and followed east and west 100 feet, varying in width from 3 to 17 feet. This is supposed to be an offshot of the main ore-body. The Superintendent judges, from the present output and the value of the ore extracted for the past few months, that there is, to say the least, no question about a continued favorable return from this locality.

On the 1500 level important connections were made for air and safety for the men. The main north drift from the Consolidated Virginia has opened the way and led to the discovery of large quantities of valuable ore, from which a portion of the output of the mine has been drawn for many months.

On the 1600 level, in upraise No. 1, 58 feet above the track floor they passed through 16 feet of good ore, gold predominating.

On the 1650 they are preparing to sink a winze, which is south of any work ever done on this level. At a point reached by drift, 109 feet east of the Con. Virginia shaft, thence 110 feet south, an upraise has been carried up and connected with the 1500 level. This upraise started in ore and continued up the whole distance in quartz or ore. The drifts are at the margin lines, and the superintendent thinks there is much to hope for.

On the 1750 level the work has been confined to the extraction of ore from the upraise east of the old stopes. The four feet of fine ore mentioned in the last annual report has continued up to the 1650 level, thence upward 60 feet above that level. A few tons of ore have been extracted from the 1950 level.

SAVAGE MINING COMPANY.—The company resumed shipping ore from the mine to the Rock Point mill at Dayton last week. The shipments average between 50 and 60 tons daily. The grade of ore shipped is above "milling value," and the outlook for wiping out the indebtedness of the company when more stamps for crushing the ore are available is good. There is a large area of ore stripped in the mine, extending downward from the 400 to the 900 level, which is constantly being added to by explorations.

SEGREGATED BELCHER MINING COMPANY.—There is said to be a probability that this mine will be added to the bullion-producing list of Comstock mines before next spring.

WASHOE COUNTY—JUMBO DISTRICT.

DUNLOP.—In this mine a force of four men is employed and enough high grade ore to cover the cost of operating is being extracted. The project of erecting a stamp mill in Washoe Valley to crush Jumbo district ore has not yet materialized. There is a large amount of ore there of an average value of above \$10 per ton, which can be handled profitably if a stamp mill was erected on the ground.

PANDORA.—The mine owners in Jumbo district are making another ore shipment to the arastras on the site of the old Merrimac mill on the Carson River. Outside authority credits the ore with an average value of about \$300 per ton in gold. There is now stripped in the Pandora a depth of 80 feet of ore and a length of above 200 feet. The rich streak is about six inches in breadth, and is fully as rich in gold on the 80-foot level as on the surface. The dip of the vein is almost vertical.

NEW JERSEY.

WARREN COUNTY.

KISHPAUGH.—It is reported that these iron mines have suspended operations. They were owned and operated by Fardee & Co., and have been in active operation for 19 years. A shaft has been sunk to the depth of 500 feet, and the vein is found to be exhausted.

NEW MEXICO.

GRANT COUNTY.

MIMBRES MINING COMPANY.—This company's property at Georgetown, which includes the Naiad Queen, Glamorgan and several other silver producing mines and a stamp mill, has been sold at public auction under a decree foreclosing a mortgage to George Bliss, Thos. F. Mason and J. D. Hague, of New York, for \$51,352.20. Mr. Thos. B. Pheby, who has had charge of this property for four years will continue to manage it.

SIERRA COUNTY.

BLACK COLT.—This mine, at Kingston, has closed down for the present. Operations will be in position to drain the workings of water.

TAOS COUNTY.

NEW MEXICO MICA MINING COMPANY.—This com-

* Dividend No. 22 is declared, but not yet paid. The company has a present balance on hand of \$28,950.00 in cash, and unsold bullion of the assay value of \$172,869.02.

pany has bought a mica mine at Tres Piedras, which is said to contain a large deposit of that mineral. Hitherto the stuff has been taken out in sheets; the refuse matter, such as trimmings and tailings, have been valueless and have had to be thrown away. The company recently made some experiments with the Cyclone pulverizer, which were successful, and has decided to establish works at Denver, Colo., for pulverizing mica, the facilities in this city being better for barreling and shipping it away than at the mines.

OHIO.

According to reports many of the manufacturers in the Ohio Valley are abandoning the use of natural gas and returning to coal, from its irregular supply and the extortionate price demanded. The gas companies may find before long that it takes two parties to make a bargain. While the people have been to great expense putting gas in their factories and dwellings, and would regret to forego the use of gas, they will not stand imposition or extortion. They were assured that gas would be furnished at or below the cost of coal, but the prices charged last year were fully 20 per cent in advance of coal, and now it is proposed to advance the rate to private consumers 33 per cent.

OREGON.

COLUMBIA COUNTY.

Messrs. McBride & Giltner own a tract of coal land near Columbia City. One of the coal deposits has been penetrated to a depth of forty feet and the vein runs from three feet to seven feet eight inches in width. The coal is said to be of first-class quality. The land is located one-half mile from the railroad, seven-eighths of a mile from the Columbia River and only thirty miles from Portland. A syndicate of Portland capitalists is negotiating for the purchase of this property.

PENNSYLVANIA.

COAL.

The railroad coal operators of the Pittsburg district met at Pittsburg on the 16th inst., and, as agreed upon at last February's Interstate Convention of Miners and Operators, a resolution declaring an advance in wages from 74 to 79 cents a ton from November 1st was passed. This increase is contingent upon a like advance to be made by competitors in this and other States.

The five ejectment suits of Calhoun M. Derringer, of Philadelphia, against Eckley B. Cox, of Drifton, and others, for five tracts, 400 acres each, of valuable coal lands, continued from time to time for the past fifteen years, were called up in court at Wilkes-Barre, on the 15th inst. After a jury had been drawn the court was informed that the plaintiff and defendants had, by mutual concessions, effected a settlement, and the court was asked to instruct the jury to render a verdict in accordance with this decision of the parties concerned. This being done, the verdict was so recorded. The lands that have been in dispute are located in Sugar Loaf and Black Creek townships, consisting of five tracts of 2000 acres, four miles long and one mile wide, every foot of which is underlaid with Lehigh coal estimated to be worth not less than \$10,000,000. Upon these lands are several collieries in operation that turn out over 1,600 cars of coal a day, employing nearly 1,500 men and boys, also two breakers at work, the largest in the coal regions, and fitted with the most complete and modern machinery, at a cost of \$800,000. It is said that the concession made was an equal division of their interests.

BLACK RIDGE COAL COMPANY.—The colliery at Black Ridge owned by this company, of Philadelphia, but which was leased and operated by J. S. Wentz & Co., has been abandoned. The last two or three years it was surmised that there was very little coal to be mined at that place, and when the mines were flooded two years ago experienced miners believed that it would not pay the company to pump out the water. The company thought differently, however, and at great expense the water was pumped out and a canal built along the mountain into which the creek emptied. The mining of coal was again resumed and continued until the latter part of last week. The mine inspector went to Black Ridge, and upon making an investigation found the supply of coal was exhausted and the pillars were being robbed. He at once issued an order that the men should stop work, and should not make another attempt to take coal from the place.

MINERAL, MINING AND RAILROAD COMPANY.—The Cameron Colliery, owned by this company, was destroyed by fire on the 16th inst. It is stated that fire originated from an explosion of gas. The loss is about \$75,000. Five miners were severely but not dangerously injured by falling machinery and timbers.

PHILADELPHIA & READING COAL AND IRON COMPANY.—This company is about opening a colliery at Good Spring, about five miles west of Donaldson. Two slopes are being sunk, and a large number of men will be given employment. It is stated that a body of coal nine feet in thickness has been discovered.

NATURAL GAS.

The Standard Oil Company has leased thousands of acres of land in Perry, Dauphin, Mifflin, Juniata and Huntingdon counties, with the intention of piping the new fuel to Harrisburg and Philadelphia if it can be found. A well has been sunk near Harrisburg to a depth of 1700 feet, but no gas was found.

In the Court of Common Pleas, at Pittsburg, on the 16th inst., a decision was rendered in the cases of a number of residents of Allegheny City against the Heating Company, and the citizens of Sewickley against the Ohio Gas Company. These suits were brought to restrain the companies from demanding exorbitant rates for natural gas, and from shutting off the fuel for a refusal on the part of the citizens to bind themselves to pay the rates, which have been ad-

vanced from 50 to 100 per cent. Preliminary injunctions were granted in both cases, and they will remain in force until the question of what reasonable rates are can be determined.

PEOPLE'S NATURAL GAS COMPANY.—This company is the first to put meters into private houses at Pittsburg, charging 20 cents per 1,000 cubic feet.

OIL.

Exports of refined, crude, and naphtha from the following ports, from January 1st to October 13th:

	1888.	1887.
	Gallons.	Gallons.
From Boston.....	3,455,370	3,324,607
Philadelphia.....	106,304,845	129,524,869
Baltimore.....	5,641,387	6,496,152
Perth Amboy.....	17,860,780	13,065,312
New York.....	281,165,964	297,265,306
Total exports.....	414,418,346	449,676,246

The Chief of the Bureau of Statistics reports the total values of the exports of mineral oils from the United States for the month of September, 1888, and during nine months ended September 30th, 1888, as compared with similar exports during the corresponding periods of the preceding year, as follows: September, 1888, \$3,874,719; September, 1887, \$4,013,189; nine months ended September 30th, 1888, \$33,546,377; September 30th, 1887, \$33,349,547. The exports from the above named ports comprise about 99 per cent of the total exports of mineral oils. It is stated on good authority that the distillation of 100 gallons of crude petroleum will yield 76 gallons of illuminating oil, 12 gallons of gasoline, benzine, or naphtha, 3 gallons of lubricating oil, and 9 gallons of residuum.

TEXAS.

INTERNATIONAL SMELTING COMPANY.—This company has bought the smelting-works built last year by C. C. Fitzgerald, late of New York, now a resident of El Paso. The company was organized at St. Louis, and it is expected that the stacks will be in blast this week.

CASS COUNTY.

The coal of this county is said to be the best grade of lignite. It has been successfully tried on the Texas & Pacific Railroad, also in furnaces of saw and grist mills.

MITCHELL COUNTY.

The company that has recently purchased land for establishing salt works at Colorado has ordered boring machinery, and will let contract for making a 1200-foot well. The Panhandle Machinery and Improvement Company are interested in this enterprise.

UTAH.

SALT LAKE COUNTY.

BROOKLYN.—The sale of this group of mines, at Bingham, to the Lead Mining Company is reported. The manager of the Brooklyn, J. J. O'Toole, it appears, a large owner of stock in the company, began negotiations in New York City two months ago for the entire property, and recently negotiations were closed, thus giving the possession of the property into the hands of Mr. O'Toole. He then began negotiations with N. Treweek, superintendent of the Lead Mining Company, which were consummated on the 1st inst. by the transfer of the property to the Lead Mining Company. It is estimated that the ore on the dump of the Brooklyn and blocked out in the mine will produce over a quarter of a million. The mine lies on the opposite side of a ridge to the Lead group, and over 200 feet higher. This will enable the company to connect the two groups by a tunnel about 1800 feet long. Thus connected, the tramway will be run into the Brooklyn, so as to give easy and cheap transit for ore to the mill and railway. Surveys for this tunnel are now being made. The Lead group has eight or ten good claims, the Brooklyn seven, besides water rights, tunnels, pipe lines, good hoisting works, etc. Then there is the fine plant of the Lead mine, five miles tramway to the railway, a splendid concentrator and their large smelter known as the Hanauer.

TOOELE COUNTY.

SHAMROCK MINING COMPANY.—This company has been organized with a capital stock of \$500,000, shares \$5 each. The company owns the Leonara, East Extension, Shamrock, the Governor Murray and Rambler mining claims, situated in Rush Valley. The officers are: C. E. Mitchner, president; J. P. Mitchner, vice-president; Arthur Brown, secretary, and E. B. Critchlow, treasurer.

WISCONSIN.

Stockholders of the Nimikon, Bessemer and Kakagon mining companies have received notice of the commencement of actions against them for labor claims amounting to \$20,000. The suits are brought under section 1769 of the revised statutes of Wisconsin, as follows: "Stockholders of every corporation other than railroad corporations shall be personally liable to an amount equal to the stock owned by them respectively in each corporation, for all debts due and owing to its clerks, servants and laborers for services performed for such corporation, but not exceeding six months' service in any one case." Fifteen separate suits are brought by Lennou & Slight for Hurley clients, who hold the claims. The action is begun in the Circuit Court of Ashland County. The number of stockholders sued is about 400, scattered all over the United States, and about one hundred of them are named in the complaint.

OCONTO COUNTY.

It is reported that near Oconto a pocket of gold quartz that promises to yield from \$50,000 to 75,000 per ton has been found. The "find" is in township 34, range 17 east, in this county, about 24 miles due west from Wausaukee. It is stated that all during the summer they have met with increasing encouragement in the form of gold-bearing rock, yielding the precious metal at the rate of from \$5 to \$20 per ton.

FOREIGN MINING NEWS.

AFRICA.

The value of gold exported through the Cape Colonial ports for August, amounted to £53,576. The value of gold exported through Natal for August was £39,424.

BRITISH COLUMBIA.

SOUTHFIELD.—A fire broke out in No. 1 level of this coal mine at Nanaimo, on the 15th inst., and will probably not be extinguished for several days, though it has been gotten under control. All the men were rescued. The extent of the damage cannot yet be learned. The fire is supposed to have originated from a steam pipe near the bottom of the air shaft, about 300 yards from the mouth of the slope.

CANADA.

PROVINCE OF ONTARIO.

The Ontario Mining Commission met at Madoc recently, and took evidence as to gold, arsenic, mica and actinolite, all of which are found in the district. Evidence was also given as to a handsome dark gray marble, quarried at Bridgewater.

ENGLAND.

WALES.

MORGAN GOLD MINING COMPANY, LIMITED.—The secretary of this company reports that the result of the crushing cleaned up on Saturday, the 22d ult., was as follows: 302 tons, 1648 ounces 2 pennyweights, of the approximate value of £5600, being an average yield of 5 ounces 9 pennyweights per ton of ore. The crushings for the three months ending September 22d are as follows: July 29th, 533 tons, 607 ounces 2 pennyweights 3 grains; August 25th, 476 tons, 646 ounces 2 pennyweights; September 22d, 302 tons, 1648 ounces 2 pennyweights.

MEXICO.

THE INTERNATIONAL AND MORTGAGE BANK OF MEXICO.—Press dispatches state that up to noon on the 15th inst., the date for the meeting of the shareholders of the Mortgage Bank at the City of Mexico, certain heavy European banking interests had tried to get control of a majority of the shares by offering \$6 premium per share, but representatives of the New York syndicate could not be influenced, and the shareholders' meeting voted unanimously, 32,000 out of the total 40,000 shares being represented, and to confirm the transfer of the concession to New York parties. President Diaz has recently told opponents of the New York syndicate that he had determined to bring American banking capital into Mexico if it could be secured, and his influence has throughout the negotiations been in support of the Americans. In our issue of September 8th we referred to the organization of this bank.

[From our Special Correspondent.]

LOWER CALIFORNIA.—A San Francisco, Cal., mining company has bought the Santa Clara gold mine in the Las Cruces Cañon from the Felix Brothers for \$20,000.

A company has been formed in San Francisco for the exploration of the mines of San Francisco and San Nicolas in the district of Real del Castillo, with a capital of \$1,000,000. One half the shares were given in payment for the mine.

SONORA.—The Palmarejo mine in the Alamos District was bought in 1886 by an English company, which has been working by the Mexican method ever since, and it is stated with an average profit of \$1000 per day. Lately a new vein of black silver has been discovered in some old Spanish workings and the company has resolved to erect a modern mill and to lay down a railroad from the mine. This will entail an outlay of about \$800,000.

Notwithstanding the high cost and the difficulty of transportation in that part of the Sierra Madre there are at present more than 500 stamps at work in the mining districts between Alamos and Guerrero. Salt in this region costs about \$130 per ton, and other chemicals in proportion. In consequence only the very best ores can be worked and the mine dumps are full of low-grade ores waiting for the opening of a railroad which is projected to pass through this country. In the mining districts of the Yaqui basin about 1500 miners are at work, but the greater part of the mines are idle for the reasons above indicated. Nevertheless, the California mine has produced \$100,000 a month for a long time, the Tarumara mine nets about \$20,000 per month, and the Dura, Barranca and Prieta mines have also made large returns to their owners.

A new discovery, called the San Luis mine, fifteen miles from San Augustin, is being worked by some Americans from Tombstone, Arizona, who are said to have a big thing.

A convention is to be held in Hermosillo on October 21st to effect a state organization of Mexican and foreign mine owners. The object of the organization is to obtain legislation favorable to the mining industry and to establish better and closer relations between the government and the mining interests. The governor of the State and a number of Mexican capitalists are the leading spirits in this movement.

CHIHUAHUA.—In the Montezuma District, 90 miles south of El Paso, Tex., work is going on constantly, with a steady output of ore for exportation, and the investors, mostly St. Louis parties, are greatly encouraged.

In the Sabinal District the Plancha de Plata mine is sinking the main shaft and will go to the depth of 235 feet, where an ore-body is expected to be struck. The present extraction is milling ore of too low a grade for shipping.

The Santa Inez mine is owned by some prominent men in this city, who are having it worked by a force

of Mexican soldiers. The locations are reported to be among the best in the camp.

The Cinco de Mayo mine, owned by El Paso parties, has struck a fine vein of argentiferous galeua. The Florenza mine, owned by F. J. Reynolds & Co., a firm of colored men, has a new ore-body at the bottom of a hundred foot shaft.

The San Francisco and Santo Domingo mines, owned by Americans, are steadily shipping ore of good quality.

In Parral the Perro Bravo mine is shipping ores containing lead, copper, silver and gold, averaging about \$100 per ton. It is owned by parties in Dallas, Texas.

The Santa Margarita mine, near Rosario, owned by Mr. L. M. Darroch, is said to be in bonanza, with ores worth over \$100 per pound as they come from the mine. Some of it is said to be almost pure gold.

A mine of argentiferous lead, 35 miles west of Montezuma, has been sold to some St. Louis parties. The ore is reported as running from \$50 to \$60 per ton.

A prospecting party of Americans has started from the city of Chihuahua to explore the mountains in the neighborhood of Batopilas.

The Sauz District, on the line of the Mexican Central Railroad, about 25 miles north of the city of Chihuahua, is attracting some attention. The ores contain copper, silver, and lead, with some gold. The silver ore runs from 40 to 200 ounces silver and 25 per cent of lead; 125 men are being worked night and day on one of the mines. The ore is made into a matte that is exported to Germany.

Some El Paso parties have purchased a tract of land in Mexico, five miles south of that city, on which there is said to be a coal vein eight feet thick.

COAHUILA.—The shipments on the Mexican Central Railroad at Escalon, the station to which are sent the ores from the Sierra Mojada, average about 300 tons of ore daily. These Sierra Mojada ores, rich in lead and easily fluxed, are the cause of the long pending acrimonious discussion about the free importation of lead from Mexico to El Paso. The lead in the ores is about 14 1/2 per cent of their value. At Santa Rosa de Muzquiz, the Cedral and San Juan mines, long inactive, and in which large sums have been sunk by American capitalists, have started up again under more favorable auspices, and are said to be doing well. At the Fronteriza mine, in the Sierra del Carmen, in the same district, a smelting plant has been erected, and it is expected that shipments of lead bullion will soon be made. The latter mine was discovered in the desert about four years ago by some enterprising prospectors. It is now owned by capitalists in San Antonio, Texas.

At the San Felipe coal mines work was suspended during the greater part of last month on account of the heavy rains, which flooded the mine.

NEUVO LEON.—The old mines on the Santos estate near Sabinas Hidalgo are to be reopened by a company of capitalists from Texas. Some new mines are under exploitation near Rinconada, on the Mexican National Railroad, by Mexicans who are just beginning to realize the value of the deposits that have been lying idle among them since the times of the Spaniards.

Since the rise in the price of lead the double shifts have been put on in most of the lead mines along the line of the Mexican National Railroad, as the owners are determined to make hay while the sun shines.

SAN LUIS POTOSI.—The mining district of Charcas is beginning to attract attention from Americans, and several ore-buying companies have their representatives on the ground. It is anticipated that 1000 tons of lead-silver ores will be shipped from here monthly as soon as the Mexican National Railroad is opened to traffic. The largest mine in the district is the "Teros Generales," owned by three Mexican families, who have worked it for the last 25 years. The vein is said to be 60 feet wide, the present production being 1000 tons a month with a force of 500 men. I saw in this place the only application of the patio process to lead ores that I have ever heard of. As is well known, the process is generally understood to be only applicable to ores containing not over 4 per cent of lead and no zinc, but the ores worked at Charcas have an average, as far as I could judge by eye, of at least 20 per cent of lead and 5 per cent of zinc. They were stated to contain about 24 ounces of silver per ton. The process is worth detailing as a metallurgical curiosity. The raw ore is first ground in a Chilian mill to about the size of rice, then roasted in a kind of a muffle furnace to get rid of the sulphur, arsenic, etc. It is then ground again, with water, in an arrastra. The mud thus produced is spread on a patio, allowed to dry partially and then made up into balls about the size of a boy's head, which are exposed on the patio until they are thoroughly dry. The ore is then ground in another Chilian mill and then sifted through some swinging sieves of about No. 20 mesh, worked by hand. What goes through the sieves is reverberated with about 62 1/2 pounds of salt to the ton, after which it is ground and sifted again, and then spread on the patio for amalgamation. It takes about 12 days on the patio to bring down all the silver. No magistral (sulphate of copper) is used, the same effect being attained by the use of more or less salt in the final roasting. The losses are stated to be from 15 to 20 per cent of the silver, and the cost of the process was stated to be between \$10 and \$14.25 per ton, these being estimates by two different parties. On asking why these ores were not smelted, the reply was that they eat up all the litharge that they are accustomed to eat as a flux. The mining of these ores was estimated to cost \$10 per ton, so that the profit must have been very little.

There are some quicksilver mines about 22 miles to

the eastward of Charcas, which are said to have been profitably worked in the last century, but which have been idle for many years.

ZACATECAS.—The San Miguel mine in the Nieves District is doing well under the management of Mr. Henry Winninghoff. He ships his ore to St. Louis.

The Rosario mine, in the same district, at which the Fort Worth & Mexican Mining Company made a failure, is now in the hands of some practical American miners, who expect to have the property on its feet again very soon.

The coinage in the Zacatecas mint during the last fiscal year was \$5,159,880 in gold and silver.

JALISCO.—Very little is heard about the mining operations in this State, yet they must be carried on quite extensively, as the mint at the capital, Guadalajara, is officially stated to have coined over \$1,000,000 in the past year.

GUANAJUATO.—This State, so well known for its richness in gold and silver, has likewise several tin mines which are profitably worked by the owners, who live in San Luis Potosi. The tin deposits of the State are said to be quite extensive. There are also many mines of quicksilver, although I think that all are idle.

HIDALGO.—The Cueva Santa mine, at Pachuca, is now in charge of Mr. Henry Pengilly, who has a good reputation as a miner and will doubtless do well for the owners. At the Rosario Viejo mine, the water which rose in the shaft in consequence of the late heavy rains is being rapidly lowered. The cross-cut at the bottom of the main shaft is thought to be near to the lode. The same lode is turning out an abundance of ore in a neighboring mine. In La Luz Pachuquilla mine the company is cross-cutting from the new shaft to reach the great Santa Gertrudis sister lode, which is on the north line of the location.

In the Santa Gertrudis mine it is claimed that there is ore in sight for eight years' extraction.

CHIAPAS.—A concession for the exploitation of mines of all kinds and of gold placers in "Los Ocotes," Santa Fe Zacualpan, district of Pichucalco, has been issued to Jose Mora and Carlos Eisenmann.

MEXICO CITY.—A ten year patent has been issued to Hubbard Russell for a new process for the treatment of ores and mineral products.

During the fiscal year of 1887 and 1888 the following amounts were coined in the mints of the Republic:

Silver.....	\$25,862,977.50
Gold.....	316,818.00
Copper.....	85,000.00
Total.....	\$26,264,795.50

Besides the amount of bullion coined, there was received an additional amount of \$154,954.31, and there was an exportation of uncoined silver to the amount of \$894,786.96. Uncoined gold was exported to the amount of \$483,248.74. The total amount of the precious metals produced, according to the official reports, including the \$85,000 of the copper coinage, was \$27,697,785.51. To the above amount must be added the gold and silver sent out of the country in the ores. Of these I have no figures, and do not know that any statistics have been taken, but the amount will probably be little, if any, inferior to the amount of bullion accounted for as above, as this branch of commerce has assumed vast proportions within the past few years.

SOUTH AFRICA.

It is rumored that about 150 miles northeast of Barberton, and 70 miles from the coast, and within a short distance of a navigable river, a very rich copper deposit has been discovered. The lode is described by the natives as a "mountain of copper," and to be very rich, and to average 20 per cent in copper. A syndicate has been formed in Barberton, and all the shares were subscribed for at once.

SOUTH AMERICA.

DUTCH GUIANA.

The official Government reports of Dutch Guiana just published show that during last year 395 gold concessions were granted, and 133 for the first four months of 1888. During 1887 the gold production is given at 858,858 1/2 grammes, representing a value of about £235,330. During the first quarter of this year the gold produced amounted to 84,294 grammes, or about £23,100 in value. From the beginning of the exportation of gold till the end of 1887 nearly £2,000,000 gold dust has been shipped. In our issue of September 29th, we gave the exports of gold from British Guiana up to August 15th, 1887, and French Guiana up to June 30th, 1887.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Oct. 19.

Statistics.

Production of Anthracite Coal for week ended October 13th and year from January 1st:

1888.			
Tons of 2240 lbs.	Week.	Year.	1887.
P. & Read, R.R. Co.....	206,975	5,364,369	5,730,934
Cent. R.R. of N. J.....	137,512	4,382,499	3,837,552
L. V. R.R. Co.....	158,064	5,064,356	4,951,738
D., L. & W. R.R. Co.....	167,417	5,358,021	4,406,585
D. & H. Canal Co.....	86,143	3,463,267	2,966,030
Penna. R.R.....	63,327	3,593,508	2,852,688
Penna Coal Co.....	39,461	1,326,645	1,187,162
N. Y., L. E. & W.....	25,000	745,551	597,514
Total.....	883,890	29,298,276	26,550,212
Increase.....		2,748,064	

The above table does not include the amount of coal consumed and sold at the mines, which is about six per cent of the whole production.

Production for corresponding period:

1883.....	24,184,621	1885.....	23,606,691
1884.....	24,184,012	1886.....	24,409,294

Production of Bituminous Coal for week ended October 13th, and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

1888.			
Tons of 2240 lbs.	Week.	Year.	1887.
Phila. & Erie R.R.....	1,668	49,834	15,062
Cumberland, Md.....	68,358	2,735,434	2,488,326
Barclay, Pa.....		119,280	144,217
Broad Top, Pa.....	8,946	275,479	257,582
Clearfield, Pa.....	64,675	2,630,030	2,483,509
Alleghany, Pa.....	16,939	612,015	664,728
Pocahontas Flat Top.....	26,496	1,082,648	785,460
Kanawha, W. Va.....	26,519	1,246,631	1,068,942
Total.....	213,601	8,811,340	7,887,626

WESTERN SHIPMENTS.

Pittsburg, Pa.....	16,726	560,643	436,612
Westmoreland, Pa.....	30,963	1,197,586	1,093,358
Monongahela, Pa.....	7,002	313,304	209,610
Total.....	54,691	2,071,533	1,823,586

Grand total..... 268,292 10,882,873 9,711,212

Production of Coke on line of Pennsylvania R.R. for week ending October 13th, and year from January 1st, in tons of 2000 lbs.: Week, 87,326 tons; year, 3,092,586 tons; to corresponding date in 1887, 2,786,000 tons.

Anthracite.

The anthracite coal trade continues in an unexpectedly good condition. The shipments last month were simply enormous, aggregating almost 4,000,000 tons, and they have been continuing at about the same rate since the 1st of the present month.

During the week ending October 13th, the shipments from the Wyoming region were 481,333 tons; from the Lehigh, 132,848, and from the Schuylkill, 239,530 tons, an aggregate of 903,711 tons, giving an increase over the corresponding month of last year of 181,447 tons. At this rate it seems scarcely possible that the market should be able to stand up for any length of time. During the present month the outlet to the West will take all that the companies can ship there, but after the 25th of October no coal can be shipped to the far West points by lake; consequently the deliveries to the East will commence to increase, and if the production were continued without restriction it requires no prophet to foresee what will happen.

The amount of coal which the market has taken this year, and which it still takes, is a surprise to every one in the trade, and many of the companies report orders on their books that would carry them well on to the middle of next month without any new business. Consequently we may expect a very fair trade throughout November, but in December and January an accumulation of coal is likely to occur which will necessitate some action on the part of the companies to reduce output, or the prices will suffer in the usual way.

No concerted action has been taken with the view of arriving at a reduction in output, and each company is doing its utmost to increase its tonnage, though some of them claim that after the first of next month they will reduce from 10 to 15 per cent.

The demand is excellent for stove and chestnut and fair for egg coal, but broken is very dull, and we hear of very good hard broken selling as low as \$3.75 per ton, and of some inferior hard coal as low as \$3.50 per ton. These, however, are exceptional figures, \$4 being the regular quotation. Pea coal is in the same condition as heretofore, with prices named sometimes below \$2. Some of the producers are stopping their shipments to tidewater of this size of coal, and they report rather a better feeling in regard to it, which is quite natural, but it is not general.

At the meeting of the sales agents on Wednesday last, no changes were made, and no question was raised as to curtailing output or regulating it in any way. This is always a stumbling block, and the actions of one or two of the companies do not indicate that it is going to be much easier to get over this year than it has been in the past.

We continue our quotations of last week, which are practically unchanged:

Broken.....	\$3.95	Chestnut.....	\$4.65
Egg.....	4.30	Pea.....	\$2 @ \$2.25
Stove.....	4.65		

On January 1st next the Philadelphia & Reading Coal and Iron Company will abandon the coal shipping piers at Elizabethport, and thereafter all its coal supplied to New York and the Eastern trade will be shipped from Port Liberty, N. J., and Communipaw.

Mr. John H. Jones, Chief of Bureau of Anthracite Coal Statistics, has issued the following statement of anthracite coal tonnage for the month of September, 1888, compared with same period last year. This statement includes the entire production of anthracite coal, excepting that consumed by employes and for steam and heating purposes about the mines, but does not represent the entire anthracite coal tonnage actually transported by the respective railroad companies, adjustment being necessary in the compilation to avoid duplications, etc.

COMPANIES.	Sept., 1888.	Sept., 1887.	Difference.
Phila. & Reading R.R..	830,951	736,309	Inc. 94,640
Lehigh Valley R.R.....	668,473	471,821	Inc. 196,652
Central R.R. of N. J.....	595,430	301,543	Inc. 293,887
Del., Lack. & West. R.R.	693,311	598,614	Inc. 102,697
Del. & Hud. Canal Co.....	442,357	404,778	Inc. 37,579
Pennsylvania R.R.....	415,492	331,039	Inc. 84,454
Pennsylvania Coal Co.....	145,846	148,951	Dec. 3,105
N. Y., L. E. & W. R.R..	118,494	58,606	Inc. 61,888
Total.....	3,916,324	3,137,654	Inc. 778,671

Table with 4 columns: COMPANIES, For year 1888, For year 1887, Difference. Lists various coal companies and their production figures.

Table with 4 columns: For year 1888, For year 1887, Difference. Shows regional coal production for Wyoming, Lehigh, and Schuylkill regions.

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The stock of coal on hand at tide-water shipping points September 29th, 1888, was 370,811 tons; on August 31st, 1888, 396,752 tons; decrease, 25,941 tons.

Bituminous.

There is nothing new to report in this market. The demand is fairly good for the season and the companies are full, and some of them more than full, of orders.

Arrangements for controlling next year's soft coal trade are under discussion, and it is to be hoped that they will produce more harmonious results than were apparent this year.

Tide-water prices are nominally as follows: \$2.60 f.o.b. Baltimore and Georgetown, and \$3.25 for New York Harbor.

Boston.

[From our Special Correspondent.]

The leading feature of the coal market at present is the advance in freights and the strength with which rates are maintained. It is an old story that retailers will fight for a reduction of five cents on the f.o.b. price, while freights advance on them 25 cents.

F.o.b. prices are, if anything, rather easier than they have been, and it is not this feature of the market which worries the retailers. Those who are well supplied at present entertain no doubts of lower f.o.b. prices later on.

There is nothing especially new in the line of bituminous coal. There is a fair movement, but the heaviest buyers are those shippers who tried to get the trade of the whole earth, and cannot produce all the coal they have sold.

The sharp advance in freights is referred to above. It is hard to quote rates for more than 24 hours with any exactness.

We quote vessel rates, exclusive of discharging: New York, 90c. @ \$1; Philadelphia, \$1.10 @ \$1.15; Baltimore, \$1.25 @ \$1.35; Newport News and Norfolk, \$1.05 @ \$1.10; Richmond, \$1.40; Provincial, \$1.75.

Retail trade is active, at unchanged figures. Delivered prices are: Stove and Nut, \$6.50; Egg, \$6.25; Broken, \$6; Franklin, all sizes, \$7.75; Lehigh Egg, \$6.50; Broken, \$6.25. Wharf prices 50 cents less than the above.

Packet dealers are busy, but as usual, at this season, are badly troubled for want of cars.

The following bins for coal were opened on the 16th inst. at the city hall at Boston: L. S. Burnham & Co., F. W. Darling & Co., both agreeing to furnish coal at the following rates: For city proper, South Boston, Roxbury, and Charlestown—furnace, \$5.85; egg, \$6.10; stove, \$6.35. West Roxbury, Brighton, and Dorchester—furnace, \$6.10; egg, \$6.35; stove, \$6.60. The bids were held under advisement.

Buffalo.

[From our Special Correspondent.]

Nothing worthy of note in the coal market either in prices, supply or demand as far as learned. Therefore, this screed will of necessity be brief.

Over 2,000,000 tons of coal have been shipped from Buffalo by lake to Western points thus far this season.

Stormy weather again on the lakes hindering vessels from making speedy trips and causing many disasters and wrecks, though none of a very serious character. Some tons of coal consigned to "Davy Jones'" locker.

The Lehigh Valley Co. has recently given orders for 2000 gondola cars, which will be used partly in the Western coal-carrying trade. The Pennsylvania Company last week ordered 200 box freight cars in addition to other contracts made some time since.

Lake freights at end of last week and continuing till time of writing active and firm, with light supply of coal considering the amount of tonnage offered. The ruling figures were as follows: 100c. to Chicago and Sheboygan, 90c. to Milwaukee, 60c. to Duluth, Su

perior, Marine City and Washburn, 75c. to Marquette, 40c. to Detroit and Toledo, and 70c. to Saginaw.

The shipments by lake westward from this port from October 11th to 17th, both days inclusive, were 102,570 net tons, namely: 48,620 to Chicago, 22,130 to Milwaukee, 20,050 to Duluth, 5600 to Superior, 2970 to Toledo, 600 to Detroit, 400 to Marine City, 460 to Marquette, 1650 to Washburn, 70 to Portage. The total shipments thus far this season, 7,042,988 net tons, including cargoes on vessels from Tonawanda not reported at Buffalo Custom House.

The receipts by canal here of coal for second week in October, 3954 net tons; the shipments, 386 net tons.

Pittsburg.

Oct. 18.

[From our Special Correspondent.]

Coal.—The barge rise was on time. The result was over six million bushels coal left on Sunday and Monday for the Western and Southern markets. The run was a very successful one. The miners in the various pools are at work, and will continue until the empties are all loaded. The Pittsburg Railroad Coal Association met and adopted the new scale, an advance of 5 cents per ton for mining, to go into effect on the 1st of November.

PRICE OF COAL PER 100 BUSHELS = 7600 LBS.

Table with 2 columns: Pool name, Price. Lists prices for First, Second, and Third pools, and Railroad coal.

Connellsville Coke.—The market is fair with a great demand for coke among the furnace men of the Ohio Valley. A new syndicate will be formed in the near future; the price of coke is certain to go up. Cars are again reported scarce. The old contracts for dollar coke are nearly all filled; the next contracts will be for \$1.25 coke, or even more.

The new rates are: Blast-Furnace, \$1.25 per ton; to dealers, \$1.35; foundries, \$1.40.

Freight rates to Pittsburg, 70c. per ton; to the Mahanov and Shenango valleys, \$1.35; East St. Louis, \$3.20; to Cleveland, \$2.80; to Chicago, \$2.75; to all other points the same proportions.

FREIGHTS.

The latest charters to October 18th per ton of 2240 lbs. From New York to:—Bangor, 90c @ \$1; Bath, \$1; Beverly, \$1; Boston, \$1; Bridgeport, Conn., .70; Bristol, .90; Cambridge, Mass., .90c; Cambridgeport, .90c; Charleston, .90; Chelsea, .90; Com. Pt., Mass., .90; E. Boston, .90; E. Cambridge, .90c; E. Greenwich, R. I., .90; Fall River, .90; Hartford, .90; Lynn, \$1; New Bedford, .90 @ \$1; Newburyport, \$1.10; New Haven, .70; Newport, .85 @ .90; New York, .25; New London, .80 @ .85; Norwalk, Conn., .70; Norwich, .90; Portland, .90; Portsmouth, N. H., \$1.05; Providence, .90; Quincy Point, .90; Salem, \$1.

From Philadelphia to:—Annapolis, .70; Bangor, 1.30 @ 1.40; Baltimore, .70 @ .75; Bath, Me., .95; Beverly, 1.25; Boston, 1.10 @ 1.20; Cambridgeport, 1.15; Charleston, .90; Charlestown, 1.00; Chelsea, .95; Com. Point, Mass., 1.10; East Cambridge, 1.12; Fall River, 1.00 @ 1.10; Gardner, Me., 1.40; Galveston, 2.80; Georgetown, D. C., .85; Gloucester, 1.05 @ 1.17; Lynn, 1.30 @ 1.40; Marblehead, 1.05; Medford, 1.10; Milton, 1.20; New Bedford, .80 @ .90; Newburyport, 1.40; Newberne, .80; New York, .90; Norfolk, .65; Portland, 1.10 @ 1.20; Portsmouth, N. H., 1.00; Portsmouth, Va., .65; Providence, 1.00 @ 1.10; Richmond, Va., .75; Rockport, 1.22 @ 1.30; Saco, Me., 1.40 @ 1.50; Salem, Mass., .90; Savannah, 1.00; Washington, .85; Weymouth, 1.15; Wilmington, N. C., .60.

From Baltimore to:—Bangor, Me., 1.50 @ 1.60; Bath, 1.50; Boston, 1.45; Bridgeport, Conn., 1.10 @ 1.15; Bristol, 1.25 @ 1.30; Brooklyn, .95; Charleston, 1.10 @ 1.15; Fall River, 1.30 @ 1.35; Galveston, 2.90 @ 3.00; Gardner, Me., 1.00 @ 1.10; New Bedford, 1.20; Newburyport, 1.40 @ 1.50; New Haven, 1.20 @ 1.25; New London, 1.25; New York, 1.05 @ 1.10; Portland, 1.40 @ 1.45; Portsmouth, N. H., 1.50 @ 1.55; Providence, 1.25; Quincy Point, 1.45 @ 1.50; Richmond, Va., .70; Salem, Mass., 1.40; Savannah, 1.25; Somerset, 1.25 @ 1.30; Williamsburgh, N. Y., 1.10; Wilmington, 1.10.

* And discharging, .3c. per bridge extra. † Alongside.

‡ And towing.

METAL MARKETS.

NEW YORK, Friday Evening, Oct. 19.

Prices of silver per ounce troy.

Table with 8 columns: Date, Sterling Exchange, Lond n Pence, N. Y. Cts., Date, Sterling Exchange, Lond n Pence, N. Y. Cts. Shows silver prices for Oct 13, 15, 16 and Oct 17, 19.

Foreign Bank Statements.—The governors of the Bank of England, at their weekly meeting, made no change in its rate for discount, and it remains at 5 per cent. During the week the bank gained £203,000 bullion, and the proportion of its reserves to its liabilities was raised from 34.26 to 36.02 per cent, against an advance from 41.59 to 43.87 per cent in the same week of last year, when its rate for discount was 4 per cent. The weekly statement of the Bank of France shows a loss of 13,850,000 francs gold and a gain of 4,800,000 francs silver. The weekly statement of the Imperial Bank of Germany shows a specie loss of 6,480,000 marks.

Copper.—The market has been very quiet during the past week, but prices are rather firmer, 17.50 having been bid for November and December delivery, with no sellers below 17 3/4. For January delivery a few lots have been sold by outsiders at 17.15, which were very readily taken up by people in the trade, and that price is freely bid for further quotations. Supplies of lake copper continue to be very limited. Outside brands remain in very good request, and nothing is obtain-

able below 16 1/2 @ 16 1/4. Beyond this there is nothing new to report about the market, but all reports agree that manufacturers who consume copper are very well booked with orders.

In the London market the feature of the week has been the marking down of spot Chili Bars to £75 10s., which is about the actual value of the copper as compared with other descriptions. Three months Chili Bars also remain steady at £78 @ £78 10s., but the business being done in Chili bars now is exceedingly small, after the recent bitter experiences of many of the speculative operators, and even at the present quotation this kind of copper offers little or no inducement to consumers. G. M. B. copper is quoted Spot at £77 10s., and 3 months at £77 to £78 and Best Selected £81 10s. to £82 10s. The consumptive demand also continues satisfactory.

According to cable advices from Messrs. Henry R. Merton & Co., the statistics of visible supplies made up for the first half of this month again show an increase of 900 tons. Taking account of the fact that Anaconda matte is now being shipped abroad, and that the surplus not sent to home consumers is being stocked at Butte City, and that the matte coming from other producers throughout this country is also being stored near New York, it seems very probable that the European stocks as published in the periodical return of visible supplies may now be considered at about the maximum; but at the same time it must not be overlooked that the accumulations of stocks, above referred to, and which are not included in the statistics of visible supplies, are nevertheless available at any moment, and can be put on the market as soon as a favorable opportunity arises. On another page we refer editorially to the dangers which hang over the trade.

James Lewis & Sons, of Liverpool, report under date October 1st, as follows:

The quantity of Chile bar copper sold for delivery during the month of September being greater than was available from outside sources, the syndicate obliged many of the vendors to come to them for the warrants they required, and for which they raised their selling price from £90 on the 1st ultimo to £95 on the 4th, to £100 on the 7th, to £105 on the 8th, to £107 10s. on the 10th, to £112 10s. on the 11th, and to £115 on the 13th, at which it has since nominally remained, though we understand they will now cancel contracts on payment of £20 per ton. Importers and other holders, however, met the demand below the syndicate figures and consequently realized considerable profits. As the scarcity of warrants during the month of September had been foreseen by most importers and dealers, a good deal of the copper sold at these high prices was supplied by them, probably about 1500 tons out of the 4000 tons estimated as required for delivery being settled for privately with the Syndicate at £10 to £25 difference—mostly on German account.

The prices paid in the open market varied as follows: £91 on the 1st, £95 on the 4th, £99 17s. 6d. to £99 on the 7th, £102 on the 8th, £105 on the 11th, £95 on the 12th, £101 on the 13th, £90 2s. 6d. on the 17th, £95 to £97 on the 19th, £99 5s. on the 25th, £104 and £103 on the 26th, to-day's selling price being £101 10s., though from consumers the syndicate are willing to accept £78.

In Chili bars, with three months prompt, a few sales have been made at £78 17s. 6d. up to £79 5s. per ton.

Most of the business transacted the past month has been in good merchantable copper, the value of which improved £2 per ton—from £76 5s. to £78 5s. for cash, £76 17s. 6d. to \$79 for three months prompt—in consequence of large forward purchases on behalf of the syndicate. To-day, however, 5s. below these prices has been accepted, with sales of about 500 tons. The value of the different kinds of copper deliverable under this title and form of contract has now almost approximated that of Chili bars, for forward delivery, and ere long contracts for Chili bars will probably be merged into those for G. M. C., thus effectually preventing the recurrence of a "corner."

During the month 871 tons of English and 218 tons of American copper have been added to the stock of good merchantable copper, for which warrants are issued.

For English copper there has been a fair demand for home consumption, but, so far, very little has been taken for export, except what is transferred to France by the syndicate, who have to-day raised their quotations 30s. per ton.

On the 13th ultimo, the Bank of England advanced their rate of discount from 3 to 4 per cent, and the Bank of France at once followed with an advance to 3 1/2 per cent. A further advance in the Bank of England rate to 5 per cent, and possibly even higher, is shortly expected. This will considerably increase the cost of holding the present large stock of copper, now estimated to amount in public and private stores and smelters' works in England and France to over 105,000 tons, and in the United States to about 10,000 tons—representing an outlay of fully £8,000,000.

In consequence of the great increase of the stocks, negotiations have for some time past been pending between the syndicate and the larger producers of copper for a reduction of their output to the extent of 25 per cent, the loss to the mining companies being compensated for by an increase in their contract price, while the contracts are to extend over a period of 10 or 12 instead of 3 years. It is stated that several of the American companies are willing to accede to these terms.

Only 1142 tons of Anaconda matte have arrived here the past month, as it is now being stored at the smelting-works in Montana; while Boston-Montana

matte, Arizona and other slab or ingot copper are being stored in New York.

The output of the ten principal Lake Superior mines for the first eight months of this and last year has been: 1887, 25,140; 1888, 27,324 tons (2000 pounds) fine.

The directors of Mason & Barry, Limited, have today declared a dividend at the rate of 9 per cent per annum for the first six months of this year. This represents a profit of about £24 per ton on the company's annual production of about 7000 tons fine copper.

During the past month 420 tons of Chili bars have been transferred from here to France, making 20,320 tons to date, viz.: 16,321 tons to Havre, 2848 tons to Rouen, and 1151 tons to Dunkirk.

Stocks show an increase of 4988 tons since the 1st ultimo, imports being 37,395 tons greater to date than last year, while deliveries are 23,811 tons less.

The arrivals in England from Chili during the month have been 1528, and the deliveries 484 tons fine, and from other countries 5065 and 3687 tons fine, respectively.

The arrivals here from the United States have been 95 tons bars, 300 ingots, and 1358 matte (including 1142 tons Anaconda), equal to about 1184 tons fine copper, and in France 369 tons.

The Chili charters for the month are 1700 tons, and the closing rate of exchange is 26¼d., bars being £28.80 per quintal.

Tin—The statistics compiled in London show, for the first half of this month, deliveries 1600 tons, and stocks reduced to 2700 tons of Straits Malacca and Australian tin, whilst shipments from the East only amount to 1000 tons. Consumption continues on a very satisfactory scale, and prices have gradually hardened. In this market, Spot and October tin is very scarce, and is held for 23¼@23½, whilst November is obtainable at 23¼@23½, and December at the same price. In London the closing quotations to-day are: Spot, £103@£103 5s.; three months, £103 10s.@ £103 12s. 6d.

Lead—The past week has been a very exciting and eventful one in this market. We have for a considerable time past sounded the warning note with regard to the inflated condition of prices, and the collapse which we have long anticipated has at last occurred. That the attempt of certain operators to corner lead was not only annoying to traders and consumers desirous of carrying on a legitimate business, but also beyond their financial abilities, has been our conviction all along, and like many other similar attempts it has involved them in disaster. Now that the storm has burst it is to be hoped the ultimate effect will be to clear the way for a more healthy condition of affairs, and consumers and the general body of legitimate traders can only be benefited by the collapse if it has this much desired result. At the beginning of the week the market was pretty steady, and only on Wednesday last 4'90 was bid for spot lead by dealers, while in the afternoon the price declined to 4'70. On Thursday, the collapse was complete, and after 4'10 had been touched orders from consumers came out pretty freely, and on Thursday afternoon the market closed much steadier at about 4¼ buyers. To-day the reported failures drew a large attendance of members to the Metal Exchange, and the market opened rather excited. In some quarters it was thought that lead would be obtainable at very low figures, and some efforts were put forth to depress prices artificially by pressing offers of small quantities, but these were taken up by buyers in different quarters, and in this way about 200 tons changed hands at from 3'95 to 3'90. After the first exchange 150 tons were sold out under the rules at 3¼, and at the afternoon exchange considerably more confidence was shown, and a good many people appeared to be anxious to take advantage of present prices. At the regular call a few small lots were sold at 3'95, after which the following lots were again sold out under the rules, viz.: 100 tons spot at 4'02½, 100 tons October at 4'07½, 100 tons November at 4'00, with buyers remaining at these figures. After this very considerable drop (about 1c. per lb. in a week), the fact must not be forgotten that consumers are known to be almost entirely devoid of stocks, and under these circumstances people who need the metal may find they have missed a good opportunity if they defer their purchases too long.

The following is the announcement which came from Chicago to-day:

CHICAGO, Oct. 19.

From all appearances the pig lead corner has burst, and with it the great firm of Nathan Corwith & Co.

The immediate cause of the failure was the refusal of the Union National Bank to further extend the time on overdrafts to the amount of \$37,000, and attachments were sued out and placed in the Sheriff's hands.

The sum is said to represent but a very small portion of the firm's indebtedness to the bank, and is only a climax to a long series of overdrafts to pay margins to sustain the pig lead trust.

The Atlas National Bank is also said to a loser through Corwith & Co.'s failure, although President Crannis of this bank said last night that such was not the case. In addition to the claim of the Union National Bank, other judgments, amounting in all to \$89,000, are said to have been secured yesterday. Mr. Corwith, Sr., is generally supposed to be worth upward of \$10,000,000.

Spelter—Very little is offered, and prices continue firm at 5¼@5½. Foreign is held for 6@6½; and the London quotation for good ordinary brands is £18 10s.

Antimony is very firm. We quote Cookson's 14c., and Hallett's 10½c.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Oct. 19.

Heavy Chemicals.—This market is in substantially the same condition as last week. As yet there is no further advance in prices, stock available is rather limited, and consumers are naturally not inclined to buy more than actually necessary on account of the increased cost. Towards the close of the week, however, there have been indications of greater activity and an increase in the volume of business. The news from abroad, although without special features of interest or importance, is that the Liverpool market is very firm and supplies are scarce, thus reassuring us that the advanced prices are based upon a solid foundation, and that both supplies and prices are entirely under the control of the "combinations."

Liverpool brands of carbonated soda ash, 48 per cent, are in better demand. There have been numerous inquiries from glass makers, which, coming upon a dull market and rather light stocks, have given firmness to the market. Considerable business has been done, although no very large transactions are reported. There has been no marked change in quotations. Spot is held at 1'27½@1'30c., and 1'25@1'27½c. is asked for future delivery.

Newcastle brands of soda ash, 48 per cent, are not wanted to any great extent. Prices remain at 1'22½@1'27½c. to arrive, according to quantity, and 1'30c. on the spot.

Caustic soda ash. More business is reported, but trade is largely of a jobbing character. Spot is quoted at 1'32½@1'35c., while to arrive may be had at 1'25@1'30c., according to quantity.

Caustic soda has been a little easier. A halt has been called in the advance of prices, but dealers and consumers alike are waiting for the further action of the English "combination." The nominal quotations for the higher tests, 70@74 per cent, are 2'35@2'40c., and for 60 per cent, 2'50@2'62½c.

Sal soda is rather dull, although the offerings are light. The quotations, 95@1c. for stock on the spot, and 95@97½c. to arrive.

Bleaching powder is very scarce and prices have again risen. For supplies on the spot, 2'20@2'25 is now asked, while lots to arrive may be had at 2'10@2'15, according to quantity and position.

Acids.—The general condition of the acid market is as good as could be expected with the present competition in the trade, which demoralizes prices and prevents a really healthy condition of affairs. Contracts are now being made for 1889, the course of prices for an entire year is to be decided, and surely there would be no more opportune time for the formation of the often-talked-of "combination." Nearly every manufacturer we have seen has thought favorably of such a step, and yet no one seems inclined to take the matter in hand. There seems to be a feeling of indifference, which is hardly explainable when we consider the benefits to be derived from even a simple agreement of the manufacturers to keep prices at a profitable point. Can we attribute this lethargy to a wholesome fear of the Standard Oil Company, which, although itself the greatest trust in the world, always contrives to prevent any combination prejudicial to its interests?

Acetic Acid.—For a long time past manufacturers have been endeavoring to support the market at something like a profitable point, but now their efforts appear to be in vain. For months past the quoted price has been 2¼@2½c., while contracts have been largely made at anything above 1'80c. or 1'85c. per lb. This condition of affairs is largely attributable to the decrease in the price of lime. Acid manufacturers bought their supplies of lime for 1888 at \$1.65 per barrel. To-day lime can be readily obtained at \$1.15 or \$1.20. This obviously will make a wide difference in the cost of production of acetic acid during 1889.

Nitric and muriatic acids are quiet, with transactions of moderate proportions. Ruling prices are about as follows: Muriatic, 18", 1'10@1'15c.; 20", 1'25@1'30c.; 22", 1'50c. Nitric acid is held as follows: 36", 3¼c.; 38", 4c.; 40", 4½c.

Oxalic Acid.—There is no further change in prices, although it appears probable that any very marked increase in the demand would furnish a basis for another advance. This week, transactions of a jobbing character have taken place at 8¼c. per lb. for 10-ton lots and 9c. per lb. for a single cask.

Tartaric acid has been selling in a quiet way at the old figures, which are as follows: Crystals, in lots of 3000 lbs. or more, 43c. per lb.; smaller quantities in barrels, 44c. per lb.; 50-lb. lots in boxes, 45c. per lb., and one cent advance on these figures for powdered.

Sulphuric acid, there is a feeling of strength apparent in the market. Prices are firm and manufacturers are sold out to the limit of their capacity. The price of nitrate of soda, which enters into the manufacture in the proportion of about eight per cent, has advanced considerably in the last six weeks, and yet there is no very important actual increase in the price of sulphuric acid, although the market is undeniably firmer. The market this week may be quoted for 66 degrees, 95c. @ \$1.15 per 100 pounds, according to quantity.

Fertilizers, Potashes, etc.—Prices show an advancing tendency, with a fair volume of business and general activity. The revised price list is about as follows: Azotine, \$2.45@2.50 as to quality; dried blood (city), low grade, \$2.40 per unit; Western high grade, \$2.50 per unit for ground material; tankage, high grade, \$23@25 per ton; low grade, \$21@22 per ton. Fish scrap, \$24@25 per ton f.o.b. factory. Sulphate of ammonia, \$3.25 per cwt.

Refuse bone-black, guaranteed 70 per cent phosphate, is quoted at \$19.00@19.50 per ton. Dissolved bone-black is 90c. @ \$1 per unit for available phosphoric acid, and acid phosphate 75@80c. per unit for available phosphoric acid.

Steamed bones, unground, \$19; ground, \$25.

Charleston rock, undried, \$5@5.25 per ton; kiln dried, \$6 per ton, both f.o.b. vessels at the mines. Charleston rock, ground, is held at \$10@10.50 ex steamer at New York.

Muriate of Potash.—Prices are firm, the arrivals having been largely absorbed by the demand for consumption. We continue to quote \$1.80@1.85 for both spot and arrivals.

Double Manure Salts.—There is a somewhat improved demand, with also an increase in the supply. Prices are firm at 1'15c. on a basis of 50 per cent potash.

Double grade sulphate of potash continues in good demand at \$2.30 per 100 pounds, on a basis of 90 per cent.

Kainit.—The market is unchanged. The arrivals this week have been slightly larger than last. We continue to quote on the spot, \$10.00@10.50 and \$9.50@9.75 to arrive. The stock in store is very light.

Brimstone.—There is really nothing new to report. Ruling prices on the spot are \$23@24 for seconds, and \$22 for thirds. For shipment, \$21@22 is asked.

Nitrate of soda.—Prices are very firm. We quote: 2'22½@2'25c. on the spot, and 2'17½@2'20c. to arrive.

Arsenic.—Prices are firm, freight rates are high, and there is apparently no indication of any decrease for some time to come.

Acetate of Lime.—The market is quiet, with market transactions at unchanged prices.

Our special correspondent at Charleston, S. C., sends us the following statement of the shipments of phosphate rock from Charleston during September, 1888:

	Crude.	Ground
To domestic ports.....	14,285	1,167
" foreign "	1,350
Total shipments.....	15,635	1,167

This is an increase of nearly 50 per cent over the shipments during the corresponding periods in 1886 and 1887.

Minerals.—The demand continues steady and fair.

Sulphate of Barytes.—Sales of a jobbing character are reported at \$21.50 for special brands of imported, and \$17.50@18.50 for best No. 1.

China Clay.—No change in the market is noted. Chalk is scarce, and prices are consequently very firm.

BUILDING MATERIAL MARKET.

NEW YORK, Friday Evening, Oct. 19.

The week has been quiet in nearly all lines of the trade. Although more or less building is done during the winter, the approach of cold weather, of course, lessens the demand for building materials very decidedly. As yet, however, business continues fair, and prices are maintained at former figures, with occasionally an advance when any notable demand is apparent.

Bricks.—It is estimated that nearly seventy per cent of the brick yards have stopped work, and the few who have not are holding back their vessel loads apparently waiting for the better prices that usually prevail at the close of the season. Therefore, the supply offered on the market this week has not been so large as formerly, and prices are consequently a little firmer. The better grades have been in most demand, although sellers are not always able to secure their advanced rates.

Cement.—Domestic cement moves freely, a good demand for the special brands being apparent. The market for the domestic article is not so satisfactory, the importations still being in excess of the demand. There is no change in the prices of either domestic or imported.

Lime.—There have been no arrivals of Eastern lime during the week and nothing is expected for the next few days. There is a sufficient supply on the spot, however, to meet current requirements. The market is generally quiet, prices show no change in any direction, and transactions are of moderate proportions.

Roofing Slate.—The demand for Pennsylvania black roofing shows no signs of abatement. The quarrymen are working to the limit of their production, and yet they fail to supply the demand. Prices are very firm, and the opinion is quite generally expressed that a considerable advance in prices will be made January 1st. The demand for the other slates continues fair.

Consolidation.—The proposed consolidation of the Building Material Exchange and the Mechanics and Traders' Exchange is a subject of considerable interest to the building material trades. The proposition originated with the Mechanics and Traders' Exchange some months ago. The Board of Trustees of the Building Material Exchange have carefully considered the proposition. The plan of consolidation has been arranged, and the whole matter will be laid before the members of the latter exchange at a meeting to be called in the early part of November.

What their action will be depends largely on the plan of consolidation. The Building Material Exchange, which was incorporated in 1882, is an offshoot of the Mechanics and Traders' Exchange. It has prospered, apparently, to a greater extent than has the older organization, and, accordingly, its members feel rather independent. Furthermore, the Building Material Exchange admits to membership only manufacturers and dealers, while the older exchange admits consumers as well. The dealers, of course, do not want the consumer to meet the manufacturer, and so they are likely to vote against consolidation. On the other hand, those in favor of consolidation argue that the union would

produce a larger, richer, and, consequently, a more influential body; that in time the exchange could erect a fine building of its own, dedicated to the building material interests; and, finally, that two exchanges are unnecessary. These, in brief, are some of the arguments that we have heard thus far.
For latest prices of building materials and wages of laborers see our current prices on another page.

IRON MARKET REVIEW.

American Pig Iron.—The iron market at this point is very quiet, with only a fair demand, and quite large stocks in some producers' hands. The Western markets have all along been more active than we have found this, and there is as yet no sign of change in this condition of affairs. Southern irons have also had a depressing effect on this market; nevertheless, better times are expected soon, and the large prospective demand for pipes of various kinds for electric subways, and the large requirements for manufactured iron, are looked to to bring a better demand for pig. Quotations remained unchanged as given in our table of prices current.

Scotch Pig.—This article remains unchanged in price and demand. The advance in Scotland has called a halt, and prices there remain practically unchanged, as given in our table of prices current.

Bessemer Pig remains without notable change. **Spiegel Eisen** is in better demand, and we hear of German being offered below \$27. Ferro has been sold at \$54 for foreign.

Steel Rails.—Sales for next year's delivery are reported by an Eastern mill which aggregate 32,000 tons for the week. Most of the makers, however, are holding off, believing, or professing to believe, that prices will be higher next year, when it is thought a good deal of new road will be built, and a large amount of renewals will be required, owing to the adoption of heavier rolling stock on several of the roads.

Some of the cabled quotations of English prices are quite misleading; for examples when standard sections are quoted at £3 18s. 9d., the figure must refer to the heavy English double head sections, for our advices are that American light flange sections which are the only kind we import, are £4 5s. @ £4 10s. f.o.b. With our quotations at \$28 @ \$28.50 the foreign article cannot come in.

Structural Iron, plates, bars, and other manufactured forms of iron and steel are in fair though not very active demand, and prices are unchanged.

Old Rails are in light supply, stocks here being now down to about 6500 tons. We hear of sales of 250 tons double heads at \$25, and offers of \$24.75 have been refused. There appears to be a fair inquiry, but buyers are shy.

Louisville. Oct. 16.

[Special reported by Messrs. HALL BROTHERS & Co.]
There has been no material change in the situation since our last report. The market continues to move along in about the same channel. There is no anxiety on the part of the furnaces, and most of them are giving more attention to catching up on back deliveries than to making new engagements. The usual run of orders for moderate sized quantities are being booked, and a few round orders for extended shipment are in contemplation, though have not as yet materialized. Quotations for cash, f.o.b. cars at Louisville, will be found in our weekly register of prices.

Philadelphia. Oct. 19

[From our Special Correspondent.]

A few representatives of the furnace companies predict to-day that prices for standard and special brands of iron will advance within two weeks after election. Buyers who are holding off predict that the increased production will, within a very short time, bring about lower prices. Consumers are making no effort to contract far ahead. Prices for all kinds of iron are very firm. A few sales of special brands have been made this week at exceptionally high prices. Inquiries have been made within a day or two for large lots, but there is no indication of parties purchasing unless an upward tendency should develop itself. The entire trade is quiet, and nothing is likely to transpire to induce makers or buyers to depart from their course. Nothing is heard of Southern iron in Eastern markets. The course of things in Northern Alabama is being closely watched. The furnaces at Columbia will shortly blow in and two or three others will be put in readiness.

This week's business in blooms of all kinds has been below the average. Parties who were negotiating last week have decided to hold off. No reason is given. Another advance has just been made in muck bars. Several buyers have ordered at the advance made last week, and best makes are now held 50c. higher. Mills are very well sold up. Merchant bar mills have been doing fairly well. There is no foundation for the rumor that prices are descending. The only basis for it is that some Western iron has been offered and sold. There are several car building orders about to be placed, and this with other business will help to maintain the strength which our market has attained. Two or three large lots of skelp iron have just been taken at full prices. A good deal of business is said to be in waiting, but buyers do not care to crowd the market up upon themselves. There is no change in the nail situation. The makers feel rather discouraged at the backward demand.

There is a large amount of work going on in establishments where wrought-iron pipes and tubes are largely used. The prices for tubes are very firmly maintained. Mills are crowded with work.

Tool machinery and crucible steel have been selling very well this week, although no individual orders are

large. Manufacturers are quite hopeful of a heavy and steady demand. The active condition of the sheet iron market still continues, but orders taken since Monday are not as large as a week or two ago. There is a quiet increase in the demand for plate and tank iron, and the improvement that has been made within thirty days is easily held, particularly where prompt deliveries are insisted upon. Some manufacturers intimate that prices will advance a tenth soon. Structural iron quotations are without any change, and beyond the anticipation of a large amount of winter business there is nothing whatever to say concerning present market conditions.

There are a good many rumors afloat concerning large probable transactions in steel rails. As to actual business there is very little to say. Manufacturers are rather reticent as to probabilities for 1889, but they are keeping their eye upon a good many railroad building enterprises. Old rails are moving with a little more freedom. A good many buyers are still waiting the decline. A drop of fifty cents or one dollar would lead to a great deal of business. Our scrap dealers have sold out all their good scrap and the highest prices of the season are being asked and paid. Quotations will be found in our weekly register of prices.

Pittsburg. Oct. 18.

[From our Special Correspondent.]

Raw Iron.—All things taken into consideration a fair volume of business has been done, when it is taken into consideration that furnace men are not offering special inducements to draw out buyers for winter requirements. The feeling generally is firm and evidently steady, and appears to be warranted by the conditions. While new contracts are not specially sought after, there is sufficient business doing which it is believed will be continued for some time to come. Furnaces in this vicinity are well supplied with orders that will keep them in operation for some time to come, and are not required to seek business. A leading broker had an offer of \$16.25 for 500 tons gray forge, a favorite brand. The answer returned was that \$16.50 cash were the only terms on which he would sell. At the same time there are reported sales of gray forge at \$16. Sales this week show a wide range of prices. Consumers sometimes take a fancy to a certain make of iron, for which they are willing to pay an extra price, while other sellers contend that they have an iron that is as good in every respect, and they will sell at a lower price. Among our sales will be found Silvery at \$16.50 and \$19, both sales made by the same firm. The market has lost but little of its firmness. Although there is not the same pressure to buy that was exhibited a short time ago, still there seems to be plenty of business on hand. The principal difficulty is to make the deliveries in time to suit purchasers, which makes the outlook a good one, so that there is no uneasiness in regard to a temporary falling off in the demand. Consumption continues very large, however, and as the stocks in both first and second hands are light, there is but little chance of lower prices for some time to come. The trade will, in all probability, not commit themselves to either side until after the elections.

Old Rails.—We hear of transactions amounting to 12,000 tons for delivery here to a local firm, to be delivered prior to cold weather. A weaker market may be the result of the transaction.

Coal and Coke Smelted Lake Ore.

1000 Tons Gray Forge, late delivery	16.00 cash.
1000 Tons Gray Forge, late delivery	16.00 cash.
1000 Tons Bessemer	18.00 cash.
1000 Tons Gray Forge	16.25 cash.
1000 Tons Gray Forge, December	16.00 cash.
1000 Tons No. 3 Bessemer	17.50 cash.
1000 Tons Bessemer, November	17.50 cash.
500 Tons Bessemer, No. 3	17.50 cash.
500 Tons Bessemer	18.00 cash.
500 Tons Bessemer	17.75 cash.
500 Tons Gray Forge, spot	16.25 cash.
500 Tons Gray Forge, spot	16.00 cash.

Coke, Native Ore.

300 Tons Gray Forge	16.50 cash.
300 Tons Gray Forge	16.50 cash.
250 Tons Gray Forge, Storage	15.25 cash.
125 Tons White and Mottled	15.75 cash.
100 Tons No. 2 Mill	15.75 cash.
200 Tons Mill Iron	16.25 cash.
50 Tons Silvery	16.50 cash.
50 Tons Silvery	19.00 cash.
50 Tons No. 2 Foundry	17.00 cash.
50 Tons No. 1 Foundry	18.00 cash.

Ferro-Manganese.

100 Tons 80 per cent	57.00 cash.
25 Tons 80 per cent	56.50 cash.
50 Tons 80 per cent	56.00 cash.

Steel Slabs and Billets.

750 Tons Billets	29.50 cash.
750 Tons Steel Slabs	28.75 cash.
1000 Tons Billets, November	29.00 cash.
500 Tons Slabs	28.75 cash.

Muck Bar.

500 Tons Neutral, November	29.25 cash.
500 Tons Neutral, November	29.25 cash.
1000 Tons Neutral	28.85 cash.
500 Tons Neutral	28.50 cash.

Old Iron and Steel Rails.

1000 Tons American T's	24.50 cash.
1000 Tons American T's	24.50 cash.
400 Tons American T's	24.50 cash.
1000 Tons American T's, October and November	24.00 cash.
700 Tons American T's, December	24.25 cash.

Skelp Iron.

900 Tons Narrow Grooved, per 100 lbs.	187½ cash.
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Scrap Material.

200 Tons Cash Scrap, gross	17.00 cash.
100 Tons No. 1 Wrought Scrap, net	20.00 cash.
100 Tons No. 2 Wrought Scrap, net	19.00 cash.
100 Tons Wrought Iron Turnings, net	14.50 cash.
100 tons Scrap Steel, gross	17.00 cash.
100 Tons Old Car Wheels, gross	21.00 cash.
25 Tons Old Locomotive Tires, net	19.00 cash.

FINANCIAL.

NEW YORK, Friday Evening, Oct. 19.

The "boom" which has taken place in mining shares in Boston has had no effect on this market, which has been quiet, with but little change in the prices of the different stocks.

Holdings of two thirds of the entire capital stock of the Sutro Tunnel Company have already paid in their subscriptions, and if the remaining stockholders respond to the final call, the proceeds of the subscriptions will be sufficient to satisfy all the indebtedness of the company and place it upon a sound financial basis. In this way the claim of the mortgagees and all other indebtedness, amounting to about 85c. per share, will be settled for 55 cents or 60 cents per share, and the property saved to the shareholders. Total interest charge on proposed present issue of new bonds, of the nominal face value of \$2,200,000, will be for the first year \$88,000, but as the bonds are redeemed this amount will be steadily reduced. Subscriptions for the new first mortgage bonds close ninety days from October 1st, 1888. The price of the Trust Certificates have been steady; they opened at 70c., and on Wednesday declined to 66c., advancing again to-day to 68 @ 69c. Sutro Tunnel stock sold in large lots at from 11 to 15c. closing to-day at 11 @ 13c.

Consolidated California & Virginia has been neglected, selling at from \$10 to \$11.25. Among the other Comstock shares which show an advance is Hale & Necross, which went from \$5.38 to \$6.38. Exchequer, from \$1.60 to \$1.85. Bullion, from \$1.70 to \$2.10. The other stocks were quiet, showing but a small business.

Barcelona showed some activity at from 80 to 90c. Mount Diablo was dealt in at \$2.80.

The State Lines, which were "famous" in days gone by, came out after a long absence, Nos 2 and 3 at 3c. and Nos. 1 and 4 at 2 @ 3c. The only value of these stocks exist in the paper on which the certificates are printed. Oriental & Miller shows a sale at 7c.

Some business was done in Navajo at from \$2.25 @ \$2.30; in North Belle Isle at from \$2.95 @ \$3.15. Tornado declined from 30 @ 19c.

Quicksilver Preferred went up to \$39 during the week, but to-day sold at from \$37.88 to \$38.

Brunswick was quiet at 12c. There was considerable activity in Plymouth Consolidated, which was daily dealt in, and advanced from \$7.50 @ \$9.50, some 2320 shares changing hands.

Bodie Consolidated was dealt in only the beginning of the week, when the stock sold at \$1.40 and at from \$1.95 to \$2.25 assessment paid. Standard was quiet at from \$1.25 to \$2.00.

Middle Bar demands but little attention at 38c. Amador was quite active and sold all week at \$2.25. Sutter Creek shows no sales. Astoria showed the largest business of the Amador stocks, at from 23 @ 24c., and Hollywood was quoted at from 40 @ 41c.

The business in Rappahannock continues to be small at from 9 @ 11c.

Colchis advanced in the beginning of the week from \$2.10 @ \$2.25, and later sold at from \$2.15 @ \$2.30.

Homestake has declared its regular monthly dividend of \$25,000; some eighty shares of the stock sold at from \$11.00 to \$11.50. Deadwood-Terra was quoted at from \$1.60 to \$1.70. Caledonia at from \$3 to \$3.05.

United Copper was active, but the price shows little change, remaining at from \$1.10 to \$1.20.

The Colorado stocks were quiet. Iron Silver was firm, at from \$3.50 to \$3.55. Leadville, at 13c. Little Chief, at 23c. Robinson Consolidated, at from 83 to 90c. Monitor, at 11c. Adams, at 75c. Silver Cord advanced from 63 to 75c. Cashier was one of the most active stocks on the list, showing sales amounting to 16,400 shares, at from 12 to 16c. Plutus declined from \$1 to 95c.

Deer Creek remained unchanged at \$1.20. Holyoke shows a few sales at 6 @ 8c.

The Geyser Mining and Milling Company has been formed from the wreck of the old Security Mining and Milling Company, a taking name, like that of the old company, and if it only succeeds in spouting silver bullion instead of gas there will be more security for the holders of the 500,000 shares of Geyser stock than there was for the old shareholders. The officers of the new company are: President, A. A. Rowe, Boston; Vice-President, John H. Norton, Boston; Secretary and Treasurer, James W. Cartwright, Boston; Directors, S. G. Doran, New York; C. H. Johnson, Silver Cliff, Col.; C. H. North, Somerville, Mass.; Edward Pr-scott, Boston, Mass.; A. L. Brown, Whitefield, N. H.; A. W. Rowe, Boston, Mass.; J. H. Norton, Roxbury, Mass.; and the officers above named. The debts of the old company have been brushed away, and the enterprise makes a new start. At the time of the floating of the Security Mining and Milling Company, a resurrection of the old Silver Cliff Mining Company, THE ENGINEERING AND MINING JOURNAL gave its readers due warning, and later when the reports of the fabulous richness of this mine were being sent all over the country the JOURNAL again denounced the company.

El Cristo shows only a sale of one hundred shares at 88c.

No transactions in Horn-Silver are reported. Ontario holds its own at from \$33 to \$33.50.

Considerable attention was devoted to Silver King, which showed a declining tendency, going from \$2.25 to \$1.65, with sales of 3860 shares.

Alice was quiet. The price opened at \$1.30, and the last sale made was at \$1.15.

Electric Stocks.

The following quotations are furnished by Messrs. Crosman & Quick, brokers of this city: Edison, \$115 @

\$125; Edison Illuminating, \$85@\$87; Edison Eur-
on-au, \$8; Consolidated, \$50@\$55; Westinghouse,
\$23½@\$24½; United States Illuminating, \$40@\$60;
Dart, \$60; Brush, \$35@\$40; Brush Illuminating, \$80
@\$100.

Gas Stocks.

The advance in the price of the Chicago Gas Trust
Company's stock from \$35¼ to \$39¼ in the last two
days was based on the purchase by a New York syn-
dicate of 21,900 shares from the United Gas Improve-
ment Company, of Philadelphia. The Chicago Gas
Trust Company was organized early in 1887, and
controls all the Chicago gas companies, and also those
of the suburban towns of Lake, Hyde Park and Lake
View. The stock of all the minor companies was
deposited with the Fidelity Trust Company, of
Philadelphia, and new stock to the amount of
\$25,000,000 was issued against it by the Chicago
Gas Trust Company, but ahead of this stock
bonds had already been issued to the full value
of the property. Messrs. Drexel & Co., W. L. Elkins,
P. A. B. Widener, W. W. Gibbs, and the United Gas
Improvement Company of Philadelphia, were large
subscribers to the new stock, and it is alleged that
the failure of the Improvement Company to obtain a con-
trolling interest was the reason for the sale of its hold-
ings of nearly 22,000 shares.

About three weeks ago a syndicate of investors and
trust companies was formed at the office of Robert
Glendenning & Co., which took \$525,000 Chicago Gas
Trust Company bonds from the United Gas Improve-
ment Company at 80, and the bonds are now worth
83½.

Auction Sale of Stocks.

The following securities were sold at auction in this
city on the 17th inst.: \$10,000 Delaware & Hudson
Canal Co. 1st mortgage 7 per cent registered bonds,
due 1891, \$108½; 100 shares N. Y., Lackawanna
& Western R.R. Co., \$100 each, \$107½; 100 shares
Quicksilver Mining Co. preferred, \$100 each, \$38;
1 share Quicksilver Mining Co. common, \$100 each,
\$9½; \$1000 Inez Gold Mining Co. 1st mortgage 6
per cent gold bonds, due 1886, July, 1884, coupons
on \$100 each, \$10; 500 shares Inez Gold Mining Co.,
\$20 each, \$1; 500 shares Pneumatic Tramway Engine
Co., \$50 each, \$6; 1 share Oxford Iron and Nail Co.,
\$100, \$1; 30 shares United New Jersey R.R. and
Canal Co., \$100 each, \$22½; 10 shares Delaware
Lackawanna & Western R.R. Co., \$50 each, \$140½;
50 shares Quicksilver Mining Co. preferred, \$100
each, \$37½; 200,000 Bessemer Consolidated Iron Co.,
of Wisconsin, 1st mortgage 7 per cent bonds, due
January 1st, 1898, coupons January and July, \$40;
\$10,000 The Bessemer Consolidated Iron Co., of Wis-
consin, 1st mortgage 7 per cent bonds, due January
1st, 1898, coupons January and July, \$40; \$8600 The
Bessemer Consolidated Iron Co. of Wisconsin, 1st
mortgage 7 per cent bonds, due January 1st, 1898,
coupons January and July, \$40.

Pipe Line Certificates.

Messrs. Watson & Gibson, brokers, report as fol-
lows for the week:

The oil market got a black eye to-day, breaking
from 92½c. to 85½c., closing at 85½c. For some time
the market has been stagnant, and no speculative in-
terest could be awakened in it on the strong
statistical and commercial outlook of the
commodity. The Western operators have been
selling for several days, and to-day they jumped
on it with "all fours." They have succeeded in forc-
ing the price down and knocking out marginal holders.
No special reason is assigned except an increase in
the production of the Clarion County field, a slack de-
mand for refined, and rumors of a new mode of refin-
ing Ohio oil. Refined is ¾c. off for the week on the
gallon.

Table with columns: NEW YORK STOCK EXCHANGE, Opening, Highest, Lowest, Closing, Sales. Rows for Oct. 13, 15, 16, 17, 18, 19.

Total sales in barrels..... 11,512,000

Table with columns: CONSOLIDATED STOCK AND PETROLEUM EXCHANGE, Opening, Highest, Lowest, Closing, Sales. Rows for Oct. 13, 15, 16, 17, 18, 19.

Total sales in barrels..... 4,490,000

Meetings.

Adams Mining Company of Colorado, Leadville,
Colo., November 15th, at twelve o'clock noon.

Hig Camas Gold Mining Company, office of W. L.
Pickard, Salt Lake City, Utah, November 9th, at half
past seven o'clock P.M.

Butte & Boston Mining Company, office of Knowles
& Forbes, Butte City, Silver Bow County, Mont., No-
vember 7th, at two o'clock P.M.

Consolidated Electric Light Company, No. 32 Na-
sau street, Room 608, October 25th, at twelve o'clock
noon. Special meeting to receive a report from the
Board of Trustees, with a statement of the present
condition and future prospects of the company.

East Saginaw Iron Company, No. 112 Washington
street, Marquette, Mich., October 30th, at ten o'clock
A.M.

Indiana Iron Mining Company, No. 87 East Wash-
ington street, Room 305, Chicago, Ill., November 5th,
at three o'clock P.M. Special meeting to wind up the
affairs of the company.

IMPORTS AND EXPORTS OF METALS AT NEW YORK OCTOBER 11 TO OCTOBER 17, AND FROM JAN. 1.

Main table with columns: Year, Tons, Casks, Pounds, Tons. Sub-sections include: Antimony, Copper, Steel Sheets, Billets, Forgings, etc., Tin, Tin Plates, Bar-Iron, Steel and Iron Rods, Copper Exports, Copper Matte, Copper Ore.

CURRENT PRICES.

Table of current prices for various commodities including chemicals, acids, alkalis, and building materials.

Table of building materials including bricks, lime, cement, and various types of stone.

THE RARER METALS.

Table listing prices for rarer metals such as aluminum, bismuth, cadmium, and others.

METALS.

Table listing prices for various metals including copper, lead, tin, and zinc.

IRON AND STEEL.

Table listing prices for iron and steel products.

Table listing prices for Scotch pig and other iron products.

Table listing prices for metal exchange items.

Table listing prices for Spiegel Eisen and other iron products.

Table listing prices for steel billets and other steel products.

Table listing prices for structural iron and steel.

Table listing prices for steel plates and other steel products.

Table listing prices for bar iron and other iron products.

Table listing prices for merchant steel and other steel products.

Table listing prices for cast-iron pipe and other iron products.

Table listing prices for wrought iron pipe and other iron products.

Table listing prices for boiler tubes and other iron products.

Table listing prices for rail fastenings and other iron products.

Table listing prices for wrought scrap and other iron products.

Table listing prices for cast steel and other iron products.

Table listing prices for old car wheels and other iron products.

Table listing prices for nails and other iron products.

Table listing prices for hot blast irons and other iron products.

Table listing Philadelphia prices for foundry and other items.

Table listing Baltimore, Md. prices for various commodities.

Table listing Birmingham, Ala. prices for various commodities.

Table listing Pittsburgh, Pa. prices for various commodities.

Table listing foreign quotations for various commodities.

Table listing Pittsburgh prices for coke and bituminous pig.

Table listing prices for charcoal pig and other iron products.

Table listing prices for iron and steel products.

Table listing prices for iron and steel products.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns for Name and Location of Company, Capital Stock, Shares, Assessments, Dividends, and Name and Location of Company, Capital Stock, Shares, Assessments. Includes entries for Adam, Alice, Amy, Atlantic, Argenta, Aurora, Basic, Belle Isle, Belcher, Bellevue Idaho, Black Bear, Bodie, Bonanza, Boston & Mont., Brece, Brooklyn Lead, Caledonia, Caumet & Hecla, Carbonate Hill, Caribou, Castle Creek, Catalpa, Central, Christy, Chrysolite, Colorado, Confidant, Con. Cal. & Va., Contention, Cop. Queen, Crescent, Brown Point, Daly, Deadwood-Terra, Derbec, Dunkin, Eclipse, Elmore, Empire, Eureka, Evening Star, Excelsior, Faxon, Franklin, Freeland, Fresno Enterprise, Garfield, Geolconda, Gould & Curry, Grand Central, Grand Prise, Granite, Granite Mountain, Green Mountain, Hale & Norcross, Hall-Anderson, Hecla, Hel's Mt., Holmes, Holyoke, Homestake, Honorine, Hope, Horn-Silver, Hubert, Idaho, Ideal, Illinois, Independence, Indian Queen, Iron Hill, Iron-Silver, Jackson, Jay Gould, Jucostita, Kumb, Kentucky, La Plata, Leadville, Lexington, Little Chief, Little Pittsburg, Manhattan, Maron Bullion, Martin White, Mary Murphy, Minnesota, Mono, Montana, Morning Star, Moulton, Mount Pleasant, Mt. Diablo, Napa, Nevada, N. Hoover Hill, Northern Belle, North Belle Isle, Ontario, Oquir, Original, Osceola, Oxford, Paradise Valley, Parrot, Peacock, Pleasant Valley, Plutus, Plymouth, Prussian, Quicksilver, Quincy, Richmond, Ridge, Rising Sun, Robinson, Robert E. Lee, Rooks, Savage, Security, Shoshone, Sierra Butte, Sierra Nevada, Silver Cord, Silver King, Silver Mt. of L.V., Silverton, Small Hope, Smuggler, Spring Valley, Standard, Stormont, St. Joseph, Surinam, Swansea, Syndicate, Tamarack, Tip Top, Tombstone, United Verde, Valencia, Viola, Yankee Girl, Yellow Jacket.

G. Gold. S. Silver. L. Lead. C. Copper. * Non-assessable. + This company, as the Western, up to Dec. 10th, 1881, paid \$1,400,000. † The Deadwood previously paid \$275,000 in level dividends, and the Terra \$75,000. ‡ Previous to the consolidation in Aug., 1884, the California had paid \$31,320,000 in dividends, and the Con. Virginia, \$24,900,000. § Previous to the consolidation of the Copper Queen with the Atlanta, Aug., 1885, the Copper Queen had paid \$1,350,000 in dividends. ¶ 1,300,000.

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table of New York Mining Stocks Quotations, divided into Dividend-paying and Non-dividend-paying mines. Columns include Name and Location of Company, dates from Oct. 13 to Oct. 19, and Sales figures.

BOSTON MINING STOCK QUOTATIONS.

Table of Boston Mining Stock Quotations, listing various mining companies and their stock prices from Oct. 12 to Oct. 18, along with sales figures.

Boston: Dividend shares sold, 27,890. Non-dividend shares sold, 65,734. Total Boston, 93,624.

COAL STOCKS.

Table of Coal Stocks, listing various coal companies and their stock prices from Oct. 13 to Oct. 19, along with sales figures.

San Francisco Mining Stock Quotations.

Table of San Francisco Mining Stock Quotations, listing various mining companies and their closing stock prices from Oct. 12 to Oct. 18.

*Bid. †Asked. **Of the sales of this stock, 31,500 were in Philadelphia, and 69,000 in New York. Total sales, 175,919.

Dividends.

The following dividends have been declared: Columbia Oil Company, No. 62, two per cent on the capital stock, payable October 30th. Daily Mining Company of Utah, dividend No. 20, twenty-five cents per share, or \$37,500, payable October 31st, at No. 15 Broad street, New York City.

Assessments.

Table with columns: COMPANY, No., When levied, D/Tnq't in office, Day of Sale, Amn't per share. Lists various mining companies and their assessment details.

Boston Mining Stocks. Oct. 18. [From our Special Correspondent.]

We have had a veritable boom in copper stocks the past week, with a perfect craze to buy stock without much reference to values. The dividend-paying stocks have been largely dealt in, as well as those of prospective value, on the idea that if the copper syndicate is able to sustain the price of copper nearly every mine which has any kind of a show will advance with others.

Osceola advanced from \$19 3/4 to \$22, and was quite firm at the latter price. Tamarack was in demand, and shows an advance from \$175 to \$187 1/2, with reaction to \$184.

Pewabic opened at \$4, but the demand for it sent it up to \$6, and it was quite firm at about \$5 1/2. Ridge, a stock which is well known in this market, and in former years was a favorite, was also in demand, and advanced from \$2 1/4 to \$3.

By Telegraph, October 19th, 1 P.M.—Calumet & Hecla, \$305; Franklin, \$18 1/2; Boston & Montana, \$64 1/2; Kearsarge, \$15; Atlantic, \$19; Allouez, \$4 1/2; Osceola, \$21 1/2. Little interest was shown in copper stocks.

Horsford's Acid Phosphate, For Indigestion, Dyspepsia, and diseases incident thereto.

WANTED—COMMERCIAL MANAGER FOR a company manufacturing high explosives. Only such parties who are at present in the dynamite trade need apply.

DIVIDENDS.

DAILY MINING COMPANY, MILLS BUILDING, 15 BROAD STREET, NEW YORK, Oct. 19, 1888. DIVIDEND NO. 20. A dividend of TWENTY-FIVE (25) CENTS per share has been declared for September, payable 31st inst.

HOMESTAKE MINING COMPANY, Mills Building, 15 Broad St., NEW YORK, Oct. 17, 1888. DIVIDEND NO. 123.

The regular monthly dividend—TWENTY CENTS per share—has been declared for September, payable at the office of the company, San Francisco, or at the transfer-agency in New York on the 25th inst.

MEETING.

OFFICE OF THE EUREKA CONSOLIDATED MINING COMPANY. SAN FRANCISCO, Sept. 20, 1888. The annual meeting of the stockholders of this company will be held on Monday, October 15th, at 11:30 o'clock A.M. at this office.

Gold Quartz Wanted.

The address of parties who can furnish free milling gold ores. W. L. CROW, 232 West 131st St., N. Y. City.

SAMUEL WHITE, JR., Commission Stock Broker, 57 BROADWAY, NEW YORK.

Special attention given to MINING STOCKS and all Unlisted Securities.

Mining properties negotiated, in United States and Europe

TO STOCKHOLDERS OF THE SUTRO TUNNEL COMPANY.

A decree for foreclosure against the SUTRO TUNNEL COMPANY has just been entered in the United States Circuit Court, Ninth Circuit, District of Nevada, and the property of that company will be sold thereunder at an early date.

55 CENTS PER SHARE, ASSENTING FROM THE DATE HEREOF TO NOVEMBER 3d, 1888, AT 12 M., and thereafter

60 CENTS PER SHARE, ASSENTING UNTIL JANUARY 2d, 1889, AT 3 P. M.

Subscribers to the bonds will receive Trust Company certificates, entitling them to the same number of shares as those deposited by them, and \$1 in bonds for each 55 cents and 60 cents respectively paid by them.

Payment should be made by check on New York to the Union Trust Company, and should be accompanied by the stock duly indorsed in blank, and an authorization to the Union Trust Company. Blank forms for this authorization and copies of circulars can be obtained upon application at the Union Trust Company's office, or at Room 19, seventh floor, Mills Building, New York.

H. E. BALZTER, Chairman, GORDON MACDONALD, P. C. A. M. VAN WEELE, OTTO LOWENGARD, THEODORE SELIGMAN, REORGANIZATION COMMITTEE.

ADVERTISING RATES.

Of the Engineering and Mining Journal. No deviation whatever from the rates given herewith will be allowed except to educational institutions.

(NONPANEL MEASUREMENT.)

Table with columns: Lines, Inches, One issue, 1 Month (4 issues), 3 Months (12 issues), 6 Months (24 issues), 9 Months (36 issues), 12 Months (52 issues). Lists advertising rates for various line lengths and durations.

Double these rates for outside front, add 80 per cent for outside back page, 50 per cent for page next to front reading matter, and 25 per cent for page opposite back reading matter.

Letters for the

Barr Pumping Engine Company

Should be addressed to GERMANTOWN JUNCTION, PHILADELPHIA. OR BOSTON OFFICE, 74 Federal St. NEW YORK OFFICE, 126 Liberty St.

They will give you prices and specifications for DUPLEX PUMPS for any service and of any capacity; also illustrated circulars and blue prints when desired, showing merits of their designs.



AMERICAN MFG. AND SUPPLY COMPANY, LTD. RATTLER ROCK DRILLS. AJAX POWDER. GUNPOWDER

(SPORTING AND BLASTING). 10 and 12 Dey Street, New York.