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CONTENTS.

THE Connellsville coke pool, according to recent dispatches, is finding, like all such organizations, that outsiders are reaping the most benefit from its efforts. Thus far, the pool has certainly done much good by keeping prices from going to pieces entirely, and it has not made the mistake of holding the candle up too high for consumers ; but it is probably too violent a tension on the good nature of its members to see independent neighbors, though few in number, go on coking undisturbed by any agreements to put out the fires for three or four days at a time.

IN a quiet way, there has been considerable excitement over the manufacture of aluminium by the FRISCHMUTH process, to which we have already alluded, and which consists in reducing alumina by generating sodium vapor in suitable retorts from a mixture of sodium salts and carbon, or other suitable reducing agent, in place of employing, as hitherto, previously prepared metallic sodium for the purpose. The Philadelphia parties who are engaged in the manufacture on a moderate scale thus far have, in the aggregate, turned out a considerable quantity of the metal, which, we may add, has been used to a much larger extent than is generally believed by our jewelers. Among the achievements of Mr. FRISCHMUTH, is the manufacture of the cap for the Washington Monument, to which we alluded last week, and which is now on exhibition at TIFFANY'S, in this city.

A MOVEMENT is now on foot to harmonize the different interests claiming a share in the future of electric motors, and representatives of the FIELD, EDISON, DAFT, BRUSH, and SIEMENS motors have held a meeting in this city this week. It was decided to ask Sir WILLIAM THOMSON, of Glasgow ; Prof. CHARLES R. CROSS, of the Massachusetts Institute of Technology, Boston ; GEORGE B. ROBERTS, President of the Pennsylvania Railroad ; ROBERT HARRIS, President of the Northern Pacific Railroad ; and JAMES H. RUTTER, of the New York Central Railroad, to become members of a commission to investigate the merits of the different motors, and place a relative valuation on them. The latter is to be the basis for the apportionment of half the stock in a new company having a capital of $1,000,000, the other half to be paid in cash. The new company, it is presumed, will choose from the various machines such details as are likely to be most effective. It will place the propulsion of cars on railroad tracks by means of electricity in the hands of a concern that will have much power for good or evil. Our mining industry has a deep interest in this matter, since it is likely that in many instances electricity will prove the most efficient and the most convenient motor, notably for underground haulage. In the near future, experiments are to be made on the Second Avenue line of the Manhattan Elevated Railroad Company, a third rail now being laid.

IN England, too, the patent process man is rampant, the latest addition to the "novelties" being a combination of a preposterous pulverizer that that inventive genius, Mr. T. R. JORDAN, has hatched out and of the old device in a new form of amalgamating by forcing the ore to rise in a column of mercury, which the Gold Ores Dry Reduction Corporation claims as all its own. This "combination," as it would be called in the theatrical world, claims the following four "principles" as novel : 1. The ore is reduced and the gold amalgamated while in a perfectly dry condition. 2. It is reduced by impact, and not by abrasion. 3. The ore, in this finely divided, clean, and dry condition, is subjected to the action of mercury under considerable pressure and under the constant action of mechanism that continually separates the particles. 4. The entire process is automatic from first to last, this automaticity being obtained by means of air-currents that are utilized for the separation, delivery, and conveyance of the powdered ore from one point to another, instead of sieves, water, and labor.

Prof. A. K. HUNTINGTON, of the Metallurgical Laboratory of King's College, London, in a letter to the *Mining Journal*, says that practical men would snap their fingers at the patents based on these claims. Unfortunately, this eminent critic himself comes forward with a method that has been repeatedly tried, in the most elaborate manner, and has promptly failed from difficulties inherent in the method. We allude to the extraction of gold by introducing the ore beneath a column of molten lead. Like every body else, Professor HUNTINGTON will find that molten lead possesses the uncomfortable habit of oxidizing, the oxide going off with the tailings.

Another "process crank" who has cropped up in London is Mr. HENRY R. CASSEL, of New York, who will be unpleasantly remembered by some of the gentlemen whom he induced to listen to his beautiful schemes. As the *St. James Gazette* informs us, Mr. CASSEL, who is accused of sharp tricks here, very appropriately brought his invention before the "Balloon Society," where we presume light "gas," and much of it, is recognized as a prime motive power. His claims to the undying gratitude of humanity and to a share of the minted gold in circulation in England are put forward by one Dr. ROWLAND ATCHERLEY, to fame unknown, but the happy possessor of an "improved mercury amalgamating machine," which, as usual, will save the float or flour gold. Mr. CASSEL, it appears, has been able to do the following :

"By a very ingenious application of electricity with quicklime and common salt, the most rebellious of auriferous ores are compelled to yield up their whole charge of precious metal, the rate of production, as proved by exhaustive tests, made in London during the past few weeks by Mr. Cassel, being about one ton of ore per hour for one small dynamo machine. The certified cost amounts to but a few shillings per ton, while the value of the gold gained averages 95 per cent of all that the ore contains. A strong syndicate, containing the heads of some of the greatest firms in Scotland, has already purchased the patent right of Mr. Cassel, and in a brief period it is proposed to set up a limited company with a very large capital to carry out the process on the largest scale."

We do not know how long Mr. CASSEL has been abroad, but he has evidently been tainted with the modesty of the effete monarchies of Europe. That alone can explain why he does not, as patent gold process men usually do, assert that he "beat the dry assay.

TIN IN THE BLACK HILLS.

Tin is probably one of the most sensitive of the metals, so far as its market value is concerned. It has been, and is still, the foot-ball of a lot of speculators, notably in London, who will not shrink from any thing if for the moment it suits their purposes as bulls and bears. The trade here has not forgotten the trick played a few years ago of shipping a thousand tons of tin from London to the continent. On the strength of the "improved statistical position," the market was rushed up, and the tin quietly returned to be unloaded. Some time ago, the exaggerated statements of discoveries of tin reported by some of our daily newspapers were deftly handled by the bears in London, and, together with other more important causes, prominent among which was the collapse of a large firm of speculators, produced a scare. The public mind in England was probably more than usually ready to credit reports concerning mining developments here, since the enormous increase in the shipments of copper had taught the metal trade there that there is more than bluster in them. The latent skepticism of our English friends was therefore temporarily overcome, and they were ready, perhaps too ready, to believe whatever wild stories came from this side. Every one interested in mining has heard them here, and promptly discounted them. We listened to them quietly, and made room only for the reports that were written for the ENGINEERING AND MINING JOURNAL by well-known authorities like Prof. W. P. BLAKE.

Thus matters rested until we published, in our issue of October 25th, 1884, a paper read by title at the Chicago meeting of the American Institute of Mining Engineers, by Prof. CHARLES A. SCHAEFFER, of Cornell University. This paper has apparently created a complete revulsion of feeling in England against American tin. How far malice or the interests of the moment on the bull side of the market had a part in a misunderstanding of what we believe to be the object of the paper, and what its scope naturally can only be, we are not in a position to state. We took its aim to be simply to announce that the mineral accompanying some ore that Professor SCHAEFFER examined was tantalite. In England, a well-known metal house, Messrs. FRENCH & SMITH, reprinted extracts from the paper, giving as its source of information the ENGINEERING AND MINING JOURNAL, and asserting in substance that it showed that there was no tin in Dakota after all. At a meeting of the famous Dalcoath Mining Company, the manager, Captain PEARCE, stated, according to a report printed in the *Mining Journal* just at hand, the following:

"He had an analysis from an eminent mineralogist, and the tin spoken of by an American mining company was no tin at all. Tin, however, was found as what might be called 'stream tin;' but, on examination, what was thought to be tin in many cases turned out to be tantalite. Mr. PEARCE added that there was nothing at present to seriously affect the interest of Cornwall. A railroad had first to be constructed to Dakota before any progress could be made; and after that, he had no doubt America would have to be supplied very largely from England as heretofore."

Perhaps no one will be more astonished at the effect of his paper than Professor SCHAEFFER, who will probably heartily join us in assuring our English friends that Professor BLAKE knows cassiterite when he sees it, and that they were mistaken when they sought comfort against the dangers of American production in drawing the conclusion from his examination of a few specimens that Dakota in general, and the Etta mine in particular, produce principally tantalite and incidentally a little tin.

We have every reason to feel confident, from the reports that reach us from reliable quarters, that the quantity of tin ore in the Black Hills is very large, very extensive developments having been made, notably by the Harney Peak Company, the owners of the Etta. We shall be able at an early date to give full details, and have only made this somewhat premature mention of it to assure our readers, and especially the English public, that, while there is some tantalite in the Black Hills, there is without any doubt whatever, a large quantity of tin, which will form the basis of an important industry.

THE COST OF PRODUCTION OF PIG-IRON.—The following comparative table of itemized cost of producing pig-iron in various districts, given by the *American Iron News*, will be found interesting. The figures are per ton of pig-iron made, and it will be noticed that the principal differences are in price of raw material. The labor is comparatively a small element in increased cost, even in the comparison between America and England, the higher daily wages paid here being counterbalanced by the greater efficiency of the workmen. The cost at Buffalo Gap, Virginia, is estimated, and the labor charge perhaps doubtful:

	Fuel used.	Ore.	Flux.	Labor, wear and tear, etc.	Total.
Lehigh Valley	$5.00	$8.00	.77	$3.25	$17.02
Schuylkill Valley	4.33	11.35	.33	3.42	19.43
Virginia	3.88	3.40	.50	3.25	11.03
Pittsburg	3.00	10.00	.77	3.25	17.02
Alabama	4.76	1.39	.80	2.81	9.76
Middlesboro', England.	3.64	2.91	.60	1.66	8.81
Buffalo Gap, Va.	3.75	3.75	1.00	2.00	10.50

CORRESPONDENCE.

[Communications will be noticed only when accompanied with the full name and address of the writer. Unless specially desired, only initials will be printed. We invite criticism and comment by the readers of the ENGINEERING AND MINING JOURNAL. Replies not intended for publication should be addressed to the Editor of the ENGINEERING AND MINING JOURNAL in blank, stamped, and sealed envelopes. We do not hold ourselves responsible for the opinions of our correspondents.]

The Belt Mines.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: We have perused with considerable surprise the editorial remarks on the "Belt" copper mines that appeared in your issue of the 1st of November, and we trust that you will, in justice to our firm, allow us to correct several of the statements contained therein, since they are calculated to injure the future of the enterprise if allowed to pass unnoticed.

In the first place, only £25,000 were paid in cash to the vendors for the mine, the balance of £140,000 being paid in shares. This is very different from a cash payment of £85,000, as your notice would seem to indicate.

We certainly estimated that $200,000 would place the mine in a position to treat 200,000 tons of rock per annum. As a matter of fact, the mine is now equipped with a mill and plant capable of treating 400 tons a day, which has cost $150,000. The total amount up to the present expended, including every possible detail of expenditure, such as cost of machinery, development of mines, etc., does not exceed $350,000.

This compares not unfavorably with the "Conglomerate" outlay, which, according to you (notwithstanding the advantage of American professional management), has expended $1,000,000, with results that are notorious throughout the Lake Superior District.

We are glad you admit the adverse influences of a fall of 5 cents per pound in the price of copper, which naturally very much altered circumstances.

The English engineers employed to report on the property had not, it is true, the advantage of a previous acquaintance with the Lake Superior District; but the property was also reported upon by two well-known *American* experts, one of whom had been for a long series of years manager of one of the largest mines in the district.

The company does not owe the miners a single cent beyond the month's wages, which it is the custom of the district to keep in hand, and we therefore presume there has been some mistake in the report from which your information emanated.

We have a large staff of men employed in opening up the Knowlton vein at the present moment, from which over 800 tons of fairly selected rock have been stamped as an experiment, yielding over 2·5 per cent of copper; a result that fully demonstrates, in the opinion of practical men in the district, that, when worked on an extensive scale, the rock from this mine should average about 1½ per cent.

In conclusion, we may remark that the company has ample funds to meet all its liabilities and to provide for the future development of the property. We are, sir, your obedient servants,

BAINBRIDGE, SEYMOUR & RATHBONE.

[In their letter to the ENGINEERING AND MINING JOURNAL dated Westminster, August 21st, 1883, and published in our issue of September 8th, 1883, page 143, Messrs. Bainbridge, Seymour & Rathbone say:

"It is only fair to the mining element of the peninsula to point out that no American experts were employed on behalf of the company to report on the property, and that it was simply and purely acquired on the recommendation of English mining engineers, after an exhaustive examination made by our firm, in conjunction with one of the best known mining experts on this side of the Atlantic; so that, whatever the future of the mine may be, we, together with the gentleman just referred to, and we only, are responsible for its acquisition by British capitalists."—EDITOR ENGINEERING AND MINING JOURNAL.]

NOTE ON SILICEOUS EARTH.*

By J. W. McKelvey.

In a small basin on the farm of Mr. D. Judson Cook, which is located near Drakesville, Morris County, New Jersey, there is a deposit of infusorial earth that covers about three acres. The first stratum, which begins at the surface, is peaty to a depth of about one foot. The next is infusorial earth to a depth of three feet, and then come seven feet of a white, sandy clay. At the bottom of this, there is a deposit of gravel and cobble-stone drift. The white clay seems to be a mixture of clay and infusorial earth. Near the edge of the bed, it grows thin, and the upper fifteen inches of the three-foot layer are more porous than the rest.

This infusorial earth is of a grayish-white color, and on igniting becomes perfectly white. It contains small fragments of leaves and twigs.

The specific gravity of the sample was 1·11. On analysis, it gave:

	Per cent.
Silica	80·66
Alumina	3·84
Lime	·58
Loss on ignition	14·01
	99·09

THE CLEVELAND GEM.—It is stated that Mr. S. Dessau, of No. 4 Maiden Lane, this city, has just cut a diamond, weighing seventy-eight carats. It has been named "the Cleveland Gem," and is said to be the largest diamond ever cut in America. The diamond was found in one of the mines at Kimberly, South Africa, but by whom is not known. It was smuggled into London and purchased by a syndicate that held it for eight years, until it was purchased by Mr. Dessau. Upon leaving the polisher's hands, it will weigh between forty and fifty carats, and will be considered worth $50,000. The largest diamond in the world is the Orloff, which weighs 194¼ carats, and is rose-shaped. Other celebrated stones are the Kohinoor, 186 carats; the Pitt diamond, 106 carats; and the Star of the South, 125 carats.

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* *American Chemical Journal.*

ZINC MINING IN SPAIN.—II.*

By G. Prus.

II. Deposits in Other Provinces.—After the province of Santander, the province richest in zinc ore in Spain is Murcia.

1. *Sierra de Carthagena.*—The Carthagena Mountains are formed of Permian schists and limestones, which contain two classes of zinc deposits. Calamine is found in the limestone in large deposits, some of which, like that worked by the Tetuan mine, which produced more than 80,000 tons, have given rise to extensive mining operations. Generally this calamine is not as rich as that of Santander, and does not yield more than 53 per cent of zinc after being calcined. To-day, these deposits are almost completely exhausted.

The blende, which is now worked in the eastern part of the Sierra in an area of about 1·5 miles square, forms a deposit in the upper section of the schists. The thickness of the bed varies between 3 and 26 feet, carrying a close mixture of blende and galena in a schistose gangue. The average composition of the ore is :

Silica	12·50 per cent.
Zinc	26·00 "
Iron	19·75 "
Lead	6·20 "
Sulphur	32·80 "
Alumina	2·75 "

The treatment of this ore is a very difficult matter. Calamine occasionally constitutes the prevailing ore in the hanging section of the deposit. It is, however, like the blende, poor, carrying in the crude state rarely more than from 32 to 33 per cent. In 1873, the output reached 30,000 tons. Now it is much smaller, having been 9562 tons—almost all of it blende—in 1881 ; and 11,000 tons, of which 1000 tons were blende, in 1882.

2. *Sierra de Cabo de Gata.*—This small chain of mountains, formed of eruptive rocks, has some thick deposits of very rich calamine, which some years ago gave rise to extensive mining operations, reaching an output of 6500 tons in 1876. Since then it has steadily declined, either on account of the exhaustion of the deposits or because mining was too expensive with the primitive appliances at hand and the high cost of transportation to Almeria. Statistics show the output to have been 487 tons in 1881.

3. *Granada.*—There are, in the Sierra Almijar, in the Sierra Lujar, near Motril, and at some other points, deposits of calamine of fair quality, which are not mined, however, in the absence of roads. A single mine near Motril has been working, and yielded 190 tons in 1881.

4. *Guipuzcoa.*—In the eastern part of the province of Guipuzcoa, the Société Royale Asturienne works two calamine mines near Oñate, where, although the quantity of ore is limited, its quality is high. It is found in small masses in cretaceous limestone. The company extracts also, near Ogarrun, a little blende, found in veins of spathic iron ore used as a flux in the Reuteria lead smelting-works. The total production in 1881 was 1212 metric tons, shipped from the port of Pasages to Aviles, where one of the works of the company is.

5. *Viscaya.*—In the Carranza Valley, and near Nestoza, small pockets of calamine in cretaceous limestone have been worked. In 1881, these mines yielded 947 tons, but they are now idle.

6. *Castellon.*—Near Luana, a deposit carrying blende has been worked. It produced 500 tons in 1881.

7. *Oviedo.*—Prospecting-work on a blende vein in the Cabrales District produced only 200 tons of poor ore. This vein, the outcrop of which yielded magnificent calamine, appears to grow barren in depth. Prospecting continues without success thus far. Calamine exists in a number of localities in carboniferous limestone, but at points where it can not be worked.

8. *Ternel.*—A deposit of calamine exists in this province, near the village of Linares. Two hundred tons were produced in 1881—a little less than in the preceding year.

9. *Bajadoz.*—A blende mine at Helechosa was worked only in 1881, and has produced 40 tons.

10. *Polencia and Leon.*—The mountains in the northern part of these provinces contain many calamine and blende deposits ; but their distance from the sea and from railroads makes it impossible to work them. Those of Triollo, near Cerbera and at Valdeon, on the border of Asturias, may be noted.

11. *Barcelona.*—A calamine mine, near Pontous, has not been worked recently. Some years ago, it yielded some ore.

12. *Lerida.*—In the Aran Valley, near the French border, there are several important deposits ; thick blende beds, unfortunately situated at an altitude of from 6500 to 8000 feet, which for the present makes it impossible to mine them.

Zinc ores very often accompany lead ores, and the latter are found in the greater number of the Spanish provinces. It is probable, therefore, that zinc deposits exist in many localities not named. For the present, they do not, however, possess any industrial importance.

III. Manufacture of Zinc.—The only zinc-works in Spain belong to the Société Royale Asturienne. They are located at Arnao, near Aviles, in Asturias, in a small coal-basin, separated from the central coal-basin. These works treat ores coming from the provinces of Santander and Guipuzcoa, with 22 Belgian furnaces, blende roasting-furnaces, and a sheet-zinc rolling plant. In 1881, 320 men were employed. In 1881, the production was 4910 metric tons† of zinc from 13,000 tons of ore, while in the preceding year it was only 4221 tons. The production of sheet-zinc was 2125 tons.

In 1881, the export of spelter amounted to 1743 metric tons, of which 1515 tons went to France and 228 tons to Cuba. It appears, therefore, that the consumption of Spain is 1042 tons of spelter and 2125 tons of sheet-zinc—a total of 3167 tons.

In 1881, the export of zinc ore was 39,774 tons, of which 31,227 tons were calamine and 8547 tons were blende. Adding to these figures the 13,000 tons treated at Arnao, a total of 53,834 tons is reached, or more than 10,000 tons more than the production returned by official statistics. There is nothing surprising in this, when it is considered that it is the practice of many miners to misrepresent their product. The exports of zinc ore were distributed as follows :

France	18,700 metric tons.
Belgium	18,268 "
England	2,456 "
Austria	350 "
	39,774 "

The production of zinc ore in the different provinces was as follows during the year 1881, according to official statistics :

	Production. Metric tons.	Workmen.
Asturias	200	27
Santander	29,573	1,400
Murcia	9,562	393
Guipuzcoa	1,212	64
Other provinces.	2,354	265
Total	42,911	2,149

A comparison of the output of the year 1881 with that preceding it clearly illustrates the serious decline during the past decade :

PRODUCTION OF ZINC ORE IN SPAIN.

	Metric tons.		Metric tons.
1870	113,583	1878	74,008
1873	101,009	1879	60,980
1875	100,174	1880	50,521
1877	70,951	1881	42,911

It is probable that this decline will continue, unless the zinc market improves.

* *Génie Civil*, Vol. VI., No. 2.

† In 1882, the production was 5570 net tons ; and in 1883, 4731 net tons.—Ed. E. and M. J.

THE HOCKING VALLEY TROUBLES.

A correspondent of the New York *Herald* telegraphs the following intelligent review of the Hocking Valley labor troubles, under date of November 24th :

The troubles in this great valley have been confused by the political agitation of the last campaign. Blaine was mixed up with the enterprises of the valley and the original speculators whose course in part led to the present troubles from which innocent investors are suffering. Neither Blaine, Lee, nor any of the speculators are concerned in the present contest. In the location of this region, the coal vein is much thicker than elsewhere in Ohio, and the union holds the rates for digging equal to those in other parts of the State, so that the operators claim they are cut out of the Northwestern market along the lakes by Pennsylvania and other regions. With a vein from ten to fourteen feet in thickness, a miner could get out twice as much coal in a day as those working in veins from three to five feet thick. With this attraction, a hard element got possession around Straitsville, Nelsonville, and other points along the great vein. They could make good wages and lie off half the time. For years, there has been a class, even in the union, who intimidated others and crowded them off into the thin-vein mines, while the Molly Maguire element controlled these best points, and there have always been many more there than were needed.

The Miners' Union or Amalgamated Association had fixed the prices for digging at seventy and eighty cents, according to the season, so that these men made excessive wages, and the operators, with all the superior natural advantages of their lands, were unable to market their coal any cheaper than those having the smallest veins and the more inferior coal. They were not only thus embarrassed, but unable to direct the proper mining of their coal, as these men would refuse to take orders from the superintendents or bank bosses. Thousands of tons of coal were wasted or covered up by "taking only that which could be loaded easiest." In case of personal spite against any boss or agent of the operators, bad coal slack or *débris* would be deliberately thrown in to damage the operator with his customers. All laws were disregarded. There have never been explosions in these mines. They are well protected, and very few have been killed or injured. Since the introduction of over one thousand new men, over four months ago, no one has been hurt in a mine. There was nothing to complain of in that respect.

The issue was on keeping the prices regulated so that men could dig in other regions where the veins are thin, and in this the operators of those localities have all the time supported the strikers in the "great vein region." The result was, that two years ago the operators in the best mining district found themselves reduced to bankruptcy. Fortune after fortune had been sunk in the richest part of the valley rather than made there. A feeling of self-preservation led to the consolidation of all the operators into two companies. Into the Columbus & Hocking Coal and Iron Company, known as the Syndicate, was merged most of the leading properties, including thirteen hundred acres of coal lands and five furnaces. The Ohio Coal Exchange was afterward organized, and took in all who were not included in the Syndicate. By thus consolidating, these companies, with a saving of general expenses, expected to be able to work their district without trouble with their men and extend the market tributary to them. The five furnaces were in blast a year ago, making iron from the raw material and coal, and clearing themselves on a small margin at the prices then prevailing. As the price of iron declined, the miners engaged in getting out coal for the furnaces were told that, if they would fall so that they could barely clear themselves, they would continue to run and give employment to those dependent on them. This request the company was refused, and the furnaces soon went out of blast, and have been out ever since, although the company had on hand, and has still, fully $400,000 worth of stock ready to be turned into iron. Throughout the remaining part of the year, there was a continual drop in the scale of prices. Although every possible concession to retain trade was made, both by the coal companies and the railroads, affairs became so bad that in March of 1884 a meeting of operators was called, and an arbitrary cut in prices was discussed. Still the companies declined to make any such demands on the men, but concluded to post at each mine a statement showing the state of trade, and their competition, and requesting the men to make a concession in their prices that would allow the companies to retain trade till better times. This notice met with no response whatever, except an absolute refusal of the men to reduce from seventy cents. The companies continued until June 20th, when they posted a notice that, on and after June 23d, they would pay sixty cents. Thereupon the men went

out, and the strike began, accompanied by the dreadful results of the past five months.

After running till July 5th on "agitation" and idle mines, the operators met again, and considered the situation. Their contracts for the fall trade were going, and they resolved that, their men having refused every thing, they must reduce the price of digging, so as to compete with others, if they meant to hold their trade. Accordingly, the following was posted at the mines:

NOTICE.

Our appeal of April 22d for assistance in holding trade for the Hocking Valley having been rejected, and our offer of June 20th to pay sixty cents for mining being refused, we hereby withdraw our offer of sixty cents.

July 5, 1884.

This was signed by all the operators of the Hocking Valley, who, having scaled the prices, held that more could be made at fifty cents a ton in their mines than in others at the prices prevailing for those points, and fixed the rate at fifty cents. The companies regarded this the end of the elations between themselves and the men then in their employ. The men were paid off in full and notified to take their tools from the mines. Some weeks after this, the first importation of new men was made into the Hocking Valley. Since that time, more than one thousand men, a majority of them practical miners from other districts, have gone to work at the prices offered by the companies. These men are satisfied and represent nearly all nationalities. They ask only to be allowed to do the work and support their families that have come with them.

In order to provide accommodations for the new men, the companies sought to get possession of their houses. This led to trouble and heavy costs. Many paid no attention to the notices, and proceedings were entered into to evict them, resulting in great difficulty, the loss of many months' rent, piles of fees and losses entailed by wanton damage to the property, and in some cases destruction, though all were given ample time to get other employment and other quarters. No case of cruelty has been cited where any one was thrown out of house and home; but the defensive point was to keep others out of the houses as well as the mines, and almost any thing was resorted to to do it.

From the date of the first importation of new men, the Columbus & Hocking Coal and Iron Company has kept guards at all of its works. There has been no protection on the part of the State, none to life or property by the officials of either of the three counties in which these companies operate and pay seventy per cent of the taxes. With but one exception (Sheriff T. F. McCorty, of Hocking County), every county official and every justice of the peace has declined to act, either through fear or the loss of business or political patronage.

During the past four months, oath-bound bands of marauders have wandered at night, murdering when they dared, and committing crimes in the most cowardly and contemptible manner in the night time. Coal-hoppers have been destroyed, dwellings burned, farmers in no way connected with the strike have been robbed and threatened, and the coal under the hills has been fired with the intention of destroying forever the valuable resources of the valley. It is not to be inferred that all of the former employés belong to this organization. On the contrary, a majority of them want to go to work, and would willingly have accepted at first the reduction, but the few leaders by organization terrorize the masses. Innocent men have been forced, at the mouth of the pistol, to join these midnight forages.

The band keeping up this reign of terror is not large. The companies know who they are; but such is the laxity of law, if not the connivance of those in power, that they can roam about as they choose. It is not a fight for living wages, but as to whether the new or the old men shall have the wages. There are in all over 1300 new men in the valley at work now. The syndicate is averaging an output of 3000 tons a day, about half its capacity, but it is sustaining a pretty good standing army to do it. All the Pinkerton men and special guards available are employed to guard the new men, who are American citizens from Virginia, the Northwestern States, and other places. None are imported nor what is known as pauper labor. With the exception of the leaders, the old employés want to go to work at fifty cents, at which they can make from $55 to $85 per month, according to their skill. Four colored men who came over from Virginia made wages during October as follows: $73.50, $61.50, $58.50, and $58. This was their first month, and they will do better by improvement.

UNDERGROUND TELEPHONING.—Mr. W. H. Preece, director of the English telegraph service, made the statement before the late meeting of the British Association at Montreal, that he had tried with fair success telephoning through the submarine cable between Dublin and Holyhead, a distance of about 60 miles. He stated, however, that satisfactory conversation through cables could not be depended on through a greater distance than 25 miles; and he added that at present it seemed to be impracticable to use underground wires in towns and cities for this purpose over a greater distance than 12 miles. On overhead wires, on the other hand, he claimed that, with an arrangement of double lines, he had been successful in conversing over a distance of 240 miles.

RAIL-MAKING PLANT FOR SPAIN.—For some time past, the Teesside Iron and Engine Works Company, in England, has been busily engaged upon an order for one of the largest rail mills yet manufactured in the Cleveland District. The mill is for the Sociedad de Altos Hornos y Fabricas de Hierro y Acero de Bilbao, and is equipped with live roller gear, pull-over gear, hydraulic crane for readily handling the blooms, hydraulic roll-adjusting gear, steam rail saw, and scroll gear for hot bank. The rail-finishing mill is a 30-inch, and will be capable of rolling rails of the largest sections now used, and in lengths of 180 feet. Adjacent to this mill, will be placed the roughing mill, together with a 39 inch blooming mill, the standards of which latter weigh about 20 tons each, and the rolls for the same will each weigh between 14 and 15 tons. The Teesside Company is also supplying in connection with this mill plant, a large bloom shearing machine capable of cutting steel blooms 12 inches by 12 inches. This shearing apparatus when finished will weigh about 75 tons; the largest casting in it, weighing 27 tons, was successfully cast at the Teesside works a few days ago. The cogging mill has been temporarily erected, and tested under steam with the most satisfactory results.

OVERHEAD COPPER TELEGRAPH WIRE.—I.*

By William Maver, Jr.

The recent adoption by several of the leading telegraph and telephone companies of hard-drawn copper wire as an overhead conductor has led to numerous inquiries as to the particular nature of this material and its advantages over iron for that purpose, and as to the meaning of several of the technical terms used in referring to it, such as tensile strength, elongation, etc. In view of the interest thus generated, I shall attempt in the following article to give a detailed description of the manufacture of iron and copper wires, the advantages that they respectively possess, and the methods of testing telegraph wire, not only mechanically but electrically, before its delivery to the purchaser.

If it shall come about that copper wire shall be extensively used to replace iron as an overhead telegraph wire—and in the opinion of many well qualified to make the assertion, such will eventually be the case—it will but furnish another instance of history repeating itself; for the first wires built by Morse between Baltimore and Washington were No. 14 copper wires. Since then, until within a very short time, iron wire has held almost undisputed sway as an overhead wire in this country.

The first important inroad into its domain was made some years ago by a compound wire composed of a steel center with a copper covering. This compound wire was not very successful, however, as it was found that, wherever the copper covering became stripped or cracked, and moisture thus obtained entrance between the two wires, an electrolytic action was set up that impaired the wire. The size of this compound wire was about No. 4 or No. 5 gauge.

The next important attempt at a compound wire was that used by the Postal Telegraph Company between New York and Chicago. This wire also had a steel center, and the copper covering was placed on the steel by an electro-plating process, by means of which process it was hoped that a closer adherence would be preserved between the metals, and the liability of the copper covering to crack or strip thus be obviated—an expectation that has been in a measure realized. The gauge of this wire is No. 4. Its resistance is about 1·7 ohms per mile.

The Bell Telephone Company is now experimenting with a metallic circuit, composed of No. 12 hard-drawn copper wire, between New York and Boston, and the results so far attained have been, I am assured, highly satisfactory, so much so that it is contemplated to build a similar metallic circuit between New York and Philadelphia.

The Baltimore & Ohio Telegraph Company has now in successful operation about 4000 miles of No. 14 hard-drawn copper wire, and it is understood that this fast-growing company intends making a much more extensive use of this metal as a line wire than has hitherto been essayed by any other company in this country; and it is an open secret that other companies are only awaiting successful results from the experiments of the above-mentioned enterprising people before building new wires of this material, or even replacing some of their old iron wires with it. For it is generally admitted that hard-drawn copper wire is at present undergoing a trial, and one that is watched with the greatest interest by all concerned. At least, one scientific gentleman of prominence in electrical circles has staked his professional opinion on the prediction that it will prove a failure; but on the other hand, other gentlemen of equal renown have expressed the opinion that, with proper treatment in the factory and in construction, it should be a success. The fact, however, that hard-drawn copper wire is now undergoing a trial, and that so much depends upon its success, as we shall see, is nerving every one connected with it, both in its manufacture and its erection on the poles, to do their best, and this will have the good effect, at least, of insuring it a fair and intelligent trial, the results of which will perhaps settle the question as to its fitness for an overhead telegraph wire. In the face of these facts, it is not surprising that inquiries should be made for information concerning this subject.

As every one knows, the principal requisites for a telegraph wire (and by that term I wish to be understood in this article as referring to overhead wires) are low resistance, high tensile strength or breaking strain, ductility, with a high percentage of elongation, and cheapness. With low resistance, we get a greater strength of current from a given battery on a given length of wire; high tensile strength insures the wire against breaking, unless from some unusual cause; ductility is an excellent adjunct of high tensile strength when the two qualities can be combined; and a high percentage of elongation gives a good margin for the strains caused by the variations of temperature—sleet storms, etc. Of course, so far as conductivity is concerned, there is no question as to which metal—copper or iron—should be chosen, copper offering a resistance to the electric current of about 1 to 7 as compared with iron but the advantages of tensile strength combined with ductility and elongation have heretofore all been on the side of iron. Now, it is well known that iron is a much harder and stronger metal than copper, so that a piece of the former, of an equal thickness with a piece of copper, will, with an equal degree of ductility, have a much higher tensile strength than the copper. As a rule, the higher the tensile strength of a metal is made, the less ductility and elongating qualities does it possess; in other words, the nearer does it approach brittleness. Thus, a piece of copper wire, No. 14 gauge, having a tensile strength of say 300 pounds, will scarcely stand being bent back on itself more than seven or eight times. If the same wire should be given a tensile strength of 370 or 390 pounds, it will, in some cases, have become so brittle as almost to break at the first bend. An iron wire of the same size could be given a tensile strength of about 510 pounds and yet stand more twists and bends than the copper wire of less strength.

There is no real necessity, however, that either metal should be given as high a tensile strength as the above, it having been fairly well established that a wire that will sustain two and a half times its own weight per mile is amply sufficient for all practical requirements. Therefore, as the weight of No. 14 copper wire is 110 pounds per mile, and iron of the same gauge 97 pounds per mile, the tensile strength of copper need not rise above 275 pounds, and iron 152 pounds, and it is quite probable that, at least in the case of copper, it may be that even this figure is really higher than is absolutely necessary. For assuming that there are about 30 telegraph-poles per mile, it follows that the actual weight of

Electrical World, November 22d, 1884.

itself that copper has to sustain between each pole is somewhat less than 34 pounds. Between that and 275 pounds is a very large margin for the pressure of wind, wet snow or sleet, on the wire.

There is, however, as already said, another property of metals that has to be taken into consideration in this relation, and that is, elongation; in other words, the stretching qualities of a wire, and this quality also decreases as the tensile strength rises. In soft copper, this feature of elongation is quite marked, and it has the detriment that, when it has been stretched, it does not resume its former length, at least not to the same extent as does iron under similar circumstances. As an instance of this, I may state that this very fact is considered a serious impediment to the use of copper in cables that are intended for submersion in very great depths, inasmuch as, should it become necessary to raise such a cable to repair it, the strain on the cable is so great that it stretches; and when the strain is removed, the iron and gutta-percha, being of a comparatively elastic nature, resume their normal positions, while the copper does not, and it is thus bunched up, as it were, at places in the cable and thereby runs a chance of causing a serious fault by connecting with the armor of the cable.

Again, where soft copper wire might be used on the same poles with iron wires, it is also probable that in time they would sag and perhaps in consequence cross with the iron wires, which would not have sagged to an equal extent. But in hard-drawn copper wire, the elongation is reduced to from 2 to 4 per cent, which, as compared with iron wire, is quite low, the latter running up to 14 and 18 per cent; yet taking the average for hard-drawn copper wire as 3 per cent, and assuming that there are 176 feet between poles, this would leave a margin of about 5 feet for elongation.

Another point, perhaps the chief point that has been urged against the use of copper wire as a telegraph wire, is that, on account of its value as a metal, it would be exposed in remote places to the risk of being cut and stolen, a result which is, in these days, probably more fancied than real. It is a fact, however, that in many parts of Europe where a large-sized copper wire was formerly used, it was frequently carried off by dishonest people.

In the foregoing, the advantages are mostly in favor of iron; but if it can be shown, practically, that copper can be made sufficiently strong to "stand up" against the elements equally well with iron—and that is the principal point of issue in the experiments now going on—there is hardly any doubt as to the ultimate adoption of copper wire as an overhead telegraph wire, for the following reasons:

Copper is much more durable than iron when exposed to the action of the atmosphere. It is so much better a conductor than iron that there is hardly room for comparison between the metals on that point. A copper wire having a diameter of 83 thousandths of an inch, equal to No. 14 Birmingham wire gauge, will offer but little more resistance to the passage of the electric current than an iron wire having a diameter of 220 thousandths of an inch (equal to No. 5 gauge). This fact offers many advantages, both electrical and otherwise. For instance, it is well known that the electrostatic capacity of a wire has a great bearing on the successful working of automatic and multiplex systems, and the greater the electrostatic capacity of a wire the greater the detrimental effect ensuing to those systems. It is equally well known that, other things being equal, the electrostatic capacity of a wire increases with the size of the wire; consequently the copper wire possesses a decided advantage over iron in this respect. As it is thus possible to get equal conductivity from a copper wire, weighing 110 pounds to the mile, to that from an iron wire weighing 670 pounds, it might be feasible, in the event of the general adoption of copper wire, to use smaller and less expensive poles, cross-arms, and insulators.

Again, when a break of any magnitude occurs on a line requiring the renewal of a portion of an iron wire line, it is necessary that the lineman should hire a horse and wagon to carry the iron wire to the scene of the break, whereas he could easily carry sufficient copper wire of the above gauge on his shoulder for the purpose. One item of economy.

It is true that the first cost of copper, weight for weight, is much greater than that of iron, the price of copper wire being, I believe, about 20 cents a pound, while iron is from 4½ to 6 cents, according to the gauge, the smallest wire being the dearest, owing to the greater amount of work required upon it; but when the greater durability of copper is taken into consideration, as well as the fact that, even when copper wire becomes useless for telegraphic purposes, it still possesses an intrinsic value, while old galvanized iron is quite worthless, its economy is yet more palpable. Indeed, when it is considered that an iron wire, to equal a copper wire in point of conductivity, must weigh, as already stated, about five times as much as the latter, it brings the first cost nearly even, if not slightly in favor of copper.

Another advantage that might well be claimed for copper wire is, that with equal conductivity it will generally operate more satisfactorily in all kinds of weather, and especially in wet weather, than iron wire, for the reason that in wet weather each pole becomes, to a greater or less degree, a path by which the current escapes to the ground; and the amount so diverted will be in proportion to the relative conductivity of the wet insulators and poles, and the wire itself. But as an iron wire, to possess the same conductivity as a copper wire, must be much larger, a much larger surface of the iron wire is therefore presented to the insulator than by the copper wire, and consequently a larger proportion of current follows the pole to the earth from the iron wire than from the much smaller copper wire.

In view, therefore, of the many points in which copper wire is so superior for telegraphic purposes, it appears rather surprising that iron has so long held almost undisputed possession of the poles. This may, however, I think, be accounted for in various ways. For instance, in the early days of telegraphy, it is quite possible that the copper wire furnished Morse was altogether unsuitable for the purpose to which it was put; which is not at all to be wondered at. Electric telegraphy was at that time an experiment, and it was not to be expected that the wire then produced could have been manufactured with any distinct understanding as to what would be required of it. The historians of those days tell us the wire was unannealed, and it is fairly assumable that the first copper wire had a very low tensile strength, which, with the manner of its erection on the poles, etc., doubtless ended strongly to breakages. This, with the high price of copper, probably created a deep-rooted prejudice against that metal regarding its use as an overhead telegraph wire. But apart from the above, there is no question that iron wire was quite equal to the requirements of the telegraph service for the first twenty or thirty years of its existence, when only single Morse wires of No. 8 and 9 gauge were used. It was when multiplex and fast automatic systems came into vogue and demands arose for better conductors that the question of again using copper for that purpose began to be mooted in earnest, and the development of the vast mines of almost pure copper in the Lake Superior regions added zest to the idea. In the mean time, to meet the needs of the service, the size of the iron wires was rapidly increased until thousands of miles of No. 4 iron were put into operation.

COMBINED CARBON IN IRON AND STEEL.*

In 1875, Messrs. Schützenberger and Bourgeois studied the properties of the residue obtained by treating cast-iron with copper sulphate, and found that the combustible carbon, which had up to that time been considered pure, is a compound, the composition of which can be expressed by the formula $C_{11}H_6O_3$. Lately, Zaboudsky applied himself to the same task, and published his results in the Bulletin de la Société Chimique de Paris. He examined a specimen of pure Swedish specular iron, containing no phosphorus, sulphur, or graphite, but containing ·23 per cent of silicon and 4·10 per cent of combined carbon. The metal was finely pulverized and treated with a mixture of sulphate of copper and chloride of sodium. The carbonaceous residue amounted to 5·76 per cent of the weight of iron taken. This residue was analyzed and found to contain 71·60 per cent of carbon, 26·00 per cent of water, and 1·25 per cent of siliceous material. The analysis of the carbonaceous portion gave the following result:

	Per cent.
Carbon	72·49
Water	27·27
Total	99·76

Its composition may be expressed by the formula $C_{12}H_6O_3$, a result that corresponds very closely with that obtained by Schützenberger and Bourgeois. This compound burns readily in the air. Heated to 150 degrees in a sealed tube, it does not change. At 200 degrees, it loses 6·5 per cent in weight and 18·1 per cent at 325 degrees.

On analysis, it now yields:

	Per cent.
Carbon	84·51
Hydrogen	2·29
Oxygen	13·20

Thus the composition is changed by the loss of water and of a considerable portion of carbon.

If heated in a stream of hydrogen, there is, in addition to the disengagement of hydrogen and oxygen, a partial separation of carbon. Thus the residue, which, after losing 24·1 per cent of its original weight, yields on analysis carbon 87·08 per cent, hydrogen 2·27 per cent, and oxygen (by difference) 10·65 per cent, loses upon further heating 33·2 per cent of its weight, and is now found to contain 96·89 per cent of carbon and 3·08 per cent of hydrogen, showing a loss of all its oxygen, 1·2 per cent of its hydrogen, and 7·5 per cent of its carbon. Upon heating still higher, the same tendency to part with carbon rather than hydrogen was noticed, so that it was impracticable to obtain from it pure carbon. It is insoluble in water, alcohol, ether, hydrochloric and sulphuric acids. When treated with nitric acid and warmed, it dissolves completely, forming a reddish-brown product having the composition:

	Per cent.
Carbon	53·71
Hydrogen	2 95
Nitrogen	2·90
Oxygen	40·44

It may be represented by the formula $C_{24}H_{16}(NO_2)O_{12}$. When heated in a tube, this compound decomposes, yielding hydrocyanic acid. Chlorine, bromine, and iodine also form compounds with this "hydrate of combined carbon," the iodine product having the formula $C_{60}H_{29}IO_{15}$.

Decomposition of the same specimen by chloride of silver yielded a product containing 70·40 per cent of carbon and 3·59 per cent of hydrogen. Nor does the decomposition by the battery (according to Weyl's method) yield pure carbon. A specimen of cast-iron examined yielded a residue containing only 71·51 per cent of carbon.

When cast-iron is treated with mercuric chloride, a product is formed containing but 67·72 per cent of carbon. Hence, in determining the combined carbon in iron by Boussingault's method, an error of 32 per cent may easily occur.

Determination of the Combined Carbon in Steel and Cast-Iron.—As a result of this investigation, Zaboudsky suggests that the following modification of Boussingault's method of determining carbon in steel and cast-iron be made use of:

For the purpose of decomposing the iron or steel, a dry mixture of chloride of copper and chloride of sodium is used. This mixture is obtained by evaporating to dryness a saturated solution of sulphate of copper and chloride of sodium. The metal should be finely pulverized and carefully mixed with this mixture in a mortar. Enough water should then be added to make a paste, and the mass triturated with a pestle, care being taken to keep the mortar cold. The decomposition is effected according to the equation:

$$2CuCl_2 + Fe = FeCl_2 + 2CuCl.$$

Theoretically, 4·8 grams of chloride of copper, or 14 grams of the mixture as prepared above, are required to dissolve 1 gram of iron. Practically, however, 20 grams of the mixture are found to be more convenient.

After half an hour's trituration, the pasty mass is raised from the mortar and placed in a beaker, and the mortar washed with ferric chloride (1 part Fe_2Cl_6 to 4 parts water). The glass containing the pasty mass, together with the wash-water, is then heated gently and, after warming, a little hydrochloric acid is added. This operation lasts about forty-five minutes, when the residue can be collected on a filter. This is then dried

*American Chemical Journal.

and burned in the ordinary manner. The loss in weight corresponds to the weight of the hydrated carbon, and is *not* the weight of pure carbon, as was formerly supposed.

In order to obtain the true weight of the combined carbon, factors must be used. These factors represent the amount of carbon in the hydrate of carbon that has been burned.

In order to determine the mean value of these factors for the various grades of iron, Zaboudsky examined a large number of specimens, and gives the following numbers as representing the amount of carbon in the combustible portion of the residue obtained by treating iron and steel in the manner given above:

Pure specular cast-iron (not manganiferous)	·720
Ferro-manganese	·700
Specular manganiferous cast-iron	·685
White cast-iron / Pure gray cast-iron	·710
Steel (cast for cannons and guns, containing about 5 per cent of carbon)	·660
Hard steel	·675
Iron	·690

COLUMBITE IN THE BLACK HILLS OF DAKOTA.*

By William P. Blake.

Columbite, associated with cassiterite, albite, and mica, occurs in several of the coarsely crystalline granite dikes that traverse the mica schists and sandstones of Pennington County, Dakota. The most notable localities are at the Etta mining claim and at the Ingersoll, about ten miles east of Harney Peak. At the Ingersoll claim, particularly, a mass of unusual dimensions was found protruding from a matrix of albite and quartz. This mass consisted of nearly pure columbite with here and there inclusions of thin sheets of quartz. It measured, approximately, twenty inches square by twenty-four in length, weighing by calculation, taking the specific gravity at 6, not less than 2000 pounds, or one ton. On blasting it out, it broke up generally into tabular fragments without crystalline planes except at the lower or imbedded end, where it was inclosed in quartz, into which it penetrated in thin tabular crystals with brilliant prismatic and terminal planes. At the Etta, on the contrary, the best crystals are taken from the albite, and are more distinct and separate than at the Ingersoll claim. The habit of the Ingersoll crystals is thin and tabular, with thin, wedge-like prismatic edges.

In breaking up the large mass, I found several cavities filled with a beautiful yellow powder, often in pellets and pill-like balls. These prove to be chiefly hydrous uranium oxide without sulphuric or carbonic acid. A similar mineral occurs at the Etta, but gives different reactions.

The blow-pipe reactions of the columbite from the Ingersoll claim are peculiar in the amount of manganese indicated. With borax, in oxidizing flame, the bead is dark amethystine red, and in reducing flame, a pale amber-yellow. The purity of this reaction for manganese is not impaired by any other metallic reaction. With phosphate of soda and ammonia in oxidizing flame, the mineral dissolves to a clear glass, red while hot, yellowish-red while cooling, and when cold, clear and nearly colorless, with a pale rose-colored or amethystine tint. In reducing flame, the bead is beautiful amber-yellow, and there is no shade of green or reaction for uranium. On foil, the manganese reaction is distinct. Treated with concentrated sulphuric acid and evaporated to dryness, the powdered mineral is partially decomposed. With the addition of a second portion of acid, the solution gives with zinc the intense sapphire-blue reaction.

PINE FOREST CAMP, Sept. 25, 1884.

TURQUOIS MINES AND PEARL FISHERIES OF PERSIA.—The United States Minister at Teheran says that turquois mining has for ages been an important source of wealth to Persia. There appears to be no historical record of turquois mining in Persia before the tenth century; but after that, the industry seems to have rapidly developed. The mines that are now in operation are the same as those worked eight hundred years ago, and are situated in Kerman and Khorassan. The former are now almost abandoned, the light green color of the stones found there fading easily, and being but little prized. The mines of Khorassan are near Nishapoor, and are of great depth. Access to them is very difficult. The number of small or seed turquoises of light tint found in these mines is enormous. Mr. Benjamin states that last January one and a half pounds of the better grade of second-class stones were sold in Teheran for about $65. Stones of a dark sky-blue tint are comparatively scarce. The best turquois mines in Persia, and, indeed, in the world, are at Aboû Riâh. All the mines of Khorassan are farmed by the Mohpered Dowlet, the Nasiré Dowlet, and one or two other officials connected with the government. For this privilege, they pay 18,000 tomâns annually to the shah, a sum equivalent to about $30,000. The best stones are sent to Europe, and there is at present no evidence of exhaustion in the Persian mines. The pearl fisheries, on the contrary, appear to be in a languishing condition. Formerly a very large source of revenue, they are at the present day probably not worth to the government more than 50,000 tomâns, or $80,000 a year. The pearl-beds are farmed by the chief men of the adjacent towns, and, instead of being distributed in Persia, are for the most part sent to Europe by the steamers plying to the Persian Gulf. The reason for the present condition of the Persian pearl-beds is, that they have been allowed no rest, but have been constantly worked. In Ceylon, the pearl oysters are allowed a rest for intervals of two years, during which they are allowed to mature. Mr. Benjamin says there is reason to believe, however, that the beds at the island of Karâk, near Bushire, which have not been worked for some time, are now in a condition to repay capital expended there, especially if diving is extended to a depth of from 50 to 60 fathoms. As the ordinary depth reached by pearl-divers is rather less than this, the Persian government has recently sent to England for diving-dresses of the latest invention, and an experienced diver has been engaged at a high salary. With the assistance of these, it is expected that the pearl fisheries of Persia will regain their former importance.

* *The American Journal of Science*, vol. xxviii., Nov., 1884.

ANOTHER VIEW OF COPPER FOR ROOFING.

Messrs. Merchant & Co., of Philadelphia, well-known dealers in metals, have written the following letter to the *Industrial World*, under date of November 17th:

An article has recently appeared in the *Mining Gazette* in reference to the advisability of architects, builders, etc., using copper roofs, and urging their use on account of durability and the present low price of manufactured copper, basing their statements on the price of ingot copper and the cost of manufacturing it into sheet-copper at three cents a pound, without regard to the thickness of the sheets manufactured. This article has been copied by many of the leading journals devoted to architecture and building throughout the country, and has no doubt attracted much attention from those interested in the subject. We have read it carefully, and it is so misleading in its statements, so inaccurate in its deductions, and such absurd prices as to the cost of manufactured copper are given, that we take the liberty of correcting some of these statements. In our opinion, copper roofs can not take the place of other material generally in this country, not altogether because of the great expense, but because, unless put on so as to avoid the great expansion and contraction, the roof will be utterly useless for the purpose for which it is intended.

Although this firm is not engaged in the roofing business, it has within the past ten years, we believe, supplied a very large portion of the sheet-copper that has been furnished for the different government and State buildings, besides large quantities of sheet-copper for gutters, valleys, etc., to the trade in general; hence we do not write this article without some knowledge of the facts of the case.

We do not doubt all that is said in regard to the durability of copper roofing, nor is there any question in our mind as to the vast number of inferior roofs that have been put on and that are put on at the present day. We do not hesitate to assert that the fault lies not only with owners of property, who are not willing to pay a good price for a good roof, but with architects, who, when specifying tin plates, simply specify IC or IX best charcoal roofing, which in reality means nothing. The great expansion and contraction of sheet-copper is such that, if a copper roof is put on in the ordinary way that a tin roof is, say of 16-ounce copper, it can not be secured by solder, nails, or screws that will hold any length of time and make a secure roof.

The government formerly used 16-ounce copper on all public buildings, and though these roofs were put on at the time by competent firms, we have it from a reliable authority that the expenses of repairs on government roofs up to the present time will show a loss to the government of so much money that the public at large would not credit it. In fact, it has been asserted that in some cases the weight of the solder used in patching these copper roofs to keep them from leaking would amount in weight to almost the original weight of the sheet-copper put on. The government has, after a series of experiments, arrived at the determination to use no copper heavier than 10-ounce for the body of the roof. Among all the patents, of which there are many, for putting on copper roofs, we believe there is only one so far that can practically make a first-class copper roof in which the edges of the sheets are positively fixed at frequent intervals, and the sheets of 10-ounce copper, being light, will buckle between the fixed points and not be dragged backward and forward over the whole roof. By this patent, the expansion is distributed over the whole roof, and between any contiguous fixed points is so light that it is scarcely appreciable. The size of the sheets used should not be more than 24 inches wide and 48 inches long. About three inches of the width are required for grooving.

We understand by this patent that it would cost about 15 cents a square foot to lay this roof, over and above the price of the material; or take ten-ounce copper at the market price to-day, and. we hardly think it possible to lay a roof at less expense than 36 cents a square foot, or over double the amount stated by the *Mining Gazette*. This would be nearly four times the cost of using Gilbertson's Old Method roofing tin, which we believe to-day to be the heaviest coated roofing plate in the market, and is consequently taken by us as the basis of the best roofing plate that can be used, as to the comparative cost between tin and copper. While it is true that even extra coated plates like Old Method must be painted from time to time, yet, even taking into consideration the cost of painting every few years, the interest alone on the original amount expended for a copper roof over tin would in the course of years be a very important item. Our figures for putting on a copper roof are based on plain copper, while the government uses copper tinned on both sides, which adds a cost of five cents a square foot; but we do not believe that there is any necessity for tinning a roof unless used in such States as Texas and other places where they are more or less dependent upon water caught from the roof. Though sheet-copper is largely used for gutters, valleys, etc., we think that you will find upon investigation that great difficulty is experienced by the most competent houses in making durable jobs of sheet-copper; in fact, it is almost impossible to make long lengths of some gutters without breakages soon occurring. We have in our city quite a number of buildings that have been roofed many years with sheet-copper, but we are informed that there are constant repairs needed on these roofs. There is no question in our mind as to the durability of copper, and that a copper roof properly put on is the most lasting one. Under the patent referred to, we have no doubt a perfect roof can be had; yet as to the question of cheapness as regards other roofs, it has only been our intention in this article to point out why the statements in the *Mining Gazette* are misleading to architects and builders, and there is no reason why the facts as we believe them to exist should not be stated at once, to save further misapprehension as to the correctness of the statements made in the article referred to.

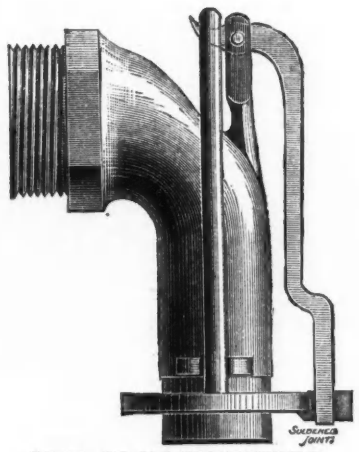
We have given the subject of copper roofing our personal attention for many years, and if any of the statements made by us are incorrect, we trust that those who have had a practical experience in this line will come forward and give their views on the subject.

THE Cambria Iron Company has employed Prof. John Fulton to give free instruction in structural geology, mining, and mine surveying to all its employés who may choose to take a course of study in those departments.

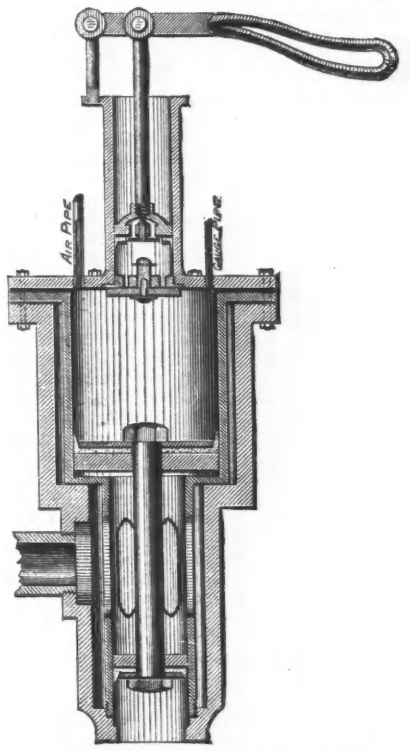
THE PROTECTION OF BREAKERS, SHAFT-HOUSES, MILLS, AND UNDERGROUND WORKINGS AGAINST FIRE.

Hardly a week passes that our columns do not contain the record of the destruction by fire of the surface buildings connected with mines in different parts of the country, or of the breaking out of fire in the workings of coal or metalliferous mines. In the great number of cases, such "accidents" are the result of sheer carelessness, though unfortunately it sometimes happens that the irritation caused by a strike or a lock-out leads to the deliberate destruction of valuable property by incendiarism. Located as they generally are at a distance from cities or towns equipped with modern fire service, and often necessarily placed in regions difficult of access, the danger of destruction by fire is greater in the case of shaft-houses, breakers, mills, and other surface buildings than is usual with other industrial establishments connected with mines. This danger is further hightened by the circumstance that, owing to the generally short life of mines, to the high cost of building materials, etc., mine buildings are, with few exceptions, timber structures, often of great hight. Although they usually cover a good deal of valuable machinery, the buildings are usually of a very perishable character. This fact, combined with those already noted of difficulty of access and of insufficient facilities for the extinguishing of conflagrations has naturally led insurance companies either to decline such extra-hazardous risks entirely, or to exact exceptionally high premiums. This in turn has had the effect of preventing the insurance of a good deal of property, and consequently it is only too often the case that a fire means a total loss. Touching a single branch of mining, we may note that, during the months of July, August, September, and October, the Derringer, Florence, Pine Brook, and Alliance coal-breakers, in the anthracite coal region, were destroyed by fire involving a loss of fully $200,000.

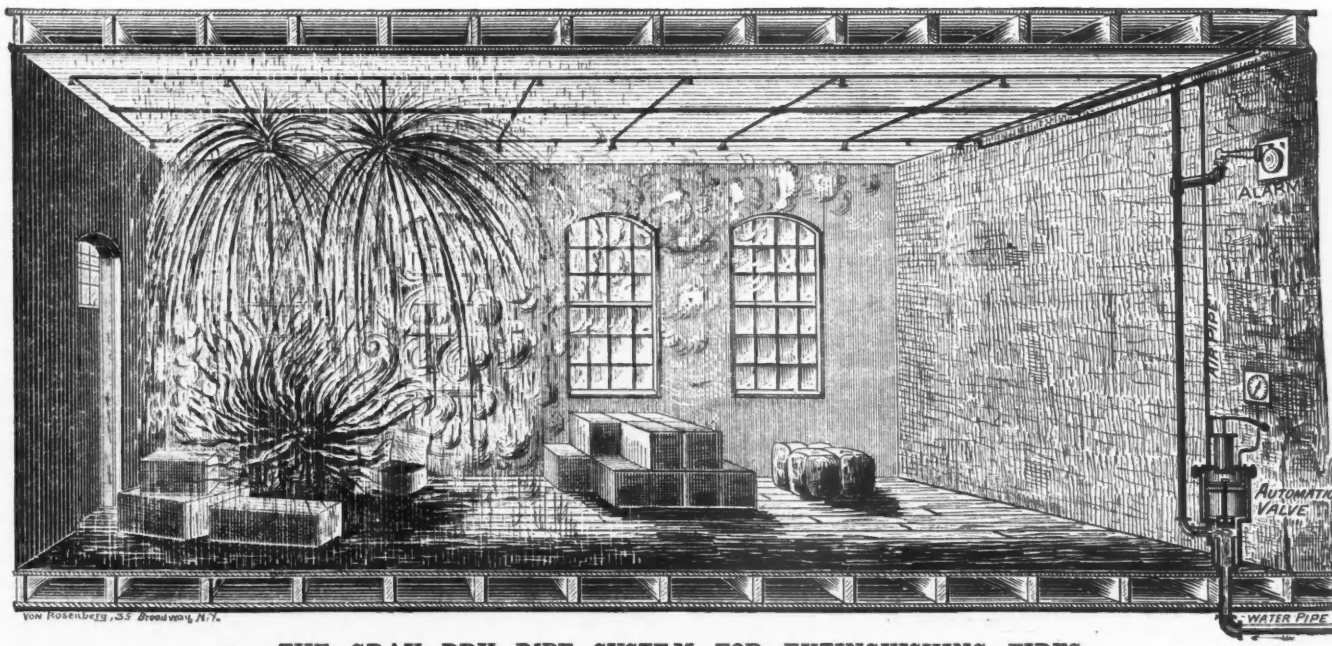
Thoroughly appreciating these facts, we have followed with the greatest interest the rapid introduction of the different systems for the automatic extinguishing of fires by sprinklers, particularly in the cotton and woolen mills in New England under the auspices of the New England Manufacturers' Mutual Insurance Company. A report recently published on the value of automatic sprinklers, in which is incorporated a list of the fires extinguished by them, covering 128 fires, gives the aggregate loss at $73,237.11, being an average loss of $572 per fire. The insurable value of these risks would amount to as much as $150,000 each. This record covers the entire period of seven years since the introduction of automatic sprinklers, and includes losses due to defective arrangements of some of the earlier forms, and to accidents in not providing water in some of the systems that are not automatic as to water supply. Even as it stands, the record is a brilliant one, and contains a very large number of cases in which no claim whatever was made. The second annual report of the Mutual Fire Insurance Company of New York contains the following passage: "During the year, two fires have been extinguished by automatic sprinklers in property insured by this company to the extent of $20,000 each, on which no claim was made. It is firmly believed that, had each of the other risks insured by this company been equipped with auto-



THE GRAY SPRINKLER.



THE AUTOMATIC VALVE.



THE GRAY DRY PIPE SYSTEM FOR EXTINGUISHING FIRES.

matic sprinklers in like manner, the losses in this company for the past year would have amounted to less than $1000. So far as the record of the different automatic sprinklers goes, not one of them has failed when fitted up with adequate supply-pipes and plenty of water."

While there can be no question of the highly successful adoption of automatic sprinklers in the numerous textile mills, factories, storehouses, and buildings in different parts of the country, we have yet to learn of their introduction into mine buildings. One reason why we have not ourselves urged their use earlier has been that the application of the ordinary systems involves one difficulty. Water is constantly kept in the pipe system on which they depend. Now, mine buildings are generally not built in so substantial a manner that during the winter season there is not danger of the freezing of the water in the pipes, and the result would be a constant annoyance from breakages or the adoption of a system by which a few well-drilled men are depended upon to turn on the water in the case of fire. Experience has shown that, even with the greatest care, it will happen that the men whose duty it is to turn on the water are so frightened at the critical moment that they neglect their duty. It has happened, too, that in the excitement, one man has turned the water off after it had been put on in the right way by one of his comrades. Practically then, the sprinkler system ceases to be automatic, and loses one of its greatest advantages, that of extinguishing a fire before it has had time to obtain headway.

For these reasons, particular interest attaches to the "dry pipe" system recently introduced by Messrs. Gillis & Geoghegan, of this city. Like all automatic sprinklers, it depends on the fusing of an alloy by the heat of the fire to open a pipe immediately above the fire, through which water is discharged upon it. In the accompanying cut we show one of these heads, an earlier form introduced by Messrs. Gillis & Geoghegan. It will be seen that the valve is held up by a yoke, and is confined there by a lever on the top of the sprinkler, which is soldered to the distributor. The solder is made of an alloy that will melt at 160 degrees Fahrenheit, so that the head opens and water is discharged when that temperature is reached. When it is considered that dry pine ignites at 550 degrees, it will be understood how promptly the action takes place. Of course, this sprinkler-head may be used in connection with the usual wet-pipe system; that is, the system in which the pipes with which the heads are connected are at all times filled with water. Messrs. Gillis & Geoghegan, however, have an arrangement by which these pipes are empty under ordinary conditions, the details being as follows: The water is excluded from the pipe throughout the building and back into the main by a valve that is operated automatically by the heat in any part of the building. We give a sectional view of the valve, and by referring to the large cut a general notion can be had of this system. It will be seen that the valve consists of two pistons, or what is called a differential piston, the upper or larger one containing an area of four times that of the lower or smaller piston. Now, in addition to the pipes for water and sprinkler-heads, a small ⅛-inch pipe is run throughout the building, with fusible plugs arranged the same distance apart as the sprinkler-heads. This pipe contains compressed air at all times, is made air-tight, and run back and connected with the cylinder containing the larger piston of the automatic valve; then the air is pumped in with the pump (shown on top of the valve) to a pressure corresponding with the pressure on the lower or water-piston. It will be seen at once by this device that, as the area of the air-piston is four times that of the water-piston, we have four times the power exerted to hold the piston down in its place and hold back the water until the fire occurs and releases the air.

The operation of the Gray dry pipe system is as follows: On the breaking out of the fire in any part of the building, the heated air rises to the ceiling and opens the fusible plug in the air-pipe by melting and releases the compressed air. It rushes out from the larger cylinder through the small pipe. As soon as the air pressure goes down below that of the water pressure, the pressure of water from the main forces up the piston above the opening to the trunk main, and the water flows throughout the pipes to the sprinkler nearest the fire, which is opened by the heat and extinguishes the fire immediately, and at the same time the alarm is sounded.

The usual cost of fitting up a building is about $4 per 100 square feet of floor surface.

In localities where the temperature is an even one, and where freezing is not to be dreaded, the wet-pipe system may be used. It is suggested, for instance, that in drifts or cross-cuts that it is desired to protect against fire, or where an automatic system of cutting off the progress of the fire in the direction of shafts, etc., is desired, it would be a good plan to equip say one hundred feet with automatic sprinklers, which, when released, would act like a water bulkhead, and could be relied upon to be automatic. Thus we know of a number of cases where the workings connecting adjacent properties underground would be best protected in this way, better in fact than by bulkheads, which it might be impossible to reach in time to close them. In every individual case, the applications will best suggest themselves to those in charge.

THE PATENT-OFFICE SURPLUS.

There are some statements in the report of the Commissioner of Patents for the late fiscal year, says the New York *Times*, that demand the careful attention of Congress and of all who take an interest in the development of inventive genius. The receipts of the Patent-Office in that year were $1,145,433, and the expenditures were $901,413, leaving a surplus of $244,020. The Patent-Office is not supported by general taxation. Its maintenance is not a burden that the people bear. The receipts are paid in by inventors, and the money contributed by them in the form of fees, etc., is more than sufficient for the expenses of the office. There has been a surplus every year—only eight years excepted—since 1837. The report of the commissioner for the calendar year ended December 31st, 1883, showed that in that year the surplus had been $471,005, or 41 per cent of the receipts. That report also showed that the average annual surplus for the five years ended December 31st, 1883, had been $285,992. It was not intended that the Patent-Office should be a source of revenue for use in other directions. It was to be made self-sustaining by the fees required from inventors. But it appears that the inventors of the United States, very many of whom are not overloaded with money, pay not only the expenses of the office, but from 25 to 40 per cent in addition to those expenses, piling up a surplus that has attracted the attention of liberal-minded legislators, some of whom have proposed that it should form part of a fund to be used in educating the illiterate in the South, without showing any good reason why patentees should be taxed for that purpose.

Now, if the Patent-Office were so well equipped that applicants could not reasonably complain of delays, the inventors might fairly ask for a reduction of fees. But it is well known that its forces are not sufficient for the work that ought to be done every year. For example, the report published a few days ago says that there were, on June 30th, 1884, awaiting action in the office no less than 9186 applications, or 5087 more than were awaiting action on the corresponding date in 1883. The arguments in the telephone interference cases closed in November, 1881, but the decision was not reached until July, 1883, and was not confirmed, on appeal, until two or three months ago. Surely, if inventors pay so much more than is required for expenses, they have a right to ask that their applications shall be promptly passed upon. That the force employed is too small, and that the salaries paid are so low that many examiners resign as soon as they become qualified by their experience to serve as patent attorneys, has been shown again and again by commissioners. Because there is a large surplus it does not follow that there should be a general reduction of fees; but it does follow that inventors should be given the worth of their money, and not be forced to submit to delays that sometimes very seriously affect the value of their inventions. It may be that more than one government bureau can be found in which the number of clerks might be reduced without doing any harm; but in the Patent-Office the number of employés should be increased, and it is folly for Congress to disregard the requests of the commissioner and the arguments suggested by the annual surplus and by the figures which show an accumulation of untouched applications.

THE LAW AS AFFECTING MINING AND METALLURGICAL INTERESTS.

Royalty on Lands Leased as Iron Ore Lands.—A case involving some legal points of importance to mining men was disposed of in the circuit court at Marquette, and is reported as follows in the *Mining Journal*: The parties to the suit were John Gribble *et al.*, plaintiffs, and H. M. Atkinson, of Negaunee, defendant. The plaintiffs were represented by E. J. Mapes, as counsel, and the defendant by William P. Healy. As the facts came out on the trial, which was before a jury, it appeared that Atkinson some time ago took a mining lease of a piece of land on the Cascade Range, owned by the plaintiff. By the conditions of the lease, he was given the right to mine iron ore upon the property for a term of twenty years, paying a royalty of 50 cents a ton upon all ore mined there. Atkinson bound himself to mine a minimum quantity of 5000 tons the first year, and 8000 each subsequent year while his lease ran, or to pay royalty on those amounts the first year and subsequently, as agreed, whether he mined the ore or not. Both the lessors and lessee presumed it to be a fact that iron ore existed in workable quantity on the tract, as a matter of course, when the instrument giving Atkinson the right to mine ore there was executed.

The defendant in the suit went to work in that belief, sunk test-pits and shafts, and, after considerable expenditure of money and labor in searching for ore, concluded that it was not there and abandoned work on the property. Gribble and the other owners in fee then declared the lease forfeited, and, Atkinson refusing to pay the minimum royalty called for by the lease, suit was brought to recover the amount claimed to be due them. The defense set up was, that the agreement to pay a minimum royalty annually, even though no ore were mined, was based on the presumption that ore existed on the tract in workable quantity; that all reasonable efforts to discover such an ore-body had only proved its non-existence; hence that this provision of the lease was not binding on the defendant, the assumption on which it was based being false in fact. The plaintiff maintained that royalty should be paid up to the time of forfeiture of the lease, whether there were ore there or not, it being "so nominated in the bond." The court, however, declined to take this Shylockian view of the case, and charged the jury in accordance with the line of defense taken by the plaintiff, holding that, as the assumption that iron ore existed on the land was essentially implied in the contract between the parties, the binding force of the lease, as to the payment of a minimum royalty, depended on whether or not such were the fact. Inasmuch as Atkinson accepted the lease, the presumption was, that ore existed on the property in a workable body; nevertheless, if he could establish that he and the lessors were at fault on that point, he could not be rightfully held for the royalty claimed. If the jury found that proper effort to find a paying deposit of iron ore had been made by the defendant, without success, he was not, therefore, liable for the royalty claimed. On this theory, the case was submitted, and a verdict was returned releasing Mr. Atkinson from liability on account of the claim for royalty. We understand the case will be appealed; but good lawyers here are of the opinion that Judge Grant's ruling is sound in principle, and that the verdict will stand. The case attracted much interest here, as it turns on a legal point that has not yet been definitely passed upon by the courts of this State, though decisions in accordance with Judge Grant's charge have been made by the supreme courts of other States where controversies over mining rights form a large share of the litigation.

The following are some of the recent decisions of the Secretary of the Interior:

The Rights of Junior Applications to Lode Claims.—A filed a lode claim, and notice was duly published. Five days later, B filed for a claim, alleged to be in conflict with the former, and made due publication. Two months later, B filed application to purchase, and made entry of entire claim. A few days later, A made application to make entry; but the same was refused by the local officers on the ground of conflict with B's claim. A appealed, and the Commissioner of the General Land-Office held B's entry for cancellation, on the ground that A's application, having been regular, was an appropriation of the land, and that the action of the local officers in allowing B's application and entry was wholly unauthorized and contrary to the uniform practice of the General Land-Office. This

was the status of the case when B appealed to the Secretary. That official says: It appears that, although A's application was filed prior to that of B, the location and survey of the latter's claim nevertheless antedated the location and survey of the former. These facts would seem to account for the further fact that A's official survey showed the existence of a conflict with B's lode, while such plat of the latter showed none. The local officers allowed the application for the former claim, because none had been filed for the latter; and they allowed the application for the latter because the official plat of the survey showed no conflict of any kind. In this the local officers erred. They should have treated the junior application as an adverse claim—since the conflict in question had been shown to exist by the record of the senior application—and therefore stayed all proceedings, except the publication of A's notice of application, until the controversy had been settled by a court of competent jurisdiction, or the adverse claim waived. It was competent for B to adverse A; but he was misled by the local officers' erroneous action in allowing the application and failing to stay proceedings; his statutory right to institute judicial proceedings can not, however, be denied solely upon the ground of the dereliction of the local officers, and his own consequent failure to exercise such right. It was not competent for the local officers to allow the junior application; such procedure, having been manifestly erroneous, should be corrected in so far as this department has power to afford the opportunity; and to this end, the parties should be remitted to a court of competent jurisdiction, pursuant to the provisions of the statute, in order that the question of the right of possession to the area in conflict shall be determined. The commission is therefore directed to suspend action upon the claims, and advise B that thirty days will be allowed to institute judicial proceedings.

The Clause of Reservation in Mineral Patents in Lodes on Town-Sites.—The secretary says the department has fairly decided that, where there is a town settlement upon a mineral claim, the clause of reservation should go into the patent, even when such settlement is not protected by a town-site entry; and that the actual rights of claimants under mineral locations and the town settlement would depend upon priority of occupation; but in the Rico town-site case, it was held that whether the lot-owner does take his lot subject to the rights of the mineral claimant as to surface must depend on priority of occupation; if a portion of the public lands have been settled upon and occupied as a town-site, such occupation is a lawful one. The rights of the occupants are fully recognized by the custom and usages of the country, as well as by the statute, and provision is made for the completion of the title by patent to the corporation authorities, or to the county judge in trust for such lot-owners, and therefore this question of occupation must be left to courts of competent jurisdiction to settle, and that in the nature of things the department could not be called upon to adjudicate such questions.

The Hours of Proceedings before Registers and Receivers.—The duties of registers and receivers must be discharged in their respective offices and during the hours devoted to public business; when the law requires affidavits to be made before local officers, they must be made before such officers officially, when in the public discharge of their official duties, or the affidavits will not be recognized by the department as a basis of entry. An application is not complete until the required affidavit is made, and then the certificate must be issued and the proper records made; and all these steps must be taken in time and order; if an affidavit is authorized to be made before any other officer than a register or receiver, and is so made, it can, of course, be filed with the application; but if made before either the register or receiver, it must be made as a part of the regular proceeding at the time the application is presented; therefore affidavits made outside of office hours are irregular and improper. Local officers have no authority to administer oaths generally, nor are they authorized to do public business privately or in chambers. Their place of business is the land-office, and their business must be conducted openly, publicly, and regularly.

FURNACE, MILL AND FACTORY.

Arrangements have been made for the immediate resumption of the Rock Island Plow-Works, Rock Island, Ill., which will give employment to 400 hands. The Rock Island Plow Company, a new organization with a paid-up capital of $350,000, succeeds B. D. Buford & Co.

The Frankstown rolling-mill, at Pittsburg, Pa., which has been idle for four months, resumed operations November 24th, and it is thought will be kept running all winter. It is expected that the new pipe mill, recently built by the same firm, will start up soon, giving employment to 600 men.

The Cowdrey Four-Cylinder Engine Company, Chicago, Ill., has been incorporated to manufacture and deal in steam-engines and machinery, with a capital of $100,000; incorporators, Robert H. Cowdrey, Harry C. Berhoup, Alfred C. Clark.

The Petroleum Fuel Company has been incorporated in California for the purpose of operating the Hogdon Converter and process patents, for converting petroleum and other hydrocarbons into fuel. The capital stock is $1,000,000. Directors: John F. Miller, Patrick Noble, H. Clay Miller, Mack Webber, and O. C. Miller.

The puddling department of Schoenberger & Co.'s mill at Pittsburg, Pa., has been temporarily closed, owing to the scarcity of orders. The nail department will also probably close down soon.

It is said the machine-works at Roanoke, Virginia, have several large orders for machinery that will employ 1000 additional men.

The Pacific Nail-Works, Cal., will probably remain closed for an indefinite period, owing to the depressed state of the nail and iron trade, unless the operators will submit to a 20 per cent reduction of wages.

The Saucon Iron Company's property, Easton, Pa., consisting of two blast-furnaces, railroad cars, mine leases, and other appurtenances, is to be purchased by the Thomas Iron Company. The terms of sale are all agreed upon, and the transfer is to be made soon. The price covers the mortgages on the works. The Saucon furnaces have been closed for eight months. The Saucon furnaces were to be overhauled and started as soon as practicable.

Attachments for claims aggregating $25,000 were placed upon the Harrison Wire-Works at St. Louis, Mo., November 21st, at the instance of Baring Brothers, of London, and Kidder, Peabody & Co., of New York. A temporary suspension of the works is probable.

The Oxford Iron Company, of Oxford, New Jersey, November 21st decided to stop the blast-furnace. One hundred and twenty-five men were discharged outright, and the rest, to the number of nearly 700 men, put on half-time.

The Keystone Horseshoe shops, of Pennsylvania, were closed November 22d. The proprietors have petitioned their creditors to grant them from twelve to eighteen months in which to meet existing liabilities.

The Franconia Iron and Steel Company's works, Massachusetts, have tempo rarily suspended operations.

Luken's Rolling-Mill and Tube-Works, at Conshohocken, Pa., has been closed.

Hogsett's blast-furnace, at Pittsburg, Pa., was blown in November 20th, after being out of blast for over a year. The capacity of the furnace has been increased from 80 to 90 tons a day.

At the sheriff's sale of the Kemble Coal and Iron Company's property, the proceeds amounted to $40,006. This includes all the land, iron ore, coal, limestone, mining rights and privileges, and improvements on real estate. The Riddleburg property, including two furnaces, coke-ovens, etc., was knocked down at $25,500. The entire property was estimated at a value of not less than one million dollars. The property was purchased for a number of gentlemen in Pittsburg and New York, who have already signed articles for a corporation, and the works will continue in operation.

The bolt, blacksmith, and machine-shops of Oliver Brothers & Phillips, of the Tenth street mills, Pittsburg, Pa., shut down November 20th on account of slack orders and over-production.

The Gautier wire mill, at Johnstown, Pa., which has been idle for a number of weeks for repairs and to reduce stock on hand, has started up on one turn. It is probable that, as soon as the warehouses are cleared of the manufactured articles, the employés will be put on double turn.

The Watt Mining Car-Wheel Company, of Barnesville, Ohio, is at present making large shipments of Watt's patent self-oiling mine car-wheel to Alabama and Tennessee. The works have been in operation some twenty-two years.

Cruikshank, Moyer & Co., of Danville, Pa., have received an order for 15 nail machines for the Bellefonte Iron and Nail Company, Limited. They are also building six additional nail machines for the Danville Nail and Manufacturing Company. The latter company is increasing its capacity by erecting additional machines and putting up another gas-heating furnace.

Five hundred tons of Alabama pig-iron were received at Philadelphia, Pa., November 25th. The firm of R. D. Wood & Co., large pipe manufacturers, have contracted for 2500 tons, to be delivered in 100-ton lots.

The Martin Color and Chemical Company of Philadelphia, with a capital of $125,000, has been chartered at Harrisburg, Pa.

W. W. Beckett, of Sherbrooke, one of the largest hardware merchants in the province of Quebec, Canada, has assigned, with liabilities of over $100,000.

The rolling-mill at Blandon, Pa., suspended operations November 25th for want of orders, throwing 150 men out of employment.

McIlvain's plate mill at Reading, Pa., which suspended a week ago, resumed November 25th.

The puddle mill of the Bethlehem Iron Company, at Easton, Pa., which has been idle since the early part of this summer, will resume December 1st.

The Old Dominion Copper Company reports a product of 550 tons of fine copper bullion for the past month from two of the Rankin & Brayton 30-ton copper smelters, which is a return of over 18,000 pounds a day for each smelter. Such a run is of course exceptional, yet it shows what can be done with these furnaces under favorable conditions.

The Canton Tool Company is to be reorganized soon, and become a joint-stock company under the name of the Fulton Tool and Manufacturing Company, with office and factory at Canal Fulton, Ohio. The new company will continue the manufacture of high-grade steel tools for miners, masons, and rail track-men, and will add some specialties. The company has recently begun the manufacture of Lalby's patent hand-drill for coal miners, and finds it is favorably received.

RAILROAD NEWS.

Mr. J. W. Hopkins, Fuel Agent of the Chesapeake & Ohio Railroad Company, sends us the following report of the total output and distribution of coal and coke received from the mines on the line of the railroad (including fuel on Lexington Division) for the month ended October 31st, in tons of 2000 pounds:

	For October.		From Jan. 1 to Oct. 31.			
Kind of coal.	1884.	1883.	1884.	1883.	Increase.	Decrease.
Cannel	2,412	109	18,890	20,623	.....	1,733
Gas	21,002	30,129	253,571	303,289	.....	49,718
Splint and Block	16,118	10,415	94,240	86,085	8,155	.....
New River, etc	20,085	30,385	324,273	331,390	.....	7,117
Coke	9,543	9,023	61,345	86,857	.....	25,512
Totals	69,160	80,061	752,319	828,244	8,155	84,080

Distribution of above:	For 31 days. 1884.	1883.
Fuel for use of company	16,980	18,534
Shipped at Huntington, on Ohio River	914	.....
Delivered on line of Elizabethtown, Lexington & Big Sandy Railroad	11,702	6,110
Delivered on line of Chesapeake & Ohio Railroad, excepting Richmond	6,358	17,853
Delivered at Clifton Forge to Richmond & Alleghany Railroad	2,300	1,407
Delivered at Staunton to Baltimore & Ohio Railroad	.....	.....
Delivered at Waynesboro' to Shenandoah Valley Railroad	54	75
Delivered at Charlottesville to Virginia Midland Railroad	2,837	7,759
Delivered at Richmond, Fredericksburg & Potomac Junction to Richmond, Fredericksburg & Potomac Railroad	984	729
Delivered at Richmond for consumption, including tugs, dredges, etc.	7,634	10,926
Shipped at James River wharves	5,459	.....
Delivered at Newport News for consumption, including tugs, dredges, etc.	563	639
Shipped at Newport News wharves	13,375	16,029
Totals	69,160	80,061

The Delaware & Hudson Canal has been closed for the season. The total shipments were 969,439 tons.

It is said that the Pennsylvania & Reading Railroad management propose putting into operation in the next fiscal year, beginning December 1st, a plan of retrenchment by which the operating expenses will be reduced some two million dollars or more. This saving is to be effected by a reduction in the salaries of officials as well as minor employés, and in the general expenses, purchase of supplies, materials, etc.

The Beech Creek, Clearfield & Southwestern Railroad, the new line into the soft coal region of Pennsylvania, is nearing completion.

The franchises, property, rights of way, branches, tracks, and all the appurtenances of the Pittsburg Southern Railroad, were sold November 21st at sheriff's sale, to the Baltimore & Ohio Railroad Company, for $50,000. The road has been in debt to an amount exceeding $1,000,000 for some time, and was unable to pay the interest on its indebtedness. The Baltimore and Ohio Company was the largest of its creditors, and has had virtual control of the road for nearly a year.

The Arizona Mineral Belt and Construction Improvement Company, at a meeting in Boston recently, elected the following board of directors: General Green B. Raum, Payson Tucker, Woodman S. Eaton, George A. Kempton, George O. Manchester, E. R. Burpee, and Dr. J. L. Hildreth. When completed, the railroad will be one of the most valuable feeders of the Atlantic & Pacific and Atchison, Topeka & Santa Fé, as it will open up some of the finest grazing and mineral lands in Arizona.

The receivers of the Philadelphia & Reading Railroad Company have made arrangements with Messrs. Drexel & Co. to purchase the coupon and registered interest of the 6 and 7 per cent consolidated mortgage bonds, amounting to $627,525, due on December 1st. The Messrs. Drexel state that the interest which was bought by them in June from the receivers was repaid within one month, and that the present advance is to be provided for in like manner.

President Keim, of the Philadelphia & Reading Company, has addressed a letter to President Little, of the Central Railroad of New Jersey, announcing that the managers of his company find that they can not deal with the Jersey Central dividend, due December 17th, until questions pending in the United States Court that affect the dividend have been disposed of. President Little is instructed to inform the shareholders that the dividend will be postponed until that time. The preliminary injunction granted against the directors of the Jersey Central to restrain them from paying any reimbursement to the Reading was dissolved November 25th on the promise of the directors not to make such payment until questions pending before the courts have been settled. The Dinsmore suit has been postponed until December 2d.

LABOR AND WAGES.

The miners have not issued any reply to the Cumberland mining companies, and it is not known when they will. This paper, if issued, will, it is said, ask a reduction of smithing from one cent to a quarter of a cent a ton, a reduction in rents and perhaps in hours, and that the ton be reduced to 2000 pounds.

The Meliert Foundry and Machine Company, of Reading, Pa., has reduced the wages of a number of its employés from 25 to 50 cents a day.

The Standard nut-works, which recently ordered a 20 per cent reduction in the wages of their employés, have positively refused to compromise, and the strikers firmly assert that rather than accept so large a reduction they will remain out all winter.

Notice has been given the employés of the Palmer wire mills, at Palmer, Mass., that, beginning November 24th, work would be furnished them only three days a week for the present, and that to a slightly reduced force. The depression will probably be of short duration.

The reports presented at the regular weekly meeting of the Central Labor Union of this city, held November 23d, showed that about $816 have been raised by subscription, for a fund for the benefit of the Hocking Valley miners. A communication was received from W. J. Kronauge, President of the Trade and Labor Assembly, of Cincinnati, Ohio, asking that petitions be sent requesting the Governor of Ohio to order the withdrawal of Pinkerton's men from Hocking Valley. A committee was appointed to draw up the required communication.

Six hundred men employed in one of Corning's mills, at Troy, N. Y., met recently and agreed to the proposition to return to work under a reduction of 25 per cent. The puddlers received $4.25 a ton, and now they are willing to work for $3.50 a ton, but work can not be given them all under two months, because many of the furnaces are out of repair.

The Bethlehem Iron Company, of Pennsylvania, has notified the employés in the Bessemer steel mill that, until further notice, the mill would be in operation only five days a week, instead of six. This action is taken on account of dullness in the trade.

The wages of the workmen employed in the melting department of Park Brothers' steel-works, at Pittsburg, Pa., were reduced fifty cents a ton November 24th. A similar reduction will also be made in the hammer department soon. The men accepted the cut without a murmur.

The mills of the North Chicago Rolling-Mills, of Chicago, Ill., will close November 27th, owing to the dullness of trade. Eighteen hundred men will be thrown out of employment.

The employés of the Dickson Manufacturing Company, at Scranton, Pa., have been notified that their wages would be reduced ten per cent after the 1st of December.

At Conshohocken (Pa.), Alan Wood & Co. have warned their hands of a reduction of 10 per cent of their wages, and it is thought will close their mill soon. Wood & Brothers have also given notice of a 10 per cent reduction.

The wages of the employés of Robinson, Rea & Co.'s foundry at Pittsburg, Pa., were reduced ten per cent November 24th.

COAL TRADE NOTES.

COLORADO.

The smelters of the State have received notice from the Colorado Coal and Iron Company that, in consequence of their coke-ovens at El Moro being entirely closed down by the strike of the miners, supplies of coke could no longer be expected of them, and hence the smelters must seek for coke elsewhere. El Moro has been turning out about 450 tons of coke a day, and the sudden withdrawal of this amount seemed likely at first to force the closing down of the majority of the smelting plants of the State. The establishments in Denver and Pueblo have on hand coke sufficient for thirty days and over; but the Leadville works have only enough for about two weeks. The consumption of coke is mainly distributed as follows: Pueblo smelters and steel-works, 175 tons; Leadville furnaces, 240 tons; and Omaha & Grant smelter, 50 tons a day. The Crested Butte ovens can not be relied upon in this emergency, as their product goes to Utah, and hence outside resources must be depended upon. For the past five months, but little Eastern coke has been marketed here, as a discrimination was made, favoring the fostering of this home industry.

The smelters were not taken by surprise, however, as this state of affairs had been anticipated, and arrangements had been perfected at the managers' meeting a few days ago with the railroads, to the end that, if the Denver & Rio Grande could not supply coke, the other lines would furnish it. Accordingly, on receipt of the official notice, telegraphic messages were forwarded to Connellsville, Pennsylvania, and fifty tons at once started Coloradoward. This amount will daily be forwarded to the Omaha & Grant works, and enough to meet the necessities of Leadville and Pueblo will also be forwarded. Other supplies of coke can be had from Ohio, West Virginia, Alabama, and the Indian Territory, and hence only a national strike can cut off the sources of supply, so that Pennsylvania or some other outside point will keep the furnaces going until the El Moro ovens are again in full blast.

INDIANA.

The mines in the Brazil District are running very nearly full-time. The Nickel Plate mine has only missed two days now for about three months. This mine is run by the Jackson Coal and Mining Company, and employs about 300 men and boys. Several severe accidents have happened in this shaft within the last four weeks.

MARYLAND.

There was a remarkable epidemic of accidents in the Cumberland and George's Creek coal region, November 22d, when three men lost their lives and one was fatally injured. In the mine of the Consolidation Coal Company, at Eckhart, Thomas Larriby was crushed under a ten-ton breast of coal that fell on him. In the Hoffman mine, at Pompey Smash, Arthur Gilmartin, who is employed about the engine, was caught in the cog-wheels, and was fatally injured. In the Midlothian mine, near Lonaconing, a breast of coal weighing several tons fell on Michael O'Hara, crushing him fatally. Archie Gilchrist, a miner in the George's Creek Coal and Iron Company's mine, was also terribly crushed by falling coal. This series of accidents occurring within an area of five square miles, caused much excitement throughout the whole mining region, which has not had as many fatalities in the past four years.

The engine-room, sand-house, and repair shop, all wooden buildings, at Koontz mine, Lonaconing, were burned November 22d.

MEXICO.

Some eight months ago, it is stated that R. J. McCracken, W. N. Monroe, and others, jointly holding perfected titles to the land, conveyed to the Southern Pacific Railroad 200,000 acres of coal land in the valley of the Sabinas, built eleven miles of railroad and put in machinery and improvements of all kinds, including houses for miners. Under American management, the mines were putting out about seventy-five tons of coal per day. Now a Mexican judge has decreed that the present owners and operators of the mines must vacate the premises, taking away all of their improvements within three days. A military force has been put in charge.

MISSOURI.

Keith & Perry are sending out an average of 50 cars a day from their shaft mines northwest of Rich Hill.

OHIO.

At Chapman, Willow No. 5 is still idle and No. 6 is running fairly well. The Sippo mine is finished, and the new Sippo shaft has struck coal and will soon be ready for shipping. The Blaine shaft has been running steadily. Some of this coal has been shipped to Cleveland. The Youngstown Coal Company is working steadily, and Brush Hill also.

NATURAL GAS.

A new vein was struck in the gas-well on the farm of Joseph Poe, just south of Cleveland, November 21st. The volume of the escaping gas greatly increased, spread rapidly, and took fire from the engine near by. The rig was destroyed by the fire.

PENNSYLVANIA.

Jacob M. Rutt, coal merchant of East Hempfield township, Lancaster County, has made an assignment; liabilities, from $15,000 to $18,000.

ANTHRACITE.

The report of the mine inspectors for October is as follows:

Pottsville District—Samuel Gay, Inspector: Accidents, 6; killed, 1; injured, 5. Total employés, 6718; average number of days employed, 20; number of tons of coal shipped, 191,324.

Shenandoah District—Robert Mauchline, Inspector: Accidents, 14; killed, 4; injured, 10. Total number of employés, 12,794; average number of days employed, 20 1-5; number of tons of coal shipped, 450,477 13.

Shamokin District—James Ryan, Inspector: Accidents, 22; killed, 4; injured, 18. Total number of employés, 13,158; average number of days employed, 20⅞; number of tons of coal shipped, 403,665 11.

COKE.

The Coke Producers' Association held its regular monthly meeting at Everson, October 20th. The report of the syndicate showed the total sales of the month to be 7207 cars, aggregating 115,841 tons, yielding $130,127, or a fraction over $1.12 a ton. The proposed advance in prices was not discussed; but a proposition to erect telephone lines throughout the region was debated with interest, and a committee consisting of R. L. Martin, J. A. Strickler, and J. M. Reid was appointed to examine into the cost and to report. It was agreed to hold future meetings at Connellsville.

The coke producers' syndicate met at Pittsburg, November 25th, and appointed a committee to see the outside producers and endeavor to get them into the association. The syndicate claims that the outsiders are reaping the benefits of the pool, and threaten that, if they do not join the association, the pool will be dissolved and a general cut of rates inaugurated.

NATURAL GAS.

Messrs. Jones & Laughlin are considering the advisability of sinking another well for gas on their property on Thirtieth street, South Side, Pittsburg. The present well on Twenty-sixth street has developed a good flow, and the pressure is constantly increasing, but, fearing that further drilling would injure the vein, a torpedo was lowered and successfully fired.

It is probable that Morehead & Co.'s Soho well will be drilled deeper. It was abandoned at a depth of 2000 feet, only a small vein of gas having been encountered.

The ordinance granting W. D. Wood, W. N. Robbins, William Whigham, and others, the right to lay pipes upon the streets and alleys, to supply the town with natural gas has passed councils at McKeesport. In consideration of the same, the company is to furnish gas free to all the borough buildings, and to be responsible for all damages. The National Tube-Works Company was also allowed street privileges to supply its works with gas.

UTAH.

The Pleasant Valley Coal Company has received an order for 300 cars of coal from the Denver & Rio Grande Railroad headquarters at Denver. The strike among the coal miners of Colorado caused the orders to be sent.

VIRGINIA.

The coal and coke-works in the neighborhood of Pocahontas are working steadily, with fair prospects of a continuance. Other new works will soon be started. The new mine of Bewry & Cooper, near Pocahontas, has shipped its first coal.

GENERAL MINING NEWS.

ARIZONA.

PIMA COUNTY.

CANNON-BALL.—These reduction-works were started up November 15th on a trial run, and then began work on custom ores. They are now ready to receive ore from any and all parties having amounts from one ton upward, and guarantee complete satisfaction in the results obtained.

HARSHAW.—W. N. Olmstead, of New York City, has been appointed receiver. It is stated that the enterprise is to be wound up.

QUIJOTOA DISTRICT.

It is reported that the managers of the leading mines have decided to purchase the mill of the Harshaw Mining Company, and remove it to Logan City, to reduce the ores from the Peer, Peerless, and Crocker mines.

YAVAPAI COUNTY.

COPPER BELT MINING COMPANY.—Considerable work has been performed on the properties recently purchased by this company. The developments have exposed large quantities of ore high in copper and rich in silver. The mines are acce-sible, and about seventeen miles east of Prescott.

CALIFORNIA.

MONO COUNTY—BODIE DISTRICT.

Reports for the week ended November 17th:

BODIE CONSOLIDATED.—During the past week, 166 tons of ore were worked at the mill, the average assay value being $205.87 a ton, 12 per cent being lost in the tailings. These tailings are carefully saved. The ore-breasts are looking well. Forty-two men are employed.

STANDARD CONSOLIDATED.—Extracted and shipped to the mill 558 tons of ore and 700 tons of tailings. Received from the ore 615 ounces of crude bullion,

and from the tailings 247 ounces. Shipped to the company $10,659.62, of which $7718.39 is from two weeks' run on ore, and $2941.23 from two weeks' run on tailings. There was considerable decrease in the value of the ore stoped during the past week. It is gradually getting lower grade, and now leaves very little margin for profit.

NEVADA COUNTY.

CHAMPION VS. WYOMING.—The Champion Mining Company has begun a suit against the Wyoming Mining Company to restrain the latter from continuing work in the direction it is now going on, and to recover $300,000 damage to the claims adjoining. The plaintiffs claim that the defendants for some time past have been extracting ore on the Champion side of the boundary line.

PLACER COUNTY.

OPHIR VALLEY.—This mineral company has been incorporated with a capital stock of $500,000, for the purpose of working mines in this county.

PLUMAS COUNTY—GREENVILLE DISTRICT.

FOREST KING.—Work on the lower tunnel is progressing, and the ledge will soon be reached. This is a promising mine, and, with a proper amount of capital invested, an extensive mine could be developed.

INDIAN VALLEY.—The mine has been drained.

LUCKY S.—The mill is running and producing good returns.

CANADA.

PROVINCE OF NOVA SCOTIA—TANGIER DISTRICT.

ESSEX.—This gold mine (formerly the Satemo) has lately started up under a new organization, and has made its first shipment of bullion. The old Tupper shaft, about which so much has been said, has been cleared out, showing a rich vein of gold. The Nugget lode maintains its repute. The management is very much pleased with results.

COLORADO.

CLEAR CREEK COUNTY.

CORRY.—This concentrating mill has been closed for the winter.

SNOW-DRIFT.—This mine was recently purchased by Daniel Weld, of Boston, who appointed Major Henry Fulton as manager. The plant of hoisting machinery manufactured by the Union Manufacturing Company, of Georgetown, is getting into working order over the Peterson shaft. Applications for leases on the property are numerous.

CONEJOS COUNTY.

Alamosa wants a smelter, and presents its advantages to capitalists.

DOLORES COUNTY.

DOLORES VALLEY.—The patent for the C. B. & Q. lode, the property of this company, has been received by the Durango Land-Office. This company owns almost 100 claims in Pioneer Mining District, and a large number of them have been patented.

GRAND VIEW.—The fourth level, on which is to be concentrated the development of the winter by the company, is at present in 370 feet, and will be continued 400 feet under the present contract.

HILDEBRAND.—Just before closing down recently, a body of high-grade gold quartz was struck in this mine.

PASADENA.—The smelter treats about 20 tons of ore daily.

SOUTH PARK.—There is a prospect that this mine, which has been idle for many months, will be worked.

GILPIN COUNTY.

KOHINOOR DONALDSON.—At a recent meeting of the stockholders at London, England, the question of raising additional capital to work the company's mine was discussed. No positive arrangements were made.

GUNNISON COUNTY.

Valuable discoveries of white, yellow, and variegated marbles are reported from Rock Creek.

The Denver & South Park Railroad has reduced its freight rates on low-grade ores, in car-load lots, to Gunnison City from points in that country.

GOVERNOR TABOR.—The mine has been sold to W. P. Black & Co. Some of the best fluxing ore in camp, that mills from 40 to 50 per cent lead and from 35 to 40 ounces of silver to the ton, is produced by this mine.

GUNNISON.—The first ore was fed into the furnace of this smelter about ten o'clock at night, November 19th. The furnace worked admirably. The blowing in at this time was merely to keep within the contract with the Chamber of Commerce. The furnace was not really ready to start up, and will treat no more ore for a week or two, the intervening time being used to get matters into more convenient shape. According to its contract with the Chamber of Commerce on the eight thousand dollar donation, the smelter must be in operation for ninety days during the coming four months.

MOFFET.—According to the *News-Democrat*, the furnace is now giving perfect satisfaction, and is smelting from twenty to twenty-five tons of ore a day.

LAKE COUNTY.

The Leadville *Herald* reports the following:

DENVER CITY.—This mine will, in all probability, strike the Forest City ore-chute. At present, the ore shipped is iron, running from 20 to 30 ounces of silver.

IRON SILVER VS. CROWN POINT.—The case of the Iron Silver Mining Company *vs.* the Crown Point was decided in the United States Court, at Denver, in favor of the Iron Silver Company.

LEO.—Operations at this mine are retarded by water. The shaft is now 360 feet in depth, and will be pushed as rapidly as possible.

OURAY COUNTY.

ALASKA.—The lessee has struck a heavy body of gray copper and sulphurets The property is owned by ex-Governor Tabor.

PARK COUNTY.

BONANZA.—This lode on Mount Bross is offered for sale. A strong vein of pay-ore is already disclosed.

LONDON.—Work on this mine has been suspended for the winter, the affairs of the company have all been adjusted and work will be resumed in the spring.

NORTH AMERICAN.—The property of this mining and developing company in Alma is to be sold at sheriff's venue, to satisfy debts of long standing.

PITKIN COUNTY.

Improvements are going on at the smelter at Aspen. A five-foot ditch and flume is running from Castle Creek, which will furnish motive power for the smelter, by a turbine-wheel. A reverberatory furnace and ovens similar to those in use at the works at Argo, are building. This is for roasting the matte that comes from the furnace with the slag, and also the more refractory ores.

EMMA.—Mr. Joseph Ruse, manager of this mine, under the lease held by Nevitt and Webber, has begun suit against said Nevitt and Webber to recover ten per cent of the net proceeds of all mineral sold from July 12th to October 21st, amounting in the aggregate to $80,457.20. Mr. Ruse seeks to recover ten per cent of $24,000, the amount which the lease brought when sold to Judkins, making the sum to be recovered, $10,457.20.

SUMMIT COUNTY.

BELFORD.—This property, which has recently shown up very favorably, is located for effective and economical exploitation by drifting on the vein in its course over the mountain and connecting these drifts by winzes. One of thes drifts has been pushed into the mountain for 100 feet, and the ore has steadily enhanced in value until an average of two feet of the pay recently taken returned a value of three ounces in gold and six ounces in silver.

DAKOTA.

FATHER DE SMET.—The superintendent reports, under date of November 4th [?], as follows: I herewith inclose express company's receipt for bar No. 195, containing 1416·35 ounces of gold, the result of clean-up of the mill for the final run in October, making a total of 2621·10 ounces for the product of the month. The mine continues to look favorable and is producing well at all points. Eureka cut ore is yet running low; but at other points, a much better grade is obtained, especially that in the Justice cut, which has shown a marked improvement in the last few days. Altogether, the outlook is encouraging for a continuation of good results. There is nothing of importance to report of work in the east cross-cut ledges, second level. Mine report from November 7th to November 15th, showed ore extracted from first, second, and third levels, 2070 tons; ore milled, 2100 tons.

IDAHO.

IDAHOAN.—The English syndicate that recently purchased this property is working it actively, and shipping ore to Kansas City. Sixty men are employed. The first payment of $150,000 will be due at McCornick's Bank, Salt Lake City, December 15th; and the remaining $250,000 matures some time after in two equal payments.

PARKER.—The hoisting-works are completed, and operations will be carried on all winter.

MICHIGAN.

COPPER MINES.

ATLANTIC.—A recent fire in the stone hoisting-house, at No. 3 shaft, did considerable damage to the building, but did not interfere with the work underground.

BAYFIELD.—This mine is worked by a small force. The company is negotiating for the purchase of a steam-drill, pump, and hoisting-works, which it expects to have in operation early next spring.

CONGLOMERATE.—All work in this mine, Keweenaw County, has been suspended. The question of doing a certain amount of exploring the coming winter is still an open one.

PEWABIC.—The argument of the case of T. Henry Mason *et al. vs.* the Pewabic Mining Company, took place November 28th; but it is stated that nothing is likely to be done in the matter until next spring.

PHOENIX.—The mine was to be sold by the creditors on the 28th inst. It is thought that the company will buy it in.

TAMARACK MINING COMPANY.—The Marquette *Mining Journal* publishes the following description of this property, which will appear in the forthcoming report of the Commissioner of Mineral Statistics: The company started a perpendicular shaft on February 10th, 1882, which is designed to reach the Calumet conglomerate at an estimated depth of 2240 feet below the surface. January 1st, 1884, it had reached a depth of 1149·5 feet, up to which point the geological section shows the strata pierced. At the present writing, November, 1884, the shaft is down 1800 feet, and indications seem to point to August, 1885, as the probable time for reaching the Calumet. At a depth of 470 feet, a bed of jasper, as the miners call it, overlying an amygdaloid belt, was struck, and in simply the area of the shaft several tons of mass copper were taken out. This promises to be a most excellent bed, and will unquestionably pay to work. The upper layer of jasper, so-called, has been pronounced by Mr. Wheeler, of Washington University, to be argyllite. At a depth of 670 feet, the Allouez conglomerate was struck and passed through, but only showed itself to be about two feet thick. Considerable discussion was raised when the jasper belt was passed through as to whether it was not the Allouez conglomerate; but as this latter conglomerate outcrops at the rear of the Calumet dam, at Calumet, measurements have shown that, assuming the dip of Hecla No. 4 to be 37 degrees 30 minutes, the second belt passed though must be the Allouez. The Allouez belt is very persistent on the Point, and on it are the Conglomerate Company's mine, the Allouez, and the Peninsular. Recent diamond drilling at the Pewabic has also cut it to the east of the Pewabic belt. As to the shaft piercing the Caumet conglomerate, there seems to be not the slightest doubt, as there are levels in the Hecla almost as far down. In regard to the richness, every indication seems to show that it will strike at a rich part. The rich ground of the Hecla has gradually, at an increased depth, veered around toward the south, and is now headed toward the Tamarack. The pay-chute that the Osceola worked, and which goes through to the Calumet & Hecla's Black Hills, is also pointed toward the Tamarack, and the probability of that part being rich is great. During the first year, the rate of progress was about 41·4 feet a month; the second year, 59·7 feet; and up to date, the average for the last year has been 63·9 feet. The shaft is most substantially timbered from the top down, the inside dimensions being 17 feet 8 inches by 7 feet. It is divided into three compartments, two of which will be used for hoisting, and the third for a pump and ladder-way. At present, only the middle compartment is used; the bucket is attached by hooks to the wire rope, which passes through a cross-head in guides. This cross-head is arrested in its motion about 50 feet from the bottom of the shaft, by two stops in the guides, and from this point the buckets descend slowly to the bottom. The timbering is kept behind the bottom of the shaft about the same distance, to avoid danger from blasting. The surface water, which is the only water in the shaft, serves to keep the timbers moist, and so protect them from danger of both dry rot and fire. A new 1¼-inch steel rope, and buckets to hold one ton each, have just been procured and will soon be in use. A feed-water heater has been connected with the exhaust-pipe of the hoisting-engine, and effects considerable saving in fuel. The air-compressor plant consists of one Clayton and a single Rand machine. These are more than sufficient to supply the necessary air. In time, the other half of the Rand compressor will be set up. The drills used have been Rand No. 4, but lately Rand's new "Slugger" has been introduced with success. This machine does not cushion on the down-stroke, and performs, by actual trial day after day, 25 per cent more work than the plain machine. The ventilation is excellent, one part of the shaft being carried up by means of a timber frame, high enough above the rest to act as an up-cast. The hoisting arrangements of the copper mines in general are admittedly behind the age—*vide* the use of long inclined shafts; and if the Tamarack is finally used as a means of output for the lands owned by the company, it will show conclusively the advantage of a vertical lift for material. Already in the anthracite regions of Pennsylvania, the new breakers are over vertical shafts, and the cost of production is lessened greatly. As is mentioned in the report of the Osceola, the company has purchased a tract of land at Torch Lake, about seven miles from the shaft, and has surveyed a line of railroad to the proposed mill. The mill, if built, will be about 80 feet above the lake, and will have the Hungarian River to depend on during a portion of the year for water. The railroad will run directly to the mill, avoiding the use of an incline with ropes. A geological section, showing the stratification as determined at the Tamarack, Osceola, and Hecla, compiled by Mr. Frank Klepetko, the company's engineer, will accompany the report, but is necessarily omitted here.

GOLD MINES.

ALGER.—This is the name of a new gold mining company just formed in Negaunee, to explore property located on section 15, town 48, range 27.

PHILLIPS.—This gold and silver mining company has begun work on its prop-

erty, 1000 feet west of the Ropes Company's lands. It has started an adit in the hill, about 50 feet east of the shaft sunk by the Deer Lake Company, and will carry it in several hundred feet, crossing the rock formations. This will be a good test of the property at this point. The work is prosecuted night and day, and will be kept up until the quartz vein is cut and the tunnel carried some distance south of it. Bed-rock has already been reached, and the water from the shaft is draining away rapidly.

IRON MINES.

The total lake shipments of ore up to and including November 22d amounted to 2,379,516 tons.

ISHPEMING IRON COMPANY.—A sale of delinquent stock of this company was recently made. Some 2000 shares were bid in at 15 cents each. The Ishpeming *Iron Agitator* says that the stock originally cost one dollar a share, and an assessment of 15 cents was called the past summer to pay a few outstanding debts. Some exploring work, conducted in a sort of a hap-hazard way, was done two years ago, after which, for some reason never clearly explained to the shareholders, no further steps toward ore-finding were taken. The company owns the fee simple of twelve forties situated at different points in the iron ranges of this county, and that the property is a valuable one there can be no doubt. What the future intention of the company is has not been learned.

JACKSON.—At the mine, a new shaft is going down in No. 7 pit, 200 feet south of No. 1 shaft. By drifting, a body of fine bematite ore was encountered 60 feet south of the new shaft, and the drift has penetrated it a distance of 60 feet.

MONTANA.

SILVER BOW COUNTY.

ALICE.—The machinery for the mammoth new pump is arriving, and workmen are busily engaged in putting the leviathan together.

LIQUIDATOR.—This mine, one of the best copper producing properties in the camp, has been shut down until arrangements can be made to work the immense amount of ore that has accumulated on the dumps. It is probable that the company will erect reduction-works early in the spring.

OVERMAN.—A force of men is actively prosecuting the work of development. The shaft has attained a depth of 60 feet, and a body of ore is uncovered. Only the ore encountered in sinking has been taken out; but when the 100-foot level is reached, drifts will be run both ways and the work of ore extraction begun.

NEVADA.

The Nevada Nickel Mining Company has been incorporated by A. J. Mason, C. C. Merrill, A. Judson, James McMeehan, and W. R. De Frees. Capital stock, $10,000,000.

ELKO COUNTY.

SCHERFF.—A new furnace is going up at this mine at Sprucemont. Quite a number of men are employed.

STOREY COUNTY—COMSTOCK LODE.

The San Francisco *Post* says it is reported that one of the objects of W. S Hobart's trip East was to contract for a new pipe of large size for the use of the Virginia & Gold Hill water-works, and that next year most of the machinery at the Comstock mines and mills is to be run by water power, at a great saving of expense.

Recent investigations prove that the water in the new Yellow Jacket shaft sunk to a depth of 3060 feet when pumping-work was suspended, has receded 300 feet since the shaft was shut down. As the only connection the shaft has is with the Crown Point and Belcher mines, the question arises, What has become of this immense body of water 300 feet in hight? The increased flow of water in the Alta mine has given rise to the theory that this water has found some channel whereby it is now flowing into the Alta and Benton mines, thereby flooding the 2150 level and causing the suspension of work in the drift.

The work of extracting ore from the Chollar croppings has been suspended in obedience to peremptory orders received from the new management. It is not definitely known when work will be resumed.

WHITE PINE COUNTY.

CALIFORNIA.—The old tailing dump is worked by this mill successfully. It will require a year to run the pile through.

NEW HAMPSHIRE.

WHITEFIELD SILVER MINING COMPANY.—At the Crane mine, the property of this company, machinery is going up and the necessary buildings for conducting operations upon a more extended scale are erecting. The shaft is about 85 feet deep, and, according to recent reports, shows a large amount of ore suitable for concentration.

UTAH.

NORWAY IRON MINING AND MILLING COMPANY.—The report presented at the annual meeting at Salt Lake City showed that the company has been busily engaged during the past year in more fully developing the property. The mines are showing large bodies of first-class ores, which ought to be utilized in the manufacture of iron, as well as for smelting purposes.

VIRGINIA.

VIRGINIA TIN MINING AND MANUFACTURING COMPANY.—According to the Lynchburg *Advance*, work of actually mining the ore by shafting and quarrying began on the 17th inst., to be followed by smelting-works for the reduction of the ore into pig. The company has been organized with a capital of $600,000, to develop tin deposits on Irish Creek, Rockbridge County.

WEST VIRGINIA.

It is stated that a remarkable cavern has just been discovered on Cheat River, near Kingwood. A very small aperture leads to a series of seven chambers, the smallest of which is seventy-five feet long by forty feet broad and thirty feet high. The caverns have not all been explored, but are believed to be very extensive. Their formation is rock crystal and exceedingly beautiful, and the explorers believe they will rival in grandeur the celebrated Luray caverns.

WYOMING.

The contract for taking out 10,000 tons of soda has not yet been let, and unless the Union Pacific Railroad Company takes the matter in hand, there appears to be a slim prospect of any thing being done.

PATENTS GRANTED BY THE UNITED STATES PATENT-OFFICE.

GRANTED OCTOBER 7TH, 1884.

306,089. Regenerating-Furnace. William F. Modes, Streator, Ill.
306,124. Pig-Iron Breaker. John A. Barnes, Akron, Ohio.
306,132. Machine for Rolling Screw-Threads. Charles S. Clark, Providence, R. I., and Hayward A. Harvey, Orange, N. J., said Clark Assignor to said Harvey, and the Harvey Screw and Bolt Company, of Connecticut.
306,145. Ore-Pulverizer. D. Virgil Goodson, Bodie, Cal.
306,157. Machine for Blooming Iron. James J. Johnston, Columbiana, Ohio, Assignor of seven eighths to William W. Gibbs, Philadelphia, and Albert C. Ellis, Pittsburg, Pa.
306,195. Brick-Kiln. Stephen W. Underhill, Croton Point, New York.
306,213. Apparatus for Separating Metals from their Ores. Abel H. Bliss, Chicago, Ill.
306,215. Apparatus for Striking Molds for Hand-Rails. Frederick R. Bodley, Denver, Cal.
306,227. Manufacture of Alloys Containing Iron and Zinc. George A. Dick, London, England.
306,229. Manufacture of Alloys. George A. Dick, London, England.
306,263. Apparatus for Withdrawing Wire Coils from Annealing-Pots. Patrick Laffey, Pittsburg, Pa., Assignor of one half to Nathan S. Brokaw, same place.
306,266. Machine for Separating and Concentrating Ores and Metals. Marcus Lane, Chicago, Ill.
306,275. Pulverizer. William Moller, Yonkers, New York.
306,335. Apparatus for Mixing Gas and Air. James P. Wilson, Newark, N. J.
306,313. Method of and Device for Cutting Barbs on Strips of Metal. Horace L. Arnold, Middletown, Conn., Assignor to Thomas W. Hall, Brooklyn, New York.
306,314. Gas-Regulating Valve for Gas-Engines. Charles G. Beechey, Liverpool, England.
306,317. Machine for Threading Bolts. John Bruderer, Philadelphia, Pa., and Orrin C. Burdict, of Buffalo, New York, Assignors to Plumb, Burdict & Barnard, of Buffalo, New York.
306,318. Indexing Books. Alfred A. Butler, Assignor to Charles H. Denison, New York City.
306,331. Gas Machine. Jefferson M. Gardner and David Grewar, Nashville, Tenn.
306,338. Alloy for Coating Metals. Charles E. Manby, McKeesport, Assignor to Edmund C. Converse, Pittsburg, Pa.
306,365. Automatic Feeding Device for Roller-Mills. Monroe B. Titlow, Treichler, Assignor of one half to Augustus Wolf and David L. Hamaker, both of Allentown, Pa.

GRANTED OCTOBER 14TH.

306,375. Portable Drilling-Machine. John F. Allen, Brooklyn, New York.
306,376. Ratchet-Drill. William J. Armstrong, Indianapolis, Ind., Assignor of one half to John A. Wilson, Nashville, Tenn.
306,382. Lubricator. William B. Bull, Quincy, Ill.
306,443. Gas-Engine. William L. Tobey, Boston, Mass.
306,541. Engine-Governor. John P. Simmons, San Francisco, Cal., Assignor of one half to W. H. Ohmen, same place.
306,542. Self-Acting Lubricating Cup and Filter. John T. Smith, San Francisco, Cal., Assignor of one half to John Williams, same place.
306,544. Apparatus for Pulverizing and Separating Coal, etc. Amour Sottiaux, Strepy Bracquegnies, Belgium.
306,570. Cut-Off Valve for Mining-Machine Engines. Benhard Yoch, St. Louis, Mo.
306,571. Turbine Water-Wheel. Jean Bèché, Hückeswagen, Prussia, Germany.
306,606. Water-Purifier for Steam-Boilers. David Hanna, Ogdensburg, New York.
306,609. Wire-Tack Machine. Thomas Harris, Seymour, Conn., Assignor of one half to Carlos French, same place.
306,619. Mill for Rolling Wire Rods, Hoops, or Strips. William D. Houghton, Sankey Wire Mills, Warrington, County of Lancaster, England.
306,646. Furnace for Steam-Boilers. Frederick S. Savage, Turner's Falls, Mass., Assignor of one half to Robert B. Campbell, same place.
306,664. Process of Obtaining Phosphoric Acid from Metallurgical Slags. Sidney Gilchrist Thomas and Thomas Twynam, Westminster, England.
306,673. Feed Mechanism for Roller-Mills. Julius Busch, Marine, Ill., Assignor to himself and John Stevenson, same place.
306,675. Wipe-Box for Wire-Galvanizing Apparatus. Frederick Crich, Joliet, Ill., Assignor of one half to the Ashley Wire Company, same place.
306,676. Apparatus for Cleansing, Condensing, and Washing Gases. James Crutchett, New York City.
306,677. Wire Gathering and Disbursing Machine. Moses M. Culver, Glidden, and Myron W. Beach, Carroll, Iowa.

GRANTED OCTOBER 21ST.

306,717. Gas-Furnace. August H. Calvelage, Haughville, and James M. Dodge, Indianapolis, Ind.
306,766. Metallic Belting. Frederick H. C. Mey, Buffalo, New York.
306,778. Magnetic Ore-Separator. Robert A. Ripley, New York City, and John Bridgford, Albany, New York.
306,781. Process of Alloying Copper with Aluminium and Phosphorus. Thomas Shaw, Newark, New Jersey.
306,810. Process of Manufacturing Gas. Robert A. Chesebrough, New York City.
306,825. Metal Extracting Apparatus. Walter Hamilton, New York York City, Assignor to the Hamilton Lead Bath Company, same place.
306,858. Brick-Machine. Napoleon M. Plante, Verplanck, New York.
306,886. Ratchet-Drill. Albert M. White, Waterbury, Conn.
306,900. Coal-Picking Table. Isaac Christ, Ashland, Assignor of one half to Lewis Stockett, Mahoney City, Pa.
306,903. Quartz-Crushing Machine. Cyprien Dandurand, Virginia City, Nev.
306,920. Apparatus for Making Explosive Compounds. Orlando B. Hardy, San Francisco, Cal., Assignor to the Giant Powder Company, same place.
306,933. Gas-Engine. Samuel Lawson, Fitchburg, Mass., Assignor to himself and Alonzo T. Welch, New York City.
306,934. Hydrocarbon-Furnace. Allen N. Leet, Newark, New Jersey, Assignor of one half to Emile Neuman, same place.
306,987. Apparatus for Grinding and Separating Ore, etc. James Wood, West Stockwith, County of Nottingham, England.
306,990. Apparatus for Casting Copper Plates, Bars, etc. Joseph Zengerle, Ansonia, Conn.
307,005. Barbed Metal Strip Fencing. Francis A. Blackmer, Springfield, Assignor to the Washburn & Moen Manufacturing Company, Worcester, Mass.
307,050. Manufacture of Coke. John Jameson, Newcastle-upon-Tyne, England.

GRANTED OCTOBER 28TH.

307,081. Amalgamating-Table. Samuel Bear, Brooklyn, New York, Assignor of three fourths to Leo Schlesinger, Sidney H. Carr, and Jacob Blumauer, all of New York City.
307,082. Amalgamating-Table. Samuel Bear, Brooklyn, New York, Assignor of three fourths to Leo Schlesinger, Sidney H. Carr, and Jacob Blumauer, all of New York City.
307,132. Apparatus for Manufacturing Gas. Adolph Mayer, Hazleton, Pa.
307,143. Double Furnace. George Rhoden, Cleveland, Ohio.
307,167. Vapor-Burner. Martin L. Best, Canton, Ohio, Assignor of two thirds to Levi L. Miller and Jacob Miller, same place.
307,182. Apparatus for Reducing Minerals and Metallic Ores. Richard J. Cunnack, Helston, County of Cornwall, England.
307,227. Metal-Turning Tool. Francis H. Richards, Springfield, Mass.
307,258. Coke-Oven Door. William H. Beckwith, Latrobe, Pa.
307,268. Governor for Steam-Engines and other Motors. Carl A. Chaineaux, Aachen, Prussia, Germany.
307,351. Die for Making Barbed Metallic Fencing. Anson P. Thayer, Brooklyn, New York, Assignor to Thomas W. Hall, same place.
307,352. Portable Riveting-Machine. Ralph H. Tweddell, Westminster, County of Middlesex, and James Platt and John Fielding, Gloucester, County of Gloucester, England.
307,353. Portable Riveting-Machine. Ralph H. Tweddell, Westminster, County of Middlesex, and James Platt and John Fielding, Gloucester, County of Gloucester, England.
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307,360. Portable Riveting-Machine. Ralph H. Tweddell, Westminster, County of Middlesex, and James Platt and John Fielding, Gloucester, County of Gloucester, England.
307,361. Portable Riveting-Machine. Ralph H. Tweddell, Westminster, County of Middlesex, and James Platt and John Fielding, Gloucester, County of Gloucester, England.
307,373. Boiler-Furnace. Absalom Backus, Jr., Detroit, Mich.

FINANCIAL.

NEW YORK, Friday Evening, Nov. 28.

The situation in the mining market remains practically unchanged. The dealings have not been so large as the preceding week, owing to the holiday and the sudden disappearance of the Sutro Tunnel "boom." But the prices have been firm, and on the whole a feeling exists that seems to show a demand for the better class of stocks. The sales this week amounted to 35,031 shares, as against 121,750 shares for the preceding week, showing a decrease of sales of 86,719 shares.

The largest business of the week has been done in Horn-Silver, and this stock continues to be the feature of the market. The price shows an upward tendency, and ranged between $4.70 and $4.80.

The reports from the mines of the Standard Consolidated show that the ore is gradually growing poorer. The stock sold as low as 30 cents, and it is probable that it will go still lower, if another assessment is levied and the reports become less satisfactory. Little business has been done in Consolidated Pacific, and the dealings in Bodie Consolidated amounted to 1150 shares. A few sales of Plymouth Consolidated were made at $15.25. The stock of Quicksilver Preferred and Common appears again on the lists; the former was sold at $30, the latter at from $4.50@$5.75.

Colorado stocks show the usual amount of business. The dealings present no special feature. Iron Silver, which attracted so much attention last week, records sales of only 900 shares, and higher prices at 60@71c.

The price of Consolidated California & Virginia has jumped from 15 cents to 45 cents. So far as we can learn, there have been no developments in the mines that would justify this move. It is probable that some of the manipulators who worked out the recent consolidation scheme are now trying to reap a harvest for their work. The price of Sutro Tunnel has been firm, and the sales have amounted to only 3000 shares. The interest in the Navajo stock is growing, and the price holds its own at from $3.25 to $3 50. The same may be said of Eureka Consolidated.

Occasional transactions were made in Homestake, Sonora Consolidated, and others. A complete summary of the market will be found elsewhere.

MEETINGS.

Arizona Consolidated Mill and Mining Company, Metropolitan Hotel, New York City, annual meeting of stockholders and election of trustees, January 5th, at twelve o'clock M.

Girard Mining Company, office of Howell Evans, Fourth and Library streets, Philadelphia, Pa., special meeting for the purpose of authorizing a sale of the timber on the company's lands in Keweenaw County, Michigan.

Ophir Gold Mining Company, No. 30 Cortlandt street, New York City, adjourned annual meeting of stockholders and for the election of trustees, December 9th, at twelve o'clock M.

Paraiso Reduction Company, No. 140 Nassau street, New York City, annual meeting of stockholders and election of trustees, December 2d, at two o'clock P.M.

San Andreas Copper Mountain Mining Company, No. 207 Vine street, Camden, N. J., annual meeting of stockholders and election of trustees, December 11th, at twelve o'clock M.

Santa Elena Mining Company, No. 140 Nassau street, New York City, annual meeting of stockholders and election of trustees, December 2d, at eleven o'clock A.M.

San Pedro Mining Company, No. 15 State street, New York City, annual meeting of stockholders and election of trustees, December 3d, at three o'clock P.M.

Windsor Consolidated Mining Company, No. 15 State street, New York City, annual meeting of stockholders and election of trustees, December 3d, at twelve o'clock M.

DIVIDENDS.

Alice Gold and Silver Mining Company, of Montana, has declared dividend No. 13 of 12½ cents a share, or $50,000, payable November 30th.

Charleston Mining and Manufacturing Company, South Carolina, announces a quarterly dividend of three dollars and fifty cents a share, payable December 1st.

Lehigh Coal and Navigation Company, of Pennsylvania, has declared a semi-annual dividend of 3 per cent, payable December 9th.

PIPE LINE CERTIFICATES.

Messrs. Watson & Gibson, petroleum brokers, No. 49 Broadway, report as follows for the week: Last week, we referred to the fact that the Thorn Creek wells showed drainage, and that, when several important wells were out of the way, we looked for "an important movement upward," as oil was closely held. To-day's events show that this was a proper estimate of the market, though prices have moved upward without waiting for the advent of two frontier wells. One of these, the Kennedy, is on top of the sand, which is so inferior that the prospect for obtaining much oil in it is small. The McBride will not be in for several days. It is more important, as it lies three quarters of a mile southeast of Fisher No. 3, on Thorn Creek. Last week, the production of that district was about 10,000 barrels. To-day, it is 8850 barrels, and meanwhile several new wells have come in, and others have been torpedoed. The production in other districts is gradually declining. Refined oil is ⅛c. better at 7⅛c., and the domestic and foreign trade in it is good. The market closed so strong—77⅛c.—to-night that it is likely to see higher prices. The lowest price during the past week was 71c., on Tuesday. We have issued a circular giving full and concise information as to the developments in the oil-field and fluctuations in market during the past two years. We will cheerfully mail it on application.

The following table gives the quotations and sales at the New York Mining Stock and National Petroleum Exchange:

		Opening.	Highest.	Lowest.	Closing.	Sales.
Nov.	22....	$0.72⅝	$0.72¾	$0.71⅞	$0.72	2,554,000
	24....	.72⅛	.72¾	.71⅞	.72¼	2,151,000
	25....	.72¼	.72¼	.71	.71⅞	2,898,000
	26....	.72¼	.73	.71⅞	.72⅞	2,918,000
	27....	....	....	....	....	.....
	28....	.73⅜	.77⅛	.73¼	.77⅛	6,955,000
Total shares						17,576,000

SAN FRANCISCO MINING STOCK QUOTATIONS.
Daily Range of Prices for the Week.

Name of Company.	Closing Quotations. Nov. 21.	Nov. 22.	Nov. 24.	Nov. 25.	Nov. 26.	Nov. 27.
Albion	....	....	....	....	....	....
Alpha	....	....	....	....	....	....
Alta	.50	.40	.35	.35	.40	....
Argenta	....	....	....	....	....	....
Bechtel	....	....	....	....	....	....
Belcher	....	....	....	.65	....	....
Belle Isle	....	....	....	....	....	....
Best & Belcher	1.12½	1.00	1.00	1.00	1.12½	....
Bodie	3.00	3.00	3.00	2.62½	2.75	....
Bullion	....	....	....	....	....	....
Bulwer	....	....	....	....	....	....
California	....	....	....	....	....	....
Challar	1.87½	1.75	1.87½	1.75	2.00	....
Con. Pacific	.95	....	.95	.90	.95	....
Con. Virginia	.10	.10	.10	.15	.10	....
Crown Point	....	....	.85	.80	.85	....
Day	....	....	....	....	....	....
Elko Cons	....	....	....	....	....	....
Eureka Cons	....	....	2.00	....	3.00	....
Exchequer	....	....	....	....	....	....
Gould & Curry	.65	.65	.50	1.00	1.25	....
Grand Prize	....	....	....	....	....	....
Hale & Norcross	2.75	2.75	3.00	2.75	3.25	....
Independence	....	....	....	....	....	....
Martin White	....	....	....	....	....	....
Mexican	.50	.55	.45	.45	.60	....
Mono	....	....	....	....	....	....
Mount Diablo	....	....	....	3.75	....	....
Navajo	3.25	3.25	3.25	3.25	3.00	....
Northern Belle	....	....	....	....	....	....
North Belle Isle	....	....	....	....	....	....
Ophir	.55	.55	.50	.50	.60	....
Overman	....	....	....	....	....	....
Potosi	.85	.85	.90	.80	.95	....
Savage	.85	.80	.85	.75	.90	....
Scorpion	....	....	....	....	....	....
Sierra Nevada	.45	.95	.90	.95	1.12½	....
Silver King	....	....	....	....	....	....
Tip Top	....	....	....	....	....	....
Union Cons	.50	.45	.45	.45	.55	....
Utah	.30	.30	....	.70	.90	....
Wales Cons	....	....	....	....	....	....
Yellow Jacket	1.12½	....	1.12½	....	1.12½	....

The following were the financial balances of the various mining companies on November 1st:

CASH ON HAND.

Alta	$24,369 19	Gould & Curry	$13,453.50
Andes	8,040.45	Martin White	6,760.85
Alpha Con	9,289 49	Mono	23,767.11
Bulwer	3,604.76	Mexican	10,288.47
Best & Belcher	13,592.09	Occidental	3,029.03
Benton Con	16,248.89	Potosi	24,964.41
Bodie Con	75,112.95	Savage	32,833.03
Challar	6,243.38	Sierra Nevada	18,050.12
Con. California & Virginia	15,065.29	Summit	312.38
Exchequer	6,574.93	Tioga Con.	870.83

INDEBTEDNESS.

Hale & Norcross	$19,130.10
Lady Washington Con.	3,457.89
Ophir	6,853.26
Standard	4,869.39

Albion indebtedness exact amount not known; approximate, $265,000.

Boston Copper and Silver Stocks.

[From our Special Correspondent.]

BOSTON, Nov. 26.

The market for copper stocks this week has shown some degree of activity, the principal feature being an order to sell about 150 shares of Calumet & Hecla at best price, resulting in a decline from $151@$145. The market, cleared of this stock, soon recovered, and advanced to $151½, which was the closing bid to-day. The price of this stock is largely governed by the supply and demand. As a rule, it is generally well held; but occasionally some one who has bought stock on a margin is forced to sell it, and invariably has to submit to a decline of $5 or $6 a share, if it is any thing of a lot. There is nothing new from the mine or in the situation of the market for ingot copper to warrant such fluctuations, it being simply the misfortune of the holder in being obliged to sell it on a dull market. Quincy seems also to have been weak, with a decline on small sales to $31. This is due, no doubt, to the absence of buying orders, as there is no pressure to sell the stock; neither is it in active demand just at present. A small lot of Franklin sold at $7½ early in the week, but subsequent sales of larger lots were made at $6½, same as last week. The rest of the list was neglected, with no disposition to operate in them.

In silver stocks, there is but little doing at the regular Stock Board. At the Mining Board, Bowman Silver continues to be the leading feature, and has been quite firm this week at 9@10c. Dunkin Silver is heavy at 20c. asked, 18c. bid. Consolidated Pacific, firm at about 95c.

3 P.M.—There was nothing doing this afternoon. Closing prices: Atlantic, $6½ bid, $7 asked. Calumet & Hecla, $151 bid, $152 asked. Franklin, $6½ bid, $7 asked. Osceola, $9 bid. Quincy, $30 bid.

BULLION MARKET.

NEW YORK, Friday Evening, Nov. 28.

Date.	London. Pence.	N. Y. Cents.	Date.	London. Pence.	N. Y. Cents.
Nov. 22	50	108⅛	Nov. 26	49⅞	108
24	50	108⅜	27	49⅞	108
25	50	108⅛	28	49⅞	108

BULLION PRODUCTION FOR 1884.

Mines.	States.	Month of October. $	Year from Jan. 1st, 1884. $
*Alice, G. S.	Mont.	....	949,041
*Belmont	Mont.	13,683	46,805
*Black Bear, G	Cal.	....	19,600
Bodie, G.	Cal.	5,241	409,784
*Bonanza King, G.	Cal.	....	191,891
*Boston & Montana, G.	Mont.	37,987	362,489
*Caledonia, G.	Dak.	....	73,511
*Chrysolite, S. L.	Colo.	13,904	131,541
*Consolidated Bobtail, G	Colo.	2,819	79,030
†Contention, S. G.	Ariz.	....	293,607
*Deadwood-Terra, G.	Dak.	37,232	423,918
*Derbec Blue Gravel, G. S.	Colo.	8,135	132,324
*Father de Smet, G.	Dak.	43,767	391,919
*Grand Prize, S.	Nev.	16,868	74,675
*Head Center Cons	Ariz.	....	1,273
*Head Center & Tranquillity	Ariz.	8,436	20,329
*Hecla Cons., G. S. L. C.	Mont.	....	972,952
*Helena, G. S. L. C.	Mont.	107,000	941,036
*Homestake, G.	Dak.	107,195	1,059,754
*Hope, S.	Mont.	31,171	70,472
Horn-Silver, S. L.	Utah.	225,000	2,143,087
*Iron Silver, S. L.	Colo.	50,107	606,472
*Kentuck, G. S.	Nev.	467	22,411
*Lexington, G. S.	Mont.	94,610	998,109
*Mammoth Bar, G.		284	1,891
*Moulton, G. S.	Mont.	....	604,188
*Mount Diablo, S.	Nev.	——	24,820
*Murchie, G. S.	Cal.	....	19,000
*Navajo, G. S.	Nev.	71,758	382,589
*New Pittsburg, S.	Colo.	12,500	51,224
*North Belle Isle, S.	Nev.	——	5,874
*Ontario, S. L.	Utah.	167,436	1,816,143
*Original, S. C.	Mont.	——	29,724
*Oxford, G.	N. S.	2,401	33,092
*Paradise Valley, S. G.	Cal.	....	103,950
*Plymouth Consolidated, G.	Cal.	78,404	858,910
*Rooks, G.	Vt.	6,716	48,662
*South Yuba, G.	Cal.	676	22,708
*Stormont, S. L.	Utah.	12,943	133,503
*Syndicate, G. S.	Cal.	....	90,475
*Tombstone, S. L.	Ariz.	‡80,016	450,772
United Gregory, G.	Colo.	....	7,174
Total amount of shipments to date			$15,070,129

* Official. † Assay value. ‡ Not including value of lead and copper; G., gold; S., silver; L., lead; C., copper. —— No bullion produced. Silver valued by the different companies from $1.05@$1.29 29 per ounce; gold, $20.67.

METALS.

NEW YORK, Friday Evening, Nov. 28.

Copper.—There is absolutely no news. The demand is small and the offerings not very heavy. We quote 12¾@13c. for Lake, with no buyers, and 11⅛@12c. for other brands, according to quality.

London cables to-day £51 for Chili Bars, a recovery from £50 12s. 6d. yesterday. Best Selected is cabled £57.

As we go to press, we are advised by a gentleman well posted in the copper trade that the Anaconda mine, in Butte, has sold its entire product for the year 1885, estimated at about 16,000 tons of matte, or twenty millions of pounds of fine copper, to English smelters, the price to be based on Best Selected English copper, and not on Chili Bars. English smelters, it is said, are afraid of corners in Chili Bars, and have therefore flatly refused to base purchases and sales of ores and mattes on Chili Bars in the future.

The following are the English Board of Trade returns for the first ten months of the year :

	Jan. 1 to Oct. 31.		
	1884.	1883.	1882.
Imports—	Tons.	Tons.	Tons.
Pure in Pyrites	11,541	12,814	13,161
Precipitate	17,704	18,465	14,706
Ore	20.888	13,444	13,045
Regulus	10,000	7,823	7,193
Bars, cakes, etc	31,349	29,698	29,510
Tons	91,482	82,244	77,615
Exports—			
Raw (English)	15,307	14,000	10,525
Sheets	17,399	12,965	13,569
Yellow metal at 60 per cent.	9,708	10,008	9,285
Brass at 70 per cent	3,194	2,842	2,825
	45,608	39,815	36,204
Foreign	9,736	9,633	10,814
	55,344	49,448	47,018

Imports of other than Chili copper (tons fine) into Liverpool and Swansea during the first ten months of the following years :

	1882.	1883.	1884.
From United States	586	6,952	14,645
Canada	279	393	266
Mexico	322	467	291
Peru	780	380	323
River Plate	211	319	108
New Quebrada	2,886	3,470	3,050
Newfoundland	1,200	1,067	224
Spain	343	1,620	2,363
Portugal		129	230
Italy	1,223	811	780
Norway	304	228	282
Cape of Good Hope	4,307	4,462	5,165
Australia	112	160	419
Sundries	719	825	242
Precipitate	7,233	9,051	8,069
	20,505	30,334	36,457

Tin.—Only jobbing business has been done at weaker prices, 16¾@16·80c. for Straits spot, large lines. London closes to-day £74 15s.

Lead.—The market has been extremely dull, and in the early part of the week exhibited signs of growing weakness. It closes to-day, however, considerably steadier, there being no metal pressing for sale. Sellers quote 3⅝@3·40c. for Common, without, however, obtaining business. London cables £10 12s. 6d. for Soft Spanish.

From St. Louis, Messrs. John Wahl & Co. telegraph to us as follows to-day :

The trade for the last week has been very much like its predecessors, being remarkable only for its dullness. There is only a moderate demand. Buyers are few and make their own terms. The event of the week has been the sale of 400 tons of Desilverized lead at 3·20c. and 200 tons of Chemical lead at 3·15c. At the close, the market is just a little stiffer.

From Chicago, Messrs. Everett & Post telegraph us as follows :

Our market is quiet and dull, and prices are unchanged at nominally 3·20c., although some sales are reported at 3·15c. Buyers, expecting a decline, are holding off, and take only for immediate wants. The troubles in the far West may affect values, and furnaces may shut down until coke can be had from the East.

Spelter.—The market is dull, Common Domestic offering freely at 4·35c., without takers.

Antimony.—Owing to small spot stock, this metal is firmer at 10⅝c. for Hallett's, and 10¾c. for Cookson's.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Nov. 28.

American Pig.—As yet the forcing into the market of outside irons, notably in this section of Southern pig, has not led to an open reduction of prices, some of the makers of standard Lehigh brands having all they can do to deliver on old orders, particularly so far as steel is concerned. Gray forge is moderately active but irregular.

We quote nominally for standard brands : $19@$20 for No. 1 Foundry ; $17.50@$18.50 for No. 2 ; and $16@$17.50 for Gray Forge. Outside irons are from 50c. to $1 lower. Bessemer pig is dull, and Spiegeleisen is quiet at $26.50@$27 for 20 per cent, and $22 for 10 to 12 per cent.

Scotch Pig.—With lower freights and a very limted demand, there is a tendency to weaknes s.

We quote ex ship and to arrive : Langloan, $21.50; Summerlee, $20.75 ; Dalmellington, $20 ; Gartsherrie, $21 ; Eglinton, $19.25@$19.50 ; and Glengarnock, $20@$20.50.

At the Metal Exchange, the following cable quotations have been received : Coltness, 58s. ; Langloan, 57s. 6d. ; Summerlee, 53s. 6d. ; Gartsherrie, 54s. 9d. ; Glengarnock, at Ardrossan, 49s. 9d. ; Dalmellington, 48s. ; and Eglinton, 44s. Warrants, 43s.

Steel Rails.—There has been more business at lower figures than those generally demanded a few weeks ago, and the tone is less firm than it has been. We quote $27@$28 at mill.

Old Rails.—Old Rails are dull at $16.50@$17.

Philadelphia. Nov. 28.

[From our Special Correspondent.]

One large lot of Alabama iron and several small lots of Virginia iron arrived this week by water and rail. There is a good deal of talk about possible business. The makers of a half-dozen of the better brands of Pennsylvania have been successful in securing running orders for enough of iron to make them feel comfortable, and hence for this class of irons there is less pressure to sell. In fact, two or three concerns are well fixed as to the next ninety days' output. The prospects are fair for a steady demand, but only for current wants. More or less is said as to possible reductions ; but the fact is, there is no room on a good deal of iron for further shading. But for the possibilities of finding market for iron at better prices in a few weeks, some furnaces would be even now shut down. One party will order 4000 tons of Southern iron for pipe work. The cost, delivered here, is $15.50. Those who have tried sample lots of Virginia pig are pleased, and it seems likely that the Virginia furnaces will gather in more business than they have had. Friday's quotations are : $16@17 for Forge ; $17@18 for No. 2 ; and $18@$19 for No. 1 ; though some lots go from 50c. to $1 higher. Ore arrivals are announced—yesterday's, 2000 tons.

Foreign Iron.—There are inquiries, but not much business. Some more spiegel is in negotiation. Bessemer is nominally $19.

Muck-Bars.—Small sales at $28. Prices asked for better, $28.50@$29.

Blooms.—Sales at $51.50@$52.50 for Charcoal, and Anthracite offered at $42.50, with some business.

Merchant Iron.—The only business that the most patient inquiry can develop is in trifling lots at 1·70@1·80c., with store lots a little higher for the armfuls that are bought. The mill men decide on Saturday as to the reduction, but no apprehension is felt or expressed as to what they will do.

Nails.—The aggregate of the petty demand for mills and stores foots up well, considering the lateness of the season. One seller reports quite an active week. Building activity has been prolonged under the fine weather, and there is a good deal yet to do. In fact, some builders are starting small houses even now, intending to have them under roof before Christmas. Quotations are $2@$2.10, but something less is occasionally taken.

Plate and Tank.—Business is quiet and dull.

Structural Iron.—A steady run of small orders helps to give trade a satisfactory look.

Sheet-Iron.—Two mills will shut down this week, and two more will make less until business improves. Card rate steady.

Steel.—Bessemer Rail Blooms are held at $32 ; Foreign Rail Blooms, $33 ; Soft Basic Blooms, $37@$38.

Wrought Pipe.—A fair, though not heavy business is doing at 45 off for Butt-Welded Black Pipe, and 30@35 off for Butt-Welded Galvanized.

Steel Rails.—Orders for from 15,000 to 20,000 tons have been taken this week by Pennsylvania mills at $27.50@$28, excepting one order at $27. Two or three large lots are likely to be placed next week.

Old Rails.—Prices are weaker, and $17.50 is about the selling price.

Scrap.—Crop-Ends are wanted at $18.50. Good railroad Scrap brings $19. Good No. 1, $18.50.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Nov. 28.

Anthracite.

The market is in a fair condition, there being no appreciable change since our last report.

As we go to press, the managers of the coal companies are discussing, at Philadelphia, the question whether or not there is to be a change in the programme of stoppages in December. As first arranged, there was to be a suspension of mining during the first and third weeks of the month. Some of the interests found this arrangement inconvenient, and conferences were held during Wednesday looking to a change, so that there would be two idle weeks at the end of the month, the miners working full-time during the first two weeks. Some of the companies had already made the necessary preliminary arrangements for stoppage next week, and were disposed to insist on the carrying out of the original plan. Others have already modified their orders, hoping to work next week. The decision is looked forward to to-morrow. The only influence it could have upon the trade would be that a stoppage during two successive weeks would lead to a slightly greater falling off in the product.

Mr. John H. Jones, official accountant, has published the following statement of the anthracite coal tonnage for the month of October, 1884, compared with the same period last year. This statement includes the entire production of anthracite coal, except ing that consumed by employés, and for steam and heating purposes about the mines :

	Oct. 1884.	Oct. 1883.	Difference.
Phila. & Reading RR.	1,147,107	1,328,809	D. 181,702
Lehigh Valley RR.	†596,319	657,243	D. 60,924
Del., Lack. & West. RR.	502,203	543,515	D. 41,312
Del. & Hud. Canal Co.	‡330,128	379,477	D. 49,350
Pennsylvania RR.	305,400	298,900	I. 6,560
Pennsylvania Coal Co.	139,713	180,087	D. 40,374
N. York, L. E. & W. RR.	42,504	38,241	I. 4,263
* Total	3,063,434	3,426,272	D. 362,838

	For Year 1884.	For Year 1883.	Difference.
Phila. & Reading RR.	9,122,566	*10,235,085	D. 1,112,519
Lehigh Valley RR.	4,837,668	5,225,464	D. 387,797
Del., Lack. & West. RR	4,218,236	4,218,650	D. 414
Del. & Hud. Canal Co.	2,757,039	2,910,342	D. 153,303
Pennsylvania RR.	2,659,728	2,288,787	I. 370,942
Pennsylvania Coal Co.	1,136,208	1,276,682	D. 140,474
N. York, L. E. & W. RR.	324,158	306,783	I. 17,375
Total	25,055,603	26,461,793	D. 1,406,189

* This amount includes 1,745,398 19 tons carried by the Central Railroad of New Jersey during the first five months of 1883.

† This amount includes the production of the mines of the State Line & Sullivan Railroad Company, amounting to 10,788 tons.

‡ In addition, there were 57,433 tons transported from mines by the Delaware & Hudson Canal Company, during October, which is included in the tonnage of other interests.

The stock of coal on hand at tide-water shipping points, October 31st, 1884, was 781,810 tons ; on September 30th, 1884, 885,591 tons ; decrease, 103,781 tons.

Bituminous.

The trade moves along quietly, and thus far no improvement has followed the prospect of a stoppage at the mines in the Cumberland District. To-day, the companies in that field received a somewhat obscurely worded circular signed, it seems, by an officer of the Knights of Labor. It insinuates that the miners are not "willing" to submit to the reduction from 50 to 40 cents a ton for the period from December 1st, 1884, to January 1st, 1886, as asked by the companies. It pronounces the claim that the companies in the Cumberland District are entitled to an equalization of the price of labor with competing fields to be "threadbare," puts forward indefinite claims to "privileges" enjoyed in competing fields and not in the Cumberland District, and winds up by inviting the companies to meet a committee of the miners at Cumberland, on the 29th, to arbitrate the questions at issue. This communication was received only to-day, and we question whether the companies have the time to appoint a committee to meet them.

NEW YORK MINING STOCKS.

DIVIDEND-PAYING MINES.

Name and Location of Company.	Highest and Lowest Prices per Share at which Sales were Made.												Sales.
	Nov. 22.		Nov. 24.		Nov. 25.		Nov. 26.		Nov. 27.		Nov. 28.		
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alice, Mon.							.05	.04			.05		2,900
Amie Con., Co.													
Argenta													
Bassick, Co.			3.00		3.50		3.45	3.00					375
Belle Isle, Ne.			.28										600
Bodie Cons., Ca.	3.25	3.15	3.10		3.15	3 10	2.90				.20		1,150
Breece, Co.													500
Bulwer, Ca.	.48		.50		.49								1,100
California, Ne.													
Cal. & Hecla, Mich.													
Castle Creek.													
Chollar													
Chrysolite, Co.			.97										250
Cons. Cal. & Va.			.15				.45						2,700
Cons. Va., Ne.													
Dunkin, Co.											.23		100
Eureka Cons., Ne.	3.20		2.90				2 95				2.70	2.65	900
Father de Smet, Dk.													
Findley, Ga.													
Gold Stripe, Ca.													
Gould & Curry, Ne.													
Grand Prize, Ne.													
Green Mountain, Ca.			1.05								.95		300
Hale & Norcross, Ne.					2.75		2.75						300
Hall-Anderson, N. S.													
Homestake, Dk.					10.00		9.00				8.75		82
Horn-Silver, Ut.			4.75	4.70	4.80	4.70	4.80	4.70			4 80	4.75	4,884
Independence, Ne.													
Iron Silver, Co.			.65	.60							.71		900
Leadville C., Co.													
Little Chief, Co.							.25						200
Little Pittsburg, Co.													
Martin White, Ne.													
Moulton													
Navajo, Ne.	3.30	3.25			3.50		3.40						1,010
Northern Belle.													
North Belle Isle, Ne.											.25		600
Ontario, Ut.													
Plymouth					15 25		15.25						200
Quicksilver Pref., Ca.					30.00								100
" Com., Ca.					5.50	4.50	5.75	5.13					600
Robinson Cons., Co.			.40		.40								200
Savage, Ne.													
Sierra Nevada, Ne.	1.05						1.00				1.10		650
Silver King, Ar.											5.00		50
Spring Valley, Ca.					1.15						1.15		200
Standard, Ca.	.45		.38	.35	.40	.30	.40	.33			.40	.30	5,140
Stormont, Ut.													
Tip Top, Ar.													
Vizina, Ar.													
Yellow Jacket													

NON-DIVIDEND-PAYING MINES.

Name and Location of Company.	Highest and Lowest Prices per Share at which Sales were Made.												Sales.
	Nov. 22.		Nov. 24.		Nov. 25.		Nov. 26.		Nov. 27.		Nov. 28.		
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Albion			.10		.07								700
American Flag.													
Barcelona, G.													
Bechtel Con., G.													
Belvidere													
Best & B'lcher, G. S.													
Big Pittsburg, S. L.													
Bradshaw, S.													
Bull-Domingo, S. L.													
Cal., B. H., G.													
Central Ariz'na, S.													
Climax, Co.													
Colorado Central.													
Cons. Imperial.													
Con. Pacific	.94				.94							.94	900
Decatur												.02	100
Durango, G.													
Eastern Oregon.													
Goodshaw, G.													
Harlem M. & M. Co.													
Hortense, S.													
Lacrosse, G.													
Mariposa Pref., G.													
" Com., G.													
Mexican, G. S.													
Mono.													
North Standard, G.													
N. Horn-Silv'r, S. L.													
Ori'nt'l & Miller, S.											.10		1,500
Rappahannock, G.	.06										.07	.05	1,800
Red Elephant, S.												.01	100
Ruby, of Arizona.													
Silver Cliff, S.													
Sonora Con.											.01		200
South Bodie, G.													
South Bulwer, G.													
South Hite.													
South Pacific.													
State Line, 1 & 4, S.													
" Nos. 2 & 3, S.													
Sutro Tunnel.	.14		.14		.13	.12	.13	.12					3,000
Taylor Plumas													
Unadilla, S.													
Union Cons., G. S.	.65	.50					.90					1.05	740

Tables giving dividends and assessments will be printed the first week of each month. Dividend shares sold, 25,991. Non-dividend shares sold, 9040.

The position of the companies is a simple one. They urge that they can not compete paying 50 cents for mining, when in Clearfield only 40 cents are paid. Far from being at a disadvantage, their miners could at the same price earn much higher wages than their comrades in the Clearfield region, since they mine nine feet of coal. The struggle is simply one to settle the question whether, as formerly, the Knights of Labor or the companies are to run the business. There is no hardship whatever to the men in the reduction, since skillful and industrious miners earn from $100 to $125 per month without long hours. Their past prosperity, of course, is an element of strength to them in the fight foreshadowed; but on the other hand, the companies are acting as a unit, and are making a contest not alone for a fair position in the markets, but also for the recognition of a principle not sufficiently established during the last strike.

Philadelphia. Nov. 28.

[From our Special Correspondent.]

The carrying out of the programme of suspension into and through December will enable the coal companies to enter upon the new year in perhaps better shape than they did last January, so far as stocks are concerned, but not in other respects. The unfavorable condition in which the industries are situated has been the occasion for much talk among the managers in view of the increasing difficulties. Thousands of hands are thrown off, stocks of goods are slow of movement, and confidence is not strong as to an active resumption in January. Those old heads who have seen several periods of depression look with but little apprehension on the present situation. They have seen worse times and have been overwhelmed with the demand that arose unexpectedly afterward. The Reading Company is preparing to enlarge its Western outlet—in fact, has made its preparations, and will enjoy the result next season. Our people here are satisfied with the action taken yesterday by the coal presidents. The Reading Company reports for last week 325,363 tons shipped, and for the year 11,523,262 tons, against 11,144,883 tons for the same time last year—an increase of 328,328 tons despite the dullness in manufacturing. The Reading has inaugurated a far-seeing policy. The Delaware & Hudson Canal Company has fallen 256,846 tons behind last year, not having such outlets as the Reading. The Schuylkill Canal shows a decrease for the season of 65,826 tons. The line trade is dull, and shipments to Western markets have been retarded by insufficient facilities. The Lake shipments are about over. The local sale is still of moderate proportions, but domestic sizes continue in good request. Strikes exist in textile, manufacturing, and shoemaking circles, and idleness is more general throughout the city than for years. The coal trade feels the depression not only here, but throughout the State. Packer mine No. 3 sends a chunk of coal 9 feet by 7 by 5 for the New Orleans Exhibition. The local demand is likely to brighten up soon, but just now it is disappointing.

The bituminous operators are living in hopes that the Eastern demand will be considerably augumented, and that their shipments will reach one million tons. In spite of the slight encouragement, some three or four tracts will be partially developed, and entries, runs, and sidings put in as preparatory steps to active work, should the market permit activity. The coal men are waiting on the iron men, and they are waiting on the railroad builders, and the railroad builders are waiting on the country to fill up.

Counting in the twelve idle days agreed upon for December, the total idle days for 1884 will foot up 107 out of 366. The production, when the figures are made up, will come near 30,500,000 tons, or only 1,500,000 tons less than last year, with all our trade depression. The extended capacity of the region is somewhere between 37,000,000 and 40,000,000 tons. The allotment plan is now preferred to the system of concerted suspensions. Six years ago, the allotment plan worked as follows:

Reading	28·97
Lehigh Valley	19·30
Delaware, Lackawanna & Western	13·39
New Jersey Central	12·86
Delaware & Hudson	10·62
Pennsylvania Railroad	7·74
Pennsylvania Coal Company	5·43
New York, Lake Erie & Western	1·69
	100·00

Last year's percentages were as follows:

Reading	38·48
Lehigh Valley	19·72
Delaware, Lackawanna & Western	15·98
Delaware & Hudson	11·05
Pennsylvania Railroad	8·72
Pennsylvania Coal Company	4·85
Erie	1·20
	100·00

This year's figures will likely show an increase in the Delaware, Lackawanna & Western, and a decrease in Reading shipments. The Pennsylvania Company has not yet determined whether to depart from its independent policy and co-operate. In view of the strong probability of a continued dullness, the question of shutting down some of the more unproductive collieries has been considered. The fundamental trouble is, there are more miners, more mines, and more machinery than are required at the present time.

Buffalo. Nov. 26.

[From our Special Correspondent.]

The anthracite and bituminous coal trade and the coke trade continue in the same uninteresting condition noted for several weeks past.

The mild weather continued until Sunday last, when a young blizzard came upon us. The wind blew for a long time at 49 miles an hour, and at six o'clock P.M. reached the unusual velocity of 60 miles. But few vessels were on the lakes, and no disasters as yet have been reported. Since then, we have had a light flurry of snow; then a severe cold wave reached us on Monday morning, continuing until time of writing (Wednesday, ten P.M.), and heavy snow last night. Lake navigation has evidently come to an end, excepting that the vessels *en route* may arrive in a day or two if not disabled. Shipments Westward are practically over until 1885.

Notwithstanding the present severity of the weather, our local "Probabilities" has given some very good reasons for predicting that the winter before us will not be severe, based on records from his office. He sums up the weather in substance as follows: "In view of these observations, the natural deductions from them are, that the *coal man* had better look out for some more certain means of support, and the ice supply is likely to be limited." It should be borne in mind, however, that this is not a prophecy; it has been ciphered out roughly from the open note-book of "Old Prob," and will come true if signs do not fail.

Mr. W. J. Murphy, Superintendent of the Delaware division of the New York, Lake Erie & Western Railroad, has been appointed to succeed Mr. Charles Neilson on the Buffalo & Rochester Division of said road. His headquarters will be in this city.

The following item is of interest: A dispatch from Milwaukee, received last Wednesday, says that "the schooner Lucinda Van Valkenburg, thirty-five days out from Buffalo, arrived here to-day after a most eventful passage, including an entire change of crew.

When at the foot of this lake, her main-gaff was broken and her mainsail split during the recent northerly gale. She lay at the Manitous while the rest of the fleet came along, as the crew protested against the captain taking her out in the gale and endangering their lives, as they claimed she was overladen, bogged, and unseaworthy. The Van Valkenburg left Buffalo on the night of October 16th with 555 tons of coal for Milwaukee. She was in tow of the tug A. J. Smith, with the schooners J. G. Masten, G. M. Case, and A. Boody. The tow broke up the following morning when above Long Point, in a heavy blow from the west, and the Van Valkenburg ran back to Port Colborne. She left that place on the following Sunday, October 19th, and nothing was heard from her for many days. She was given up as lost, and was believed to be the vessel sunk off Mohawk Island. Twelve days after leaving Port Colborne, she reached Detroit River. There she got a new master and a new crew.

The engagements by lake from Buffalo on coal cargoes for the past week were at the following rates: To Milwaukee and Chicago, 75c.; to Detroit, 25c.; to Toledo, 40c. On Saturday last, the propeller Cuba and consort (the schooner Donaldson) were chartered to Milwaukee at $1 per net ton, the last boats of the season.

Receipts of coal by lake, none.

Receipts of coal by canal for the third week of November, 5046 tons; shipments for same period, 1296 tons.

Receipts of coal by Lake Shore & Michigan Southern Railroad for the past week, 900 tons; namely, 576 tons for Buffalo, and 324 tons for other points.

The shipments of coal by lake from November 20th to 22d, both days inclusive, were 10,650 tons; namely, 5930 tons to Chicago, 3820 to Milwaukee, 500 to Detroit, and 400 tons to Toledo.

The following statement shows the ruling rates of lake freights on coal from this port to Milwaukee and Chicago, once a week during the season of navigation in 1884:

May 10th and 17th	$0.75	September 6 and 13	$0.50
" 24th and 31st	.80	" 20 and 27	.60
June 7th and 14th	.80	October 4th and 11th	.60
" 21st and 28th	.80	" 18th	.75
July 5th and 12th	.80	" 25th	.95
" 19th and 26th	.60	November 1st	1.00
August 2d	.60	" 8th and 15th	.75
" 9th and 16th	.70	" 21st	.75
" 23d	.80	" 22d	1.00
" 30th	.50		

The Welland Canal (Canada) will be closed, as per official announcement, on Sunday, November 30th.

The receipts of coal at Duluth for the week ended November 22d were 5900 tons. Total for the season, 289,147 tons.

Boston. Nov. 26.

[From our Special Correspondent.]

The market for anthracite coal continues fairly active. The only drawback is the element of uncertainty concerning the restrictions for the rest of the year. It was supposed that this matter was all settled, but the scarcity of stove coal with some companies gives rise to talk of three weeks or full-time mining in December. While the question is deciding, an excellent excuse for procrastination is afforded the buyer. The demand at this season is almost wholly from retailers, and the Boston retailers are placed in a very independent position about ordering. Formerly they, in common with up river trade, used to stock up in anticipation of winter. That custom has now gone by, so far as city retailers on the water front are concerned. The fear of a close of navigation does not now enter into their calculations. The fleet of steam colliers plies throughout the winter and keeps winter freight rates down. Then the large 800-ton schooners, which have increased in number lately, do not fear the ice as do the small coal craft. The question with the buyer is one of needs more than of price. F. o. b. quotations remain firm, and trade is not forced. For Stove in New York, $4 is asked, and not much is to be had at less than that figure. The market, as a whole, is in a healthy condition, and compares favorably with other leading markets. The weather is favorable for an increasing trade.

Considering that the manufacturing demand has fallen off very materially this year, and that the Western demand has also fallen off, it is a matter of interesting conjecture where all the anthracite coal has gone to. The production is within five per cent of the figures of last year, which was the biggest mining year on record. There has evidently been a large increase in the Eastern consumption of anthracite.

We quote f. o. b. prices as follows:

At New York, Stove, $4@$4.15; Broken and Egg, $3.50@$3.65; Pea, $2.40; individual coals, $3.90 for Stove, $3.25@$3.50 for Broken and Egg. At Philadelphia, $3.90@$4 for Stove, $2.20 for Pea, $3.30@$3.50 for Broken and Egg. Special coals, $4.85@$5 for Broken, $5.35@$5.50 for Stove.

The announcement of a twenty per cent reduction in the wages of Cumberland coal miners has relieved the bituminous branch of the market from the monotony into which it had fallen. It raises the possibility of a strike on the one hand, and on the other hand, in case the cut-down goes into effect, it places the Cumberland operator on a more even competing basis with his Clearfield neighbor. The price of mining in both regions would then be 40 cents a ton. It has been 50 cents in the Cumberland region. This gain of ten cents a ton would go to make up the difference between Baltimore and Philadelphia water freights. If a strike must come, now is a good time for it. The matter is in uncertainty, but it is believed that the cut-down will be acquiesced in. There is nothing of importance in the way of business. We quote delivered prices $3.55@$3.70.

There is little change in freights. Guarantees of prompt dispatch obtain slightly easier rates. We quote: New York, $1@$1.05; Philadelphia, $1.10@$1.20; Baltimore, $1.15@$1.20; Newport News, $1.10@$1.15; Richmond, $1.20; Cape Breton, $1.55@$1.60; Bay of Fundy, $1.30@$1.40.

Trade is quite active in retail circles. The peddler and wharf demand is especially active. Quotations are unchanged. We quote:

White ash, furnace and egg	$5.50
" " stove and nut	5.75
Red ash, egg	6.00
" " stove	6.25
Lorberry, egg and stove	$6.75@ 7.00
Franklin, egg and stove	7.50
Lehigh, furnace, egg, and stove	5.75
" nut	5.75

Wharf prices, $4.50 for Broken, $4.85 for Stove.

STATISTICS OF COAL PRODUCTION.

Comparative statement of the production of anthracite coal for the week ended November 22d, and year from January 1st:

Tons of 2240 lbs.	1884. Week.	1884. Year.	1883. Week.	1883. Year.
Wyoming Region.				
D. & H. Canal Co.	111,435	3,475,585	100,668	3,732,432
D. L. & W. RR. Co.	149,579	4,589,860	110,931	4,564,608
Penna. Coal Co.	35,950	1,174,497	33,952	1,362,298
L. V. RR. Co.	49,181	1,243,429	43,421	1,270,437
P. & N. Y. RR. Co.	5,887	200,785	4,968	196,899
C. RR. of N. J.	*	*	*	1,202,078
Penn. Canal Co.	12,661	416,622	14,250	478,302
North & West Br. RR.	16,650	733,442	11,821	458,867
	381,343	11,834,220	320,011	13,265,921
Lehigh Region.				
L. V. RR. Co.	134,103	4,129,013	111,994	4,561,995
C. RR. of N. J.	*	*	*	1,126,889
S. H. & W. B. RR.		135,949	1,457	36,552
	134,103	4,264,962	113,451	5,725,436
Schuylkill Region.				
P. & R. RR. Co.	339,166	10,034,292	277,410	8,769,206
Shamokin & Lykens Val.	*	*	*	950,363
	339,166	10,034,292	277,410	9,719,569
Sullivan Region.				
St Line & Sul. RR. Co.	2,271	67,393	1,794	62,550
Total	856,883	26,200,867	712,666	28,773,476
Increase				
Decrease		2,572,609		

* Included in tonnage of the Philadelphia & Reading Railroad.

† Reports not received.

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.

Total same time in 1879 ..... 23,930,783 tons
" " " " 1880 ..... 21,336,764 "
" " " " 1881 ..... 25,268,064 "
" " " " 1882 ..... 26,342,109 "

Belvidere-Delaware Railroad Report for the week ended November 22d:

	Week.	Year 1884.	Year 1883.
Coal for shipment at Coal Port (Trenton)	4,276	105,671	117,801
Coal for shipment at South Amboy	23,714	585,601	531,748
Coal for distribution	26,755	735,623	747,939
Coal for company's use	5,253	166,687	144,956
Total	59,998	1,593,582	1,542,444
Increase		51,138	
Decrease			

Comparative Statement of the Production of Bituminous Coal for the week ended November 22d, and year from January 1st:

Tons of 2000 pounds, unless otherwise designated.

	1884. Week.	1884. Year.	1883. Week.	1883. Year.
Cumberland Region, Md.				
Tons of 2240 lbs.	63,576	2,601,054	55,529	2,282,793
Barclay Region, Pa.				
Barclay RR., tons of 2240 lbs.	5,343	264,231	7,895	298,256
Broad Top Region, Pa.				
Huntington & Broad Top RR., of 2240 lbs	4,088	178,619	4,345	175,920
East Broad Top			977	39,140
Clearfield Region, Pa.				
Snow Shoe	4,154	163,670	7,868	228,967
Karthaus (Keating)	1,922	49,853		
Tyrone & Clearfield	69,349	2,821,596	65,729	2,548,197
Alleghany Region, Pa				
Gallitzin & Mountain	10,689	369,957	12,187	404,235
Pittsburg Region, Pa.				
West Penn RR.	5,569	255,220	9,417	349,150
SouthwestPenn. RR.	2,107	112,844	3,250	109,311
Pennsylvania RR.	5,336	250,997	34,532	1,242,415
Westmoreland Region, Pa.				
Pennsylvania RR.	28,750	1,183,103	13,142	568,897
Monongahela Region, Pa.				
Pennsylvania RR.	4,239	141,062		
Total	205,122	8,392,206	214,871	8,247,281
Increase		144,925		

The increase in shipments of Cumberland Coal over the Cumberland Branch and Cumberland & Pennsylvania railroads amounts to 190,338 tons, as compared with the corresponding period of 1883.

FREIGHTS.

Coastwise Freights.

Per ton of 2240 lbs.

Representing the latest actual charters to November 27th.

Ports.	From Philadelphia.	From Baltimore.	From Elizabethport, Port Johnston, South Amboy, Hoboken, and Weehawken.
Alexandria	.65@.80		
Annapolis			
Albany			
Baltimore	.58§		
Bangor		1.25	
Bath, Me.	1.10@1.15	1.25	1.00
Beverly	1.10@1.15		1.00
Boston, Mass.	1.10@1.15	1.20@1.40	1.00
Bristol		1.15	
Bridgeport, Conn.		1.10	.60
Brooklyn		1.05	
Buffalo, N. Y.			
Cambridge, Mass.	1.15@1.20‡		1.00‡
Cambridgeport	1.15@1.20‡		1.00‡
Charleston, S. C.	.75	.65@.70	
Charlestown	1.10@1.15		
Chelsea	1.10@1.20		1.00
City Point			
Com. Pt., Mass.	1.25		1.00
E. Boston	1.10@1.20		1.00
East Cambridge	1.15@1.25		1.00‡
E. Gr'nwich, R. I.			.75
Fall River	1.00		.70@.75
Galveston		2.00	
Gardiner, Me			
Georgetown, D.C.	.65@.80		
Gloucester	1.15@1.20		
Hartford			
Hackensack			
Hudson			
Lynn	1.25@1.50		
Marblehead	1.25		
Medford			
Millville, N. J.			
Milton			
Newark, N. J.		1.25	
New Bedford	.95@1.00	1.10	.75
Newburyport		1.35	
New Haven		1.05@1.10	.60
New London			.65@.70
New Orleans			
New-Berne			
Newport	1.05		.70@.75
New York		1.00	
Norfolk, Va.	.50@.60		
Norwich		1.25	.70
Norwalk, Conn			.60
Pawtucket			
Philadelphia			
Portland, Me.	.85*	1.20	
Portsmouth, Va.	.50@.60		
Portsmouth, N.H.	1.25	1.20	1.15
Providence	1.00	1.10	.70
Quincy Point			
Richmond, Va.	.75		
Rockland, Me.			
Rockport			
Roxbury, Mass.	1.10‡		
Saco			
Sag Harbor			
Salem, Mass.	1.25		1.00
Saugus			
Savannah		.75@.80	
Somerset	1.05	1.10	.75
Staten Island		.90	
Trenton			
Troy			
Wareham			
Washington	.65@.80		
Weymouth			
Williamsbg, N.Y.		1.05	
Wilmington, Del.			
Wilmington, N.C.	.80	.90	
St. Thomas, W. I.			

* And discharging. † And discharging and towing. ‡ 3c. Per bridge extra. § Alongside. ‖ And towing up and down. ¶ And towing. ** Below bridge.

Vessels scarce.

GEORGE W. JONES & Co