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A BALLOT list of the American Society of Mechanical Engineers, just sent to the members, contains the names of over one hundred gentlemen, many of them well known, who are desirous of becoming members. The society is rapidly coming to the front, and should, we believe, have fully outgrown the dangers which beset its earlier days. With such accessions to membership, the balance-sheet, at any rate, will cease to show a troublesome tendency to exhibit the heaviest amount on the wrong side.

We are informed that the work of collecting the mineral statistics of this country, so auspiciously begun under the direction of the United States Geological Survey by Mr. ALBERT WILLIAMS, Jr., will probably be continued. The tardiness of Congress in reaching the appropriation bills will, however, cause a modification of the programme, so that the statistics for 1883 and for 1884 will be issued as soon as possible in 1885. Such statistics increase in value to the industries whose

progress they record, the more promptly they are given to the public, and this important point the plan referred to will secure in the future. Nearly four months of the present year had passed without even the prospect of the continuance of the work, and it would probably take at least three months more before the statistics for 1883 could be obtained. So far as that year is concerned, all hope of a reasonably prompt publication has passed. The prospect of overcoming the difficulty in the future by combining the work of 1883 and 1884 will be gladly accepted as a sufficient indemnity for the delay in bringing out the figures for 1883, a delay which circumstances have forced upon the survey.

THE MASSACHUSETTS GAS BATTLE.

For over a month, beginning in February, a contest was carried on before the Joint Standing Committee on Manufactures of the Massachusetts Legislature, at which there was an array of experts hardly equaled in hearings of that character. The law of that State forbids the distribution of illuminating gas containing more than 10 per cent of carbonic oxide. The testimony of Mr. CHARLES W. HINMAN, State Inspector of Gas, throws some light upon the history of that law. In his reports for 1878 and 1879, he urged the necessity of providing against the danger of using a gas containing from one third to one half its volume of carbonic oxide, insisting that that gas was a poison. In 1880, the law was passed substantially as framed by him. It does not appear that Mr. HINMAN made any investigation of water-gas except at one or two localities in the earlier stages of its development. A letter from Mr. P. NOYES to EDWARD EVANS, of Lynn, dated Boston, October 28th, indicates that the law was pushed through with the express object of heading off the introduction of water-gas, and that those instrumental in doing it felt confident that they could bring about its repeal should they find that it would prove advantageous to use the new process. The main issue upon which the battle was fought was to convince the members of the committee, so far as the petitioners for the repeal of the amendment were concerned, that the presence of a large quantity of carbonic oxide in illuminating gas is not so dangerous to public health as to overbalance alleged advantages, while the case of the remonstrants, or practically the coal-gas companies of the State, rested upon proving that the public is exposed to dangers against which it must be guarded. Turning first to the evidence brought forward by the former through the statements of chemists, we find Prof. CHARLES F. CHANDLER, of the Columbia School of Mines, whose assertions carried with them the weight of a long connection with the Board of Health, within the province of which questions of this character naturally came, and who declined to take any action looking to a suspension of the manufacture of water-gas. Professor CHANDLER holds that, for all practical purposes, coal-gas and water-gas are equally dangerous, if carelessly used. His testimony is an admirable popular review of the different methods of manufacturing illuminating gas. He insists upon the fact that the product of the Tessié du Motay process is superior to the ordinary coal-gas in illuminating power. Prof. IRA REMSEN, of the Johns Hopkins University, urges that in any legislation special attention should be given to the question of odor. Prof. H. B. NASON, of Troy, and Messrs. PEGIS, CHAMENET & BROTHER, chemists, of St. Louis, take a similar ground. Dr. T. STERRY HUNT, of Montreal, is of the opinion that water-gas may be substituted for coal-gas without any disadvantages whatever, the question being purely and simply one of their relative cost and relative advantage considered as illuminants. He points out that water-gas does not so much contaminate the air in giving the same amount of light as coal-gas, that its explosive properties are not so marked, and that the danger from its diffusion through the air would not be as great with water-gas as with coal-gas. Prof. HENRY WURTZ, of this city, who has been long and favorably known through his careful study of all matters relating to water-gas, is represented by an affidavit, in which he reviews at length the questions at issue, and comes to the conclusion that an illuminating gas containing a predominant proportion of carbonic oxide is almost in every respect decidedly safer for public use than one in which marsh-gas predominates, and in no respect less safe.

The leading chemical authority on behalf of the remonstrants is Prof. HENRY MORTON, of the Stevens Institute of Technology, who takes the position that the presence of a large proportion of carbonic oxide, a poisonous gas, entails risks, and that it is a question of balance between risks and advantages. He holds that the latter should be overwhelming to authorize the taking of the risks. Professor MORTON'S views appear to have undergone some modifications during the course of time, through a period in which he confessedly gave little attention to the water-gas question. He agrees fully with the views expressed by Prof. B. SILLIMAN, of Yale College, in a written opinion. Professor SILLIMAN insists that carbonic oxide is a blood poison, whose toxic power is due to its combination with the hemoglobine of the blood, causing asphyxia by destroying the power of the blood corpuscles to transfer oxygen from the air to the tissues. He concludes that

there is an increase in the danger due to the greater toxic power of a gas containing as high as 90 per cent of carbonic oxide.

Among the other chemists who have certified in behalf of the remonstrants, Professors WILLIAM R. NICHOLS, G. F. H. MARKOE, JAMES F. BABCOCK, and CHARLES U. SHEPARD, and Dr. S. W. ABBOTT, none differs materially from the two gentlemen already quoted, and none of them appears to have had any experience with water-gas or its manufacture, their opinion being based upon a study of the literature and some personal experience of the effects of carbonic oxide, chiefly in a pure state.

Reviewing the opinions brought forward, and weighing the comparatively meager array of facts presented, it is difficult for an unprejudiced hearer to escape the general impression that water-gas is more dangerous than coal-gas, if carelessly used; but we are convinced, also, that it is by no means so terribly dangerous a mixture that its use should be prohibited by statute. The accident statistics submitted do not impress us favorably, so far as their reliability is concerned; and even if the number of accidents were to increase in consequence of the use of water-gas, their number would by no means be such as to justify an exercise of authority.

Concerning the merits of the product of the Tessié du Motay and Lowe processes, as compared with that of the destructive distillation of bituminous coal, the evidence is conflicting. We may at once rule out such testimony as that of Mr. J. R. THOMAS, editor of the *Gas-Light Journal*, whose animus carried him so far as to declare that he looked "upon these fellows, upon these opposition companies, as a pretty considerable set of rascals, you know," and that "it was more a moral question with him, than a sanitary question or any thing else." Putting aside, also, as open to the charge of being strongly biased, the evidence of Mr. T. S. C. LOWE, Mr. W. H. BRADLEY, Mr. HENRY M. PIERSON, and others, either inventors or manufacturers of water-gas plant, or otherwise financially interested in the success of new companies, and rejecting, also, for similar reasons, the testimony on behalf of the remonstrants, by eminent coal-gas engineers, like Messrs. W. W. GREENOUGH, EUGENE VANDERPOOL, and others, it is only necessary to point to the figures found by Mr. E. G. LOWE, gas examiner of this city, quoted by Professor CHANDLER, showing that, for the quarter ended December 31st, 1883, the three coal-gas companies made a gas averaging 19.26, 19.40, and 21.68 candle-power, while the illuminating power of the gas of three water-gas companies was on an average 25.37, 28.31, and 29.57.

The hearing brought out many facts of general interest concerning notably the latest efforts of those connected with the manufacture of water-gas to introduce improvements. It threw some light upon the methods, not always tending to the public good, of all gas companies, and it witnessed attempts to show that the Standard Oil Company was the power behind the throne so far as the water-gas companies were concerned. The general effect that, to us, it seems calculated to have upon unprejudiced readers of the testimony is, that the advantages of the gas manufactured by the new processes fully warrant the acceptance of any risks that may attend its use. The magnitude of these risks can not, with our present knowledge, be mathematically presented; but they seem far remote from the point where it becomes the duty of local government to take action thereon.

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.]

Mr. Tower and the Slag Metal.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: The use of my name in your issue of the 12th, under "The White Metal from Blast-Furnace Slag," was unauthorized. I have never produced any metal myself. Yours truly, A. E. TOWER.

FALLKILL IRON COMPANY, POUGHKEEPSIE, N. Y., April 24.

THE PRODUCTION OF SPELTER.—Messrs. Henry R. Merton & Co., No. 2 Metal Exchange Buildings, Leadenhall avenue, E. C., London, have compiled the following statistics of the production of spelter in the world. Estimates are indicated by a star:

LOCALITY.	1883.	1882.	1881.	1880.
Rhine District and Belgium.....	123,891	119,193	110,989	98,830
Silesia.....	70,405	68,811	66,497	64,459
Great Britain.....	27,661*	25,581*	24,419	22,000*
France and Spain.....	14,671	18,075	18,358*	15,000
Poland.....	3,783	4,400	4,000*	4,000*
Austria.....	2,879*	3,199	2,520*	2,520*
United States.....	243,290	239,259	226,783	206,809
	32,790	33,765	30,000*	23,239
Total.....	276,080	273,024	256,783	230,049

THE MINERAL PRODUCTION OF THE GERMAN EMPIRE.

The final figures for the production of the mines and the metallurgical establishments of the German Empire, including Luxemburg, for the year 1882, have been published. The following are the figures:

	1882.	1881.
Coal, metric tons.....	52,118,595	48,688,161
Lignite ".....	13,259,616	12,852,342
Rock-salt, metric tons.....	322,422	311,907
Brine salt, ".....	459,499	456,958
Potash salts, ".....	1,201,392	905,891
Chlorate of potassium, metric tons.....	148,403	113,168
Iron ore, metric tons.....	8,263,254	7,600,801
Pig-iron, ".....	3,380,806	2,914,009
Spelter, ".....	113,418	105,478
Lead, ".....	92,591	86,729
Copper, ".....	16,292	15,273
Silver, kilograms.....	214,982	186,990
Gold,.....	376	381
Wrought-iron.....	1,586,154	1,421,792
Steel.....	1,074,807	897,425

ON PRECAUTIONARY MEASURES AGAINST EXPLOSIONS OF FIRE-DAMP.—III.*

By M. Hoernecke, Halle, Germany.

A large number of apparatus have been constructed in order to show the presence of fire-damp automatically and independently of the men. They are based upon the chemical and physical properties of the light carbureted hydrogen, and in working complete an electrical current which shows the composition of the air by sounding alarms or indications on diagrams placed at some specific points of observation.

Ansell's fire-damp indicator is probably the oldest of this class of apparatus. It consists of an iron U-tube filled with mercury, and terminated by a funnel-shaped cap, closed by a porous diaphragm (gypsum, burnt stoneware, marble). The other end carries a glass vessel into which a platinum rod can be screwed until it closely approaches the quicksilver level. It is connected with one pole of a battery, while the other pole is connected with the funnel. By the action of endosmose, the lighter carbureted hydrogen enters into the funnel-shaped cap quicker than the heavier air can escape from it through the porous diaphragm. Thus a pressure is exerted upon this end of the U-tube, which forces the quicksilver in the other end upward, until it touches the platinum rod and the circuit is closed.

Wilson's fire-damp indicator consists of a brass wire lever, from the longer arm of which a glass ball filled with air is suspended, which is accurately balanced by a lead counterpoise, the position of which is regulated by means of a screw, and which can be connected with an electric bell. When the glass ball is surrounded with fire-damp, it drops in this lighter gas, and the upward motion of the other arm of the lever closes the electric circuit.

The Maurico alarm is based upon the principle that the hydrocarbon in a given volume of mine air is gradually consumed by contact with platinum sponge in an hermetically closed vessel. The decrease in the pressure of the vessel, observed by means of an aneroid, furnishes the means of ascertaining the percentage of marsh-gas in the sample of air. It is stated that the entire operation with this apparatus takes only five minutes.

The Liveing apparatus consists of two platinum spirals, one of which is contained in closed glass tube filled with air, while the other is in a cylinder of wire cloth. When both the spirals are made incandescent by an electric current, they glow equally bright when the air in the glass tube and the air in the mine possess the same composition. When, however, the air in the mine contains marsh-gas, the ratio of the incandescence of the spiral in the glass tube and of the spiral in the wire-cloth cylinder is as follows, with the corresponding percentages of marsh-gas:

1/4 per cent marsh-gas	1.24 times brighter.
1/2 " "	1.65 " "
1 " "	2.78 " "
2 " "	5.10 " "
3 " "	22.00 " "
4 " "	64.00 " "

The comparative luminosity of the two spirals is measured by a small photometric apparatus.

The Coquillion fire-damp indicator is based upon the observation made by the inventor that palladium wire made incandescent by the passage of an electrical current causes the chemical combination without an explosion of the hydrocarbon and the oxygen in a mixture of both, in which the latter is in excess, and that the volume is decreased by double the volume of the marsh-gas in it. This decrease in the volume and, therefore, the percentage of marsh-gas present, is noted with the aid of a scale attached to the apparatus.

Schondorff has further improved the Coquillion fire-damp indicator, so that the method is as precise and the results as accurate as those of the Bunsen gasometric methods. The following results were obtained with it in the ventilator casing of the Heintz colliery, Saarbrücken:

September 19, 1881.....	0.568 per cent carbonic acid,	0.184 per cent marsh-gas.
" 20, ".....	0.567 " "	0.184 " "
" 24, ".....	0.488 " "	0.187 " "
" 26, ".....	0.472 " "	0.157 " "
" 27, ".....	0.544 " "	0.122 " "
" 30, ".....	0.422 " "	0.143 " "
October 11, ".....	0.430 " "	0.150 " "
" 12, ".....	0.488 " "	0.179 " "

At least, a check on the ventilation in the whole mine may thus be had. The Sourzée fire-damp indicator has been repeatedly modified. One design possesses a special expansion apparatus for closing the contact, which is acted upon by the elongation of the flame of the safety-lamp, and the greater development of heat when it enters into fire-damp. In another design, the elongation of the flame of the safety-lamp causes a pipe above it to sound, which is transmitted by telephone. A third apparatus is designed to take advantage of the differences in the transmission of heat through various gases. Two tubes, one of them filled with atmospheric air, and the other with air from the mine, are placed between the source of heat and a thermo-electric battery. The latter closes the two tubes, and the strength of the current is relied upon to show whether and how much explosive gas there is in the mine. Other apparatus by

* Verhandlungen des Vereins für Beförderung des Gewerbfleisses.

the same inventor depend upon the property of a mixture of chlorine and carbureted hydrogen to ignite by an electric light. None of them has thus far proved practical.

In a general way, it may be stated that the indicators thus far invented have proved of very doubtful utility as automatic alarm apparatus, because the composition of fire-damp varies widely in one gallery, according to the light. These variations are all the greater, because the gaseous mixture is by no means homogeneous. The automatic indicators record only the percentage of marsh-gas close by the point where they are placed, and their alarms will cause more trouble than they are worth, so far as their practical utility in working proper is concerned.

The only practical means to test the percentage of hydrocarbon in fire-damp at any time, and at any locality in the underground workings, is the safety-lamp. If its wick is screwed down to a height of three millimeters, and if the percentage of marsh-gas mixed with varying quantities of air is placed at 1, then the flame of the lamp exhibits the following phenomena :

Ratio of mixture.	Davy lamp, according to Davy.	Saarbrücken lamp, according to Pfaehler.	Mueseler lamp, according to Mallard.
1 to 30	The presence of gas becomes visible.	The flame is elongated and is pointed	
1 to 15	The gas begins to ignite.	The flame elongates more and is pale blue.	
1 to 14	The flame spreads in the whole lamp without detonation.		The flame is surrounded by a white, hardly visible aureole.
1 to 12	The cylinder is filled with a blue flame.	The first weak explosion is noted in the lamp.	
1 to 11			The height and the luminosity of the flame decrease; the lower, darker part begins to extend; the upper part becomes somewhat smoky, and is surrounded by a clearly-visible whitish glow. At times, the flame is nearly extinguished, and there is nothing left but a reversed bluish cone, reaching from the chimney to the wick
1 to 10		The explosion becomes more violent.	The intervals between the shrinking of the flame grow shorter.
1 to 9	The explosion grows more violent.	The explosion becomes more violent.	A bluish flame rises to the upper wire cloth.
1 to 8	The explosion grows more violent.	The explosion becomes more violent.	The fluctuations begin again, but they do not last long. The flame rises almost imperceptibly, though it is not extinguished.
1 to 7			The flame spreads to the upper wire net, and is then completely extinguished.
1 to 6	The cylinder is filled with a bright flame, and the wire becomes red-hot	The explosion becomes weaker.	
1 to 5			
1 to 3	The flame is extinguished.	There are no more explosions.	
1 to 1		The flame is extinguished.	

It is true that the ratios given above are not based, in every case, upon gas mixtures taken from the mine and determined by analysis. They are partly the results of tests of mixtures of illuminating gas and air, the percentages of which could be accurately determined. It is true that, in their chemical and physical properties, they do not closely correspond with those of fire-damp and air, because their action becomes more apparent in more dilute mixtures. Notwithstanding this, the phenomena observed with mixtures containing the different quantities of marsh-gas or illuminating gas are so striking and may be so sharply distinguished that it requires only little attention on the part of the workman to teach him how long he can safely go on working when their presence in the workings become dangerous, and when there is immediate danger of an explosion. The latter is always the case when any one of the different safety-lamps shows the upper wire cylinder to be filled with flames and begins to get red hot.

The phenomena observed in the safety-lamp described above are not observed in the fire-damp of the Waldenburg District, where only a short or no blue flame at all is noted, when there is a small admixture of fire-damp. Explosions in the lamp appear at once, accompanied with a brownish-red flame, when the corresponding percentage of marsh-gas is reached. Whether this is due to an admixture of carbonic acid, of olefiant gas, or to other causes, has not been ascertained as yet.

The Influence of Coal-Dust.—The danger of fire-damp, according to recent investigations, is materially increased by coal-dust, which is found in large quantities in all dry collieries. Its presence may cause or extend explosions in gaseous mixtures not by themselves capable of exploding.

Lyell and Faraday, in reporting on the Haswell colliery explosion in 1844, first expressed the opinion that its magnitude was not alone due to the fire-damp, but that the coal-dust raised by the explosion was ignited and coked, and that the gases of the coking process in turn contributed to extend it.

Du Souich states, in a report on the explosion at the Charles pit at Firminy in 1855, that a crust of light coke was found in the timbering, which could have originated only in the coal-dust raised in the workings and carried long distances by the violent currents of air created by the explosion. As the dust was partly ignited, it could transmit the effects of the explosion further.

Vital furthermore refers to the fact, in describing the explosion at the Campagnac colliery, near Aveyron, on September 2d, 1874, in the *Annales des Mines*, that a shot raised the very fine dust, and that this only caused the explosion.

At the same time, Galloway proved, with an apparatus used for testing

safety-lamps at the Llwympia, in South Wales, that a mixture of coal-dust and air is not explosive at ordinary temperatures and ordinary pressures; but that an explosion always results when coal-dust is in a gaseous mixture in which there is a hydrocarbon, and that such explosions take place even when one volume of hydrocarbon is diluted with 112 volumes of atmospheric air.

Mathet has examined the coke-crust formed by an explosion at the Jabin colliery, and has compared it with the chemical composition of the coal of the seam. He found that the coked dust had lost volatile matter to the extent of 6.13 per cent of its weight, or nearly one fourth of its original percentage of volatile matter. The result is, that one kilogram of dust developed 61 grams, or 84 liters, of gas of ordinary temperature and pressure, the volume of which must have been increased very much by the temperature of combustion.

Vital has ascertained that dust which has once brought about an explosion is not capable of originating a second.

The latest investigations by the English commission for accidents have not alone confirmed the results obtained by Galloway, but it was proved also that the presence of coal-dust is capable of transmitting an explosion to localities in which there is only pure atmospheric air. It has been proved, too, that dust mixed with other substances, like horse-dung, in hauling drifts, is more dangerous than the pure coal-dust at the working faces, because it is more readily ignited. The commission has further laid stress upon the point that even a smaller quantity of marsh-gas than can be detected in the air by the best means now known is sufficient to make a mixture of coal dust and fire-damp capable of exploding. The experiments made lead to the conclusion, furthermore, that, when the current of air is slower, a smaller quantity of coal-dust suffices to make it capable of igniting. Thus, when the current had a velocity of 600 feet per second, an addition of from 2 to 2.75 per cent of gas was necessary to bring about an explosion, while the same result was reached by an addition of 1.5 per cent with a velocity of only 100 feet.

The French commission, however, reached nearly contradictory results. It ascertained that in general the tendency of coal-dust to ignite is dependent upon the percentage of volatile matter in the coal; that the quantity of dust to be mixed with the air to cause ignition and transmit it must be very great; that such a quantity of dust can be raised only by very violent mechanical means, and that it can only be kept in suspension for a very short time after this mechanical action has ceased; and finally, that the ignition of the dust raised can only be caused by very strong flames, and that it is transmitted only very slowly in air laden with coal-dust.

However strongly the investigations referred to above speak for the part attributed to coal-dust in fire-damp explosions, there are many engineers, even in England, who do not recognize the influence of coal in such a measure; and in Belgium, too, the co-operation of dust has not yet been proved in the case of a single explosion, although there coke-crusts have been found on the timbering after greater explosions. The coal-dust question has only been discussed in Germany very recently, and many phenomena not otherwise capable of explanation, noted in explosions in Silesia and Westphalia, have also been attributed to the action of coal-dust. However, many scientists who doubt it, oppose those who adhere to English authority in practical working, and it will require more convincing proofs, and many experiments will be needed before the far-reaching influence of coal-dust is acknowledged in German collieries.

ON THE TEMPERATURE OF WATER AT VARIOUS DEPTHS.

In a paper recently read before the American Society of Civil Engineers, Mr. Hamilton Smith, Jr., expressed the opinion that the temperature of water drawn from a reservoir at a depth of 170 feet would be much more constant during the year than if drawn from a point say 60 feet below the surface. He stated that at one of the North Bloomfield reservoirs, in California, formed by a masonry dam about 100 feet in height, the water was drawn from a point about 90 feet below the top of the dam. In July, when the temperature of the air is often above 90 degrees, the water near the surface is too warm for drinking and not too cold for bathing, while the water from the deep point is almost icy cold. In the winter months, with a depth of from 50 to 60 feet of water, that drawn from the bottom is from 5 to 7 degrees warmer than the stream water in the neighborhood; this fact being of great practical advantage, as the comparatively warm water enters the open canal of the company, and retains more or less of its high temperature for a distance of fifteen miles, even during snow-storms; while in other canals of that neighborhood whose water comes from running streams, the flumes soon become choked by snow unless they are covered.

A number of observations upon the temperature of water were given. Those made by F. A. Forel, at the Lake of Geneva, Switzerland, showed a surface temperature varying from 41 degrees to 71 degrees, and a constant temperature of 41 degrees at the depth of 984 feet. The range at the depth of 164 feet was only from 43 degrees to 44 degrees. This lake rarely freezes. Observations upon other Alpine lakes were given with the same general results. Prof. William Ripley Nichols found the temperature of Fresh Pond, at Cambridge, Mass., with a range of from 82 degrees to 33 degrees at a depth of 2 feet below the surface, while at a depth of 35 feet the variation was only from 51 degrees to 34 degrees.

Prof. J. L. Conte found the temperatures of Lake Tahoe, California, at 1506 feet below the surface, to be 39 degrees, when at the surface it was 67 degrees. This lake has never been frozen across. In ocean soundings, the Challenger found, in latitude 37° 31' south, longitude 36° 07' west, a temperature of 30 degrees at a depth of 16,050 feet, and in several other soundings temperatures of 31 degrees and 31 degrees. The Blake found north of St. Thomas, in the West Indies, 36 degrees at a depth of 27,366 feet, which is notable as being the deepest sounding thus far made. At this point, the surface temperature practically remains constant at 80 degrees. The Blake soundings also show that, in this heated current rapidly moving northward from the tropics, there is a very rapid diminution of temperature, even at very small depths. The explanation of these low summer temperatures at considerable depths in bodies of fresh water is, that water, being most dense at about the temperature of 39 degrees, the surface water which becomes cold in the winter gradually sinks, and water being a poor conductor, the strata, at depths of 200 feet or more,

will retain during summer this lower temperature with but slight variations, although the surface may become heated up to 32 degrees, as at Fresh Pond, and perhaps even higher at other points. This theory does not seem to account for the very low temperature of 30¹/₁₀ degrees recorded by the Challenger, or that of 36¹/₁₀ degrees by the Blake. Possibly pressure may be a factor in this problem. There are great practical difficulties in determining accurately temperatures at such enormous depths. In the soundings near St. Thomas, the pressure of water amounts to near 12,000 pounds per square inch. Comparative tests, however, of the latest models of thermometer used by the United States Coast Survey show satisfactory results. It is evident, therefore, that, in a reservoir near this locality, the surface temperature may reach 85 degrees in July and August, and go to 33 or 34 degrees in winter; while at a depth of 170 feet, it will not vary greatly during the year from 45 degrees; this being on the assumption that the reservoir remains full. Where water can be obtained from depths of from 60 to 170 feet, this consideration should have weight in determining the point from which it can be most advantageously drawn. On account of this lower temperature, the water will probably be more free from organic matter or organisms. Of course, bottom temperatures will become elevated as heated strata from near the surface find their way toward the bottom.

In the discussion of the paper, Mr. N. S. Keith described the construction and operation of the electrical apparatus used for ascertaining temperature at great depths. The paper was further discussed generally.

Arrangements were announced for the convention of the society to be held at Buffalo, New York, June 10th, 1884.

CHAMBER SPACE REQUIRED AND NITER USED IN THE MANUFACTURE OF SULPHURIC ACID FROM PYRITES.

Written for the Engineering and Mining Journal.

In an article that appeared in the ENGINEERING AND MINING JOURNAL for March 15th, 1884, and afterward in the *Oil, Paint, and Drugs Reporter*, I gave some figures in regard to the chamber space required in using pyrites for acid-making, and in regard to the consumption of niter, for which I have been severely criticised by friends of mine who (having no experience with pyrites) consider my figures altogether too low.

The English mail has just brought to hand the *Journal of the Society of Chemical Industry*, dated March 29th, which contains a paper (read before the Society at Liverpool on March 5th) by Dr. Eschellman, chemist at James Muspratt & Son's works, Widnes, on the Loss of Niter in the Manufacture of Vitriol.

Dr. Eschellman gives the following data relating to the chamber space and niter consumption as the results of extensive practical work with pyrites at the above factory, which bear out what I said in the article quoted above:

Chamber space.		Per cent niter.
Cubic meters per kilo. sulphur per 24 hours.	Cubic feet per sulphur per 24 hours.	
1.34	21.45	3.24
1.47	23.53	2.75
1.00	16.01	4.00
1.10	17.61	3.70
1.20	19.21	3.50
1.30	20.81	3.10
1.40	22.41	2.80

NOTE.—The loss of sulphur in escaping gases from Gay-Lussac tower in no case exceeds 0.5 per cent of that in pyrites charged to burners.

W. M.

COAL AND IRON IN ALABAMA.

Special Correspondence of the Engineering and Mining Journal.

Another large coal and iron company has just been organized at Russellville, Franklin County, Ala. It is the incorporation of the Lady Ensley Coal and Iron Company, with a capital of \$1,000,000, composed chiefly of the gentlemen who compose the Pratt Coal and Iron Company. The officers of the Lady Ensley Coal and Iron Company are Napoleon Hill, President; Enoch Ensley, Treasurer; and Secretary and General Manager, Mr. L. W. Johns, who for several years past has been the mining engineer of the Pratt Company. In the selection of Mr. Johns for manager of so large a concern, the company has acted wisely, he being a man of large experience and capability. The Lady Ensley Company will begin the construction of furnaces at Russellville, Franklin County, and also at Sheffield, the new city on the Tennessee River. It will also open coal mines at a point on the Birmingham & Northwestern Railroad, now constructing. It will open its ore mines and also quarry its limestone at Russellville. The company owns 25,000 acres of splint coal, which will be used "raw" in the furnace; and it also possesses about 45,000 acres of brown hematite and limestone lands. I am told by Mr. Johns that the ore stands out in many places in bluffs from 50 to 100 feet high, and is remarkably pure. The ores yield on an average 57 per cent of metallic iron, and the limestone, which is mostly crystallized and fossiliferous, contains from 96 to 98 per cent of carbonate of lime. All these coal and iron lands are very heavily timbered, and there is an abundant supply of water at all seasons. The company will also construct its own machine-shops and foundries at Sheffield, and construct all its cars and machinery necessary for mines and furnaces. Work on the railroad is pushed forward very rapidly, over 1200 men being employed in and near Sheffield.

The miners employed by the Pratt Coal and Iron Company, who have been out for several weeks on a strike against the usual summer reduction, returned to work on Monday last, at 45 cents a ton. The Pratt Coal and Iron Company contemplates sinking another shaft about two miles south of its No. 2 shaft.

A terrible rain-storm, accompanied with a gale, passed through this section last Monday, doing a great deal of damage to railroads and mining companies. A wash-out, about 100 yards long, occurred on the Pratt Company's railroad, also on the Coalburg branch of the Georgia

Pacific, carrying away a bridge. East of Birmingham on the Georgia Pacific Railroad, the destruction was so great that no trains have run since Monday, and none is expected for a week or more. On the Cahaba Coal Mining Company's railroad, the damage was not very serious, being limited to two or three wash-outs, which were repaired at once. Numerous places along the Alabama Great Southern Railroad and Louisville & Nashville Railroad were badly washed, and bridges weakened or carried away, obstructing travel for a day or more.

The Montevallo Coal and Transportation Company is building a new piece of about one and a half miles of road from its No. 1 mine to its new slope, which is now opening. It will recommence operations on the first of May.

The Pierce Warrior Coal Company is opening a new mine at Warrior, which will greatly increase the output for that region.

The Warrior Coal and Coke Company is at work locating its railroad mines, and will probably be putting out coal in a month or so.

The output of coal for March shows a falling off from that of February partly because several furnaces were out of blast for the want of new lining, and partly because the season for domestic sizes is over. The following is the output:

	Tons.
Lower Cahaba Field:	
Cahaba Coal Mining Company.....	6,000
Montevallo Field:	
Briarfield Coal and Iron Company.....	6,500
Helena Field:	
Cahaba Coal and Coke Company.....	2,500
Coosa Field:	
Broken Arrow Coal Company.....	2,000
Upper Warrior Field:	
M. G. Hoene Coal Company.....	5,000
Pierce Warrior Coal Company.....	6,000
Jefferson mines.....	2,000
Brakes Coal Company.....	3,500
Milner Coal and Railroad Company.....	4,335
Middle Warrior Field:	
Coalburg Coal and Coke Company.....	12,000
Pratt Coal and Iron Company.....	50,873
Woodward Iron Company.....	8,000
West Warrior Field:	
Virginia & Alabama Mining Company.....	3,000
Alabama & Mississippi Coal Company.....	3,000
Total.....	114,808

Next Tuesday, the 22d, is the opening day for the Mineral Exhibition at Birmingham. The Louisville & Nashville Railroad Company contributed a magnificent display of coal, iron, and other minerals. This, with the numerous displays by the various coal and iron companies, makes a very handsome exhibit.

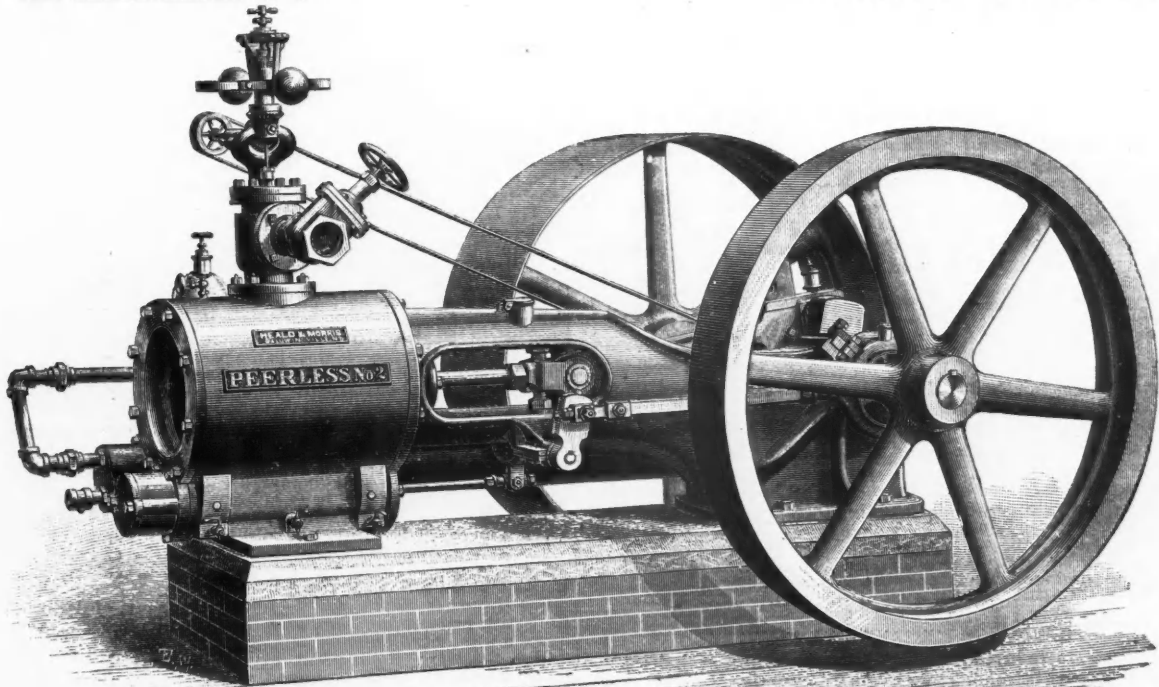
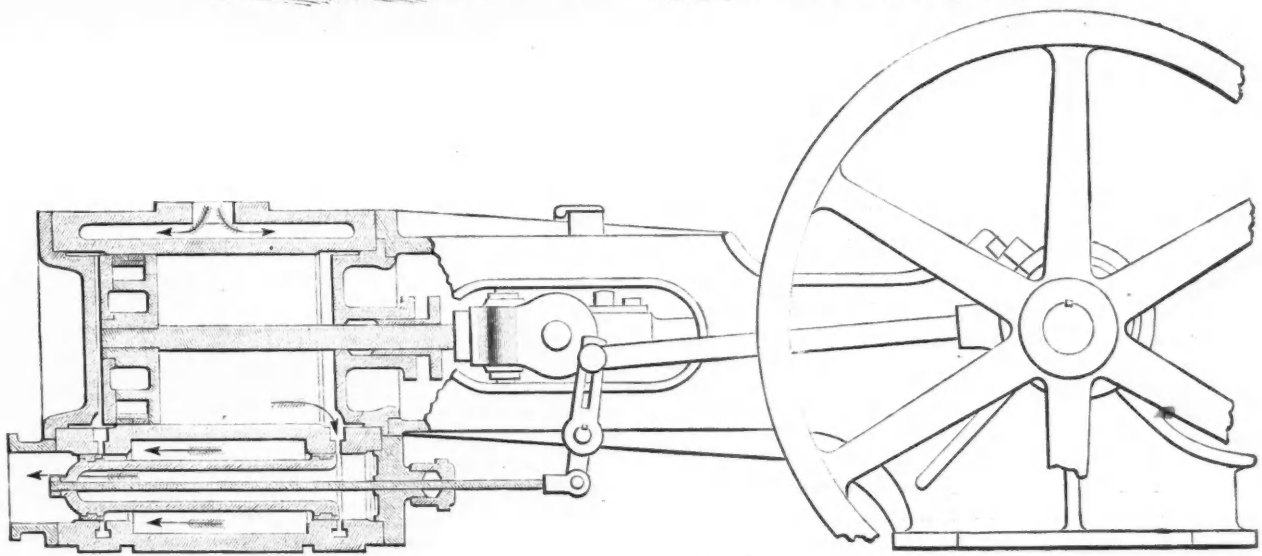
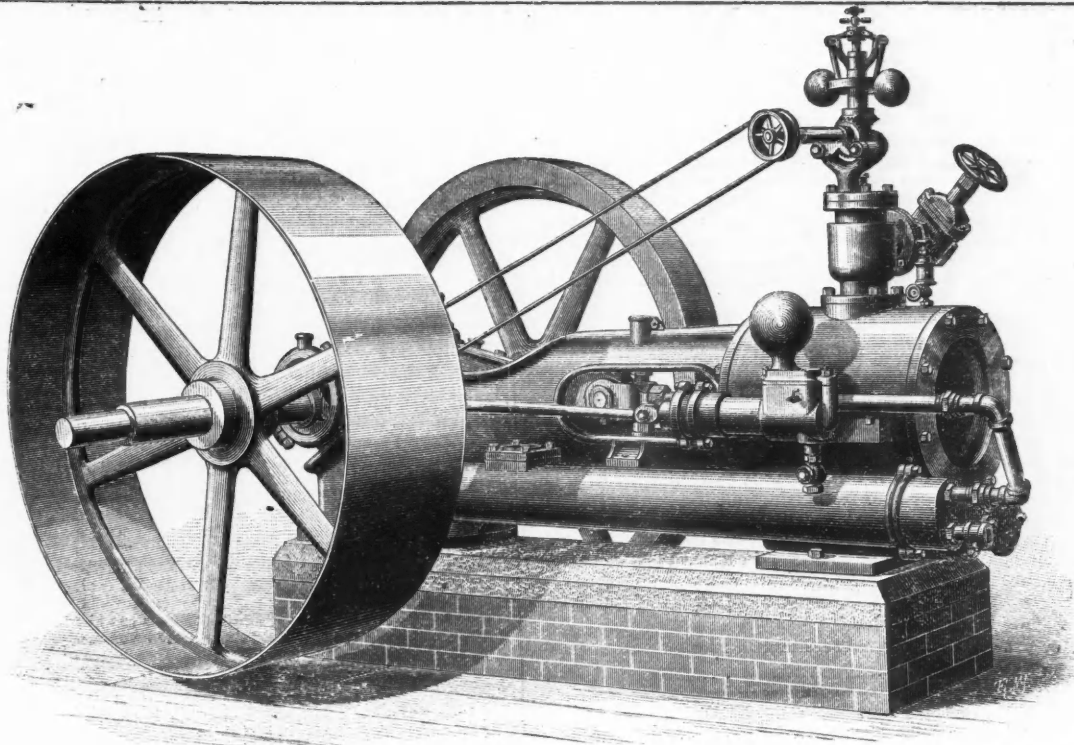
CHARLES M. WEISS.

BIRMINGHAM, ALA., April 18.

THE "PEERLESS" HORIZONTAL ENGINE.

In the accompanying engravings, we illustrate the Peerless horizontal engine, built by Messrs. Heald & Morris, of Baldwinville, New York, who have been making engines of this design ranging between 10 and 60 horse-power, and propose in the near future to add two new sizes of about 80 and 110 horse-power. The style as now built has been the result of a series of experiments, the object of which was to attain at the same time compactness and strength. Some of the considerations that have led up to the design illustrated are the following: The shaft bearing is on a line with the center of the cylinder, so that it is very nearly a "straight line." It is urged that center crank engines, or engines using the bell-crank, are better than those using the disk or side connection, because the strain on the bearings is equal, while in the side connection but one box supports the shaft when an outside stand is used. It is claimed that, with the latter, the stand becomes loose by reason of the unequal strain, which tends to throw the crank out of line. The valve, as seen in our sectional view, is of the round type, and is well balanced. The steam is on the outside of it, while it exhausts through the center. The cylinder is steam-jacketed, and as the steam-chest is on the bottom of the cylinder, the latter can be instantly drained. The connecting-rod, cross-head, pump connection, rock-shaft, and the rock-shaft connection to the valve-stem, are made of malleable iron, while the cross-head slides and the connecting-rod boxes, both at the cross-head and at the crank, are made of phosphor-bronze. The slides are made adjustable, so that they can be taken out when required. The engine is furnished with pump, heater, with any one of five different makes of governors, a gate throttle-valve, and Craig sight-feed lubricator.

DISTRIBUTING POWER FROM CENTRAL STATIONS.—The notion of distributing power from central stations to the workshops of small users, as they are called, is gaining ground in England, and there is an evident determination to wait no longer for the promised transmission of power by electricity. In London, there is a scheme already partly completed for supplying hydraulic power to city warehouses; and in Birmingham, there is a scheme for supplying motive power by means of compressed air that awaits the sanction of the corporation. It is calculated that the cost of the compressed air would be about the same as gas used in gas-engines; but there is this advantage—that the compressed air could be utilized in the engines now driven by steam. Out of two hundred and seventy small-power users who have been consulted, nearly two thirds have expressed their readiness to take the compressed air; and if the scheme can be successfully worked, it will tend to materially reduce the smoke nuisance and the number of boilers, all of which are liable to explode. It is not altogether an easy matter to lay down a series of mains and supply compressed air to the workshops of a given district; but so much has been learned during the recent boring operations connected with the great Alpine tunnels, that it is quite possible to lay on a supply of compressed air, which could be turned on as required by means of a tap. There is one great advantage in the scheme, besides the abolition of the smoky furnace—and that is, that the "exhaust," instead of being very much of a nuisance, would assist in the ventilation of the work-rooms, and in some trades would be of special value in connection with certain processes.



THE "PEERLESS" HORIZONTAL ENGINE.

BRIMSTONE AND PYRITES FOR ACID-MAKING.

Written for the Engineering and Mining Journal by William Martyn, Boston, Mass.

At the present time, when pyrites is steadily making its way into sulphuric acid works as a substitute for brimstone, the question often crops up whether the decrease in the price of it that ultimately it will be more economical to use brimstone than pyrites. Let us look into the actual cost of producing brimstone, and see if the above is possible.

The brimstone supply of the world comes almost entirely from Sicily and Italy. It is extracted from ores containing an average of twenty-one per cent of sulphur. Four plans of extraction or liquation are used namely:

1. *Retort Process.*—The ore is heated in closed vessels fired from below by means of a wood or coal fire.

2. *Kiln Process.*—In this process, the ore is stacked in large kilns and set fire to. A portion of the sulphur burns off and supplies the heat necessary for melting out the sulphur of the remaining portion.

3. *Steam Process.*—The ore is placed in wrought-iron vessels, and the sulphur melted out by means of steam.

4. *Chloride of Calcium Process.*—The sulphur is melted out of the ore by means of a hot solution of chloride of calcium.

The first-named process is very expensive and little used. The second is the one principally in use, notwithstanding that one third of the sulphur contained in the ore is expended in melting out the remaining two thirds.

The third and fourth processes are used to some extent. By them, practically the whole of the sulphur in the ore is recovered.

The following figures are given on good authority as the cost of extracting (and shipping) one ton of brimstone by the kiln and steam processes several years ago:

COST OF ONE TON OF BRIMSTONE BY THE KILN PROCESS.

7 tons ore at \$1.02 per ton	\$7.14
Liquation	3.10
Royalty to proprietor of land	3.00
Cost of one ton of brimstone at the mines	\$13.24
Carriage to coast and shipping charges	5.58
Export duty	2.00
	\$20.82

At the time the above statement was made up, certain railroads and roads were in progress, on the completion of which, the carriage and shipping charges were expected to be reduced to the extent of \$2 a ton. Deducting this..... 2.00
We have as the actual cost per ton f. o. b. in Sicily, exclusive of profit to miner and extractor, interest on capital or depreciation 18.82

COST OF ONE TON OF BRIMSTONE BY THE STEAM PROCESS.

5 1/4 tons of ore at \$1.02	\$5.51
Liquation	3.71
Royalty to proprietor of land	3.00
Cost per ton at mines	\$12.22
Carriage to coast and shipping charges (see remarks above)	3.58
Export duty	2.00
	\$17.80
Add for repairs (not included above)	.20
Actual cost per ton f. o. b. in Sicily, exclusive of profit to miner and extractor, interest on capital or depreciation	\$18.00

The cost of the chloride of calcium process, given below, is based on figures published in the ENGINEERING AND MINING JOURNAL of March 29th, 1884:

COST OF ONE TON OF BRIMSTONE BY THE CHLORIDE OF CALCIUM PROCESS.

5 1/4 tons of ore at \$1.02	\$5.51
Liquation—5 1/4 tons at 85c	4.59
Repairs (say)	.20
Royalty to proprietor of land	3.00
Cost per ton at mines	\$13.30
Carriage to coast and shipping charges	3.58
Export duty	2.00
Actual cost per ton f. o. b. in Sicily, exclusive of profit to miner and extractor, interest on capital or depreciation	\$18.88

It will be seen that the average cost by these three processes is \$18.56, or, including interest and depreciation, say, 50 cents a ton—\$19.06 f. o. b. in Sicily, exclusive of profit to miner and extractor.

Freight from Sicily to New York, Boston, Baltimore, or Philadelphia will average say \$4 a ton, and insurance say 50 cents. So that the actual cost of one ton of brimstone ex ship in American ports, exclusive of profit to minor and extractor, is about as follows:

Cost f. o. b. in Sicily (including interest and depreciation)	\$19.06
Ocean freight	4.00
Insurance	.50
	\$23.56

The present price of brimstone is about \$25 a ton, which leaves a profit to the miner and extractor of about \$1.44 a ton.

Adding to the price ex ship (\$25) \$1 a ton for lighterage and other charges, we have, as the price of a ton of brimstone at the buyer's works, \$26.

Now, pyrites equal to a ton of brimstone can be bought delivered at buyer's works, and all extra cost of handling, etc., paid for (not more than) \$15 a ton, but say \$15.50. We have therefore:

Price of one ton of brimstone at buyer's works	\$26.00
Price of pyrites equal to one ton of brimstone delivered at buyer's works, plus all extra cost of handling, etc.	15.50
Difference in favor of pyrites	\$10.50

And it is plain that no reduction in the cost of shipping brimstone (such as a reduced export duty, cheaper average freights, etc.) can possibly bring its price down to the level of pyrites.

It would appear, therefore, that our pyrites miners and consumers have nothing to fear in the future from imported brimstone.

RAILROAD NEWS.

The Baltimore & Ohio and the Cincinnati, Hamilton & Dayton companies will be bidders for the Dayton & Southeastern when it is sold. Its purchase would admit the Baltimore & Ohio into Dayton or give the Cincinnati, Hamilton & Dayton access to the coal-fields.

It is officially announced that the Susquehanna & Clearfield Railroad, a line twenty-two miles long, extending from Keating, on the Philadelphia & Erie Railroad, to Karthaus, a point in the Snow Shoe coal regions, will be opened for traffic on May 1st. It will be operated as a part of the Middle Division of the Philadelphia & Erie Railroad.

The Erie Railroad Company made another cut April 21st in coal rates from its mines to Buffalo, making the rates \$1.05.

At a meeting of the stockholders of the Washington, Cincinnati & St. Louis Railroad, held at Harrisonburg, Va., April 18th, the company was organized by the election of the following officers: President, Archer N. Martin, New York; Directors, C. E. Kimball, New York; H. D. Cooke, Washington; and U. L. Boyce, J. W. F. Allemon, and J. S. Loose, Virginia. Energetic work will be commenced on the road early in May. This road will traverse one of the richest mineral and timber sections of Virginia.

The army of coal-pickers who have followed their avocation on the Lehigh Valley Railroad have had their business interrupted by an order compelling them to quit their trade. Many of the pickers not only gathered all the coal used at home, but made a livelihood by picking the coal and selling it. The order, it is stated, was issued to keep the parties from getting on the tracks and running great risks of being killed or injured.

The Coal and Iron Railroad of West Virginia, with a capital of \$4,500,000, has been incorporated. The road is to run from Winchester, Va., to Davis, Tucker County, West Va., through what is probably the richest coal-field on the continent. Among the incorporators are James G. Blaine, Senator J. N. Camden, Senator Thomas F. Bayard, ex-Senator Chaffee, ex-Senator H. G. Davis, Senator McPherson, of New Jersey; ex-Governor Whyte, of Maryland; Senator A. P. Gorman, of Maryland; ex-Vice-President Keyser, of the Baltimore & Ohio; Harrison Garrett, son of President John W. Garrett, of the Baltimore & Ohio; Enoch Pratt, of Baltimore; and other capitalists.

Two heavy coal trains came into collision at Catasauqua, on the Lehigh Valley Railroad, April 24th. One of the engines was badly damaged and fifteen cars were shattered.

FURNACE, MILL, AND FACTORY.

Merwin McKaig, of the Beall Engine, Boiler, and Machine-Works, Cumberland, Md., has just closed a contract with the New Central Coal Company for a 50 horse-power hoisting-engine, drums, and boiler, for its mines at Lonaconing, Md.

After many delays and postponements, it is now authoritatively announced that the sheet-mill in Newcastle, Ohio, lately the property of Reis Brothers, which was sold to P. L. Kimberly & Co., will start up.

The Pine Iron-Works of Bailey & Shoemaker, in Berks County, Pa., are again in operation rolling blooms.

Two new furnaces are soon to be erected at Colebrook, on the Colebrook Valley Railroad, by Robert H. Coleman.

The Greenville rolling-mill of P. L. Kimberly & Co. was recently started up with from 10 to 15 of the 26 puddling-furnaces. If business increases, the rest of the mill will be put into operation.

The new furnace of the Cranberry Iron and Coal Company, at Cranberry, N. C., started up April 14th. Other furnaces at Cranberry are projected.

The blast-furnace of the Lynchburg (Va.) Iron-Works, which has been in constant operation for more than two years, was blown out April 19th, and work suspended until some needed repairs can be made.

The Lehigh Car Manufacturing Company, at Stenton, Pennsylvania, has accepted a contract to build 600 gondola cars for the Missouri & Pacific Railroad, to be delivered as soon as possible.

A circular has been sent to the creditors of Brown, Bonnell & Co., of Youngstown, Ohio, asking them to take either 50 per cent in cash for their claims or stock in the new company, called the Brown-Bonnell Iron Company. The offer has been rejected.

The Solid Steel Casting Company, of Newark, N. J., has broken ground preparatory to the erection of a large manufactory on the river, near the Greenwood Lake Railroad embankment. The present works of the company are at Jersey City. The new manufactory will have a capacity of 5000 tons a day.

The casting-shops of the Clendenning foundry at Montreal, Quebec, Can., were recently destroyed by fire. The loss is estimated at \$40,000, and is covered by insurance.

Twelve of the twenty-six furnaces in the Greenville, Ohio, rolling-mill have been lighted, and if trade improves, the others will be put in operation.

The rolling-mill of the Akron Iron Company, Ohio, is on single turn. The forge department, which has been idle for some time, is again in operation.

Merwin McKaig, proprietor of the Beall Engine, Boiler, and Machine-Works, Cumberland, Md., informs us that he is running full force, being busy building his new "Mogul" horizontal stationary engines, for which the patterns range from 10 to 100 horse-power; the "Keystone" roller mills, just put on the market; the Anderson self-lubricating mine car-wheel, of which one large coal company alone has ordered 500; and is also constructing a variety of pulleys, shafting, and mill machinery gearing.

The Lidgerwood Manufacturing Co. is building one of its improved reversible link-motion hoisting-engines for the Lucas Coal Company, of Scranton, Pa., with a drum of sufficient capacity to hold 6000 feet of rope. We understand that this concern makes a very large line of special hoisting-engines for mining purposes, and that it claims to keep finished parts of all its engines on hand at all times, so that in case of any accident to the engine, or breakage of any part, a duplicate can be furnished without a moment's delay. This is a very important point, and worth the attention of mining men. We are informed that the company has sold over 2500 hoisting-engines in the past five years.

The Phoenix Roll Company, of Pittsburg, Pa., has just finished and shipped to the North Chicago Rolling-Mill Company a train of two-high grooved jobbing-rolls, weighing 18 1/2 tons each.

It is the intention to build two more new puddling-furnaces to the Union Mills of Carnegie Brothers & Co., at Pittsburg, Pa., which makes a total of 40. The room around the mill is very narrow; but if the space can be arranged, it is most likely that the puddling-forge will consist of 50 furnaces, which would then be by no means supply the finishing mills.

H. K. Porter & Co., Pittsburg, Pa., builders of light locomotives, have just shipped a new engine, and three others are almost ready to be forwarded.

The Lucy furnace of Carnegie Brothers and Co., at Pittsburg, Pa., is enlarging and thoroughly overhauling, with the view to an increase of capacity from 160 to 240 tons daily.

The Huyett & Smith Manufacturing Company, of Detroit, manufacturer of the Smith exhaust-fan, pressure-blowers, and mine and ventilation fans, has issued a new fully illustrated catalogue.

The Delaware Rolling-Mill, at Phillipsburg, New Jersey, with all the machinery and four lots of ground, will be sold by the receiver, May 14th. This mill is well furnished with the requisite appliances for producing sixty or seventy tons of finished iron a day, and has a siding from the Pennsylvania Railroad; car-dump for coal, stables, sheds, and storage rooms, scales, and dwelling-house. Parties desiring information can apply to Messrs. Peter L. Voorhees, 120 Market

street, Camden, New Jersey; Samuel B. Huey, 36 South Third street, Philadelphia, Pa.; and Robert H. Hinckley, 204 South Fifth street, Philadelphia, Pa.

The cinder crusher recently put up by the Plymouth Rolling-Mill Company, at Conshohocken, has been successfully started. The crusher is a Gates patent, manufactured in Chicago; the motive power consists of a 40 horse-power engine, built in Erie. The amount of cinder expected to be crushed will be about 200 or 300 tons per day.

One hundred men were discharged from the Baldwin Locomotive-Works, in Philadelphia, Pa., April 19th, and one of the members of the firm has stated that, unless other work came in the discharges would continue until the present working force of 3000 would be reduced to about 2000 men. The works have been running to their full capacity for several years past, and have averaged 550 locomotives a year.

One of the Scranton companies is reported to have taken an order for a 300-ton lot of steel rails at \$33 a ton.

Nearly all the various mills at Ironton, Ohio, are in operation again. The Lawrence mill is on double turn in all departments except the cotton-tie mill, which has been idle over a year. The Bellefonte mill is also running double turn in the forge departments. The old mill of the Iron and Steel Company is again in operation double turn. Its blast-furnace is idle. The Kelley nail mill is on double turn in the forge department, and its nail factory is doing well. The Bellefonte furnace is overhauling. The Big Etna, owing to repairs making, will be kept out of blast six weeks or two months.

Mr. A. E. Barthel, of this city, sole proprietor for this country of the Reiser, Stauffer & Barthel lubricators and solidified oil, has just issued a new circular for 1884.

The Western Nail Association met at Pittsburg, Pa., April 23d, and compromised the arrangements for the proposed nail pool. By a unanimous vote, the association approved the action of the iron manufacturers in demanding a reduction of wages.

A movement has been made to put in operation the furnaces of New Castle, Pa., which were recently shut down because of a strike.

LABOR AND WAGES.

A committee of the State Engineers, which has in charge the violation of the laws in relation to the inspection of steam-boilers and the licensing of engineers, will appear before the Boesevelt Investigating Committee as soon as an opportunity is afforded. It is prepared with facts, names, and dates to show gross carelessness and violations of law.

The miners who recently were on a strike in the Broad Top region have accepted the reduction of forty cents per ton, and returned to work April 19th.

The arbitrator to whom the question of wages in the manufactured iron trade in Northern England was referred has decided upon a reduction amounting to two and a half per cent. The employers demanded a reduction of ten per cent.

The conference of the Amalgamated Association and the manufacturers at Pittsburg, Pa., April 19th, contrary to expectations, resulted in a disagreement. The workmen demanded that the present rate of wages (\$5.50 a ton) for puddling be continued, with the exception of the extra \$1.10 for axle iron, and presented additions and amendments which, it is claimed, will increase the wages of certain classes of workmen from 5 to 20 per cent. The manufacturers peremptorily refused to accept the proposition, and demanded a uniform reduction of 10 per cent in wages, which, they claimed, was necessary on account of Eastern competition and depression in trade. The workmen denied that such a reduction was necessary, and also denied that their scale provided for any increase. The discussion lasted three hours, when it was decided that an agreement was impossible. Both sides profess to be firm in their position. If one or the other does not yield, work will be suspended in all mills in the West after May 1st.

The long strike of the Western Indiana coal miners is about ended. The operators demanded a reduction from \$1 to 75 cents per ton. This proposition was rejected by the miners, and a strike lasting two months ensued. One or more companies have offered 85 cents, and the matter will be adjusted on that basis.

The Coal Bluffs mines, third pool, returned to work at three cents April 21st. There is dissatisfaction in the pool at the reduced rate, and the lower pool miners are not in the best frame of mind at the 3½ cent rate prevailing there.

The Grand Jury having ignored the charge of criminal conspiracy brought by Rafferty, Duncan *et al.* against a number of Buena Vista miners, the officers of the Miners' Association in Pittsburg, Pa., are engaged in raising funds to push a second batch of similar cases to conclusion.

The stove manufacturers of Troy and Albany have formed a permanent association, and have agreed to reduce the wages for mounters twenty per cent. This is the same reduction the molders accepted, and it is believed the mounters will agree to it.

The striking coal miners at Irwin Station, on the Pennsylvania Railroad, have established a camp just outside the Westmoreland County coal mines for the purpose of inducing the men at work there to join the strike. The sheriff, fearing trouble, is on the ground, but so far his services have not been needed.

COAL TRADE NOTES.

ALABAMA.

At the Alabama Mineral Exposition, the Pratt Coal Company has a lump of solid coal weighing seven tons and a quarter.

CANADA.

PROVINCE OF MANITOBA.

The improvements this season for receiving coal made by the Northwest Fuel Company at Port Arthur will be similar to those at Duluth, and in anticipation of these improved facilities for discharging, the company has contracted for a large proportion of the lake tonnage at about one dollar per ton. It expects to handle at Port Arthur about the same quantity it handled last year, and is prepared to book orders for the best anthracite coal, on arrival of 1884 coal, at \$10.75 a ton, and the best soft coals at \$9.50. It looks for Western native coal to reduce the tonnage from the East. The company has leased the Saskatchewan mines, near Medicine Hat, and intends putting in new appliances so as to greatly reduce the cost of mining, and enable it to sell to the railroad authorities for a little over half of the present price.

PROVINCE OF NOVA SCOTIA.

Since the purchase of the Springhill collieries by the Cumberland Railroad and Coal Company, work has been pushed on vigorously. Although only three months have elapsed since the company entered into possession, the output now reaches fully twelve hundred tons a day. Within a few weeks, the facilities for mining and shipping will be increased to 1700 tons a day, and by the end of the year will be raised to 2000 tons.

COLORADO.

The Colorado Coal and Oil Company, of the Denver & Rio Grand Railroad Company, has introduced its new Cañon coal in the Denver market. The company owns and works mines on Coal Creek, in the heart of the Cañon City basin.

KENTUCKY.

The Colton mines are running and shipping coal. The coal-works at Peach Orchard are in operation, employing about 80 men, shipping coal to Ashland by rail and thence on the river.

MARYLAND.

The stockholders of the Atlantic & George's Creek Consolidated Coal Company have elected the following directors: Simon Rosenburg (President), Edward S. Myers, Philip Hamburger, Philip Joseph, Milton M. Wheat, Townsend Scott, and Louis Adler.

Work at the Hoffman, Eckhart, New Hope, and Ocean mines is much improved. Borden and Blaen Avon are working nearly full-time.

MISSOURI.

The Keith & Perry Coal Company will soon begin shaft mining northwest of Rich Hill.

MONTANA.

The Great Falls Coal Company, organized for the purpose of carrying on the business of mining for coal in Meagher County and elsewhere in the territory, and disposing of the products, has filed articles of incorporation. The capital stock consists of 100,000 shares, of a par value of \$2 each, making the total capitalization \$200,000. The company is to remain in existence for twenty years. Its principal business office will be at Fort Benton.

Thirty acres of coal land on Deep Creek, Lewis & Clark County, were recently sold for \$1125.

OHIO.

A rumor states that the part of the town of Sabineville that is built over a coal mine is caving in.

PENNSYLVANIA.

ANTHRACITE.

The Buck Mountain Coal Company is doing some big work at the new operation recently started by it near the Mahanoy Tunnel. The slope is down the first lift, and the gangway is driving rapidly. The vein is the Buck Mountain, and has been proved to have an average of ten feet in thickness, of good quality and easily mined. In about three months, shipments will be made over the Lehigh road.

The formal opening of the Ebony colliery, near New Castle, took place a few days ago. The colliery has a capacity of about one hundred tons a day.

The property of the Spring Mountain Coal Company has been sold to the Lehigh Valley Coal Company for \$700,000 cash. Possession will be given when the present lease terminates next December. The Spring Mountain stockholders have ratified the sale.

The old Horton breaker of the Lehigh Valley Company near Port Bowley is to be replaced by a new one of increased capacity during the present season.

At the instance of the Pennsylvania Coal Company, boring operations are under way at a point near Plainsville.

Haddock & Steele's Black Diamond colliery, at Luzerne borough, is to be provided with another second opening adjacent to the main shaft.

Tripp's shaft, near Hyde Park, is finished. It is 324 feet deep, and masons and other mechanics are arranging for the erection of the machinery. The capacity of the colliery will be between 600 and 700 tons a day. The Clark vein is to be developed.

It is stated the Reading Company has notified the individual operators at Shamokin that their leases, requiring them to ship coal over the Reading road or pay a penalty if shipped via the Pennsylvania, will be enforced for last year and monthly hereafter. This will involve nearly all of the Langdon and Big Mountain tonnage, over 400,000 tons of which were shipped last year by the Pennsylvania road. It is reported that the bills for last year's penalty, amounting to \$150,000, have been sent, and operators will ask the Reading Company that they be not pushed for payment in the past.

The roof of the slope of the Fuller Coal Company's mines at Maltby caved in April 24th, and a vast quantity of water rushed into the workings. Fears are expressed that the quicksand about the rock will run into the mine, but as yet the cribs built by the company, in anticipation of a disaster, have held it back. Work is suspended, and 200 men and boys are out of employment.

A charter has been issued to the Union Coal Company to mine coal in Northumberland County. The capital stock is \$400,000.

Vice-Chancellor Van Fleet, of New Jersey, has just decided against the plaintiff in the long-pending case of the Lehigh Coal and Navigation Company against the Central Railroad of New Jersey.

BITUMINOUS.

The following reports show the number of working days of the mines mentioned for the month of March, as stated by the *Du Bois Courier*:

Rochester mine, of Du Bois, worked 19 days, with 337 miners about 100 day hands.

Hildrup mine, of Du Bois, worked 23½ days, with 49 miners and 10 day hands. Prospects not very good.

Falls Creek mine, near Du Bois, worked 13 days, with 55 miners and 8 day hands. Prospects fair.

Hamilton mine, of Reynoldsville, worked 10 days, with 105 miners and 18 day hands. Prospects poor.

Soldier Run mine, of Reynoldsville, worked 8½ days, with 115 miners and 35 day hands. Idle at present, with poor prospects.

Sprague mine, of Reynoldsville, worked 8 days, with 125 miners and 18 day hands. Prospects fair.

The One-Eyed Pit, near Centerville, worked 7½ days, with 78 miners and 12 day hands. Idle at present, with poor prospects.

Tyler Station worked 16 days, with 24 miners and 4 day hands. At present, idle against a reduction.

Claremont mines, in McKane County, ran 18 days, with 103 miners and 25 day hands. Prospects poor.

Walston mines, at Funxsutawney, ran 17 days, with 170 miners and 40 day hands. Prospects poor.

Beechtree mines ran about 15 days, with 130 miners and about 12 day hands.

Pancoast mines ran five days. Twenty cars to the man was the production. There are 18 miners and three day hands. Prospects poor.

Dagus mines, at Centerville. Chute No. 1 ran only three days. Chute No. 2, 22½ days. Four hundred miners and 160 day hands.

COKE.

The coke pool is having a direct and salutary effect upon the prices of coke, says the *Connellsville Courier*. It has now been in actual operation but a little over two weeks, and prices that a month ago ranged from 90 to 95 cents a ton have been brought up with a sudden jump to \$1.10 for furnace coke, and \$1.20 for foundry coke. These figures will be increased still further two weeks hence, and will not stop in their upward tendency until \$1.50 per ton is reached. The demand is stronger to-day than it has been for several months past. Transient orders are on the increase, and the shipments have swelled from 625 cars a month ago to 775 cars at present. The Joliet Steel Company has leased and started the works of the defunct Union Iron and Steel Company, and this has brought another large consumer into the market. The furnaces in the Mahoning and Shenango valleys are running full, with no prospect of shutting down or curtailing production on account of prices.

Of the 9750 ovens in the region, there are 1493 idle and 8266 active. Our review of March 21st reported 1107 idle ovens and 8643 active. The slight increase in the idle list is due wholly to the restriction on the output by the syndicate, which has put out 15 per cent of its 7000 ovens in the effort to strengthen the market and stiffen prices. Aside from this, there are but 433 idle ovens. Of these, the Mount Braddock, Pennsville, and Mahoning works, aggregating 319 ovens, are and have for some time been in litigation. The Mahoning plant, however, has been purchased by Judge Ewing and others, and

will be started up in the not far distant future. Redstone, Youngstown, and Boyle, which have been running but part full, are in full blast. Labor is plenty in the region, but Fort Wayne cars are scarce. The present heavy freight traffic of that road has contributed greatly to this end. Baltimore & Ohio cars are abundant, and the Western shipments over that road heavy. The latter fact is contemplated with uncommon complacency by the Baltimore & Ohio officials. The machinery of the coke pool is in active and successful operation.

The charter of the Connellsville Gas-Coal Company has been renewed. The company is actively engaged in business, having sold its Trotter plant to the Frick Company; but it still owns the Morrell & Wheeler property which is leased for twenty years by the Cambria Company.

TEXAS.

The State Land Board has leased, for a term of six and ten years, 600,000 acres of land at an annual rental of 9½ cents an acre. The sales to actual settlers—all unwatered land—averaged \$2.10 an acre. The leased lands lie principally in the Pan-Handle.

VIRGINIA.

It is announced that operations at the coal mines at Pocahontas will be resumed shortly. Mr. H. Wickham, late manager of the Trotter works, of Connellsville, Pa., has accepted the vice-presidency of the Southwest Virginia Improvement Company, and will at once assume the management of its mines.

A dispatch to the New York *Tribune* states that the mayor of Philadelphia has received a communication from a committee of citizens of Pocahontas, appealing for pecuniary aid in behalf of the widows and children of the miners who lost their lives by the recent catastrophe at that place. The communication stated that many of the people were suffering for the necessities of life, and asked that some relief be afforded the sufferers.

WEST VIRGINIA.

A correspondent of the Pittsburgh *Telegraph* recently visited the different coal fields of the great Kanawha coal-field, and reports that there has been little trade and small profits. In fact, little or nothing was done at many of the works during the latter part of the winter, notwithstanding the cold weather. The breaking up of winter five or six weeks ago, however, enabled the river mines to resume shipments, and they have generally had a good run since. The resuming of the gas-coal shipments over the Chesapeake & Ohio Railroad the middle of March has also brightened up business in the vicinity of Coal Valley, which is the center of what is termed the West Virginia gas-coal field. Here are eleven mines opened into the gas-coal seam, two into the Eagle or coking coal, and one into the cannel coal seam. The mines are generally reached by short inclines up the side of the hills. The coal averages from 5¼ to 6 feet, with a strip of splint or hard coal about 12 inches thick running through it near the top, which is separated by the miners and sent out when shipments of hard coal are made. During last year, the miners were reduced from 62 to 56 cents a ton for coal run over a half-inch screen. The gas-coal is all shipped over the Chesapeake & Ohio road to Richmond and Newport News, where there are extensive coal-bins and docks for handling large quantities of coal, and shipping it by vessels to the Eastern markets.

A few miles below Coal Valley, in the splint coal-field, a number of the companies have recently built tipples at the river, and are prepared to ship both by river and rail, thus getting in a large quantity of coal to the lower markets. The price for mining the splint coal is three cents a bushel over an inch and a half screen. Quite a large amount of coal also goes from these works by rail both East and West. All the mines on the opposite side of the river ship by river to Cincinnati. There is not as much improvement to note along the river this year in the way of new openings as last, but still there are some additions to be made.

Wyant's Eagle Coal and Coke-Works are two miles above Cannelton station; they are the first large coal and coke-works opened below the New River District. They were opened up and are owned and operated by Mr. William Wyant, formerly of McKeesport, Pa., and are known as the Eagle Coal and Coke-Works. This opening was made into what has become known as the Eagle seam, 120 feet below the gas-vein. It is a rich bituminous coal, especially adapted for iron and steam purposes, and is here manufactured into a fine quality of coke. The seam runs from four to five feet in thickness, containing a small soft slate two feet below the roof, in which the running is done. Mr. Wyant is the only person manufacturing coke in this field outside of the New River District. At the foot of the hill, alongside of his coal-tipple, are planted twenty-four beehive coke-ovens, all in blast. Ground has been broken on a bench above the present plant for thirty additional ovens, which will be constructed during the present season. An extended tipple will be built from the new ovens out across the railroad to the river, with machinery arranged so as to lead coke directly from the oven yards to either railroad cars or barges in the river. This, we believe, will be the only coke-works in the county where coke can be loaded on the river from the oven yards. There is always a good stage of water in the Kanawha River in front of this property; and when the new dam (No. 2) now building at Cannelton is finished, an additional six-foot stage of water will be given up here, enabling barges to get up and down the river at all seasons of the year. In the mine on the hill, about 175 men are employed. The coal to the ovens is sent down the hill through a tubular iron pipe. The shipping coal is sent down the plane in the mining cars.

About a mile farther up the river, it is the intention of Mr. Wyant to open another large work, to be known as the Diamond, and where he will build a number of coke-ovens, with machinery, etc., for shipping the products both by rail and river. These works have run very steadily during the year, losing some little time during January and February. The prospects are good for plenty of work this year.

The St. Clair Coke Company, a little over a year ago, opened up in the Eagle seam, a short distance above the Eagle works, a fine mine, and built thirty large beehive coke-ovens, all of which are in blast. The mine is opened into the coal on the side of the mountain 250 feet above the works, and is well worked. From 60 to 70 men are employed. This company, at its meeting in February, decided to build at once 30 additional coke-ovens, which will necessarily double the present working force. A number of new houses will also be built. The coal is dumped at the mouth of the mine into a tubular pipe two feet in diameter, and run down the mountain 230 feet to a large bin, from which it is fed to the ovens in a larry. All coal mined here is used in the coke ovens.

About two and a half miles above the Eagle, at Mount Carbon, the great Kanawha Colliery Company opened mines during the past year. It has built large works, and is prepared to ship both by rail and river, but as yet has not made a very large output. About forty men are employed.

The Faulkner mines are now running fairly, employing about fifty men. They are working in the gas-seams at present.

The Crescent Works have two mines in operation one mile above Coal Valley. Both of these openings are made into the gas-seam. The old or No. 1 mine is reached by an incline 325 feet in length. The new or No. 2 mine was opened into the same coal a few hundred yards farther down the road, and is reached by an inclined plane 275 feet in length. An opening has also been made into the Eagle seam, and a fine large tipple built at the river, from which they will be able to load and ship large quantities of both the Eagle and gas-coals to the lower market when No. 2 dam is finished. A large ventilating surface is now building near the mouth of No. 1 mine, by which both mines will be well ventilated. Since resuming the gas-coal shipments, No. 1 and No. 2 mines have been running steadily. About 150 men are employed.

On the Morris Creek branch, a short distance from Coal Valley, the Carver Brothers opened up a large mine in the coal-gas seam several years ago, and have been successfully operating it, shipping during last year about 35,000 tons

of clean coal. An inclined plane 175 feet in length reaches the mouth of the mine, in which about 75 men are employed, averaging three-quarter time. The coal-seam is about five feet thick. The mine is kept in good condition. They have recently secured a lease of additional territory, and are driving entries preparatory to opening up larger workings.

The works of the Mount Morris Coal Company are also on Morris Creek, near the Carver mine. An inclined plane 195 feet in length runs up the side of the mountain to its opening into the gas-coal seam. It ran steadily during the last year, shipping about 34,000 tons of coal. Like all the other mines in the neighborhood, orders were scarce during January and February, and but little work was done. They are running steadily, employing about 50 men.

Duller times have been experienced in Coal Valley this spring than for several years back. However, since the resumption of gas-coal shipments, the miners have all got to work again. The Cannel Coal Company, on the opposite side of the river, has only been mining fuel coal from its lower seam this winter, having a large stock of cannel coal in its yards from which orders have been filled. It is about resuming mining in the cannel coal. The Coal Valley Company's mine is nearly worked out, only about 25 men being employed in mining fuel coal. The Strouhan mine has been idle for some time. M. T. Davis & Co. are operating the Eureka and Excelsior mines at the upper end of the Morris Creek branch, employing about 75 men. Both these openings are in the gas coal seam. The Union mine, below town, is also running as steadily as cars can be had, employing 60 men in the gas-coal seam. The Kanawha Mining Company and the Wyoming Manufacturing Company have their mines in full operation at present.

The Kanawha Cannel Coal Company has leased 500 acres up the Paint Creek Railroad, five miles back from the river, and begun mining and shipping both by river and rail a large quantity of fine cannel coal. The mine is reached by an inclined plane 1000 feet in length. Some improvements have recently been made in the underground work, enabling it to get out coal more readily and prepare for its increasing trade. This is one of the largest seams of cannel coal in the country, running from three to four and a half feet in thickness. This coal has but recently reached the Eastern markets, where it is received with favor. About 60 men are employed.

The Crown Hill Splint Coal Company has one of the largest and best producing mines of splint coal along the river. About one year ago, an opening was made into the upper seam, where there is an excellent mine of splint coal, averaging four feet four inches in thickness. This work has been well opened up and laid with T-iron rails to the face of the coal in all rooms. This opening is made in what is known as the Lewisburg seam, 100 feet above the Coalburg seam. Preparations are making for shipping largely this season, both by rail and river, these being tipples for both. At present, 110 men are employed.

The Robinson Coal Company is the largest and oldest operator at Coalburg. It has two openings high up in the Coalburg splint coal seam on the mountain. It is running steadily at present, putting out 7500 bushels of coal daily, shipping by rail and river. In and about these works, 180 men are employed. Three cents a bushel are paid. One mile farther up the road, Mr. S. M. Buck operates the East Bank colliery in the same vein, employing 45 men. At Blacksburg, the Edith Mason mines are running, employing 75 men. The opening is in the Hampton seam, averaging about three feet. Three cents per bushel are paid. On the opposite side of the river, the Peabody Coal Company is shipping about 4000 bushels daily, employing 100 men. The Cedar Grove Coal Company, a little farther up, employs about 30 men, and ships by river. The North Coalburg mine has been idle some time. A mile or two farther down the river, Graham McFarlane opened up a mine about a year ago, and is running steadily, employing 50 men, shipping coal by river.

The Winifrede Coal Company owns 13,000 acres of coal property of Fields Creek. Up Fields Creek, five miles back from the river, three openings have been made into the coal and two large and fine tipples built. The underground work is in good condition, dry and well ventilated. The coal averages four feet nine inches, and will reach six feet in some places. No. 2 mine has not been on, but the entries are driven and rooms turned to enable them to put in sixty men at any time. A standard gauge road was built by the company to the river, connecting with the Chesapeake & Ohio road. A large tipple was also built at the river by which all the products of the mines are shipped, for which purpose there are a large number of barges and boats. About 200 men are employed, the miners receiving three cents per bushel over a two-inch screen.

The works of the Campbell's Creek Coal Company, at Malden, are among the oldest and largest yielding mines on the Kanawha River. From two large mines, 16,000 bushels of coal are daily loaded in barges at the river. The Boice mine is entered by a slope, and contains the highest coal on the river, averaging over six feet in thickness. No. 2, or the Calderwood mine, is a drift opening. It contains excellent coal, averaging from three and a half to four feet. About 250 men are employed. The miners at all the works here receive 2½ cents a bushel.

The Dana Brothers' mine is another large mine of splendid coal opened and entered by a slope alongside of the Boice mine. The coal here averages about six feet. About 130 men are employed. The coal is carried over the tram-road of the Campbell's Creek Company to its large tipple at the river. Each of these companies has a locomotive for hauling the coal to the river. The prospects are fair for a good summer's work.

The Pioneer Coal Company is in full operation, but its mines are almost worked out. It is employing in No. 1 and No. 2 mines from 150 to 175 men. It is prospecting for coal some five miles farther up the creek, and, should it succeed in finding a good seam, will extend the road up there and open up. The No. 3 mine has been abandoned.

GENERAL MINING NEWS.

ALABAMA.

The State Mineral Exhibition was opened at Birmingham, April 23d, by the Governor. About 10,000 persons were present.

ARIZONA.

PIMA COUNTY.

GUNSIGHT.—Reports from Philadelphia state that sufficient money has been raised for the purchase of the mines and for the development of them on a large scale.

TOTAL WRECK.—In the mine, they are drifting on the 440-foot level, and the character of the ore is better than has ever before been taken from the mine. The company has twenty-seven men at work on the mine, which is to be developed before starting the mill.

YAVAPAI COUNTY.

BLACK WARRIOR.—The shaft has attained a depth of 200 feet, with its north drift in 450 feet. It is constantly worked, and never was more promising in appearance.

CALIFORNIA.

MONO COUNTY.

MAY LUNDY.—Twenty five additional stamps will be added to the mill this spring. It is said that a tramway will be built on the face of the bench between Lake and Mill cañons, a distance of about 1200 feet, on the line of the tramway removed two years ago. This would save considerable transportation work, if the ore could be run into or close to the mill.

BODIE DISTRICT.

W. H. Lent, Secretary of the Bodie Mining Company, died in San Francisco, April 23d. It is stated that he committed suicide on account of ill-health.

BODIE CONSOLIDATED.—During the week ended April 12th, there were crushed

at the mill 138 tons of ore, and at the Bodie Tunnel mill 304 tons. The average assay value of the pulp is \$49.53, and that of the tailings \$3.60 a ton. At the mine, the south drift from the west cross-cut, 200-level, has reached a distance of 25 feet, a gain of 10 feet. Here they expect shortly to make a connection with uprise No. 1 on the Fortuna. On the 200-foot level, winze No. 2 has made connection with the uprise from 300-foot level. On the 300-foot level, uprise No. 1 has been advanced 8 feet; total height, 170 feet, without any material change. South drift on the 300-foot level, Fortuna vein, is extended 7 feet; total length, 205 feet, with no change. The west cross-cut from north drift, 300-foot level, has cut the Fortuna vein, which had faulted to the west. The vein is about 12 inches wide, low-grade ore. An uprise has been started at this point to prospect the ledge above. The north uprise on the 400-foot level has been advanced 5 feet; total height, 108 feet. The vein is about 3 feet wide, but much broken.

COLORADO.

CHAFFEE COUNTY.

The failure of the banking-house of Hiller, Hallock & Co., at Buena Vista, is announced. The liabilities are placed at \$60,000, of which \$42,000 are deposits.

FAIRPLAY.—It is reported that this mine has been sold for \$15,000.

FREE GOLD.—The company's property is operated under lease by the Buena Vista Mining and Reduction Company, which also owns and runs a 15 stamp mill, working its own and such custom ores as are offered. The group consists of some eight or nine claims, among which are the Free Gold, Friendship, Arthur, Dundena, and Little Spring, all locations on the same vein. A large amount of work has been done by the old company, but, for lack of proper management, the result was not satisfactory.

GLADSTONE.—This tunnel, in Middle Cottonwood, ten miles west of Buena Vista, is in about 500 feet. Eleven hundred feet more are required to strike the vein.

MADONNA.—Shipments of ore have been resumed.

OSHKOSH.—A lot of ore averaging twenty-nine ounces in silver and twenty-three per cent in lead has been shipped.

CLEAR CREEK.

CORRY CITY.—Sinking on the main shaft is pushed by double shift, and good progress is made. The lessees will shortly begin shipping the concentrating dirt to the mill in Georgetown. Besides the quantities of concentrating dirt piling on the dump, a great deal of smelting ore is produced, which runs well.

SUMMIT CONSOLIDATED.—A strike was made last week on the hanging-wall of the 170-foot level. The breast shows from 4 to 5 inches of very rich ore, and in the stope, which has been opened but 12 or 15 feet, there are shown from 7 to 8 inches of ore the entire distance.

WIDE WEST.—Work will shortly begin at the mine, which has been closed for some time. The difficulties with the company have been settled.

YOUNG AMERICA.—This mine, on Red Elephant Mountain, which has lain idle for several years, has been started up. The shaft is cleaning out and retimbering. It is down 210 feet. Considerable ore is in sight.

DOLORES COUNTY.

PASADENA SMELTING AND MINING COMPANY.—It has been definitely decided by this company to locate its works at Rico. The company proposes to do its own refining at Rico, and charges for treatment will be \$20 a ton for dry ores and \$15 a ton for lead ores. The works will be started with a capacity of from 50 to 60 tons of ore daily, and when success is assured, this will be increased to meet all requirements.

FREMONT COUNTY.

The Leadville *Herald* declares that the gold discovered in the auriferous gravel from the Pisgah District, north of Cañon City, exists as chloride of gold, and is consequently salted. The reported discovery created great excitement, and caused a great many people to visit the so-called gold-fields.

GILPIN COUNTY.

CALIFORNIA.—The company keeps 25 stamps of the Gregory mill running on ore from its California mine, on Quartz Hill. These, with the full capacity of the Hidden Treasure mill, give it a capacity of 75 stamps in constant employment.

CENTRAL.—The new plant of machinery for the Galena mine, the property of this gold mining company, has arrived, and is getting into position.

LITTLE ALICE.—The Gilpin County Water Supply Company has purchased the property of this mining company, on Fall River, Clear Creek County, near Silver City, for \$50,000. This gives the company certain water rights along the stream and its tributaries that will afford it a large supply of water, covering as it does a large area of water-shed. The company anticipates beginning work on the line of its proposed ditch as soon as possible.

GUNNISON COUNTY.

FOREST QUEEN.—The mine has been closed for an indefinite period. It is said that the company proposes to build a mill to treat the low-grade ore. The mine will not start up again till the mill is built.

HINSDALE COUNTY.

CALIFORNIA.—The parties who have recently worked the mine, it is said, will purchase it, and begin operations on a large scale.

CROOKE MINING AND SMELTING COMPANY.—The development of the Ute and Ulé goes steadily forward. On the Ute, drifts are running both ways from the bottom of the shaft in the main level, and disclose good ore-bodies. In the Ulé, the main working-shaft is going down steadily at the rate of 12 feet a day; it is sinking in the country-rock alongside the lode, owing to the unusual quantity of water that passes through the vein. The concentrator is getting into order, preparatory to running when there is water in sufficient quantity.

LAKE COUNTY.

The Leadville *Herald* reports the following:

A. Y.—The resources are rather limited, but active exploration-work is continued. The developments, consisting of three shafts, ranging in depth from 206 to 345 feet, and thousands of feet of drifts and winzes, have quite thoroughly developed the southern portion of the claim.

CALIFORNIA & COLORADO.—Work has been suspended on this tunnel.

IOWA GULCH.—The company is to be reorganized. The property, once held at \$280,000, was sold for \$300 to Mr. Jennings, who bought it on behalf of the stockholders.

IRON SILVER.—The product of the mines during March was 3400 tons, being a falling off from the previous month of about one hundred tons. The output of the properties is now almost equally divided between the mines on Iron Hill and those of California Gulch. In addition to the leases previously let, there were issued during the past week a lease on the South Iron mine waste-dump, and four leases on the Bullseye claim. At the Moyer shaft, the new shaft-house is nearly completed. East of the shaft-house is the engine-house, containing a hundred horse-power engine, connecting by Frisbie clutches with two drums about ten feet in diameter each. These drums carry an inch and a quarter steel cable. The developments from the Moyer shaft show a large quantity of sulphide ore, too low in silver, however, to be profitable at present.

LEADVILLE.—This gold and silver mill is overhauling, preparatory to a test-run of one thousand tons of low-grade iron ore from the Chrysolite mine. The repairs will be completed, when the mill will be immediately started up.

LITTLE CHIEF.—This mine, owned by the American Mining and Smelting Company, has closed down again, and will wait until further interruption from the snow will be impossible.

MORNING AND EVENING STAR.—About one hundred different parties have examined these properties, which are offered for lease. It is thought bids will be made offering as much as sixty per cent royalty.

FRYING PAN DISTRICT.

The mines on the west side of the Arkansas River, almost without exception, promise to make large productions this year, and eclipse many older fissure-vein districts in Colorado. In spite of the snow and the consequent expense incurred in hauling ore to the smelters at Leadville, regular ore-shipments have been made from a number of the mines, and several have stored on their premises considerable mineral, awaiting more favorable weather for shipping. The ore, as a rule, runs very well in the precious metals, and the success that has attended the operation of a few of the mines has created a new impetus, resulting in general activity throughout the entire section.

At present, from seven to ten producing mines are operated. Several new properties on Sugar Loaf Mountain have been added to the list of mines during the past winter, and will begin ore-shipments with the departure of the snow. One of these properties is reported to have several returns from its assayer of two ounces in gold to the ton in addition to high values in silver.

Parties have leased the Shields mill, and are repairing and overhauling it, preparatory to resuming operations. The mill is to be started up as soon as a supply of fuel can be got in, and the road open so that ore can be transported from the mines to the mill at some reasonable figure.

The Sugar Loaf Mountain mines are paying from three to four dollars a ton for hauling ore to the Leadville smelters, a distance of six miles. The ore is hauled about half the distance on sleds, and then transferred to wagons.

LA PLATA COUNTY.

SAN JUAN & NEW YORK.—The smelter began operations April 16th. The company has from 300 to 400 tons of ore at Silverton awaiting shipment.

PARK COUNTY.

During the last three months, Stone & Mackey have sunk a shaft on the Dauser lode, in Mosquito Gulch, to a depth of fifty to sixty feet, and in so doing have taken out about 200 tons of free-milling ore, containing about \$30 per ton in gold. The ore is slightly higher in grade than that taken out last fall. The greatest improvement, however, is in the vein, which, from five to six feet in width at the bottom of last summer's stope, is now twelve feet in width at the bottom of the shaft, and a large quantity of ore is opened and is available for early shipment. The new mill of the Nestor Company, now nearing completion, is almost within stone's throw of the Dauser dumps, and it will likely receive the largest share of this ore in case it proves capable of handling it.

PITKIN COUNTY.

The Aspen smelter is reported to have purchased to date over \$250,000 worth of ore.

The Omaha & Grant Smelting Company has established an agency at Aspen for the purchase of ore.

RIO GRANDE COUNTY.

Two stamp-mills are to be built at Summitville. Glowing reports are received from the mines in the vicinity of this place.

SAN JUAN COUNTY.

The first freight train from Durango entered Silverton April 16th, after a blockade of seventy-six days.

SUMMIT COUNTY.

EAGLE BIRD.—The water will be pumped out of the mine, and the property prepared for active operations.

MCCLELLAND.—The mill has begun operations.

ROBINSON.—According to the *Ten-Mile News*, a new ore-body, not very promising but near the surface, has been struck. This property is now almost exclusively in the hands of leasers; but it is stated that in the early summer operations will begin on company account.

LA CROSSE.—Mr. John Scudder informs us that this company has United States patents for property on the Ashtabula, Kansas, Munroe, and Burroughs lodes; also patents for dumping-ground at the mouth of the tunnel that is into Quartz Hill about 1700 feet. The Burroughs and Kansas lodes are worked under leases, and the tunnel will continue, as arrangements to that effect have been perfected.

DAKOTA.

FATHER DE SMET.—The superintendent writes, under date of April 5th: Inclosed find express company's receipt for bar No. 180, containing 1309.50 ounces gold, the result of the clean-up of the mill for the last half of March, making a total of 2400.90 ounces for the month—a very good showing, considering every thing. At the mine, work is pushed ahead everywhere in full blast, with the general outlook very encouraging. The stopes in the Eureka and Justice cuts are looking well and in fine condition for breaking ore economically. Golden Gate Chamber, 2d level, shows an improvement in the character of the ore; therefore a continuation of fair shipments is to be expected. Work in west side of South Header, 3d level, shows considerable ledge matter, but as yet low in quality. The report of the mine, from April 7th to April 15th, shows ore extracted from the first, second and third levels, 2100 tons; ore milled, 2100 tons.

MEXICO.

The *Mexican Financier* reports the following: A conducta arrived at Mazatlan from the Faisan mine at Panuco with 63 bars of silver of a value of over \$70,000. One of the mines at Tlalpujahua is producing ore ranging from \$50 to \$125 a ton.

In the course of the year 1883, the Encino mine at Pachuca produced 7788 cargas of ore, with an average of 10½ marks; the Cristo mine, 22,011 cargas, with an average of seven marks; the Tetitlan mine, Mineral del Chico, 1000 cargas, at nine marks; the Arevalo, also of Chico, 21,328 cargas, at eight marks.

The Mineral de los Reyes, State of Jalisco, is reported in bonanza. The Refugio mine alone exported to Europe last month 1800 marks of silver sulphurets, and it is estimated that the same monthly yield will be kept up. At a depth of 50 meters, a considerable quantity of ore has been struck, yielding an average of four marks and over to the carga of 12 arrobas.

MICHIGAN.

CONGLOMERATE.—Seventy-five men have been discharged, and only one shift will be worked in the mine at present.

DETROIT.—The mine is looking much improved over the showing of a few months ago. The shaft is down about 200 feet, and shows 15 feet of ore. It is the intention to sink another level below that which has just been started at the bottom of the shaft and to keep on in this manner as rapidly as possible.

HANCOCK.—It is stated that the mine will be closed down in May.

MINNESOTA IRON COMPANY.—Active mining operations are pushed at the Breitung and Stones mines in the Vermilion District, and they will have in the stock-piles there fully 60,000 tons of ore by the last of July, at which time the contractors promise that they will have the road finished from Two Harbors to the mines.

PEWABIC.—The Boston *Herald* says: The suit to restrain the directors from further action in the matter of reorganization came up for hearing in the United States Court at Grand Rapids, April 14th, and involved in the issue is a suit

FINANCIAL.

Gold and Silver Stocks.

NEW YORK, Friday Evening, April 25.

There was quite a change in the mining market this week, and business was more brisk and prices were firmer than for some time past. The low-priced stocks were especially noted for their activity, and large blocks of these stocks were sold. Their prices, however, were not materially affected, but remained about stationary. The Comstocks ruled weak, but show a better business than of late. The Leadville stocks were firmer, and Iron Silver ruled strong at the close to-day. The Bodie stocks were rather inclined to be weak, with the possible exception of Bodie. They show but a moderate business. A full summary of the market is given below. The total number of shares sold aggregates 115,605, against 61,865 last week.

The Comstock shares were more actively dealt in than for some time past, but were generally inclined to weakness. California sold from 21@17c., with a fair business. Consolidated Virginia was very actively dealt in at weak prices; it declined from 25@19c. Sierra Nevada was also weak under a fair business, selling from \$1.90@1.50@1.55. Union Consolidated declined from \$2.10@1.70, and was moderately dealt in. Mexican was quiet and weak, selling from \$1.10@95c. Ophir was also weak under a small business, declining from \$1.55@1.25. Sutro Tunnel was fairly dealt in at steady prices, selling from 14@13c.

The Leadville stocks were moderately dealt in at firm prices. Amie sold at 6c., with a small business. Chrysolite was quiet and steady, selling at 98@86c. Dunkin sold at 18c. Breece was very actively dealt in at steady prices; it sold from 25@31@28c. Iron Silver was weak at one time, but rallied at the close; it sold from 80@95c. Leadville was quiet and steady, selling from 35@39c. Little Chief also sold at steady prices, and was but moderately dealt in; it was quoted from 43@46c. Little Pittsburg sold at 35c., and Climax at 4c.

The Bodie stocks were inclined to weakness, and were moderately dealt in. Bodie Consolidated sold at irregular prices, under a moderate business; it was quoted from \$4.15@4.60@4.40. Standard was weak, declining from \$1.75@1.55; it was fairly dealt in. Bulwer was quiet and a little weak, selling from 95@85c. Mono sold at \$1.15.

The Tuscarora stocks were quiet and steady. Grand Prize sold from 30@25@26c., with a fair business. Belle Isle was quiet and steady, selling from 34@37@36c. Navajo was a little weak, selling from \$2.60@2.45, with a moderate business.

In the miscellaneous list, Alice was quiet and strong, selling for \$2.85@3. Eureka Consolidated sold also at strong prices, and was fairly dealt in; it was quoted from \$4@4.25@4.15. Green Mountain was quiet and steady, selling from \$2.05@2.10. Hall-Anderson was also quiet and steady, and sold at \$1.35 throughout. Horn Silver sold at irregular prices, under a moderate business; it was quoted from \$6.63@7.63@7.13. Robinson was quiet and steady, selling from 19@20c.

Barcelona was quiet at 16c. Big Pittsburg ruled firm at 60c. Central Arizona was quiet and steady at 21@20c. Decatur sold from 1@2c., with a small business. Harlem was quiet, selling from 5@6c. Lacrosse also ruled steady, selling from 14@13c., with a fair business. Rappahannock was very actively dealt in at steady prices; it sold from 19@17c. Sonora Consolidated was also very actively dealt in, but was irregular; it sold from 9@5@6c.

MEETINGS

The St. Bernard Coal Company, at office of the company, Earlinton, Ky. Annual meeting of stock holders May 7th.

DIVIDENDS.

The Bodie Consolidated Mining Company, of California, has declared a dividend of fifty cents a share. Eastern stockholders may be paid at the office of Laidlaw & Co., No. 14 Wall street, on May 5th.

The Kentucky Mining Company, of Nevada, has declared a dividend (No. 45) of ten cents a share, payable April 18th, at San Francisco.

The Ontario Silver Mining Company, of Utah, announces its ninety-fourth dividend of \$75,000 for the month of March, payable in San Francisco, or by

Messrs. Lounsbury & Haggin, No. 15 Broad street, on April 30th. Total dividends to date amount to \$5,450,000.

The Oxford Mining Company, of Nova Scotia, has declared dividend No. 12, of two and a half per cent upon the capital stock, payable on the 26th.

DIVIDENDS PAID BY MINING COMPANIES DURING THE MONTH OF APRIL AND FROM JANUARY 1ST, 1884.

NAME OF COMPANY.	Location of mines.	Paid during month of April.	Since January 1st, 1884.
Atlantic, c.	Mich.		40,000
Basick, g. s.	Colo.		100,000
Bodie Consolidated, g.	Cal.	50,000	100,000
Bonanza King Cons., s.	Cal.	25,000	100,000
Bulwer Consolidated, g.			10,000
Calumet & Hecla, c.	Mich.		500,000
Carbonate Hill, s. L.	Colo.	10,000	10,000
Central, c.	Mich.		40,000
Copper Queen, c.	Ariz.	100,000	200,000
Cosmopolitan, s.	Utah.	25,000	25,000
Derbec Blue Gravel, g.	Cal.		20,000
Father de Smet, g.	Dak.	20,000	40,000
Hecla Cons., s.	Mont.	15,000	60,000
Homestake, g.	Dak.	25,000	100,000
Hope, s.	Mont.		12,000
Horn Silver, s. L.	Utah.		300,000
Idaho, g.	Cal.	15,000	62,000
Iron Silver, s.	Colo.		100,000
Jocuitita, s.	Mex.		50,000
Kentuck, s.	Nev.	3,000	12,000
Lexington, s.	Mont.		80,000
Little Chief, s. L.	Colo.		20,000
Mount Heasant, g.	Cal.		15,000
Ontario, s.	Utah.	75,000	300,000
Original	Mont.		9,000
Oro Grande	Cal.		6,000
Osceola, c.	Mich.		25,000
Oxford, g.	N. S.	2,500	10,000
Paradise Valley	Nev.		20,000
Plymouth Cons., g.	Cal.	50,000	200,000
Quicksilver, Pref. q.			12,000
Quincy, c.	Mich.		180,000
Rooks, g.	Vert.	8,500	8,500
Security, g. s. L. c. & I.	Colo.	25,000	25,000
Small Hopes Con.	Colo.		50,000
Standard, Con., g.	Cal.		75,000
Syndicate, g.	Cal.	10,000	30,000
United Verde, c.	Ariz.		60,000
		\$459,500	3,007,400

G., gold; S., silver; L., lead; C., copper; Q., Quick-silver; C., coal; I., iron.

PIPE LINE CERTIFICATES.

Messrs. Watson & Gibson, petroleum brokers, No. 49 Broadway, report as follows for the week:

Saturday last, the market opened at 97 1/2 c., sold up to 98 3/4 c., and closed at 97c. after touching 96c. On Monday morning, the market opened off 1 1/2 c., owing to the report that the Lang well at Macksburg had been opened, and was good for over 100 barrels the first day. This is a field of small wells, and the Lang well is over a mile ahead of development, and the trade is easily scared concerning that field. On top of the report about the Lang well came the news that the Schiedewauth well, Baldrige, Butler County, Pa., was good for 1000 barrels, and under the influence of these reports and the consequent heavy selling, the market closed heavy at 93 3/4 c., or within 1/2 of the lowest of the day. Tuesday, the market opened a trifle firmer at 94 1/2 c., closing weak at 93c., and 92 3/4 c. after the Board. Wednesday, the market opened at 92 3/4 c. sold up to 93 3/4 c., and then down to 91 1/2 c., closing 93c. The price of Refined was lowered 1/2 c. to 8 3/4 c. The market on Thursday was very irregular, opening at 92 3/4 c., sold up to 94c., and closed 93 1/2 c. The Mining Exchange sold very heavily, and the result was lower carrying charges, and the certificates were in demand. To-day (Friday), the market had a firm undertone throughout the day, opening up at 93 3/4 c., and closing 94 1/2 c., with 95 1/2 c. sales just before the close. The improved feeling and market during the past two days are due to the decline of the Lang well, and growing suspicion that the Macksburg district has been exaggerated, and to buying to cover shorts.

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

April	19.	Opening.	Highest.	Lowest.	Closing.	Sales.
	19.	\$0.97 1/4	\$0.98 3/4	\$0.96	\$0.97	7,754,000
	21.	.95 1/4	.95 1/4	.93 1/4	.93 1/4	9,879,000
	22.	.94 1/4	.94 1/4	.93	.93	6,289,000
	23.	.92 3/4	.93 3/4	.91 1/2	.93	9,530,000
	24.	.92 3/4	.94	.92 1/4	.93 1/4	7,009,000
	25.	.93 1/4	.95 1/4	.96 3/4	.94 1/4	6,245,000
Total sales						46,708,000

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

NAME OF COMPANY.	CLOSING QUOTATIONS.					
	April 18.	April 19.	April 21.	April 22.	April 23.	April 24.
Albion						
Alpha						
Alta	1 1/4	1 1/4	1	1 1/4	1 1/4	1
Argenta						
Bechtel						
Belcher	1 1/4	1 1/4	1	1	1	1
Belle Isle						
Best & Belcher	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
Bodie	3 3/4	4	4 1/4	4 1/4	4 3/4	4 3/4
Bullion						
Bulwer						
California	.20	.20	.20	.20	.20	.20
Chollar	.90	.85	.85	.90	.90	.75
Con. Pacific				.30		
Con. Virginia		.25	.20	.20	.20	.20
Crown Point	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
Day						
Elko Cons.						
Eureka Cons.	4 1/4	4 1/4			4 1/4	4 1/4
Exchequer						
Gould & Curry	1 1/4	1 1/4	1	1 1/4	1 1/4	1 1/4
Grand Prize						
Hale & Norcross	1 1/4	1 1/4	1	1 1/4	1 1/4	1
Independence						
Martin White				60		
Mexican	1 1/4	1	1	1	1	.90
Mono						
Mount Diablo	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	
Navajo	2 3/4	2 3/4	2 3/4	2 3/4		2 3/4
Northern Belle						
North Belle Isle						
Ophir	.60	.50	.45	.45	.45	.25
Overman						
Potosi	.50	.50		.45	.45	
Savage	.35	.30	.30	.30	.25	.20
Scorpion						
Sierra Nevada	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
Silver King						
Tip Top						
Union Cons.	2	2	1 1/4	1 1/4	1 1/4	1 1/4
Utah	.85	.70	1 1/4	1 1/4	1 1/4	1 1/4
Wales Cons.						
Yellow Jacket	1 1/4	1 1/4	1 1/4	1 1/4		

Copper and Silver Stocks.

Reported by C. H. Smith, 15 Congress street, Boston, Stock Broker and Member of the Boston Mining and Stock Exchanges.

BOSTON, April 24.

The transactions of the past week in copper stocks have been almost wholly confined to Calumet & Hecla, which has now become purely speculative, and weak holders are disposed to sell out before the price settles down into the fifties. There is a rumor current on the street that the company has borrowed money to pay the past two dividends, and that it is in debt \$1,000,000. If this is true, the prospect for a dividend in August is rather doubtful. The market opened at \$170, and gradually settled on the daily sales to \$171, which was the price to-day, closing at \$172 bid. The sales aggregate about 400 shares, well distributed through the week in small lots. The market for ingot copper is dull, but the price is fairly held; but it is only a question of time, we think, as, with the large production and the limited consumption at the present time, a lower range of prices must inevitably result. In Quincy, the dealings have been limited, and small lots have sold at \$37 1/2. To-day, it dropped to \$36, which was bid for it at the close. Franklin continues weak, and buyers scarce. An order to sell 100 shares at best price caused a drop to \$8 1/2, and it is now offered at \$9, with \$8 1/2 as the best bid. Atlantic sold at \$8, same as last week. Osceola was unchanged at \$14 1/2. Huron sold at \$1 1/4, which is an advance of 3-16 from last sale. Superintendent Vivian writes, April 18th, regarding Huron: We started the new head stamps and washing machinery yesterday, all of which seems to work like a charm. Soon after May 1st, we hope to start up for regular work. No news at the mine except that the ninth level, south of No. 8 shaft, seems to improve as we advance. Pewabic sold at \$1 1/2, 50 shares only; but \$1 1/4 is bid for it. The last report from the mine says that the mine has not looked so well for over a year. The suit against the directors of the company, to enjoin them from proceeding in the matter of reorganization, has resulted in an injunction, and the affairs of the company will now go into the hands of a receiver.

In silver stocks, there is a little more activity. Bonanza sold freely at \$1 1/4. Catalpa, on the report of a forthcoming dividend, advanced from 35@40c., with last sale at 37 1/2 c. Sullivan was in demand early in the week, and advanced to 17@18c., but the stock coming out freely, it fell off again to 10c., closing at 10c. bid. Bowman Silver has ruled dull at 14@17c. Empire sold at 12 1/2 c. Dunkin declined to 18c. In miscellaneous stocks, there is very little doing.

3 P.M.—At the afternoon Board, Calumet & Hecla was firmer, with sales at \$174, which was also bid,

\$175 asked. Quincy, \$36½ bid. Franklin, \$8½ bid, \$8¾ asked. Atlantic, \$7½ bid. Osceola, offered at \$14½, no bid. Pewabic, offered at \$1½, no bid. Allouez, \$1 bid, \$1½ asked. Bonanza, \$1½ bid.

METALS.

NEW YORK, Friday Evening, April 25.

Copper.—It appears that there are negotiations pending for the sale of the usual heavy quantity of Lake copper, and it is expected that they will be closed at an early date. It seems likely that the figure will be near 14½ cents. During the week, small lots of Lake copper have changed hands at that figure, and the market exhibits some tendency to weakness. Other brands are freely offered at 13¾c., and in some instances at less.

One encouraging feature is the disposition reflected by cables from abroad of a better feeling in England. Chili Bars are cabled to-day £57 15s., while the latest figure for Best Selected is £63.

The British Board of Trade has published the following statistics for the first quarter :

	Jan. 1 to March 31—		
	1884.	1883.	1882.
Imports :			
Pure in pyrites.....	4,082	4,348	4,319
precipitate.....	4,552	5,414	4,686
ore.....	6,639	2,750	2,968
regulus.....	2,796	2,012	1,819
Bars, cakes, etc.....	10,481	9,097	8,566
	28,550	23,621	22,358
Exports :			
Raw (English).....	4,763	4,200	2,703
Sheets.....	6,363	4,466	3,292
Yellow metal at 60 per cent.....	2,644	2,757	2,240
Brass at 70 per cent.....	1,010	873	736
Foreign.....	14,780	12,296	8,980
	3,049	2,209	3,235
	17,829	14,505	12,215

The following are the returns of the imports and exports of metals for February, according to the Bureau of Statistics :

Pounds.	February.		Eight months.	
	1884.	1883.	1884.	1883.
Fine copper in ore.....	277,439	not st.	1,320,975	not stated
Pig and old.....	12,343	24,181	324,765	253,712
Copper Re-Exports.				
Fine copper in ore.....	not st.		312,299	not stated
Pig and old.....			41,159	2,312
Copper Exports.				
Ore, tons.....	1,078	368	10,355	2,242
Ingots and old.....	261,365	90,798	12,196,038	2,187,185
Sheets.....			59,006	
Tin Imports.				
Net tons.....	1,162	948	9,902	9,013
Spelter Imports.				
Blocks and old.....	283	162	2,235	6,610
Spelter Exports.				
Oxide, tons.....	16	6	123	130
Blocks and sheet.....	26	15	45	403

Tin.—This metal continues strong, closing at 19@19½c. The spot stock is scarce; futures, however, are offering at lower figures. London cables the market firm at £85 10s.

Lead.—On Saturday last and on Monday, holders disposed of 5000 tons and upward of lead at 3·75c., partly for June, July, and August delivery. Since then, 300 tons have been sold at 3·70c., and some odd lots, each of 150 tons, have been forced on the market at 3·62½c. and 3·65c. Consumers here and elsewhere are stocked now as they rarely have been before, and are indifferent about buying, so far as the covering of actual needs is concerned. It is possible, however, that they may be induced to enter a proposed pool to take about 1000 tons at 3¾c. At the present time, holders are asking 3·70@3·75c., but lead is not salable at that figure, though it is probable that a fair amount might be taken at 3¾c. It seems likely that for the immediate future the market will continue dull, with a tendency to lower figures.

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

Our market is firm. Sales for the week sum up 80 tons of Refined Lead, at 3·62½c.; 400 tons, at 3·60c.; 500 tons, for next month's delivery, at 3·50c.; and 180 tons of Chemical Lead, at 3·55c., delivered at buyer's works, this month's delivery. Receipts during the week foot up 900 tons.

Spelter.—This mineral is weaker, and is offered as low as 4·50c.

Antimony.—We quote: Cookson's 11¾c., and Hallett's, of which there is a moderate supply, 10½@10¾c. Pontifex is held at 10·60c. London cables Hallett's £48.

BULLION MARKET.

NEW YORK, Friday Evening, April 25.

There has been a marked advance in silver the past week, owing to higher prices in London, resulting from a demand for the East Indies; and the market is firm at the figures of the accompanying table :

DATE.	LONDON.		DATE.	N. Y.	
	Pence.	Cents.		Pence.	Cents.
April 19	50¾	111½	April 23	50¾	111¾
21	50¾	111½	24	51	112
22	50 13-16	111½	25	51	112

*111¾@111½.

BULLION PRODUCTION FOR 1884.

MINES.	States.	Month of March.	Year from Jan. 1st, 1884.	
			\$	¢
*Alice, g. s.....	Mont.		209,296	
*Belmont.....	Mont.		8,081	
Bodie, g.....	Cal.		85,976	
*Bonanza King, s.....	Cal.		36,844	
*Boston & Montana, g.....	Mont.		56,114	
*Chrysolite, s. L.....	Colo.		16,023	
*Consolidated Bobtail, g.....	Colo.		7,915	
*Contention, s. g.....	Ariz.		54,872	
*Deadwood-Terra, g.....	Dak.		40,409	
*Derbec Blue Gravel, g. s.....	Colo.		9,628	
*Father de Smet, g.....	Dak.		39,898	
Grand Prize, s.....	Nev.		25,000	
*Hecla Cons., g. s. L.....	Mont.		162,178	
*Homestake, g.....	Dak.		99,682	
*Hope, s.....	Mont.		2,547	
Horn-Silver, s. L.....	Utah.		258,087	
*Iron Silver, s. L.....	Colo.		58,287	
*Kentuck, g. s.....	Nev.		3,606	
*Lexington, g. s.....	Mont.		98,494	
*Little Pittsburg, s.....	Colo.		7,199	
Moulton, s.....	Mont.		122,000	
*Mount Diablo, s.....	Nev.		24,820	
*Navajo, g. s.....	Utah.		13,877	
*Ontario, s. L.....	Mont.		197,727	
*Original, s. c.....	Mont.		11,135	
*Oxford, g.....	N. S.		3,102	
*Plymouth Consolidated, g.....	Cal.		89,277	
*South Yuba, g.....	Cal.		3,779	
*Syndicate, g. s.....	Cal.		5,982	
*Tombstone, s. L.....	Ariz.		122,756	
United Gregory, g.....	Colo.		7,174	

Total amount of shipments to date.....\$3,926,845

* Official. † Assay value. ‡ Not including value of lead. G. Gold; S. Silver; L. Lead; C. Copper.

Foreign Bank Statements.—The governors of the Bank of England, at their regular weekly meeting, made no change in the bank's minimum rate of discount, and it remains at 2½ per cent. During the week, the bank gained £191,000 bullion, and the proportion of its reserve to its liabilities was raised from 47½ to 49 per cent, against 38 3-16 per cent at this date last year. The weekly statement of the Bank of France shows gains of 8,753,000 francs gold, and of 1,929,000 francs silver.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, April 25.

The February returns of imports of iron and steel, according to the Bureau of Statistics, are as follows :

	February.		Eight months.	
	1884.	1883.	1884.	1883.
Ore, gross tons.....	35,210	42,448	391,714	502,823
Pig iron, gross tons.....	10,764	19,238	209,477	339,971
Iron scrap, gross tons.....	2,481	5,960	38,153	56,021
Steel scrap, gross tons.....	162	Not stated	5,393	Not stated
Bar-iron, net tons.....	1,170	2,676	33,251	46,006
Iron rails, gross tons.....		20	503	5,072
Steel rails, gross tons.....	51	10,326	7,010	102,344
Iron hoop, bands, and scroll, net tons.....	25	278	133	5,441
Sheet, plate, and ladders, net tons.....	253	350	7,366	9,903
Tin plates, net tons.....	15,994	16,745	162,081	159,287
Cotton ties, net tons.....		Not stated	14,056	Not stated
Steel, hoops, bands, sheets, net tons.....	45	"	1,235	"
Steel ingots, billets, blooms, gross tons.....	2,819	"	13,143	"
Wire rods, net tons.....	7,016	"	50,434	"
Wire and wire rope, net tons.....	205	"	2,458	"
Anvils, axles, forgings, net tons.....	45	"	760	"
Chains.....	62	"	845	"

The appended figures, taken from the British Board of Trade returns, show the quantities, etc., of the principal hardware, etc., goods exported from this country to the United States during March, 1884, as

compared with the same month of 1883, and with the figures for February, 1884 :

ARTICLE.	Month of	Month of	Month of
	March, 1884.	March, 1883.	February, 1884.
Pig-iron.....	19,094	23,547	10,969
Bar, angle, rod, etc.....	554	962	233
Railroad, all.....	1,524	4,957	3,766
Hoops, sheets, plates, etc.....	382	2,286	483
Tin plates.....	16,568	16,021	17,274
Cast or wrought.....	141	414	302
Old.....	1,576	2,173	3,626
Steel, unwrought.....	1,107	4,708	896
Iron rails.....		979	
Steel rails.....	1,523	3,712	3,621

American Pig.—Business continues dull and quiet, with no marked changes. There is no marked tendency on the part of makers of standard brands to sell, nor do consumers display any anxiety to purchase supplies. Mill irons are not much better than they have been.

We quote No. 1 Foundry at \$20@21; No. 2, \$19@19.50; and Gray Forge, \$17.50@18.50. There have been no sales of Bessemer pig, which remains quiet for Foreign at \$20 ex ship, and 20 per cent Spiegel is quoted in round lots at \$28@28.50 ex ship, some sales having been made at the lower figure. Ferromanganese, 45 per cent, is worth \$45.

At the Metal Exchange, the following sales were reported: Monday, April 14th, 100 tons No. 1, September, \$19.37½; Wednesday, 100 tons No. 1, May, \$19.

Scotch Pig.—There is no change whatever to note.

We quote ex ship and to arrive: Coltness, \$22@22.50; Langloan, \$22@22.50; Summerlee, \$21.50; Dalmellington, \$20.75; Gartsherrie, \$21.50@22; Eglinton, \$20.25; and Glengarnock, \$22@22.25.

At the Metal Exchange, the following cable quotations have been received: Coltness, 56s. 9d.; Langloan, 53s.; Summerlee, 51s. 6d.; Gartsherrie, 52s.; Glengarnock, at Ardrossan, 52s.; Dalmellington, 47s.; and Eglinton, 45s. 3d. Warrants, 42s. 5d.

Steel Rails.—No business of any importance has been transacted. We quote \$33 at Eastern mill.

Old Rails.—The transactions have not been large in volume, and quotations remain unchanged.

Philadelphia. April 25.

[From our Special Correspondent.]

Pig-Iron.—There is some talk on the street to-day of the probability of good sales of foundry and forge iron, and it is even hinted that prices for the former are likely to improve under the increased activity; but close inquiry shows that there is very little likelihood of this, as brokers and representatives of furnace companies state that it is all they can do to maintain prices at present limits, in spite of the lowness of stocks in first and second hands. There is a probability that there will be a more active foundry demand, although there is no reason for believing that large lots will be sold. Consumers have no inducement for anticipating requirements at present. Forge iron is very unsettled, and prices seem to be weakening under the large and frequent offerings of low-priced irons. Standard makes command \$18 delivered, and more sales are made at \$17.50, and there are a good many offers at \$17, which will probably result in business. The extreme depression in refined iron leads mill-owners to buy the cheaper iron, where, in better times, they would only use the standard brands. They have, in a great many cases, made offers of low prices for these good irons, and, being refused, have contented themselves with inferior brands. This falling off in demand for standard irons will probably lead to the granting of slight concessions on them, in order to effect sales. Average sales of standard Foundry Iron are made at \$20 for No. 1, and \$19 for No. 2, very little "special" being called for. Furnace companies are making heavy deliveries on old contracts, but have very little new business on hand. There has been more talk of business in domestic Bessemer during the past week or two, and several contracts for summer delivery have been placed at about \$19 at furnace.

Foreign Irons.—There is a strong probability of considerable business in spiegeleisen; at least, a good deal is wanted, but prices as yet have not been agreed upon. Holders offer 10 per cent Spiegeleisen at \$24.50, and 20 per cent at \$28.50@29, but buyers' views are below these figures. Negotiations, however, are in progress, and sales may be made any day. For Bessemer iron, \$20 is offered, with sellers from 50c. @ \$1 higher. Only small lots are wanted.

Manufactured Iron.—Every few days, there is a little improvement in the demand for small lots of bars, and expectations of manufacturers are raised; but trade always resumes its old dullness in a day or two. It seems that the present state of things has come to stay. Consumers can not be induced to order any thing but very small lots, and for them only the most meager prices can be obtained. There is a continual pressure on prices, which are declining slightly. Western competition is not very serious in itself, but coming on the market in its present weak condition, it adds a good deal to the depression. Best Refined Iron commands 2c. in small lots, but any thing ordinary sells very much lower, as low as 1.80c. being taken in some cases. Common iron is selling slowly, for car-work.

Plate and Tank Iron.—There is a moderate amount of business doing in a small way, but manufacturers report the market very dull and lacking in interest. Common Plate sells as low as 2.15c.; Tank, 2.20c.; Shell, 2.75c.; Flange, 3.75c.; Fire-Box, 4.75c.

Structural Iron.—Prices are quoted at 2.20c. for Angles, 2.70c. for Tees, and 3.50c. for Beams and Channels, with concessions to be obtained on good orders, were any to be presented. The continued dullness of demand is likely to generate a more active competition, and prices will probably decline, even from these low limits. Structural mills are doing a good deal of work; but, like others, have very few orders ahead.

Sheet-Iron.—There is a fair movement, mostly in small lots, at the usual quotations.

Nails.—Trade continues to be mainly of a retail character, but a good deal is done in anticipation of the heavy building operations that will be begun early in May. The production is large since the settlement of the strikes, but prices are maintained at \$2.50@2.60. A great deal of interest is felt in the course of the new Western nail pool. Another meeting of the manufacturers was held in Pittsburg on the 23d inst., and all the details of the new arrangement completed.

Steel Rails.—Small lots are selling slowly at about \$33.50 at mill. It is understood that heavy contracts would be readily taken at \$33, but none such are presented. Even this price may be shaded after a week or so, when the makers become a little more anxious for new business.

Old Rails.—Very little is doing, though shipments of Tees are freely offered at \$22. Only small lots, however, can be moved, and for these \$22.50 is generally obtained. Double-Heads are offered at \$23.50, and \$23 for shipment, but nothing is doing.

Scrap Iron.—The market is dull and prices are weak. No. 1 Wrought is quoted at \$23@23.50. Wrought Turnings, \$16. Cast Turnings, \$11@12.

Pittsburg. April 24.

[From our Special Correspondent.]

Pig-Iron.—The changes in pig-iron within the past two weeks have been altogether for the worse. The market is very dull, and within the time mentioned there has been a steady drop in prices of from 25 to 50 cents a ton. There are various causes for this, but one of the chief is the fact that manufacturers will buy but barely enough for immediate use, owing to the figuring on the new scale of iron wages for the ensuing year. There is no telling whether a summer "idleness" will ensue or not. The Amalgamated Association scale asks for old wages and a few "extras" sufficient to give increased cost to certain branches of manufacture. The manufacturers ask a ten per cent reduction on all labor scaled. Both sides are resting on their oars. The production of pig is not in excess of the consumption. Some quotations are made at \$17.50 and \$18, four months, but sales have been made at \$17@17.50, four months. Lots, Bessemer iron, \$19.50 cash and \$20 four months; on smaller lots for foundry use, 50c. @ \$1 a ton more. But few iron mills are working up to their full capacity.

Steel Rails.—The reported sales of Bessemer rails at \$33 and \$34 a ton at the East have aroused our manufacturers, but I am unable to find sales here at that figure. The quoted rate here is still \$35. Pittsburg can sell to the West at \$35, and about make up in freights to the buyer at \$33 farther East.

Nails.—Trade is dull for the season, but an improvement is expected. Once jobbers are convinced that lower prices will not ensue, trade will grow better. Quoted prices: \$2.35, 60 days, 2 per cent off

for cash, and 5@10c. per keg additional on small lots. This is the card. The pooling arrangement lately perfected, whereby all product is handled through one hand, seems to give satisfaction.

Muck-Bar.—Quoted \$31 cash, with no sales reported.

Manufactured Iron.—Few bar mills are running full, and trade is dull. Prices are unsettled and on small margin.

Pipe.—Orders are coming in more freely. No change in prices.

Steel.—Quotations are: best brands Refined Cast, 9¼c.; Crucible Machinery, 5c.; Open Hearth and Bessemer, 3¼@3½c.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, April 25.

Anthracite.

The trade continues very dull, and has proved a disappointment even to those who were not inclined to take very sanguine views as to the immediate effect of the restriction agreed upon for May. Business is confined to a small volume, and falls to those who are in a position to make concessions. The result naturally is, that those companies which make the effort to maintain prices are simply forced to stock their coal. Buyers are naturally exceedingly cautious, and domestic sizes particularly are totally neglected. It should be remembered, however, that the present is the season immediately preceding the opening of lake navigation, and is apt to create pessimistic impressions of the future of the market. We are far from looking upon the situation as being as grave as many are inclined to picture it who have other aims in view than those of the legitimate trade. Whatever the outlook for the future may be, the present is certainly not bright, though we are inclined to regard it as being only a temporarily severe depression that extended markets and the persistency in the policy of restitution will overcome.

The Western Anthracite Association has marked down prices 15 cents, as compared with the opening figures of last year. We doubt whether this is sufficient.

The members of the Western Anthracite Association, who have been trying for weeks to reach some definite action in pooling arrangements, held a meeting in this city April 24th, and just before adjournment these opening rates were agreed upon:

For Buffalo and the International Suspension Bridge (on cars), stove and chestnut, \$5 a ton; egg, \$4.75; grate, \$4.65; 30 cents to be added for free on board. For Ontario Lake points, 70 cents less than the Buffalo free on board prices. For Rochester, 35 cents less than Buffalo on car prices. For Syracuse, \$1 less than Buffalo on car prices. No. 4 coal to be in all cases 25 cents above stove and chestnut.

The association held another meeting April 25th, to consider rates for interior points. A committee was appointed to consider the subject.

Gradually those firms in the coal trade which joined in the exodus to the Washington Building, No. 1 Broadway, are getting installed in their handsomely equipped offices. It may be of interest to state that the following firms have moved there: J. W. Andreas, J. W. Atwood, W. Bacon, F. A. Bassler, Castner & Co., Cox & Rockwell, W. Davidson, W. A. Dean, H. L. Gawthrop & Co., Greaff, Wilcox & Co., Haddock & Steel, C. W. Hays, Heilner & Son, J. R. Husson, Kissam & Randolph, G. B. Linderman & Co., Meeker & Co., D. M. Niven & Co., A. Pardee & Co., Pennsylvania Coal Company, Robinson, Haydon & Co., R. P. Smith & Co., Sewall & Winans, Swan Brothers, Stickney & Conyngham, A. S. Swords & Co., R. Talbot, J. K. Wells & Co., R. H. Williams & Co.

Bituminous.

Business is dull and low prices continue to prevail. We quote for current orders, \$3.25@3.40. The triangular fight at Buffalo continues.

Freights from Philadelphia to Boston have advanced to \$1.25.

Philadelphia.

April 25.

[From our Special Correspondent.]

There are only two or three things to be said about the anthracite coal trade this week. There is considerable improvement in inquiry from the East, and more orders are coming to hand than can be filled promptly, owing to the scarcity of vessels at this

port. Freights are a little higher nominally, but shippers decline to pay more than the prices ruling last week. A good many vessels are due here, but word comes that they will not be along for two or three days yet. The lumbermen are also making complaint of the scarcity of vessels and the advance in freight rates. The improvement in the demand for coal in Eastern markets is due to two facts: First, the consumers have permitted their stocks to run very low; and secondly, the policy of restriction announced by the companies is accepted by the consumers in all markets without question. Stocks at Port Richmond are declining rather slowly. The production at the mines during the times allotted to full work will be as large as possible. It is expected that the New England market will take a great deal of coal during the next two or three weeks. A good many buyers are even yet inclined to defer the placing of orders; but negotiations are going on, and it is probable that business will be closed in these cases, although at much lighter concessions than consumers are asking for. Two or three companies are holding very firmly to prices. There are rumors of considerable shadings, but these are incorrect; only the ordinary shading is going on, excepting for a few inferior coals that are always more or less shaded in this market. Good reports come from the mines, and the representatives of the various companies here speak encouragingly of the prospects of the trade. Southern demand is waking up, and as soon as vessels are more abundant, heavy shipments will be made. The Reading shipped 2024 tons last week, against 183,373 tons for the corresponding week for last year. The Schuylkill Canal carried 1707 tons, against 131,689 tons for the same week last year. The average price of coal in the Schuylkill region for March was \$2.47. Another conference has been held between the Reading Company and the Shamokin Coal Exchange, and an agreement will soon be arrived at. The talk of the trade to-day is, that demand from both East and West is likely to improve, and that the talk about over-production has not been warranted by circumstances. The outlook for manufacturing demand is no brighter than it has been at any time since the opening of the year. The iron trade is very dull; several furnaces have blown out, and a number of concerns have partially shut down. A good many buyers in the local and line trade are still holding back their orders. Anthracite production, so far this year, is 6,939,040 tons. The Spring Mountain Coal Company has sold its property to the Lehigh Valley Coal Company for \$700,000. This property produces about 200,000 tons a year, and is situated at Jeanesville, Luzerne County.

Bituminous operators are anxiously asking why the Vanderbilt road has dried up, six or eight miles from Phillipsburg. A few weeks ago, they were promised a rapid extension of the line, not only to Phillipsburg, but beyond; but work there is at a stand-still, and there seems to be no disposition to carry out the programme announced in the early part of the season. The bituminous coal men have very little to say this week. A few of them have entered into some good contracts, but most of them are waiting. Negotiations are now in progress with Eastern parties, as to the placing of a good deal of soft coal. Prices have gone to very low limits; in fact, as far as prices are concerned, the bottom has dropped out of the bituminous trade.

Pittsburg. April 24.

[From our Special Correspondent.]

The railroad coal trade may be said to be in fair condition. On the river, matters are not so cheery. Coke is pursuing the even tenor of its way since the pool has begun to work satisfactorily.

On the river, during the week just past, the trade may be said to be without material change. The stocks at Cincinnati, Louisville, and New Orleans are good, not in first hands, however, but in the yards. Second pool coal at Cincinnati and Louisville is rated and sold at 7c.; third pool and fourth pool coal is a fraction less. This prevents any immediate brightening of the trade. At New Orleans, trade is reported very dull, and price 30 cents a barrel. The river run will soon be over, three or four weeks will finish it unless there is a rise, and the busy times digging for the past few months will be past. The men are now generally at work at the new level of prices for digging, namely, 3¼ cents a bushel for the first

and second pools, 3 cents in the third, and 2½ cents in the fourth pool. There are a few exceptions where labor troubles are causing idleness; but generally speaking, the miners have acknowledged the wisdom of the new rates of prices, and accepted them.

The demand for railroad mined coal is light, owing partly to the backwardness of lake contracts and the meager buying of the mills. The rate on the wall may be said to be the tribal figure—5½ cents—and it is certainly nothing higher, with no information at hand of any cutting. Lake trade is beginning to come in now, and some contracts have been made, but the tonnage this year does not equal that at the same time last year. Operators believe that this trade will be well opened by the first of the month and shipments continue steady. Work at most of the pits is light, and three-quarter time would probably cover employment at present. Some pits are idle—those at Irwin station; but the coal mined there does not go to the lake at all, but finds an Eastern market. Of the trade in general, one of the firm of B. F. Rafferty & Co. is quoted as saying they have secured several large lake contracts, and there will probably be a larger amount of coal moved north this summer than ever before. The next few months will have to prove the correctness of this assertion.

Coke prices are: Furnace, \$1.10; Foundry, \$1.25. You may safely tell your readers that these prices will remain unchanged through May and at least until June 1st. I find assertions that an advance would be made on May 1st erroneous. The shipments continue to average between 700 and 800 cars a day. For the past week, this has been cut down about 40 cars a day, owing to the strike at the New Castle furnaces. These are expected to start up before the end of the week at the old wages. One of them, the *Aetna*, is running now with the help of clerks, bookkeepers, etc. The 15 per cent of ovens closed down on April 1st will not be started until the trade demands it. In connection with the coke trade, I might refer to the railroad coke pool meeting at Philadelphia this week. I do not think it has been published that the Pennsylvania Railroad has gained a decided advantage lately by the purchase of the Mahoning branch railroad, a switch running past 380 ovens, out from Dunbar. It takes in Reed's, Laing & Davidson's, and the Mahoning coke-works, and the possibilities are, that the line will be extended to the Hill farm works, and connection made with the Dunbar Furnace Company. Heretofore, the Pennsylvania Railroad had to pay the Baltimore & Ohio \$1.50 on every car brought out on this line. Now, the Baltimore & Ohio can not get the traffic at all. This gives the Pennsylvania Railroad the advantage of 700 more ovens in the attempt to adjust pool percentages; for what are the 360 ovens lost to the Baltimore & Ohio but double gain to the Pennsylvania Railroad?

Buffalo. April 24.

[From our Special Correspondent.]

There is nothing to communicate relative to the anthracite coal trade, excepting that dealers are taking orders on the basis of "the lowest rates of the season," awaiting the schedule to be fixed to-day in New York.

There is some difference of opinion relative to the promised restriction of production of anthracite coal according to the demand for consumption. Of course, consumers look upon the subject with one kind of glass, and the producer with another, and the workmen with still another. I need not describe the various points made; they are too numerous, and take a wide range. The word "monopoly" was frequently mentioned when the matter was under discussion.

The bituminous coal trade is in a very bad shape at this port, but rates have demoralized business seriously. A prominent dealer and producer told me to-day that he could not give soft coal away unless it was accompanied with a donation of an elaborate chromo, and that it would be necessary even then to make special efforts to induce consumers to allow the coal to be placed in their cellars, as the offers were so liberal in number and quantity. I offered to take twenty tons myself; but he said he would not impose upon my good nature, for most of the coal was too d—d bad to burn!

A dispatch from Cheboygan, April 23d, says: The south passage of the Straits of Mackinaw is open for propellers. A propeller tried to reach Sault Ste. Marie, but had to return. The ice in St. Mary's River was 18 inches thick and perfectly solid.

The New York State canals will be opened probably

on Monday, May 5th. No official intimation has been received, however. This date seems to be about right, judging from the appearance of the lake, the news from the Straits and from along the line of the said canals.

Navigation at this port is practically open (for steam craft certain). The propeller barge *William Edwards* left at half-past twelve Tuesday last, for Chicago, loaded with 1250 tons of coal taken on board late last fall. She took the south shore route. The ice was found to be badly broken and soft. No other vessels are yet ready to leave, and the managers of the line propellers say that they will not move until next week. Other owners do not feel inclined to venture out before the 1st of May, so as to save the April insurance, 10 per cent. The owner of the *Edwards* carries his own risk.

There is no change in lake freights here to Chicago and Milwaukee, as no vessels have been chartered since those I mentioned last week. The schooner *Champion*, now at Erie, Pa., takes coal from that port at 70c. to Milwaukee.

It is reported that the *Hecla* and consort, *Ironton*, and a new vessel shortly to be launched, will take 25,000 tons of coal from here to Duluth at 90c. The propeller *Jay Gould* was chartered on Wednesday to take coal from this port to Duluth, also at 90c. "It is estimated," says a local newspaper, "that there are about 250,000 tons of coal in stock in Buffalo for shipment on opening of navigation." I doubt this statement, but have no figures to hand to refute or confirm the report, but think the amount stated too high.

Coal receipts here by the Lake Shore & Michigan Southern Railroad for the week ended last Saturday were 552 tons; 300 tons for Buffalo, and 252 tons for other points not stated.

Work on the Tift farm canals is progressing favorably and rapidly. There are to be three canals. One is now finished, and the second and third well under way. The coal-trestle between the first and second canals is in full operation, so far as stocking up is concerned, and vessels will be loaded there as soon as the water is let in. The stock in this trestle is estimated at 50,000 tons, owned by the Lehigh Valley Company.

The New York, Lake Erie & Western Railroad has made another cut of five cents for coal hauling. It is said that a triangular fight has been quietly going on between this road and the Buffalo, New York & Philadelphia and the Rochester & Pittsburg for some time. There is no doubt that the Erie has handled the largest quantity of the bituminous coal brought into this market for some weeks. The object is not very clear; the officials of each road laying the blame on one of the other two. A prominent business man, after referring to the fall in the value of the stocks of these roads, said, "They had better look out for themselves, I should think. It's all right to take freight all the way from cost price to two or three cents below; but when the pay-day comes, they will find that the cutting of rates does not pay interest."

Here is a free trade nut for your readers. The *Boston Herald* says: "Inasmuch as the wages of the protected coal miners and iron-workers of Pennsylvania are down to sixty-five cents and one dollar a day, a cheapening of commodities is the only alternative against pauperism."

Boston. April 24.

[From our Special Correspondent.]

The market is marked by no special activity. The tone of the anthracite market is a healthy one. The strong attitude of the producers in the matter of curtailment removes any fear of discord and a break in the market subsequently. Dealers are all ready to buy when they think best to put on the coal, leaving aside consideration of f. o. b. price, which is not liable to change for the present. Just now it is desirable, as they claim, to run light stocks. Many end their coal year May 1st. The assessors make their rounds at that time, and taxes are levied for the year according to the stocks then in the yard. Procrastination is therefore excusable at this time. During May, and particularly toward the close of that month, there is prospect of an excellent trade, as stocks are light, particularly in the city itself. Prices might stiffen somewhat under the company's announcement, but in absence of trade they remain nominally unchanged, quoting New York f. o. b. prices: Stove, \$4.25;

Broken and Egg, \$3.85. Philadelphia Stove, \$4.15; Egg, \$3.70; Broken, \$3.50@3.60; Chestnut, \$4.

There is very little doing in bituminous coal. The market is raked bare of contracts of any size. We quote \$3.90@34 for cargo lots.

There is a firmer feeling in freights than there has been. This is probably owing to the fact that many of the coal fleet are at this end of the route. Barges continue to run from New York at 95c. per ton and no bridge charges, and no material increase in insurance charge. It looks as if considerable barge freighting would be done.

New York, 90c.@\$1.25 per ton; Philadelphia, \$1.15 @ \$1.25; Baltimore, \$1.40; Georgetown, nominal, \$1.75; Newport News, \$1.25; Richmond, \$1.35; Bay of Fundy, \$1.50; Cape Breton, \$2.

Gas coal is more active and a good trade may be looked for until contracts are all closed. Several leading companies have purchased a full stock. Rates continue at \$3.40@3.50 at Philadelphia, and \$3.25@3.35 at Baltimore.

There is a quiet retail trade at slightly easier prices although most sales are at \$5.75 for egg, and \$6 for stove. Contracts with large consumers are yet to come, and no prices are yet made. We quote:

White ash, furnace, egg and nut	5.50@5.75
" " stove	5.75@6.00
Red ash, egg	6.00@6.25
" " stove	6.00@6.25
Lorberry, egg and stove	6.50@6.75
Franklin, egg and stove	7.25@7.50
Lehigh, furnace, egg, and stove	5.75@6.00
nut	6.00

Cleveland. April 23.

[From our Traveling Correspondent.]

The trade at this point is still quiet. Considerable quantities of coal are loading at different points for lake shipment. Captain Bradley's fleet, which includes the larger part of the vessels available here for this month, is loading coal at Ashtabula for Port Arthur and Escanaba at \$1.15. Reports from Chicago seem to indicate that most of the vessels that wintered in the upper lake ports will leave the grain tonnage for the present and take ore at \$1.10 for their first trip. Shippers here are holding off, not being in a hurry to deliver their contracts, hoping to get lower rates. From 75c.@\$1 is asked for upper lake points, while 60@90c. is offered. Mining in all Ohio districts is dull. The Hocking Valley operators have issued a call for a joint meeting of operators and employes to adjust the prices of mining. The operators claim that contracts representing 200,000 tons or more in quarters where last year they secured the trade, have this year been taken by Pittsburg operators, who have secured a reduction in mining, because of the inability of Hocking Valley operators to meet the prices. The conference is called for next Monday, the 28th. It is perhaps too much to hope for an agreement. The operators talk about 50 cents, while the miners will be slow to accept 60 cents, which would be 10 cents below present and last year's prices. Yet the inevitable seems to be that Hocking Valley coal must be mined cheaper or crowded out of the most important markets in which it has heretofore found buyers. Dealers here are awaiting with some interest the coming circular from the Anthracite Associations. Prices here are as follows:

ANTHRACITE.		Wholesale.	
Stove	5.85		
Chestnut	5.98		
Egg	5.58		
Grate	5.40		
Retail Delivered.			
Chestnut	6.75		
Stove	6.75		
Egg	6.50		
Grate	6.50		
BITUMINOUS.		Wholesale.	
			F. o. b.
Brier Hill	\$3.00	\$3.25@	\$3.50
Palmyra Block	2.15		3.25
Massillon Lump	2.65	2.65@	2.75
" Nut	2.40		2.10
Pittsburg Lump	2.50		2.75
Salineville "	2.25		
Tuscarawas "	2.25	2.05@	2.25
Tuscarawas Nut	1.85		
Wheeling Creek Lump			2.25
Hocking Valley, "			2.40
Retail Delivered.			
Pittsburg Lump	\$3.50		
Palmyra Block	4.00		
Massillon Lump	3.65		
" Nut	3.40		
Tuscarawas Lump	3.25		
" Nut	3.00		
Connotton Valley Lump	3.00@3.50		
" Nut	2.75@		3.00

The Pittsburg & Wheeling Coal and Coke Company

NEW YORK MINING STOCKS.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Table with columns: NAME AND LOCATION COMPANY, HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE (April 19-25), SALES. Lists various mining companies like Alice, Amie, Argenta, etc.

Table with columns: NAME AND LOCATION COMPANY, HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE (April 19-25), SALES. Lists various mining companies like Albion, American Flag, Barcelona, etc.

Full tables giving the total amount of dividends, capital, etc., will be printed the first week of each month. Dividend shares sold, 63,793 Non-dividend shares sold, 51,810.

BOSTON MINING STOCKS.

PHILADELPHIA MINING STOCKS.

Table with columns: NAME AND LOCATION COMPANY, HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE (April 18-24), SALES. Lists various mining companies like Allouez, Amie, Atlantic, etc.

Table with columns: NAME AND LOCATION COMPANY, HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE (April 18-24), SALES. Lists various mining companies like Amer. Cons., Argent., Arizona So., etc.

has already commenced shipments from its dock at Lorain, and will, no doubt, do as large a business this year as in 1883. A large bank of fine molding sand has recently been opened up near Akron, which promises a considerable addition to the freight traffic on the Valley Railroad.

The "deep coal" find of Messrs. Campbell & McFadden seems to have petered out completely. Reliable citizens who had confidence in the men now conclude that the hole was salted. The Justus (Massillon) mine seems hopelessly filled with water. The workings encountered an underground river, which has submerged them and filled 70 feet of the shaft. The utmost efforts have failed to lower the water below 40 feet in the shaft, and the company will doubtless be compelled to abandon an otherwise valuable new mine.

Baltimore, April, 1884.

Prices of anthracite to trade in cars for North Central Railroad:

Hard and free-burning (Shamokin), white ash:	
Lump, steamer, broken, and egg	\$4.15
Stove	4.55
Chestnut	4.30
Lykens Valley (red ash):	
Broken	5.15
Egg	5.55
Stove	6.15
Chestnut Valley	5.80

Afloat alongside, for barges and scows, for all grades, 15 cents a ton off above prices.

STATISTICS OF COAL PRODUCTION.

Comparative statement of the production of anthracite coal for the week ended April 19th, and year from January 1st:

Tons of 2240 Lbs.	1884.		1883.	
	Week.	Year.	Week.	Year.
Wyoming Region.				
D. & H. Canal Co.	890,574	96,576	1,008,110	
D. L. & W. RR. Co.	39,049	1,243,269	112,370	1,259,776
Penna. Coal Co.	724	282,234	33,489	343,688
L. V. RR. Co.		351,897	40,739	304,438
P. & N. Y. RR. Co.		52,645	4,074	56,607
C. RR. of N. J.		*	61,516	682,761
North & West Br. RR.	14,073	243,445	6,978	158,103
	53,846	3,064,044	355,742	3,813,573
Lehigh Region.				
L. V. RR. Co.		1,130,533	135,564	1,337,155
C. RR. of N. J.		*	57,016	603,060
S. H. & W. B. RR.	6,484	60,868	1,701	10,739
	6,484	1,191,401	184,281	1,950,954
Schuylkill Region.				
P. & R. RR. Co.	1,023	2,630,079	175,076	1,828,631
Shamokin & Lykens Val.		*	30,512	373,192
	1,023	2,630,079	205,588	2,201,823
Sullivan Region.				
St Line & Sul. RR. Co.		21,936	1,514	17,515
Total	61,353	6,907,460	757,125	7,983,865
Increase				
Decrease		1,076,405		

* Included in tonnage of the Philadelphia & Reading Railroad.

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	6,569,180 tons.
" " " " 1880	6,337,473 "
" " " " 1881	7,138,010 "
" " " " 1882	7,242,687 "

The increase in shipments of Cumberland Coal over the Cumberland Branch and Cumberland & Pennsylvania railroads amounts to 22,506 tons, as compared with the corresponding period in 1883.

Belvidere-Delaware Railroad Report for the week ended April 12th:

	Week.	Year.	Year.
	1884.	1884.	1883.
Coal for shipment at Coal Port (Trenton)	2,598	6,218	10,940
Coal for shipment at South Amboy	21,963	169,180	231,415
Coal for distribution	17,970	228,343	231,461
Coal for company's use	3,416	53,056	45,299
Total	45,919	456,797	519,115
Increase			
Decrease		62,318	

Comparative Statement of the Production of Bituminous Coal for the week ended April 19th and year from January 1st:

	1884.		1883.	
	Week.	Year.	Week.	Year.
Cumberland Region, Md.				
Tons of 2240 lbs.	64,498	633,102	41,515	587,754
Barclay Region, Pa.				
Barclay RR., tons of 2240 lbs.	6,169	104,623	4,564	107,270
Broad Top Region, Pa.				
Huntington & Broad Top RR., of 2240 lbs.	2,300	58,334		63,386
Clearfield Region, Pa.				
Snow Shoe	2,547	74,893	3,950	78,684
Tyrone & Clearfield	65,090	853,391	50,752	849,733
Allegheny Region, Pa.				
Gallitzin & Mountaintain	5,298	122,457	5,793	160,661
Pittsburg Region, Pa.				
West Penn RR.	3,497	96,147	8,271	153,092
Southwest Penn. RR.	3,392	47,625	1,286	39,361
Pennsylvania RR.	7,705	86,026	9,214	165,358
Westmoreland Region, Pa.				
Pennsylvania RR.	7,113	337,252	27,557	427,520
Monongahela Region, Pa.				
Pennsylvania RR.	2,887	50,304		
Total	170,496	2,464,154	147,882	2,633,819
Decrease		169,665		

Comparative Statement of the Transportation of Coke over the Pennsylvania Railroad for the week ended April 19th, and year from January 1st:

	1884.		1883.	
	Week.	Year.	Week.	Year.
Gallitzin & Mountaintain (Allegheny Region)	2,372	40,341	2,293	38,014
West Penn. RR.	131	23,842	2,071	31,959
Southwest Penn. RR.	43,038	659,807	42,660	594,141
Penn. & Westmoreland Region, Pa. RR.	2,916	60,487	5,878	74,657
Monongahela, Penn. RR.	1,193	22,608		
Pittsburg Region, Pa. RR.	16	136		274
Snow Shoe (Clearfield Region)	174	7,828	760	5,372
Total	49,840	815,049	53,662	744,417
Increase		70,632		

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