THE ENGINEERING AND MINING JOURNAL.

VOL. XVII.—No. 19.—FOURTH SERIES. NEW YORK, SATURDAY, MAY 9, 1874. PRICE 10 CENTS PER COPY.

Local Coal Deposits in Missouri.

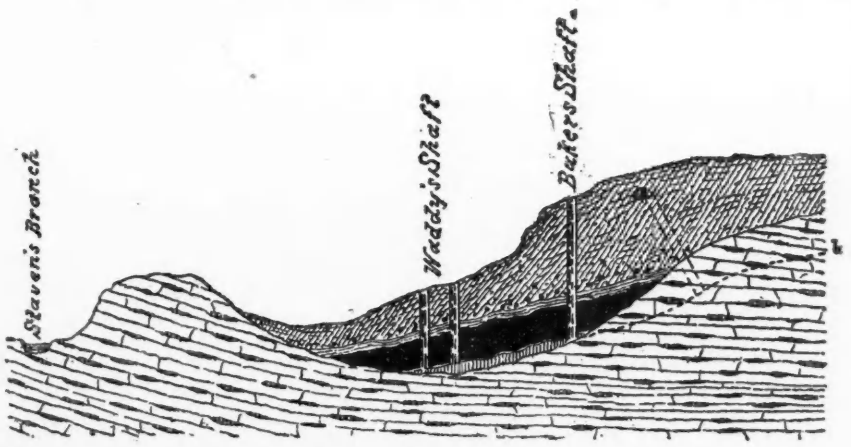
DURING the few years immediately preceding the re-institution of a geological survey in Missouri, which were marked by an increasing interest in mining matters, the building of blast furnaces, and the establishment of a great home production of iron, an impression grew among the citizens of the State that Lincoln County was favored above all others in the possession of a metallurgical fuel. The investigation of the field by Prof. POTTER proved that impression to be groundless, as we remarked in speaking of the iron ores found in the same county some time ago. We now give some illustrations of the deposits as delineated by him.

He recognizes two classes of coal deposits: 1st, those which are regularly stratified, undisturbed, and may be referred to the lower series of the coal measures; 2nd, irregular isolated beds, occurring in the banks of streams and ravines, exhibiting signs of disturbance, and associated with a comparatively small amount of the usual accompanying beds of the coal measures. The first named coal is soft and caking, rather tender, and contains considerable sulphur. Two analyses, 1, from the top, and 2, from the bottom of the bed, taken from the only place where it has been mined, are given in the following table. The bed (at Meadows bank, west of Bob's Creek) varies from 15 to 25 inches in thickness, and is covered by 4 feet of hard, compact hydraulic limestone, and in some places a few inches of black slate.

	No. 1.	No. 2.
Water	6.30	6.75
Volatile matter	39.20	36.80
Fixed carbon	44.30	42.00
Ash	10.20	14.45

Color of ash in both, light brown.
Sulphur 4.91. Iron 4.44.

It is the irregular deposits which are the really interesting ones. Though isolated, they present the same general characteristics and associations, being



The Waddy Coal Bank, Lincoln County, Missouri.

opened in the sides of numerous ravines and valleys. They are sometimes as much as 25 feet thick, and show the evidences of disturbance in an angular dip and in the presence of slickensides. For all their thickness they are not accompanied by the rocks common to coal measures, in the usual quantity; a few inches of shale or slate in the coal itself, and perhaps a few feet above the bed, being the only representatives of the usual strata. They always occur in one of the subcarboniferous limestones, usually the Encrinital, filling small basins which appear to have been formed partly by erosion and partly by disturbance. The cropping out of the limestone on all sides of the bed and in its immediate vicinity is at once a proof of the nature of these deposits and an indication to the miner that his store of fuel is limited.

The accompanying cut of the Waddy bank gives a clear illustration of this occurrence. At the Waddy shaft the coal was 8 to 10 feet below the surface, had a thickness of 5 to 7½ feet and was overlaid by an irregular mass of slate from a few inches to 2 feet thick. The coal has a general dip of 5° to the southwest, but this varies considerably, both in direction and intensity, in different parts of the pits.

Eighty feet from the Waddy shaft is the Baker shaft, which was opened in ground about 20 feet higher. It passed through clay and chert gravel 19 feet, black slate 3 to 8 inches, coal 8-10 feet; and had Encrinital limestone in broken masses at the bottom. Above the coal, sometimes clay and sometimes slate is found. The inclined dotted lines shown in the figure, point out the position of an incline which was calculated to strike the coal at a distance of 40 feet north east from the Baker shaft, but it ran into a mass of very hard and tough clay filled with limestone fragments, and after passing through this, it struck the solid ledge of limestone at the dotted line marked *b*.

The limits of this coal *basin* include an area 115 feet square. The analysis 1, of an average sample, and 2, of the bottom coal, are as follows:

	No. 1.	No. 2.
Water	8.75	8.50
Volatile matter	38.67	39.50
Fixed carbon	46.93	46.45
Ash	5.65	5.55
Color of ash		white.
Average sulphur		2.632
Average iron		trace.
Specific gravity		1.65

This is, therefore, a very striking instance of a coal containing a good deal of sulphur, and hardly any iron. No investigations into the condition in which the sulphur exists have been made, but Prof. POTTER thinks it is probably there as gypsum, at least for the greater part.

The Comstock Mines in 1873.

[From the forthcoming Report of the U. S. Commissioner of Mining Statistics.]

I HAVE again to acknowledge my obligations for clear and trustworthy notes on the development of these important mines, to Mr. C. A. LUCKHARDT, now of the Nevada Metallurgical Works at San Francisco, to whose ability I have had occasion in former reports to bear repeated testimony. Mr. LUCKHARDT visited Virginia City at my request, and his intimate acquaintance with the history of each of the mines lends weight to his conclusions regarding them. But for the delay which has attended the annual publication of these reports, the public attention would ere now have been arrested by the striking fulfillment of some of the predictions in which I have ventured to indulge concerning the Comstock lode, and for all of which I have had, besides my own opinion, the better authority of Mr. LUCKHARDT's judgment.

During the year 1873 only one new development of note was made in connection with the so often described bodies of ore already explored on the Comstock. It is, therefore, unnecessary to recapitulate in detail the occurrence of these bodies, for which the reader is referred to former reports. During the past year, extensive explorations have been carried on, under the stimulus of the developments made in the southern portion of the Comstock.

Following again the method of description heretofore adopted, I commence at the north end of the lode, and proceed southward.

I. *Northern portion of the vein.*—The 12,200 linear feet from the Utah to the Chollar have developed during the year, as follows:

1. The ore-body of the Sierra Nevada was found to extend north into the Utah mine, and has been explored to the vertical depth of 400 ft., showing the same ore as the Sierra Nevada, worth from $3 to $18 per ton (principally gold).

The Sierra Nevada has been at work on the same body. The mill being situated at the mine, facilitates operations. No new developments have been made.

2. The Ophir Company has carried on explorations from the shaft, eastward and southward from the 1,400 ft. level principally, showing the vein to be over 300 feet wide. The quartz-stringers and their intersections of quartzose material, intermixed with porphyry, described in last year's report, gave sufficient inducement to carry on explorations southward; and the result was, that about 40 ft. north of the Ophir south line, the apex of what seems to be a new ore-body, has been discovered. The ore, in its character, is similar to that found near the surface in former days, in the old central incline, at the vertical depth of 400 ft., varying entirely from that ore, which constituted the "3d ore-body" of former reports. Its dip is apparently 70° E., and its pitch is decidedly south

ward. Sufficient explorations have not as yet been made, to permit speculation with any degree of certainty as to its merit.

3. The ground adjoining Ophir to the south, as far as the Best & Belcher, known as the Virginia Consolidated, (excluding the Central ground,) has been divided into two distinct companies. The northern portion of the Virginia Consolidated, including the Central, California and Central No. 2, is now known as the California Consolidated. The ground south of this, to the Best & Belcher, constitutes the Virginia Consolidated. The developments made through the 1,465 ft. level of the Ophir promise well for the California Consolidated Company's ground, and explorations are carried on through the Ophir Company's ground, to investigate it.

4. The developments described in last year's report in the 1,400 linear feet, extending from the Central to the Gould & Curry, made by the Virginia Consolidated Company on its 1,167 ft. level, and constituting at that time already a noteworthy feature, have since led to the exposure of an ore-body now fully 300 ft. in length, and varying from 8 to 30 feet in width, of $45 mill-ore. The connection between this level and the Virginia Consolidated shaft has been completed, facilitating the work of the latter company materially as compared with last year, when all the explorations had to be done through the Gould & Curry. The ore of this body is identical with that of what was known as the East Potosi Chimney of the Savage. It carries much argillaceous matter, but is not sufficiently near the eastern boundaries of the vein to be referred or compared to what is known as the Potosi Chimney of the Savage; on the contrary, it has every appearance of making an ore-body of large dimensions. For the past six months, the Virginia Consolidated has extracted an aggregate of 50 tons per day of the above named value from it. From all appearances, this body will extend much further south than it has as yet been developed.

5. The Gould & Curry has not made any new developments during the year, but there are hopes of meeting the above ore-body on the 1,300 ft. level, where explorations are now being carried on both northward and eastward.

The Savage has been worked on its 1,400, 1,500, 1,600, 1,700, and 1,900 ft. levels, and the vein has been explored to the south line in all of them. With the exception of the 1,300 ft. level, no work has been done north of the company's shaft. The 1,400 ft. level developed, south of the shaft, a large mass of quartz with small ore-seams, but not in sufficient quantities to warrant extraction.

The ore-body of last year's report, encountered on the 12th, or 1,500 ft., level, has been exhausted, and no ore has been extracted since April, 1873. The incline has reached a depth of 60 ft. below the 1,900 ft. level, at an angle of 38° E.

6. The Hale & Norcross has not made any new developments of note during the past year. The 1,400 ft. level south of the shaft showed some quartz and ore, resembling the tributaries of the ore-body of the 6th and 7th levels, which has been exhausted.

During the year, explorations have been carried on by various companies east of the Norcross and Chollar Companies' grounds, but without success in finding anything of note. The Senator, at a depth of 400 ft., exposed the feldspathic porphyry of the Sierra Nevada 800 ft. level, barren of quartz. The Julia, situated east of the Chollar, exposed, at a depth of 1,100 ft., west of its shaft, some quartzoze material, carrying silver, but not in paying quantities.

II. *The middle portion of the vein*, including Chollar, Bullion, Exchequer, Alpha, Imperial and Empire, etc., an aggregate of 1,800 linear feet, has not shown any new and noteworthy developments during the past year.

1. The Chollar has been at work on the apparently inexhaustible mass of ore of low grade, at and near the surface, and is still extracting from 60 to 70 tons per day of $20 to $25 mill-ore. No new discoveries have been made through the east shaft. The explorations northward in the 725 foot level shows that the body of the Hale & Norcross did not extend as far south as was expected.

2. The Bullion 1,400 foot level, with east drift, did not give encouragement for further explorations. The quartz encountered varied from 20 to 40 feet in width, in places carrying small ore-seams, carrying as much as several hundred dollars per ton in silver, but not in quantities for extraction. The workings of this company are apparently too far to the west to encounter ore in quantity.

3. The Imperial 1,400 foot level showed the vein wider in the three levels immediately above, carrying in places 60 feet width of quartz, with small bunches of ore, but of no value.

III. *The southern portion of the vein*, from the Imperial to the Overmann, does not show, outside of the Belcher and Crown Point ore-body, any new developments.

1. The Yellow Jacket has reached a depth of 1,630 feet. Explorations have been carried on in the 1,300 and 1,400 foot levels through the quartz-body described in last year's report, but without finding anything of note. Small quantities of ore have been extracted from the upper levels. The Kentuck connected the Crown Point and Jacket on the 1,500 foot level through that massive quartz-body which the Jacket developed, but without meeting with ore.

2. The developments in Crown Point are described at length in the official report below. From another source it is reported, that the ore runs from 250 to 300 feet north from the south line, about the same on all the levels worked, viz., from the 1,100 to the 1,500 foot level. Crosscuts east, near the Kentuck south line, show a heavy quartz-body, but no ore.

3. Belcher has attained a depth of 1,460 feet. The appearance of the mine as changed but little from what it was last year. The average length of the ore-body is 320 feet, and its width may be put at fully 40 feet. The most southerly point of the ore-body yet reached is 400 feet from the company's north line on the 1,300 foot level. The average value of the ore is $65 per ton; the daily product 550 tons; and the value of the bullion $2 57 per ounce. The ore-body is of such dimensions that it is even as yet impossible to come to any definite conclusion as to the locality of its center or the direction of its axis; but from all appearance its inclination is northward.

4 The Overmann has attained a depth of 900 feet from the new shaft, which lies 1,500 feet east of the company's old works. At depths of 700 and 900 feet, levels have been run west of the shaft, and about 200 feet north from the company's line some favorable indications were met with. The quartz resembles that of the Belcher ore-body, and its position is S.5°W. from the ore-body in the 1,000 foot level of the Belcher; but the development does not fully justify the expectation of finding ore in paying quantities in the immediate vicinity.

5. Following the western branch of the Comstock (if I may so speak) towards American Flat, quite extensive explorations have been carried on in the various mines from the Caledonia south and west, all of which show the existence of the quartz and low grade ore, which constituted the long ago exhausted western ore-bodies of the Overmann and Uncle Sam, etc., carrying at intervals seams and bunches of rich ore of insignificant dimension. Nothing important has, however, been exposed during the past year.

6. In the ground, south-eastward from the Overmann, towards Silver City, many long-abandoned mines resumed work during the year, and some of them developed bodies of ore, resembling that described in last year's report as extending to the Lucerne. Ore-bodies, from which considerable quantities of ore have been extracted, have led to the resumption of work as far south as Cold Spring Valley. One of the most notable developments here was made by the Dayton Company in lower Silver City, which shows at the present time an aggregate of 300 feet ore-length (in detached bodies) 5½ feet in average width, varying from $20 to $100 in value per ton.

The remarks made in my last year's report relative to the favorable appearance of the Comstock mines, and the great probability that more careful and thorough explorations will expose workable ore-bodies in ground already passed through, but insufficiently prospected, might be repeated here. They have not lost their applicability, either for encouragement or for warning. Indeed, in the latter respect, they have gained force with time. I do not doubt that the present year, while it cannot exhaust the great ore-body from which the Crown point and Belcher have obtained so much profit, and the proprietors of other mines so much hope, will nevertheless reveal more clearly than they are now known, the limits of that body or of its richest mass. Whoever believes that these mines have now at last entered upon a solid and continuous body, extending indefinitely in depth, and precluding for the future the necessity of explorations, will find himself mistaken.

Diamond Drill Boring in England.

LATE English papers give details of the work accomplished by the diamond drill in prosecuting the celebrated Sub-Wealdon trial boring. The early part of this work progressed slowly and cost a great deal, but since the use of the new tool these conditions have been materially altered. In eight weeks 359 feet were bored, or an average of 45 feet per week, beginning 311 feet 6 inches below the surface. It is worthy of notice that in boring the 359 feet only 239 feet 1 inch of core was obtained, a deficiency of 105 feet 5 inches. Something, perhaps, is to be allowed for core standing at the end of the last week reported, but by examining the following table it will be seen that the loss of core was a constant one. The figures given are very instructive, when taken in connection with Mr. HEINRICH's remarks on this subject last week. Perhaps that gentleman will supplement his valuable paper by a statement similar to the following, for the sake of comparison:

Week ending	Depth bored. ft.	in.	Total depth. ft.	in.	Core obtained. ft.	in.
February 7th	14	6	326	6	3	6
" 14th	26	6	353	0	16	6
" 21st	36	10	389	10	14	4
" 28th	32	1	421	11	27	1
March 7th	60	2	482	1	52	4
" 14th	57	3	539	4	30	0
" 21st	81	4	620	8	75	0
" 28th	50	4	671	0	20	0

The bit is 3½ inches in diameter, and has 15 diamonds. It revolves at speeds varying from 150 revolutions per minute in soft rock to 300 in hard. The rock bored through during the time covered by the above report appears to have been to a great degree composed of hard bituminous shales.

The Syracuse Salt Wells.

From the Annual Report of the Superintendent of the Onondago Salt Springs of the State of New York, for 1874, we learn that the amount of salt inspected last year was 7,460,357 bushels of 56 lb. each, of which 30 per cent. was obtained by solar evaporation and 70 per cent. by artificial heat. The wells are mostly in 3 groups, containing 25 wells, with a few others in isolated positions. The total number of "blocks" or boiling rights is 316, of which 202 are active and produced an average of 26,000 bushels each in 1873; their full capacity being 40,000 bushels. This would give more than 8,000,000 bushels evaporated by artificial means. For solar evaporation there are 42,000 vats covering about 800 acres and capable of making 2,700,000 bushels in a good season. This gives a total capacity of 10,700,000, so that the production last year was about 70 per cent. of the possible yield. The cause of the low production was partly the state of the market and partly the loss of time and salt caused by a heavy freshet which made the lake overflow its banks. Several new wells have been bored, and should the market encourage a larger production this year, it can easily be made. Dr. FRANCIS H. ENGELHARDT, Chemist to the American Dairy Salt Company, contributes some interesting tables which show that the strength of the brine has decreased from 70° (of the salometer) in 1855 to 59° in 1859 and 65. 45° in 1873. This falling off he attributes to the greater amount of brine pumped, and concludes that "the basin or excavation of the Onondaga valley is not the actual source of our brines, but only a large store room for the same." He gives analyses of brines from several districts, which show "that the original source of our salt waters must be a very large and extended deposit, which to find should be the main object of all our investigations," and which, if found, would enable Syracuse to compete successfully with all rivals. The new wells are from 301 to 400 ft. deep.

The Diamond Drill for Deep Boring, Compared With Other Systems of Boring.*

BY OSWALD J. HEINRICH, M. E., SUPERINTENDENT MIDLOTHIAN COLLIERY.

[Concluded from page 275.]

THE borings executed by Messrs. MATHER & PLATT by the use of a flat rope and a cutting tool formed of a number of small chisels set in a hollow shank, exhibits so many strong points of competition with the diamond drill that it may be well to calculate the time required to bore with the latter under ordinary circumstances, and with a proper construction of the apparatus. This can be done more accurately with this than with any other drill.

If n denotes the number of feet to be bored, s the number of sections of rod of a given length, t the time in minutes required to bore one foot, t_1 the time in minutes required to raise and lower the rods, it would require in minutes

$$\text{I. } T = n\,t + f(s)t_1$$

to bore the whole distance, in which formula $f(s)$ will be an arithmetical progression depending upon the length of the rods.

The factors t & t_1 can be ascertained for each machine according to its arrangements and speed, and are, in fact, the most important items. If proper observations are made and published they may, in course of time, be accurately ascertained. For deep boring t depends more upon the speed of feeding resorted to than upon the hardness of the rock to be perforated. It will be found in practice that for deep borings we are compelled to reduce the speed to an average which in shallow borings may be varied from, according to the rock, and a more rapid speed used. This is due to the greater length of the rod and its consequent vibratory motion ; t_1 depends entirely upon the conveniences at hand for raising and lowering rods speedily.

The values of t & t_1 approach nearer to an average as the borehole is deepened, calculating them upon sections of 400 feet depth. Long sections of rods consume comparatively less time on account of uncoupling, which may be averaged at about 1½ to 2 minutes for each uncoupling.

For annular bits it is necessary to raise the rods at every ten feet boring ; therefore $f(s)$ will be

For the first	10	feet	1
" 2d	do		2
" 3d	do		3
" $\frac{n}{10}$th	do		$\frac{n}{10}$

and for n feet $f(s) = 1 + 2 + 3 + \ldots \frac{n}{10}$ or $\frac{n}{10} = s$

$$f(s) = \frac{1+s}{2}s$$

Allowing also an incidental loss in time for repairs and accidents of C per cent.

$$\text{II. } T_{400} = nt + \frac{s}{2}(1+s)\,t_1 + C \text{ for the first 400 feet.}$$

To use the formula for greater depths it will require the medium value of t and t_1 for every 400 feet greater depth.

If respectively t_2 and t_3 represent those for the second 400 feet.

t_4 and t_5 " " " " third 400 feet.

$$\text{III. } T_{800} = n\left(\frac{t+t_2}{2}\right) + \frac{s}{2}(1+s)\left(\frac{t_1+t_3}{2}\right) + C.$$

$$\text{IV. } T_{1200} = n\left(\frac{t_1+t_2+t_4}{3}\right) + \frac{s}{2}(1+s)\left(\frac{t_1+t_3+t_5}{3}\right) + C.$$

If the solid concave bit is used, and for the sake of looking after the bit, rods are drawn after every 40 feet boring, the time consumed is again

$$T = n\,t + f(s)\,t_1.$$

Here $f(s) = 1+2+3+\ldots \frac{n}{40}$ or $\frac{n}{40} = s$; again

$$\text{V. } T_{400} = nt + \frac{s}{2}(1+s) + t_1 + C.$$

n being, as before, the number of feet bored, t the time consumed per foot, and t_1 the time required to raise and lower s number of feet of rods, changing the coefficients t & t_1 for greater depth, as above stated.

Until further experience can be collected the following figures may be used with safety :

For 400 feet depth	800 feet depth	1200 feet depth.
$t = 25$ minutes.	$t_2 = 45$ minutes.	$t_4 = 60$ minutes.
$t_1 = 7$ "	$t_3 = 8$ "	$t_5 = 10$ "

The incidental loss, C, may be taken as 10 per cent of the whole time consumed.

Accordingly, a bore hole of 400 feet would require with annular bit:

$T_{400} = 400 \times 25 + \frac{40}{2}(1+40)\,7 + \frac{1}{10}\,T_{400} = 17314$ minutes $= \frac{17314}{720} = 24$ 12-hour shifts.

Also for 800 feet :

$T_{800} = 800 \times \left(\frac{25+45}{2}\right) + \frac{80}{2} + (1+80)\,\frac{7+8}{2} + \frac{1}{10}\,T_{800} = 57530$ minutes $= \frac{57530}{720} = 80$ 12-hour shifts.

And for 1200 feet :

$T_{1200} = 1200 \times \left(\frac{25+45+60}{3}\right) + \frac{120}{2}(1+121)\,\frac{7+8+10}{2} + \frac{1}{10}\,T_{1200} = 157020$ minutes $= \frac{157020}{720} = 218$ 12-hour shifts.

If the solid concave bit is used the coefficient t might probably be only 20_m per foot. Raising rods at every 40 feet $t_1 = 14_m$. and :

$$T_{400} = 400 \times 20 + \frac{1+10}{2}\,10 + \frac{1}{10}\,T_{400} = 9647 \text{ minutes} = \frac{9647}{720} = 13.4 \text{ 12-hour shifts.}$$

The bore hole at Gillick in the Cleveland District, England, (ENGINEERING & MINING JOURNAL, May 6th, 1873) is one instance, 902 feet being bored in 45 days, to prove that these figures are by no means exaggerations, if even the actual results in this paper, for reasons stated, fall short of it.

The expenditures per day for a machine of moderate dimensions, such as the No. 1 prospecting drill of the American Diamond Drill Company, would be:

For labor	$6 50	Lubrication	50
Coal @ $3 per ton	1 00	Interest and wear	1 92
Supplies of all kinds and repairs	11 00		
			$20 92

Therefore, a bore hole of 400 feet ought not to cost more, in round numbers, than $504; one of 800 feet, $1680; and one of 1,200 feet, probably $4,800.

Even if these figures are apparently low, the actual expenditures of the bore hole at Midlothian—$2007 for 827 feet—will give sufficient proof that no other mode of boring, so far, can stand against this competition.

To help to build up and bring to perfection this system of boring may, therefore, offer a new field for the profession; and members of the Institute are earnestly solicited to contribute for this object all communications within their reach.

DISCUSSION.

The session adjourning immediately after Mr. HEINRICH ceased reading, the President, upon opening the afternoon session, called for remarks upon the paper.

Mr. E. B. COXE asked if there was no possibility of the rod turning when extracted, and thus vitiating the conclusions arrived at from the marking of seams, etc., on the core. Would not the slight amount of torsion which existed in the rod when the boring ceased, cause the same to revolve slightly when it was lifted ?

Boring would be impossible without some pressure on the bit, and the amount of this pressure would, in any given instance, be the weight of the rod less that portion of the weight which was suspended at the surface, and therefore there must be some torsional resistance, however slight.

Mr. HEINRICH—With the round rope the core might turn, but not when the flat rope is used. The core-catcher does not take hold until all boring has ceased. There is no possibility of the core turning after the core-catcher has once taken hold. There is, moreover, not sufficient pressure on the bit to cause any torsional resistance ; the weight of the rod is suspended by friction rollers at the surface, and when it reaches the bottom its weight is to a very small extent only relieved by the rod resting on the bottom. The pressure of the bit is only just sufficient to enable the diamonds to grind away the surface with which they are in contact. It is not necessary to exert a pressure sufficient to exert a *cutting* action of the diamonds, as the surface they remove is of infinitesimal depth. The action of the feed is such that exactly the pressure necessary for the abrasive work of the tool is communicated, and no more. The length of the rod makes no difference, the pressure being the same with 800 as with 10 feet of rod. This pressure varies with the speed at which the drill runs. I am not in favor of too great speeds, though, if desirable, it is perfectly possible to run at 400 to 700 revolutions per minute.

The President, Mr. RAYMOND, asked about the mode of setting the diamonds by hydraulic pressure described by Professor BLAKE a year ago.

Mr. HEINRICH replied that he had studied the subject, and thought that for the side diamonds this method might be preferable, but if it were attempted to set the diamonds in the head of the cutter in this way, the metal would have to be cut away so much that the pressure would break the head. His practice was as follows : The workman carefully examined each diamond, and cut a hole which exactly corresponded to the faces on the stone. All the holes for the head were cut and finished before any one of the stones were set. When complete, the workman put in the stone, and with a hammer closed up the steel firmly about it, taking great care not to carry the compression of the diamond too far, as there is danger of cracking it.

Professor BLAKE said that the setting of the stones by hydraulic pressure, formerly described by him, is no longer in use. It was found in practice that there was some irregularity in the work which was probably due to the intermittent action of the pump. At present the stones are set by pressure given by a screw, which is found to work more regularly. The hole is cut to fit the diamond exactly as Mr. HEINRICH had described in his method, but the hole is not cut entirely through the steel. On the contrary, a thin bottom is left which is so cut as to exactly correspond to those faces of the stone which have been selected for the cutting surface. The latter is then taken to an emery wheel and the steel cap is ground off, leaving the diamond exposed. This is the method now pursued by the Diamond Drill Company.

The President, Mr. RAYMOND, pointed out that this method would not permit the resetting of loose stones.

In answer to an inquiry respecting the kind of diamond used, Mr. HEINRICH said that he had found a reddish looking, kidney-shaped stone better than the common black diamond. Borts are used for the side stones, but for the end of the tool the black, or, better still, the reddish diamonds above mentioned, are the best on account of their greater surface.

* A paper read before the American Institute of Mining Engineers, New York, February 26, 1874.

THE ENGINEERING AND MINING JOURNAL.

NEW YORK, SATURDAY, MAY 9, 1874.

ROSSITER W. RAYMOND, Ph. D., JOHN A. CHURCH, E. M., } Editors.
RICHARD P. ROTHWELL, C. E., M. E., Editor of the Coal and Iron Department.

The Engineering and Mining Journal, is devoted to Mining, Metallurgy and Engineering. Communications on these subjects will always be welcome.

It is the Official Organ of the American Institute of Mining Engineers, and it alone publishes the valuable papers read before that influential society.

Correspondence and general communications and books for review should be addressed to the Editors. Business communications should be addressed to the Secretary.

Remittances should always be made by Post-Office Orders or Bank Drafts, made payable to WM. VENTZ, Secretary.

Subscription $4 per annum ; $2.25 for six months, in advance.

Advertising Rates. Inside pages 25 cents per line each insertion. Outside pages 40 cents per line. Special reduced rates will be given on application for advertisements extending over a long time or occupying a large space.

The legal rate of Postage on the ENGINEERING AND MINING JOURNAL addressed to its regular subscribers, is 20 cents per annum, or 5 cents per quarter, PAYABLE IN ADVANCE. Subscribers who receive their copies by letter-carriers will please hand the annual or quarterly postage to the carriers, taking their receipts. If any higher rates are demanded, report the facts to the local Postmaster. The postage on copies directed to subscribers in New York City has been prepaid by the publishers.

Our authorized agents for Philadelphia and vicinity are Messrs. COFFIN & MITCHELL, 725 Sansom Street, where information with regard to rates of advertising, can be obtained.

THE SCIENTIFIC PUBLISHING COMPANY.
WILLIAM VENTZ, Secretary,
P. O. BOX 4404. 27 Park Place, New York.

CONTENTS FOR THIS WEEK.

THE funniest result of the great peat excitement last year was that Lord GRANVILLE, who occupied the position of Foreign Secretary in Mr. GLADSTONE'S Government, got the impression that peat was "likely to take the part of coal in many parts of the Union," (*vide Mining Journal* April 18, 1874), and he accordingly directed the British Consuls in this country to report on the subject. Of course there was but one answer—that peat had no chance except when coal was extremely high. One manufacturer who had a peat bed close to his factory, found it cheaper to buy coal and pay 75 per cent on its prime cost for transportation.

DR. H. C. BOLTON suggests in the *American Chemist* that the present year may fairly be considered to close a centennial of chemical science, and that it ought to be noticed as such. In a science so steadily progressive as chemistry is, and which undeniably dates back to early times, it might be difficult to fix on some distinguishing fact were it not for the striking re-arrangement of chemical knowledge which followed the generalizations of LAVOISIER, and these generalizations were themselves a result of PRIESTLEY'S discovery of oxygen. This discovery was made in 1774, so that Dr. BOLTON has really selected a year which, in addition to many investigations pregnant with future importance, presented one of those fundamental brilliant discoveries which fasten the attention of the profession in all future time. The present year, therefore, does recall one of the most individually important triumphs which science ever gained, and it is, perhaps, the best date to select for an anniversary. At all events it is sufficiently good to make Dr. BOLTON'S suggestion, that the chemists should hold a social re-union this year, a very apt one. The Editors of the *Chemist* endorse the proposal in hearty terms, as we also do. They ask for suggestions, and we trust the subject will meet with the approval of the profession.

THE explosion of a so called "boiler" in Condit's paper mill at Shawangunk, New York, is an occurrence worthy of notice. It was not a boiler for generating steam, but consisted of a shell 20×7 ft., which revolved on hollow trunnions, and through these steam was introduced from an ordinary boiler on one side, and alkali (in solution) from another cylinder on the other side of the now exploded boiler. The steam is reported to have been used at 100 lb. pressure, and the shell is said to have leaked in one seam for about six weeks. Here we have a boiler in which the usual conditions are all satisfied except the presence of a fire-place. There is a bath of hot liquid and steam at a high pressure, within the structure. Considering the nature of the solution, it is evident that the temperature in the exploded boiler must have been above that which would have existed with a similar pressure if pure water, instead of a strong alkaline solution, had formed the bath. When the explosion came it manifested the usual intensity of such occurrences. A piece of the shell, reported to weigh 6 or 7 tons, "was hurled far away on to an adjacent hill," and the whole mill was completely wrecked. Twenty three persons were in the building at the time, the hour being just before 6 P. M., and of them seven were killed and three injured. This loss of life will doubtless give rise to a thorough inquiry into the circumstances. Unfortunately the press reports are so sensational in character as to be unworthy of credit at present, however faithful they may hereafter prove to be.

Conditions which Affect the Quality of Lead.

THE remarkable improvement in the quality of lead which the modern methods of refining have produced may be estimated by comparing any series of old analyses with the following, which are taken from the *Preussische Zeitschrift* for 1870. They include 22 analyses, of which 20 were made by the same chemist. The fact that all of these analyses were made in one laboratory by similar, or identical methods, gives to this series an advantage for comparison which analytical work rarely presents. We cannot, in every case, be sure of the process by which these leads were made, but will divide them to the best of our belief as follows :

I. Virgin Lead produced by Roasting and Reaction ; per cent. of impurities.

	Year.	Copper.	Antimony.	Iron.	Zinc.	Silver.
1. Villach	1868	0·0021	0·0052	0·0025	0·0032	trace
2. Tarnowitz	"	0·0013	0·0022	0·0080		0·0015
3. Bleiberg (Belgium)	"	0·0014	0·0037	0·0016	0·0016	0·0008
4. Silesia	"	0·0019	0·0013	0.0013	0·0014	0·0025
		·0017	·0031	·0023	·0026	·0016

None of the above were refined by zinc, and we presume the same is true of the following English brands :

II. Virgin lead. English process. Heat higher than in the above.

	Year.	Copper.	Antimony.	Iron.	Zinc.	Silver.
5. Wm. Blackett & Co	1868	0·0034	0·0046	0·0012	0·0070	0·0035
6. Joster Blackett & W	"	0·0526	0·0074	0·0015	0·0018	0 0040
7. Enthoven & Sons	"	0·0094	0·0021	0·0016	0 0010	0·0007
8. Common Lead Co., *best.*	"	0·0236	0·0058	0.0021	0·0018	0·0010
9. Pontifex & Wood, selected.	"	0·0758	0·0032	0 0022	0·0032	0 0020
10. Real. Comp. Asturiana	"	0·0006	0·0013	0·0012	0·00008	0·0040
		·0276	·0041	·0016	·0024	0·0009

III. Refined work lead, from pure ores by Roasting and Reduction.

	Year.	Copper.	Antimony.	Iron.	Zinc.	Silver.
11. Mechernich	1868	0·0060	0·0020	0·0040	0·0030	0·0009
12. "	1868	0·0023	0·0031	0·0017	0·0026	0·0005
13. "	1869	0·0024	0·0019	0·0009		
14. Pirath & Jung	1868	0 0034	0 0081	0·0013	0·0009	0·0023
15. "	1869	0·0027	0·0092	0·0012	....	0·0028
16. Stolberg double ref.	1867	0·0501	0·0021	0·0008	....	0·0044
17. "	1868	0·0383	0·0050	0·0024	0·0018	0·0025
18. "	1870	0·0019	0·0025	0·0007	....	0·0010
19. Herbst & Co	1868	0 0070	0·0030	0·0050	0·0030	0.0006
20. "	1869	0·0051	0·0045	0·0020	....	....
		0·0119	·0041	·0020	0·0022	·0020

IV. Work lead from impure ores by Precipitation, refining by zinc and steam (21), or zinc and poling (22) :

	Year.	Copper.	Antimony.	Iron.	Zinc.	Silver.
21 Lautenthal	1870	0 0014	0·0057	0·0023	0·0008	0·0005
22 Altenau	1870	0·0020	0·0033	0·0012	0·0008	0·0007

In addition to the above, some of these brands contained other elements, as follows : (10) 0·0104 per cent. bismuth ; (13) 0·0008 per cent. nickel ; (16) 0·002 per cent. bismuth ; (18) 0·0037 per cent. bismuth, and 0·0009 per cent nickel ; (19) 0·0001 per cent. nickel ; (21) 0·0055 per cent. bismuth, and 0·0007 per cent. nickel ; (22) 0·0037 per cent. bismuth, and 0·0007 per cent. nickel.

Although made by one hand, these analyses are not strictly comparative, for the reason that the samples upon which they were made were taken at periods extending over three years. Short as this time is, it has latterly sufficed for great changes in the metallurgy of lead. Of the four works producing virgin lead, three now use the zinc process, which they did not use in 1868. Still, as it is not our object to discuss the merits of particular works, but to bring out some facts in connection with the physical characters of lead, we will disregard this discrepancy and also take the liberty of averaging the results in each of the classes we have presented, as follows :

	Copper per cent.	Antimony per cent.	Iron per cent.	Zinc per cent.	Silver per cent.
Virgin	0·0017	0·0031	0·0023	0·0026	0·0016
English	0·0276	0·0041	0·0016	0·0024	0·0009
Roasting and Reduction	0·0119	0 0041	0·0020	0·0022	0·0020
Precipitation	0·0017	0·0045	0·0017	0·0008	0·0021

From this comparison it will be seen that the differences between these classes are very slight. Not one of them contains half a per cent. of impurity. The virgin lead of six years ago contained only 0·0113 per cent. of foreign elements ; the Hartz lead of 4 years ago contained 0 0108 per cent. ; the Rhine leads made by blast furnace process in 1868-70 contained, 0·0222 per cent., and finally some very select brands of English lead, made 6 years ago, contained 0·0366 per cent. Of these brands nearly all but the Hartz lead have been improved somewhat since these analyses were made, and for this reason we have placed the almost chemically pure refined virgin lead first.

Let us now see which of the brands represented in these analyses are suitable

for corroding. It is an old observation that the exact proofs of analyses only confirm the conclusions previously reached by business men. Thus we find that with the white lead makers the different brands of foreign lead are ranked about as follows: Tarnowitz, Münsterbusch, (in Belgium,) Bleiberg, (in Belgium,) all of them refined virgin leads, made from pure ores in the reverberatory furnace. Next come Stolberg and the other Rhine leads, made from ores mined in Spain or taken from that wonderful sandstone layer at Commern, on the left bank of the Rhine. These brands are made in the shaft furnace. By turning to the analyses we publish, it will be found that these are among the purest we have quoted. It is a remarkable fact, also, that some of the best (Tarnowitz and the Rhine brands) are made from a mixture of galena and pure carbonate of lead. The other brands of lead represented in these analyses are rejected by American makers of white lead, though they are employed abroad where a less exacting standard of quality is used. The English and Hartz leads cannot make any headway against the convictions of paint manufacturers of the Atlantic States.

The point we wish to bring out in connection with these analyses is the doubt which every one must feel as to whether the rejected brands are really unfitted by lack of purity for corroding. The Hartz leads which contain 0·0164 and 0.0144 per cent. of impurity are rejected, and Stolberg lead with 0.0105 per cent. is accepted, and what is the difference between them? The former contains in a ton of 2,000 lb.,4 ¾ *ounces* (Troy) of foreign metal, while the latter contains only 3 ounces! Even this is not a full statement of the case. The impurities in question are 5 in number. Antimony and zinc both give a white powder, and even if their oxyds and carbonates were a little less brilliant than those of lead, the effect of mixing 2 or 3 ounces of oxyd or carbonate already formed of these metals with 29,163 ounces of lead oxyd or carbonate, would be altogether too small for the eye to detect. We venture to say that if any of our readers will try the experiment in those proportions, the color of the mixture will not sensibly vary from that of the pure white lead of the same fineness. When we consider the oxyds and salts of copper, iron and silver, the case is different. They are colored and might be expected to affect the shade of the product. Still, in view of the fact that the sulphate of copper is sometimes designedly mixed with carbonate of soda to remove a gray tint, and that it is used to the amount of a half of one per cent. for that purpose, it is evident that the effect of ½ to ¼ oz. of copper in a ton of lead cannot be very great. Silver is said to communicate a reddish tint to white lead, but this belief, which is common among white lead makers, has been distinctly denied by a French chemist who studied the subject. We are inclined to accept this denial, for the reason that all lead—even when not considered argentiferous—contains silver. The Hartz lead, according to the above analyses, contains one-seventh to one-fifth of an ounce of silver to the ton, and only two of the analyses given show a less quantity. Indeed, we are inclined to think that there is next to no fine lead made which is poorer in silver than this. All white lead contains silver in some proportion, and it is doubtful if the rosy tinge is due to this element.

There is one element which very rarely appears in analyses of white lead, or of pure lead of a quality fitted for corroding, and that is *sulphur*. When we consider that every pound of the best lead is made from a sulphur compound of the metal, it is at least extremely probable that a trace of this element is left in the lead. The French chemist, before referred to, attributes the rosy tinge of some paint to a minute trace of sulphur, and considering the great coloring power of lead sulphid, it is very probable that the gray tint of the second rate brands of white lead is due to this substance, present in very small quantity.

But aside from the effect of special ingredients, the unsuitability of some brands for corroding may be due to causes very different from mere lack of purity. It is well known that the circumstances—including temperature, time and surrounding substances—under which chemical compounds are formed, may affect their character very decidedly. Both nature and art furnish numerous examples of this. Thus the mineralogies tell us of Palladium which crystallizes in the 1st system, and Allopalladium which crystallizes in the 6th system. n spite of this marked difference in structure the two minerals are composed of the same element—palladium—in the pure state. The Diamond, Graphite and charcoal is another instance of the same substance varying widely in form, color and weight. In the field of composite substances many similar series are known. The explanation of these phenomena is that the substances are formed of molecules in a greater or less state of condensation. Thus, if we grant that Palladium is made up of molecules containing 1 or 2 atoms of the element of the same name, Allopalladium will differ only in being composed of molecules containing 3 or 6 atoms. The difference is not one of composition but of aggregation.

It seems to us highly probable that a similar cause may operate in the case of these brands of lead. If temperature can affect the constitution of the product, we have in blast furnace and reverberatory furnace lead a striking difference. The former is as near a white heat as lead can be, it is at least a brilliant red. In the latter, the metal is hardly altered in color, often retaining its well-known bluish gray hue, only made a little silvery by heat. In regard to time, the blast furnace lead is kept at a high temperature much longer than the metal in the reverberatory, being tapped off two or three times a day. In the latter furnace the metal is mostly made within three or four hours after charging, and immediately tapped. In respect to the physical condition of the charge, just as great differences are noticeable. Blast furnace lead is made in presence of a perfectly fluid charge; reverberatory furnace lead (that is, the best brands) is run out from a mass that is only softened by the heat.

These differences are evidently sufficient to have strongly marked effects upon the molecular constitution of the metal, if anything will affect it in that way. Certainly it would seem to be more profitable to study the subject from this standpoint than to suppose the whole question is included in a minute difference in composition; a difference that, if made up by mixing together the separate ingredients, would probably have no effect upon the result.

The question is one of great importance. The white lead factories of the Atlantic States produce the best paint in the world, and their circumstances are such that they must continue to do so. To accomplish this they must use only the best materials, and to decide what are the best they have devised no better way than to experiment with every known brand. In spite of almost innumerable investigations, they do not seem to have advanced even one step toward the solution of the problem, unless the conviction that mere analysis of a given lead will not give decisive results, may be called a progressive step. Some new course should be tried, and it seems to us that a careful study of the subject by those in the secrets of the trade ought to be sufficient. Both lead producers and lead users in this country would be deeply interested in the result.

The Magnetic Iron Ores of New Jersey—Their Geographical Distribution and Geological Occurrence.*

BY PROF. J. C. SMOCK.

THE magnetic iron ores of New Jersey are found in the northern part of the State, in the Highland Mountain range, which runs from the New York line on the northeast, to the Delaware River, near Easton, at the southwest. The same range continues across Orange County to the Hudson River, and towards the southwest it is known in Pennsylvania as the South Mountain. It is more properly an elevated table-land, quite deeply furrowed by several narrow, longitudinal valleys, and shorter cross valleys or gaps. The ridges or lines of elevation, as well as the lower valleys, conform in their general direction very closely to the general trend of the whole belt or table-land, that is, from northeast to southwest. This also agrees with the prevailing strike of the rocks. This great uniformity in the altitudes of the hills and ridges, and the direction of the lines of depression corresponding to the strike of the strata, point to an original table-land, which, through the long action of denuding agents, has been quite deeply eroded, giving rise to the present surface configuration, so that some of the former and uniform features have been partially obliterated. The very few cross-valleys or depressions are much more irregular in their course, and serve as outlets through which the drainage is carried, either into the Kittatinny Valley on the northwest, or to the broad red shale and sandstone plain bounding the Highlands on the southeast. The area of this Highland region in New Jersey is about nine hundred square miles. Its average elevation above the ocean is about one thousand feet.

Except the valleys towards the northwestern border, as the Wallkill, Musconetcong, Pohatcong and German, which contain magnesian limestone and Hudson River slate, this whole range consists of crystalline rocks, mainly gneiss, granite, syenite and limestone, covered in many places by drift and alluvial beds. These rocks resemble closely those of the Laurentian formation of Canada, both in their structure and in their mineralogical characters. Stratification is nearly everywhere plain, indicating a sedimentary origin and subsequent metamorphism. In the Geological Survey reports of the State they have been described as belonging to the "Azoic Formation."

It is in this series of crystalline, metamorphic rocks, that the magnetic iron ores occur. The extent of this outcrop and the iron mines and localities at which ore in workable amounts has been obtained, are both indicated upon the geological maps of the State survey, one of which has just been published.† This map shows the mines as in lines nearly parallel to one another, and having the same direction as that of the whole belt or range. In some instances they are so close as almost to form a continuous line, as the Mount Hope, Allen, Baker, Richards, Mount Pleasant and others, near Dover, in Morris County. Others appear in a sort of *en echelon* arrangement.

This occurrence in *lines*, or what may be more properly termed *ranges*, is so well known that miners and those searching for ore speak of veins continuing for miles, and of certain mines as belonging to certain veins. Large and productive mines, as the Hibernia, Mount Hope, Dickerson, Ogden and Kishpaugh, with others, give names to such lines. The complete breaks in veins worked, and the absence of any indications of continuity, show that these popular theories are not yet substantiated by the facts, although, if by the terms *lines* or *veins*, or, better, *ranges*, series of ore-beds whose several lines of strike or axes run closely parallel to one another, are meant, then they have a foundation in truth. In the "Geology of New Jersey," published in 1868, the mines then opened were grouped in such lines, and these were called ranges. The map accompanying that report, as well as the one just issued by the State Survey, shows these lines and the intervening barren belts. A comparison of these two maps confirms in some degree this theory of ranges, or what would be better termed, ore-belts, inasmuch as the hundred or more new mines and ore outcrops opened since 1868, and represented on the latter map, are nearly all either on old and well-known lines or what must be considered as new ones. These discoveries have shortened the gaps and widened the ranges. Thus the new mines near Chester, and those along the eastern base of Copperas Mountain, all in Morris County, have filled in wide blanks, and greatly extended what were but very faintly indicated as

* A paper read at the New York meeting of the American Institute of Mining Engineers, February 26, 1874.

† A geological map of northern New Jersey on a scale of two miles to an inch, printed in colors, was exhibited.

ranges or belts of ore. The numerous openings quite recently made on Marble, Scotts, and Jenny Jump Mountains, in Warren County, constitute a new and marked line. In this, the manganiferous character of the ore throughout its whole length seems to give additional evidence in proof of such a relation. An order of arrangement or division into such lines or belts, based upon lithological and mineralogical characters, has not been possible, but it is hoped that further studies will develop the existence of such characteristic features which will confirm the indications from the geographical distribution.

The last map also shows *groups of mines*, between which very little ore has been found. One of the best known and largest of these groups is near Dover, Morris County, and a map of this district was published in 1868. Northeast of this there is an interval of several miles, extending almost to Ringwood, in which there are no working mines, and comparatively but few localities where ore is known to exist. But the newly opened Board, Ward, Green Pond, Pardee and Splitrock mines show that the lines of ore are beginning to be traced into this hitherto barren district, and point to future discoveries which will connect the Ringwood and Sterling groups with the Morris County lines. A lack of cheap and ready transportation has prevented the thorough examination of this part of the State, or the development of any localities which were promising.

The extended workings in the older mines are also doing much to prove the great length and probable continuity of some of these veins. Thus the long line from Mount Hope to the Dickerson mine, a distance of seven miles, has been so opened as to show an almost uninterrupted bed or vein of ore, or a series of veins parallel to each other, and all within a very narrow belt. And all the facts of geographical distribution, as well as the arguments which could be drawn from the probable mode of origin of this ore, tend to support this theory of *lines* or *ranges*, or better, perhaps, *bells* of ore.

TO BE CONTINUED.

The South African Diamond Fields.

THE diamond fields of South Africa are seeing dark days. At the principal bed—Colesberg Kopje—the product has fallen off 50 per cent. from the average of the last two years, and 30 per cent. below that of last year. The rains have caused heavy cavings of the deep pits which formed the diggings, so that one-third of the ground is thought to be covered up by slides, which it will hardly pay to remove. The deep diggings are flooded, and there is no way of drying them, except the bucket and rope, working through depths of 180 feet and more. The value of claims is steadily falling, the diamond colony is poor, and the whole condition of things will be sufficiently indicated to any old Californian by the fact that loans are made on the mining licenses at the rate of 10 per cent. a month, with foreclosure at the end of the first month! The river diggings which reach for a distance of 150 miles are in no better condition.

In these African camps diamonds take about the same place as gold dust does in a placer camp, but with a difference. In the latter the dust is itself the common currency. In the diamond camps the small stones form the basis of value, and would doubtless be used as the common currency but for one fact. While the value of gold is directly proportioned to its weight, a pound nugget being worth exactly 12 times as much as an ounce nugget of the same fineness, the value of diamonds increases with enormous rapidity as they grow heavier, so that they cannot be paid out in pinches as gold can. For that reason they occupy in South Africa about the same position as gold coin now has to greenbacks. Transactions take place in diamonds, but the amount of the exchange has to be estimated in another currency.

Mining Engineering.

By Prof. F. L. VINTON, E. M.

Concluded from page 247.

FINALLY, the same exploitation may be undertaken by the method of galleries and pillars, with or without robbing.

Firstly, if filling is utterly deficient and the coal of little value, the field is simply crossed up by a net of galleries 3 or 4 ft. wide, leaving pillars of dimensions strictly adequate to resist the pressure of the roof, after which the exploitation is abandoned with the loss of one-third the mineral. If, however, some filling can be procured, or it be even deemed advisable to introduce a little in order to secure the great majority of the coal by robbing the pillars subsequent to the tracing of the galleries, then these last are spaced so as to leave the pillars voluminous and possesssing a considerable excess of strength above that demanded for support. This course is pursued because, when the pillars are afterwards robbed, the coal will be in better condition than if it had stood subjected to enormous pressure in smaller masses. The conduct therefore of an exploitation by pillars and galleries with robbing is generally as follows: A main gangway is drifted from the shaft along the axis of the field. On each side of this, as well as around the shaft, masses are reserved sufficient for the substantiation of the works; and, moreover, if the mine be subject to fire-damp, the field will be divided into boundaries, separated by considerable walls of coal, which are not pierced except when unavoidable for ventilation and transportation passages, which can be stopped by doors or walls if danger declares. Any one, then, of these compartments or boundaries is worked into galleries and pillars quite isolated from the others; the pillars are left 20m. on the dip by 10m. on the strike, and the galleries are made 3m. to 4m. wide, their height being that of the bed. The galleries are in themselves a real exploitation as well as preparation, but as the pillars cannot be robbed until the galleries are pushed to the limit of exploitation, the temptation to present prematurely a magnificent outcome of coal leads the miner sometimes to diminish or cut through the pillars before the time, a proceeding reprehensible, first, because it weakens the general support; second, because it is cheaper to rob than to cut the massive pillars; and, third, because the robbing of weakened pillars gives a deteriorated product.

The robbing begins with the pillars on the farthest line, and is a general uncoaling followed by a subsidence of the earth. The line of retreat is maintained not only well supported, but also unbroken and regular, lest some outlying column be crushed by an undue concentration of pressure. In commencing, the miners attack simultaneously all the pillars on the line, and as each of these is well disengaged by the tracing, the breaking down is large, rapid and easy, burdened only by the onus of sustaining the roof and combating the irregularity of its subsidence.

EXPLOITATION OF THICK BEDS.

The general conditions of a wise project here, as ever, are the securing of all the coal possible in the best condition, and assuring the safety of the works and workmen.

Beds over three meters thick are exploited in two very different manners, which may be resumed in short under the heads, viz., with filling, and without filling.

An exploitation without filling must assume the disposition of galleries and pillars. If the pillars are to be abandoned, the character of the works is precisely the same as has been delineated under a similar title in metal mining. The galleries are made high to diminish the number of sills, and the pillars are arranged in each story directly over those below. If the miner proposes to rob the pillars, the bed can only be treated by supposing it a series of layers, 3 m. thick, more or less, and attacking these layers by pillars and galleries of the ordinary dimensions, beginning at the top layer. After the earth has subsided in the first layer, and been left awhile to consolidate, the second can be engineered in the same manner—a proceeding not so difficult or dangerous as it might seem, particularly in the robbing, because the caving presents a more constant regimen there, and can therefore be more easily governed. The disadvantages of such a method are, first, that the surface of the earth is disturbed over the cavities, a condition which, in many cases, might be disallowed, or at least burden the exploitation with indemnities; and, second, that it must produce in the cavities quantities of crushed coal spontaneously inflammable.

If, then, under certain circumstances, it is judged more economical to exploit with filling, the methods are variable, but all result in solving the same problem, namely, to substitute successively for a partial volume of coal extracted, an equivalent cube of filling, obtained usually from the exterior, and either thrown down a special pit or transmitted in the returning cars which brought up the coal. In case of flat, thick beds treated thus, it is convenient to work out in layers, each attacked by pillars and galleries, the exploitation being filled during the robbing with rock, ashes and scoriae, and a good packing earth at the bottom, which, by the compression of the subsiding country, forms a compact, manageable roof for the works in the next layer. When, however, thick beds of coal approach the vertical, the difficulties of their exploitation are enhanced by the compressibility of the filling, which, if the exploitation were conducted on layers from above downward, would soon charge it with a superincumbent mass, unstable and liable to sudden movement. In such case, then, the rational march of the process is from below upward, and the attack of the bed may be by traverse headings, two meters wide. Separated by masses of the same width, the traverses are served by a longitudinal gallery, which is in communication with the shaft, and also, perhaps, with a pit into which the filling is cast from the surface. Each and all of these traverses being filled, the contiguous masses are in their turn worked out and stopped, a process which results in the complete winning of a table of coal as thick as the traverses are high, say two meters. One or two more layers may be excavated and replenished in the same manner, working on the filling below until it is found expedient to make new adits from the shafts and recommence the series of operations. One level of adits and galleries may serve conveniently for the exploitation of three of these tables of coal, that is, of a layer 6 m. thick; and if, during the operation, the filling become compressed to a stability justifying the step, the next level may be opened 6 m. underneath, so that the general march may be from above to below, while the detailed operations depart in the contrary direction. This is a method whose attack is considerably subdivided, and therefore applicable to beds in which the mineral is unsolid or fissured by the pressure from old excavations not filled. If, however, the coal be sound, another and larger style may with advantage be adopted. This is served by two longitudinal galleries, one, the lower, on the roof, and another, the upper, on the wall of the bed, 5″ or 10″ apart vertically. The lower is the rolling way, and communicates with the shaft; the upper communicates with the pit, through which the filling is forwarded. At any point, then, from the lower gallery a heading is drifted straight across to the foot wall, and from there up to the gallery above. This disengages on two faces a prism of coal, say two meters wide, and evidently in a situation to be attacked by overhand stoping This is, in fact, done proceeding from the foot wall to the roof, and by degrees, as the coal is worked down and discharged through the lower gallery, the filling is brought in through the upper and dumped into the void. When a slice is thus excavated, and its bulk replaced by filling, a contiguous one is exposed and assaulted in the same manner, the operation continuing indefinitely until all the mineral mass between the two galleries has been extracted. The galleries are spaced farther or nearer according to the consistence of the coal. This method presents the advantage of, first, avoiding the maintenance of galleries in juxta

position with the fillings; second, of casting the filling directly into place without shovelling and building; third, of easily barring and isolating a work in case of fire.

From the foregoing it is patent that the exploitation of thick beds of coal is not naturally in economical conditions, and that, having given a certain volume, it is far preferable that it should lie in separate seams of moderate width rather than confront the miner in that accumulated bulk which astonishes and pleases the imagination, but disappoints greatly the rationale of engineering. Coal mining is, in fact, the most onerous, dangerous and perplexing of all exploitations. The mineral is not high-priced, yet just so valuable that the least possible should be left in the abandoned works, where it is lost forever. It has to be extracted in large masses, and the sources of water and deleterious gases thus disengaged on considerable surfaces occasionally give outlet to invasions of the works which may promptly annihilate the labors of time and compromise the existence of the laboring life—dangers which only manifest themselves when there is no longer time either to apprehend or resist them; in short, it is mining which, in some conditions, paralyses all the resources of science and industry, and would in still more were it not for special means of safety and ventilation and the progress of the steam engine.

THE editor of the London *Cosmopolitan* will come to this country in a short time for the purpose of examining the mines of the West and the country that holds them. He appears to be determined to form his own conclusions about matters which are so loudly disputed over in London. His conclusions are to be published in his paper, and we believe he intends to copyright them, which doubtless means another book about us.

A Fiery Mine.

The occurrence of large quantities of fire damp in our hard anthracite coals was, till recent years, generally discredited on the ground that the heat that was sufficient to transform bituminous coal into anthracite would have left little, if any, free carburetted hydrogen in the strata. As the workings on certain coal beds attained considerable depths, this gas was met with in quantities fully as great as in any bituminous coals. Indeed, it would appear to be under a tension in the anthracite as much higher as that coal is harder than the bituminous. We therefore find the gas issuing from the pores of the coal in such quantity that in the mine to which we shall presently refer, in passing the hand over the fresh cut face of the coal in a new heading, "it feels almost like the blast from a hand bellows," and when powder is used in driving the heading, the gas takes fire after nearly every shot, requiring, in many cases, the greatest exertion to extinguish the flames. As drifts are driven out into new ground, the gas drains off, and, little by little, the danger diminishes as the extent of the workings increases.

Probably the most fiery mine in this or, perhaps, in any other country, is the Prospect shaft of the Lehigh Valley Railroad Company (the Luzerne Coal and Iron Company), near Wilkes-Barre, Pa. This pit is down 600 feet to the "Baltimore" or "big" vein, which is here in two benches, of 8 or 10 feet each, and separated by some 15 or 20 feet of hard sandy shale. Gas in great quantity is met with in both of these beds of coal, and blowers in the shale separating them. The upper bench is, however, always more fiery than the lower. As the company has, as yet, but one opening to the mine, no work is being done inside, except driving gangways, intended to open up and prove the coal. These headings are driven double, each being not less than 12 feet wide by 7 feet high, and the pillar between them is 15 to 25 feet thick, with cross headings every 50 or 75 feet. One of these headings is for the main gangway, the other for the airway. When the driving has advanced 10 feet beyond a cross-cut, a brattice is put in to carry the air up to the face, for it is found that the quantity of fire-damp given out by the coal is so enormous, that if the face of the work be more than 10 feet in advance of the brattice, the gas will accumulate even when the quantity of air passing through the gangway be from 20,000 to 30,000 cubic feet per minute; fifteen feet ahead of the brattice the gas will ignite in the safety lamp. Now, when we consider the velocity (600 feet per minute) of the air current at the end of the brattice, being the velocity of a pleasant breeze, and the volume of air circulating, we can form some idea of the enormous quantity of gas generated.

The coal is so hard that it is found necessary to use powder, and the feeders of gas ignite quite frequently after a shot. These blowers will burn in a steady jet, frequently many feet in length, and if the flame be not at once extinguished, it quickly ignites the coal, and under the great draft the fire would spread with wonderful rapidity.

Experience in fighting these fires has shown that the most efficient means of getting control of them is by the use of fire extinguishers, such as the Gardner, etc. Those in use here are the Green & Platt patent. They are brought into requisition as soon as the shot goes off, and in a few minutes will generally extinguish the flames. A car with water stands a short distance back from the face of the gangway, and a 3-inch water pipe leads down the shaft and up to the face of the gangway, where it is provided with hose and nozzle. As the water is under a head of 600 feet, this forms a most efficient fire-engine.

Recently, the fire got such headway that it was found impossible to subdue it with the fire extinguishers (the water pipe was not then laid along the gangway), and the pit had to be filled with water. In closing it, a number of explosions occurred, but owing to the arrangement of the head house, which is simply a skeleton frame, without roof, to carry the rope sheaves, no damage was done above ground. On pumping out, the roof was found to have fallen in some places, but there being little work opened there was no very serious damage done.

At the foot of the shaft, pieces of shale, sandstone and coal were found, with the angles quite worn off and rounded like the pebbles on the shore of the sea. The only explanation of this curious phenomenon was that the quantity of gas escaping from the mine kept the water in the shaft in a state of violent ebullition, and these stones were worn round by rubbing one against the other in the boiling waters.

A second shaft—the Oakwood—is being put down 750 feet for a second opening from this mine. When completed, this will be one of the finest collieries in America.

The hoisting engine of the Prospect shaft has two steam cylinders, 24" diam., 72" stroke; conical drums from 8 to 12 feet diameter, each carrying about 800 feet of 1¾ inch diameter iron wire rope.

The ventilator is a Guibal fan, 20 feet diam., 7 feet face, and running 50 to 60 revolutions, giving 50,000 cubic feet of air per minute. The fan stands a little way off from the upcast shaft; the passage from the one to the other being covered with light boards, an explosion in the mine lifts these off and leaves the fan uninjured.

The winding engines are connected directly with the drum shafts, and the 600 feet of a lift can be made with ease in 20 seconds.

One car, with a capacity of 93 cubic feet, or say two tons of market coal, is lifted at a time. There are two hoistings, one car going down as the other comes up. The change is made at the foot and the surface in from 5 to 7 seconds, regular running. The coal breaker stands at some distance from the shaft.

The machinery was made by Messrs. SNYDER & Co., of Pottsville.

There is no pump in the shaft; in fact, the mine is almost perfectly dry, and it is found very easy to take out all the water made during the day in a few trips with the water car.

Steam is furnished by plain cylinder boilers, and is carried at 60 to 65 lb. pressure.

FRED. MERCUR, Esq., is the mining engineer in charge of the companies' collieries.

COAL TRADE REVIEW.

Import Duty on Coal.

Anthracite free. Bituminous, per ton of 28 bushels, 80 lb. to the bushel, 75c., gold.

All slack, or culm, such as will pass through a half-inch screen, per ton of 28 bushels, 80 lb. per bushel, 40c., gold.

Not otherwise provided for, per ton, 40c. gold.

NEW YORK, May 8, 1874.

The amount of coal mined in the several regions for the week ending 2nd of May, and from the 1st of January, is as follows:

Anthracite.

	WEEK. Tons.	YEAR* Tons.
Wyoming Region.		
Delaware and Hudson Canal Co	56,384	779,008
Delaware, Lackawanna and Western R.R	62,470	784,855
Pennsylvania Coal Co	21,991	367,002
Lehigh Valley R.R	15,908	328,039
Pennsylvania and New York R.R	857	22,506
Central Railroad of New Jersey	25,138	376,436
	182,748	2,657,846
Lehigh Region.		
Lehigh Valley R.R	63,551	946,698
Central Railroad of New Jersey	18,733	266,267
†Danville, Hazleton & W. B. R.R	....	5,437
	82,284	1,218,392
Schuylkill Region		
Philadelphia and Reading R.R	124,574	1,352,591
‡Shamokin and Lykens Valley	12,691	171,184
	137,265	1,523,775
Sullivan Region.		
Sullivan and Erie R.R	970	8,107
Total of all the regions	403,267	5,408,120

* Year beginning Jan. 1.
† From the Penn. R.R. Co.'s report, April 30.
‡ A portion of this production not reported this week.

Bituminous.

	Week. Tons.	Year. Tons.
Cumberland and Pennsylvania R.R	53,424	490,542
Cumberland Branch R.R	5,169	52,861
Barclay R.R	6,798	65,671
Huntingdon & Broad Top R.R	....	75,049
† Snow Shoe	....	22,815
† Tyrone and Clearfield	....	191,727
† Allegheny Region, Penn. R.R	....	78,346
† West Penn. R.R	....	72,825
† Southwest Penn. R.R	....	1,200
† Gas Coal, Penn. R.R	....	237,232
† Pittsburgh Coal, Penn. R.R	....	117,598

Coke.

† Tyrone and Clearfield	....	124
† Allegheny Region, Penn. R.R	....	46
† West Penn. R.R	....	18,339
† Southwest Penn. R.R	....	128 496
† Gas Coal, Penn. R.R	....	13,378
† Pittsburgh Coal, Penn. R.R	....	30,359

† From Penn. R.R. Co's report for the week ending April 30.

Anthracite.—From the above table we note that the total output from January 1st was 5,408,120 tons, and for the week 403,267 tons, as compared with 438,806 tons the week previous.

No perceptible change can be observed in the demand for anthracite coal. A slight falling off in the demand from retail yards is noticed, while there is a counterbalancing increase for manufacturing purposes. There have been no sales of importance to note. Some of the large companies are placing nearly all their coal to the account of season contracts. The Delaware and Hudson Canal Company are now prepared to ship about 13,000 tons per day to tide water, from their regular production and stock at Honesdale. Vessels are quite abundant, and freights are low, with no prospect of an immediate advance. Freights to Boston are now quoted at $1.80 for ordinary cargoes, and as low as $1.60 for large vessels, to load at Port Johnson or Hoboken.

The following are the wholesale prices f. o. b. at the shipping ports:

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
‡Scranton at E'port & Hoboken	4 70	4 80	4 90	5 05	5 50	4 50
*Lackawanna	4 70	4 80	4 90	5 05	5 50	4 50
§Pittston at Newburgh	4 40	4 40	4 50	4 60	5 10	4 25
Wilkesbarre at Port Johnston	4 70	4 80	4 90	5 05	5 50	4 50
Newport and Plymouth	....	....	4 90	5 05	5 70	4 50
Susquehanna Coal Co. at Amboy	4 85	4 95	5 00	5 15	5 60	4 60
Kingston at Hoboken	4 70	4 80	4 90	5 05	5 50	4 50
Lehigh Coals.						
Old Company at Port Johnston	5 65	....	5 60	5 60	5 50	4 50
Old Company's Room Run	5 10	....	5 10	5 15	5 75	4 80
Sugar Loaf at Port Johnston	5 65	....	5 60	5 60	5 60	4 65
Hazleton at Elizabethport	5 50	....	5 45	5 45	5 60	4 55
Honey Brook at Elizabethport	5 50	....	5 45	5 45	5 60	4 55
Spring Mt. C. Co. at Hoboken	5 50	5 50	5 45	5 45	5 75	4 80
Beaver Meadow at South Amboy	5 65	....	5 60	5 60	5 60	4 65
McNeal at Port Johnston	5 50	5 50	5 45	5 45	5 00	3 65
Schuylkill Coals at Port Richmond.						
Schuylkill white ash	4 20	4 30	4 40	4 55	5 00	3 90
Schuylkill red ash	....	....	4 55	4 70	5 00	4 15
Shamokin white and red ash	....	....	4 65	5 00	5 00	3 90
N. Franklin	....	....	5 00	5 00	5 15	4 15
Lorberry	....	....	5 15	5 15	5 90	4 65
Lykens Valley	....	....	....	5 90	5 70	4 60

* f. o. b. in New York Harbor.

§ These are net prices for delivery, during May, of coal previously contracted for, and are not rates at which the company would now make contracts.

‡ These prices are for registered contracts. Buyers not having contracts will be charged 15 cents per ton more than above prices.

Line Prices for May, 1874.

WHOLESALE.

AT	Lump and Broken.	Egg.	Stove.	Chestnut.	Pea.
Carbondale	2 25	2 25	2 50	2 00	1 25
Fair Haven, Vt	6 00	6 25	6 50	6 25	....
Ithaca, N. Y	4 90	4 90	5 40	5 15	....
Mauch Chunk, Lehigh coal	3 35	3 35	3 60	3 10	....
" Newport coal	2 25	2 25	3 50	3 00	....
" Wilkes B. coal	3 50	3 50	3 70	3 20	....
Pittston Junction	2 45	2 45	2 70	2 45	....
Port Carbon	2 75	3 00	3 15	2 40	1 25
Port Clinton	2 91	3 09	3 19	2 44	1 44
Schuylkill Haven	2 83	2 98	3 08	2 33	1 33
Scranton	2 25	2 25	2 50	....	1 25
Wilkes-Barre	2 25	2 25	2 50	2 00	1 25
Waverly, N. Y	4 75	5 00	5 25	5 00	....
Syracuse, N.Y	5 55	5 30	5 55	5 20	....
Oswego and Buffalo, N. Y	6 50	6 25	6 50	6 25	....

Lehigh furnace lump remains at $3 25, without any commission.

Retail prices per 2000 lb. are as follows:

	Grate and Egg.	Stove.	Chestnut
Pittston coal, in yard	$5 60	$5 80	$5 00
Delaware & Hudson, delivered	6 60	6 85	6 10
Scranton, delivered	6 75	7 00	6 25
Wilkes-Barre, in yard	6 00	6 25	5 50
Lehigh & Locust Mountain, del'v'd.	7 00	7 50	6 50

The receipts of coal at Port Richmond for the week are reported at 49,000 tons; shipments, 54,000 tons; and balance on hand, 95,000 tons.

The Delaware and Hudson Canal Company have in stock at

Homesdale, 500,000 tons; at Rondout, 44,000; and at Weehawken, 16,000 tons.

Bituminous Coal.—The demand for bituminous coal shows no improvement. We learn of a sale of 7,000 tons of Cumberland, for ferry use, at Boston, at $6.97, delivered; also 400 tons of Scotch cannel at $5.50, to the same city. The latter lot has been laying on the wharf for several months. In the absence of important transactions, prices are somewhat nominal. Some companies say they would rather close their mines than sell at less than $4.50 and $4.60, at Georgetown; while others, fully as reliable, openly quote at $4.40, and would undoubtedly make concessions on this figure for important contracts.

There are a number of vessels loading at Baltimore for the West Indies; freights being offered as low as $2, gold. The business with San Francisco has very much improved, and considerable Cumberland coal is afloat for that port. Freights can be had at $9@$10, while at the same time last year they could not be procured at $15. There are no sales of foreign house coals being made in this city, but then, there is nothing expected at this season of the year.

The production of Cumberland coal from January 1st to May 2d was 543,403 tons, as compared with 625,827 tons for the corresponding time last year. The production for the week was 58,593 tons, as compared with 58,239 tons for the previous week. The following are the quotations:

WHOLESALE PRICES. F. O. B.

Broad Top	$6 75	Block House	6 50
Derby	6 75	Ohio Caking	10 00
Kittaning	6 75	Ohio Cannel	12 50
George's Creek, Cumberland	6 75@7 25	Lyonsdale Coal	12 00
West Virginia Gas.	7 40@7 50	James River Bit	6 50
Peytona Cannel	13 50	" Carb	9 00
Penn. Gas	7 50@7 65	*Cannelton Cannel	12 50
Westmoreland Gas.	7 50@7 65	Liverpool Gas Cannel, ex ship	15 00@15 50
Sterling Cannel	14 00	" House	18 00
" " del'v'd.	16 00	‡Newcastle Gas	8 00
Caledonia	6 00	Red Bank Cannel	9 00
Waverly Co. Youghiog'y.	7 50	†Cannelton Splint	8 00

Freight from Richmond, Va., to New York, $2 00@2 10.
* $11 f. o. b. at Richmond.
† 6 " "
‡ Delivered at wharf.

RETAIL PRICES.

Per ton of 2000 lb.

Liverpool House Orrel, delivered	$20 00@22 00
Liverpool House Cannel, delivered	@25 00
American Block, delivered	16 00@
Straitsville Cannel	16 00@

The following are the prices of provincial coals, f. o. b., at the shipping ports of the mines:

PRICES IN GOLD F.O.B. AT THE SHIPPING PORTS OF THE MINES.

	Coarse.	Slack.		Coarse.	Slack.
Block House	$2 25	$1 25	Sydney, Reserve mine	2 60	
Gowris	2 00	1 50	Lingan	2 50	
Pictou, Albion mine	3 00	1 50	Caledonia	2 00	1 00
Pictou, Vale m.	3 00		Glace Bay	2 00	1 00

Freights from Cape Breton to New York, $2 75.

Gas Coals.—There is nothing doing in gas coals, nor is there likely to be for the present, unless it be in odd lots at a sacrifice.

Anthracite Coal Trade of Philadelphia.—There is little to be said about the condition of the anthracite coal trade differing from the reports for weeks past. Freights to the East remain low—to Boston, $2 15 to $2 25—and corresponding rates to other points. Vessels are not so plenty. Rates to Richmond and Norfolk remain low—$1 10 to $1 15 and 90c. respectively. To Washington, $1 10 is obtained, but taken reluctantly by the Captains, while the Cumberland coal trade remains inactive at Georgetown. The demand for anthracite for shipment is slowly getting better.

The curtailment of cars in the Schuylkill region for the month of May differs somewhat from last month. It does not apply to red ash collieries, and consequently the white ash coal operators, having plenty of orders, feel it all the more severely. This is a new feature, a discrimination within a discrimination, an arbitrary exercise of assumed power, all the more odious from being more distinctly aimed at fewer parties.

It is bad to see those who are connected with the coal trade of the Chesapeake and Ohio Railroad plunge thus early into the inevitable consequences of "rings," and jeopardize thereby the future prospects of a very rich coal and iron region.

The Bituminous Coal Trade of Philadelphia is unusually inactive. Excepting upon contracts made early in the season, but few tide water shipments are noticed.

Although prices and vessel freights are low, consumers maintain a determination to hold off. Former quotations for shipment may be continued.

Local or line trade remains depressed. Standard coals (either Broad Top or Clearfield) are firm at $1 25 at the mines, but new coals and inferior qualities are forced on the market at below this quotation.

The recent Act of Assembly imposing a tax of 3c. per ton upon all coal mined by corporations will, of course, finally be borne by the consumers.

The troubles at the Broad Top Collieries, noticed in last report, seem to be local and of no interest. Miners, however, complain of low wages and are expecting better times. So do the operators.

Chesapeake and Ohio Railroad.

Coal received from mines for week ending May 2, 1874:

	TONS.
Cannel Coal	770
Splint "	2,640
Bituminous Coal	280
Total	3,690

THE BRITISH COAL TRADE.

LONDON, April 18, 1874.

There is generally an improvement in the demand for steam coals, and the best house coals. The demand for shipment has increased. The shipments from Liverpool last week were 13,220 tons foreign, and 3,123 tons coastwise. The first shipments have been made to the Baltic, although there will probably not be much done in this direction until the first week in May, when it is thought navigation will be open to St. Petersburgh. The demand for manufacturing coals is quite limited, owing to the great depression in the iron business, the blowing out of a large number of furnaces, and the closing of mills and forges.

The labor troubles in South Staffordshire show no indications of an early adjustment, there being no weakness shown by either men or masters. The demands on the union's funds are very heavy, and it is anticipated that the men cannot hold out very long. The masters are determined to stand firmly to their resolutions, passed at a meeting held in Dudley last month, viz.: to reduce thick coal colliers to 4/ 6d. per day, and their mine workmen to 3/ 3d. per day, for eight hours. In 1863, colliers' wages were 3/ 6d., 4/ and 4/ 6d. per day, for eleven hours; in 1864, 4/ 6d. to 5/; in 1868, 4/ to 4/ 6d.; in 1870, 4/ 6d.; and in 1871, 5/; but in 1872 they gradually reached 5/ 6d. per day, for eight hours, the highest point ever known in South Staffordshire.

In other sections reasonable reductions are being submitted to, in nearly all cases, without serious opposition. Owing to the curtailment of the output during Easter week, stocks in the Manchester district have been very much decreased, and the men are determined only to mine enough to supply the demand, and not accumulate stock, and will therefore only work about four days a week. In the north of England no understanding between the masters and men has been arrived at, but no trouble is anticipated.

At Barnsley, Silkstone house coal can be purchased at 14/ per ton; Barnsley do., from 11/ @ 12/; and steam, at 15/ per ton. At Tyldesley, pit prices are as follows: best coal, 15/ 6d. six feet, 12/ 6d.; burgie, 10/ 6d.; best slack, 8/ 6d. @ 9/ 6d.; and common do., 8/ per ton. In Cleaveland, coke is being sold at 21/, at the ovens; manufacturing coal, 11/; and household, 11/, at the pit. In Durham, good unscreened coal is from 9/ @10/, at the pit; household 14/ @ 17/; and coke 18/ @ 20/. The Cannock Chase Colliery Co. quote Cannel gas coal, producing 15,600 ft. per ton of 2.352 lb. at 2£.

Wales.—The trade in Wales is in such a condition, that a reduction in wages is inevitable. Prices are from 4 to 5/ below the highest winter quotations, and the output is greatly diminished in consequence of the falling off in the demand at the works, and also for exportation. At a meeting of the MONMOUTHSHIRE and SOUTH WALES COLLIERIES' ASSOCIATION, held at Cardiff, on the 15th inst., whereat nine tenths of the total output were represented, it was resolved that on Monday next notices for the termination of contracts should be posted up at all the collieries in Monmouthshire and South Wales. No decision was arrived at in regard to the precise rate of the reduction in wages to be enforced, but this question will come up for consideration at an adjourned meeting to be held on the 14th proximo. It is thought, however, that the reduction will be about 15 per cent. Ten per cent. would undoubtedly be submitted to, and 20 per cent., would bring about a strike, and it now remains to be seen what an intermediate demand will bring about. The coal exports from Cardiff last month were 249,626 tons, against 245,665 tons in March last year. Best steam coal is quoted at 18/ @ 19/ f. o. b.

Scotland.—The coal market has been completely disorganized by the coal pressed on it by the iron masters. Wishaw coal is now to be had at 10/ per ton, f. o. b. at the Broomilaw; being a reduction of 10/ per ton in a very few weeks. It is no secret that the ironmasters have resolved to force down prices and they will likely go still lower. The miners' union is all but disorganized, owing to the want of unanimity among the men as to the course they ought to pursue. At a conference held in Glasgow on the 10th inst, it was resolved to communicate with the employers, asking them to meet the delegates, with the object of agreeing upon a sliding scale of wages. It is thought the ironmasters will not permit a resumption of work at their collieries, until wages reach, at least, a point 30 per cent. below what they were at the time the dispute commenced. There is a very strong feeling among the miners against Mr. Alexander Macdonald, M. P., and other leaders, whom they consider as having seriously misled them, and been the cause of a month of semi-starvation, and all to no avail; and even to have placed them in a much worse position than though they had submitted to the proposed reduction of 20 per cent. with no resistance.

Georgetown, D. C., and Alexandria, Va.

George's Creek and Cumberland f.o.b. $4 40@$4 55, wholesale.

Baltimore, Md.

Reported by E. STABLER, JR., coal merchant.

WHOLESALE PRICES.

	afloat.	at depot.
Wilkes-Barre, "Lee," or "Diamond,"		
Lump, steamboat or broken	$5 05	$5 60
Egg	5 35	5 75
Stove	5 45	5 75
Pittston and Plymouth.		
Lump, steamboat, and broken	....	5 35
Egg and stove	....	5 50
"Boston" (free burning,) all sizes	5 35	5 50
Shamokin, red or white ash, all sizes	5 35@5 60	5 50@5 75
Lykens Valley, red ash, all sizes	5 55	5 80

From wharf or yard, wholesale, 50@75c. additional.
By retail, all kinds and sizes, per ton of 2240 lb. $7@7 50.

BITUMINOUS.

George's Creek and Cumberland f. o. b. at Locust Point for cargoes	4 60@4 85
West Va. Gas Coal f. o. b. at Locust Point	5 50@....
Kanawha Cannel, coarse	13 00@....
Tyrone	7 25@....
Ritchie Mineral of West Virginia	19 00@....

Boston, Mass.

May 6, 1874.

The only break in the monotony of the Cumberland coal trade during the past week is the sale to the "East Boston Ferry" of 7000 tons on the part of the "Potomac Coal Co.," delivered from Baltimore at $5 97. This is "contraction" with a vengeance, and causes much comment. Market rates for single cargoes, $4 50@4 55. A vessel of 525 tons was chartered to-day for three trips from Georgetown at $2 60. Smaller vessels are taken at $2 65. The same apathy as heretofore prevails in the anthracite trade.

Receipts of coal at this Port for the week ending May 2:

	Week. Tons.	Year. Tons.
Domestic	29,054	161,799
Foreign	....	1,534

We quote:

English Cannel	$24 00@25 00	Pictou	7 25
do do from ship	22 00	Sydney	7 50
Scotch Cannel	15 00@18 00	Acadia	6 75@ 7 25
American Cannel	14 00@15 00	Cumberland	7 00@ 7 50
Lingan	7 50	Anthracite, retail	8 50@ 9 00
Caledonia	7 00	" by cargo	6 75@ 7 50

Buffalo, N. Y.

May 6, 1874.

There is now stocked here something like 100,000 tons. Freights are very dull, almost nothing being done in the way of shipments. Freights to Chicago are 25c. per ton, free in and out. We quote:

Youghiogheny Gas Coal	$6 00	Connellsville coke	5 00
Catfish Lump	4 75	Beaver Gas Coal	6 50
" Nut	3 50	Red Bank Cannel	5 50
" Nut and Slack	3 00	" Orrel	5 00
" Slack	2 85		

Anthracite f. o. b. vessel. Retail prices $1 per ton additional, delivered.

Lump	$6 50	Stove	6 45
Grate	6 00	Chestnut	5 95
Egg	6 00		

Chicago, Ill.

May 4, 1874.

REPORTED BY RENO & LITTLE, Coal Merchants.

Prices of coal irregular. We quote:

Lehigh Lump	$11 00	Midway (West Va.)	8 00@ 8 50
Lehigh prepared	10 50@11 00	Cannel	9 00@10 00
Lackawanna, Wilkes-		Blossburg	9 00
Barre and Pittston	10 00	Indiana Block	6 50
BITUMINOUS.		Hocking "Brooks"	8 00
Briar Hill and Erie	8 00@ 8 50	Wilmington and Illinois	5 00
Walnut Hill (W. V.)	8 00@ 8 50		

Cincinnati, O.

May 4, 1874.

Reported by A. BUCHANAN & Co., wholesale and retail dealers in coal and coke.

There is very little of interest to report in the coal market this week. Prices remain the same. The river is at a good boating stage, and has been so for a longer period than for some time before.

There is very little coal changing hands now, the coal men asking 10c. per bushel afloat for Pittsburgh coal, and the dealers here not caring to buy, only to supply the immediate demand.

	Bush.	Tons.
Youghiogheny, or Pittsburgh, afloat	10 c.	$2 80
Pomeroy coal	7 c.	1 96
Cannel coal	18 c.	5 04
Semi Cannel	9 c.	2 52
The following are retail prices delivered:		
Youghiogheny	13 c.@14c.	$3 64@$3 92
Pomeroy	11 c.@12c.	3 08@ 3 36
Cannel	22 c.@24c.	6 16@ 6 72
Semi Cannel	— 13c.	— 3 64
Anthracite	— —	— 11 00

Cleveland, O.

May 5, 1874.

	Per ton.		Per ton.
Youghiogheny, l'p, f.o.b.	$4 75	Straitsville	$3 50
Youghiogheny, nut	3 75	Columbiana	3 75
Briar Hill, (Church Hill).	4 65	Strip Vein	4 00
" " (Brookfield)	4 50	Mountain Blossburg (blacksmith)	6 00
Massilon, according to quality	$3 75 to 4 00	Darlington and Sterling Cannel	4 60
Hocking Valley	3 75		

Detroit, Mich.

May 6, 1874.

Reported by ROBINSON & KEYS, dealers in all kinds of coal.

Trade quiet, but fair for the season.

Lehigh Lump, per ton	$11 00	Brookfield	....
Lehigh nut	10 00	Chippewa	....
Wilkes-Barre, prep. sizes	9 50	Massilon	8 00
Blossburg	9 00	Straitsville	....
Briar Hill	8 50	Erie	8 75
Willow Bank	....		

Denver, Col.

RETAIL PRICES.

Canon	$6 50	Boulder Valley	$4 75
Marshall	5 50	Eulner	5 50
Murphy	5 50	Black Diamond	5 50
Baker	5 00		

Indianapolis, Ind.

May 4, 1874.

Reported by Messrs. H. McCoy & Co.

The market for coal is very dull—dealers ordering only to meet demands. The strike in the coal regions having come to an end by the miners going to work at the reduction, the supply is in excess of the demand, and, in consequence, there is a reduction on block and Highland coals. Some sales are made of block and Highland at lower figures than we quote, but by small operators who are not governed by the mining market prices.

BITUMINOUS.

Per ton on cars in city.

Best Block coal	$2 90	Indianna cannel	6 50
Best Highland	2 40	Hocking Valley	3 00
Block Nut	1 75	Youghiogheny	4 75
Highland "	1 75	Gas coke, per bushel	12c
Block slack	1 25	Blossburg (smithing) "	27
Peytonia cannel	8 50	Piedmont " "	30

ANTHRACITE (Lackawanna).

Per ton on cars in city.

Grate	$9 75	Chestnut	10 25
Egg	9 75	Stove	9 75

Louisville, Ky.

	Bush.	Tons.
Pittsburgh, afloat	10 c.	$2 80
" retail	14 c.	3 92
Kentucky	11@13 c.	3 08@3 64
Indiana and Peacock Pomroy	13 c.	3 64@....
Anthracite, per ton, from yard		10 00@10 50
" afloat		9 00@ ....

New Orleans, La.

May 1, 1874.

Reported by P. and R. DeVerges, Wholesale and Retail Dealers in Pittsburgh, Anthracite and Cannel coal,

The demand is limited and the market unsettled. The stock of coal afloat, this day, at Willow Grove, is as follows; 210 boats, 14 barges and 1 hull. The consumption during April was 21 boats and 5 barges; the arrivals, 54 boats and 13 barges. Boats contain about 8500 bbls., or about 775 tons of 2000 lb., and barges 4500 bbls, or about 400 tons. We quote :

Pittsburgh coal, retail, per bbl	75c.
" wholesale, per bbl	37½@38c.
" per hhd	$7 00
" to steamboats, per box	50c.
" to manufacturers, per bbl	60@65c.
Anthracite, retail, per ton	$12 50
" wholesale per ton	$8 50@ 9 00
Spadra (Arkansas) coal, retail, per bbl	75c.

Omaha, Neb.

Blossburg (blacksmith)	$18 00	Wyoming	14 00
Anthracite	20 00	Missouri	8 00
Iowa	9 00		

Philadelphia, Pa.

ANTHRACITE.

Broken, in the yard	$5 00
Egg and Stove	5 00
Chestnut	4 75

BITUMINOUS.

Pennsylvania and Westmoreland Gas	6 00
Broad Top, f. o. b., Port Richmond	4 75@5 00
Red Bank Cannel	8 50
Clearfield Coal, f. o. b. at Greenwich, according to destination	4 75@5 00

75c. per ton additional for delivery

Clearfield and Broad Top coals are about $6 25 per ton at South Amboy, f. o. b.

RETAIL.

ANTHRACITE.

P. & R. C. and I. Co., per ton of 2,240 lb.

	In Yard.	Delivered.
Broken	$5 50	$6 25
Egg and Stove	5 75	6 50@7 50
Chestnut	4 75	5 50@6 50

Other dealers generally ask a little more than the P. R. C. & I. Co., having special brands that are prepared in a superior manner.

BITUMINOUS.

Per ton of 2,240 lb.

$6@6 25 in yard ; $6 75@7 00 delivered.

Pittsburgh, Pa.

May 4, 1874.

	per ton.		per ton
Youghiogheny coal	$2 25	Anthracite all sizes	$7 00
" coke	2 75	Castle Shannon coal on platform, per bushel	7½c.
Connellsville coal	2 25		
" coke	3 25		

San Francisco, Cal.

West Hartley	$12 75@$13 00	Bellingham Bay	8 50
Wallsend	12 00	Mt. Diablo, coarse	8 50
Australian	10 00@10 50	" fine	6 25
Coos Bay	11 00	Anthracite	20 00
Nanaimo	$11 00@ 11 50	Cumberland	18 00@20 00

St. Louis, Mo.

May 2, 1874.

Reported by the Collinsville Coal and Mining Company.

Prices per ton of 2000 lb. are as follows:

ANTHRACITE.

Lehigh Lump	$14 50
Lackawanna and Wilkesbarre	13 50

BITUMINOUS.

Indiana Cannel	$7 50
" Block	6 50
Washington Indiana—smithing	4 87
O. Fallen, to manufacturers	5 00
Illinois, to manufacturers	2 75

Retail, 25c. per ton additional.

Toledo, Ohio.

Scranton, all sizes	$9 00	Briar Hill	6 00
Lehigh Lump	11 00	Bituminous	4 50@6 50
Blossburg	8 50@ 9 00		

Halifax, N. S.

May 1, 1874.

There is a full supply of coal at present, and the demand is dull. Purchases can be made for other Cape Breton coals than Sydney at less than $7. We quote:

Per chaldron of 3000 lb.

Sydney (old mines)	$7 75	Little Glace Bay	7 50
Other Sydney coals	7 00	Albion (at railroad)	7 50
Gowrie	7 50		

Toronto, Ont.

Prices in gold, per ton of 2000 lb.

Scranton, all sizes	$7 50	Bituminous	7 50
Lehigh prepared	8 50	Blossburg	7 00
" Lump	9 00		

Montreal, Quebec.

May 8, 1874.

(Special Telegram to the Engineering and Mining Journal.)

No arrivals of shipping. The ice bridge still holds at Quebec. Coal market dull and unchanged.

Freight on Pittston Coal—From Newburgh.

By boats of the Pennsylvania Coal Co., per ton of 2240 lb.

To Troy, Albany and Stuyvesant	60 c.
" Nyack and Hudson and Boston R.R. dock, Hudson, discharged to cars	50 c.
" Hudson, except a above, Rondout and Poughkeepsie	35 c.
" Catskill, at mouth of creek, Sing Sing, Tarrytown, Piermont, and Yonkers	55 c.
" Fishkill Landing and West Point	25 c.
" Peekskill, Haverstraw, Saugerties, and Tarrytown	45 c.
" New York	65 c.

MISCELLANEOUS FREIGHTS.

Gas Coals.

From Fairmont and Clarksburg, via B. and O. R. R., to Baltimore, including loading	$5 20
From Coalburg and Paint Creek to Richmond, via C. and O. R. R., per ton, including loading	3 75
From Richmond to New York	2

Freights.

PORTS.	From Baltimore and Georgetown.	From Port Richmond, Philadelphia.	*From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken
Augusta, Me	3 40	....	....
Albany	2 25	....	....
Amesbury, Mass	....	....	....
Bangor, Me	3 15	2 50	....
Bath, Me	2 40	....	....
Baltimore	....	....	....
Boston, Mass	2 50	2 25	1 75
Bridgeport, Ct	2 10	1 50	85
Bristol, Ct	....	1 75	1 20
Derby	....	1 50	1 15
Dighton	2 30	....	....
East Cambridge	....	....	††1 80
Fall River	2 15	1 90	1 20
Hackensack	....	....	....
Hartford	2 40	....	1 40
Hoboken	1 90	95	40
Hudson	2 00	....	....
Jersey City	1 90	95	45
Middletown	....	....	1 25
Mystic	....	....	1 15
Newark	1 90	....	....
New Bedford	2 20	1 75	1 25
Newburyport	2 60	2 50	1 93
New Haven	2 10	1 50	85
New London	2 15	1 65	1 10
Newport	....	1 75	1 20
New York	1 75	¶ 95	§ 45
Norfolk	90	....	....
Norwalk	2 25	1 50	85
Norwich	2 25	1 50	1 15
Pawtucket	2 50	1 90	‡‡1 30
Philadelphia	1 00	....	....
Portland	2 55	3 00	1 75
Portsmouth, N. H	2 60	2 60	1 95
Providence	2 05	1 75	1 20
Petersbug, Va	1 50	....	....
Richmond, Va	1 25	....	....
Rockport	....	2 70	....
Saco	....	3 00	2 10
Sag Harbor	1 25	....	1 10
Salem	2 50	2 50	1 75
Savannah, Ga	2 50	....	....
Stamford	....	1 50	85
Stonington	....	1 75	1 20
Taunton	....	....	1 65
Troy	2 30	....	....
Warren	....	....	1 20
Washington	....	....	....
Wareham	2 50	....	1 50
Wilmington, Del	1 00	....	....

Rates from Rondout to New York 15c. above Weehawken. They are 5c. less from Newburgh going south, and 5c. above Newburgh rates going north.

§ Under 150 tons, 50c. per ton.

¶ This is the rate alongside. Delivery on wharf costs from 16c. to 18c. additional.

†† Towing extra.

‡‡ 3c. per ton per bridge extra.

* Freights from South Amboy are 5c. above these rates.

TOWING

FROM NEW YORK TO POINTS ON THE HUDSON RIVER.

	per ton.		per ton.
Manhattanville	8 c.	Haverstraw	17 c.
Spuyten Duyvel	9 "	Verplanck's Point	17 "

Coal Freights from the Anthracite Mines to the Principal Markets.

Schuylkill Coals, per ton of 2240 lb.	From Pine Grove.	From Tamaqua.	From Port Carbon.	From Mount Carbon.	From Schuylkill Haven.	From Port Clinton.
To *Belmont & W. Manayunk, via P. & R. R. R.	$2 12	$2 07	$2 00	$1 99	$1 92	$
* Port Richmond, "for shipment." " "	2 12	2 07	2 00	1 99	1 92	—
* Philadelphia and "retail yards," " "	2 22	2 17	2 10	2 09	2 02	—
† Philadelphia, including the charge for the use of cars, barges, and for toll, via Schuylkill Canal	—	—	—	—	1 75	1 64
* Swede Furnace, " " "	1 88	1 83	1 76	1 75	1 68	—
* Aramingo, " " "	1 62	1 57	1 50	1 49	1 42	—
* Port Clinton, " " "	91	86	79	78	71	—
* Allentown, via East Pennsylvania Branch	1 57	1 52	1 45	1 44	1 37	—
* Col'bia, Lanc'r, & points on Lan. Brch., via R. & C. R. R.	1 77	1 72	1 65	1 64	1 57	—
* Heidelberg, via Lebanon Valley Branch	1 54	1 49	1 42	1 41	1 34	—
* Robesonia, via L. and T. Branch	1 35	1 49	1 42	1 41	1 34	—
* Lebanon " "	96	1 55	1 48	1 47	1 40	—
* Harrisburg and Paxton, via L. and T. Branch	1 38	1 72	1 65	1 64	1 57	—
* Dauphin, via Schuylkill and Susquehanna Branch	70	—	1 40	1 39	1 32	—
* Harrisburg, " " "	85	—	1 50	1 49	1 42	—
* Jonestown, via Lebanon and Tremont Branch	90		1 80	1 79	1 72	—
* Lebanon, " " "	96		2 01	2 00	1 93	—
† Reading, including charges for the use of cars, barges, and for toll, via Schuylkill Canal	—	—	—	—	95	84
† Bridsburg, add $10 per boat, via Schuylkill Canal	—	—	—	—	65	60
† Trenton, N. J., " "	—	—	—	—	1 00	95
† New York, " "	—	—	—	—	1 62	1 57
† Wilmington, Del., " "	—	—	—	—	85	80
† Bridgeton, N. J., " "	—	—	—	—	1 60	1 55

Lehigh and Wyoming Coals. per ton of 2240 lb.	From Penn Haven.	From Mauch Chunk.	From Hazleton.††	From Upper Lehigh.	From Ashley and Sugar Notch.	Lackawanna Junction.
To ‡ Newark, N. J. via Central Railroad of N. J.	2 49	2 25	2 86	—	—	—
‡ Mauch Chunk, Pa. " " "	14	—	56	59	89	—
‡ Phillipsburg, N. J.	94	80	1 34	2 34	2 64	—
Philadelphia, via N. P. R. R.	—	1 75	—	—	—	—
‡ Elizabethport, Port Johnston, Hoboken and South Amboy, N. J., shipping and wharfage 35c. additional	2 13	1 99	2 49	3 34	3 64	—
High Bridge, N. J.	2 40	2 20	2 82	2 79	3 09	—
Somerville and Raritan, N. J.	2 80	2 60	3 22	3 19	3 49	—
Elizabeth, Cranford, Westfield and Elizabethport, for cosumption	2 95	2 75	3 37	3 34	3 64	—
¶ Jersey City, N J., & N.Y., towing limits, via Morris Can.	—	2 39	3 17	3 24	3 54	—
Andover, via Del., Lack., and Western R. R.	3 30	—	3 72	4 29	—	—
Port Oram, Dover and Boonton	2 75	2 45	3 17	4 74	—	—
§ Trenton, Somerset Junction & Greensburg, via P. R. R., Belvidere division	2 65	1 97	3 07	3 64	—	—
Trenton, for shipment, to tide ports east of N. Brunsw'k	1 82	1 68				
Owego, N. Y.	3 06	2 92	—	—	—	2 18
Groton	4 10	3 96	—	—	—	3 22
Auburn	3 34	3 20	—	—	—	2 46
Waverly	2 98	2 84	—	—	—	2 10
Athens	2 94	2 80	—	—	—	2 06

†† Rates on line coal from Hazleton are 9c. per ton above these figures.

‡ The cost of unloading is to be added to these rates. No charge less than 40c. per ton will be made for any distance. Tolls from Mauch Chunk to Phillipsburg for way points will be $1 15 per ton.

§ Twenty cents per ton less when five cars at a time to one party. Provided that where the reduction makes the rate $1 a ton, or less, the rate will be $1.

¶ 20 cents per ton additional for transferring coal from boat to boat, and 10 cents per ton for reshipment of same from wharves.

* These tolls do not include wharfage or shipping expenses at tide ports.

† Ten per cent. is deducted from these rates for lump, steamboat and broken coal.

Yonkers	10 "	Peekskill & Newburg	18 "
Hastings	11 "	West Point & Cold Sp'g	20 "
Piermont & Dobbs Ferry	13 "	Poughkeepsie	22 "
Nyack & Tarrytown	15 "	Rondout	23 "
Sing Sing	16 "	Hudson	25 "
Croton Landing	17 "		

Boats of 100 tons and under—per boat.

Manhattanville	$11 00	Spuyten Duyvel	$13 00
Yonkers	15 00	Tarrytown	18 00
Sing Sing	20 00	Peekskill	20 00
Newburgh	25 00	Poughkeepsie	30 00

ON LONG ISLAND SOUND.

	per ton.		per boat.
Norwalk & Bridgeport	33⅓ c.	Port Morris	$20 00
New Haven	33⅓ "	West Farms, mouth of Creek	25 00
Derby ($50 per b't extra)	33⅓ "	West Farms	35 00
Southport & Westport	40 "	West Chester	30 00
Milford	40 "	College Point	25 00
Branford	45 "	Flushing & White Stone	30 00
New London	60 "	East Chester Town Dock	60 00
Middletown	65 "	New Rochelle & Glen Cove	50 00
Norwich	68 "	Mamaroneck & Port Chester	70 00
Hartford & Stonington	75 "	Greenwich, Stamford & Darien	75 00
Mystic	75 "		
	per boat		
Harlem	$18 00		
Mott Haven	18 00		

Harbor Towing.

From Hoboken to

	Loaded.	Light.
53d st., towing limits	$6 00	$5 00—$11 00
Gowanus	6 00	6 00— 14 00
Newtown Creek	10 00	9 00— 19 00
Port Johnston	9 00	9 00— 16 00
130th street, North River	....	....— 18 00
From East River to Weehawken and return to East River	9 00	7 00— 16 00

To 61st st., $12 extra; to 79th st., $14 extra; to 93th st., $16 extra.

Lehigh and Delaware Division Canals.

MAUCH CHUNK, PA., March 25, 1874.

Until further notice the following rates of toll, via the above canals will be adopted :

From Mauch Chunk to Easton per ton of 2240 lb..... 46c.
" " " " Bristol or New Hope..... 70c.
Towing from Bristol to Philadelphia..... 7c.
On local shipments the toll sheets of 1873 will remain in force.

Erie and Champlain Canals.

NEW YORK AND SHIPPING POINTS IN THE VICINITY TO

* Buffalo and Lockport	$1 85	* Utica, N. Y	1 25
* Rochester	1 75	* Syracuse, N. Y	1 35
* Burlington, Vt	1 75	*Oswego, N. Y	1 70
Albany	85	Troy	90

* Alongside.

*Montreal, Canada, gold.	$2 75	Ottawa, Canada	3 25
St. Johns, N. B	2 50	Quebec	3 25

* Harbor towing extra

Chesapeake and Ohio Canal.

BITUMINOUS COALS.

The freight on George's Creek coal per ton of 2240 lb. to Georgetown is $1 86. To Alexandria, Va., it is 11c. per ton more. By the B. & O. R. R. to Baltimore the freight on George's Creek coal is 2.70 per 2000 lb., and 4c. per gross ton for use of cars.

On bituminous coal from Cannelton to Richmond via the C. & O. R. R. the transportation amounts to $3.65 per net ton.

Delaware and Raritan Canal.

TOLLS AND TOWING.

Per ton of 2240 lb.

Fairmount to New York			64 cents.
Greenwich	"		66½ "
Trenton	"		35 "
Port Richmond	"	anthracite	58 "
Philadelphia	"	bituminous	65½ "

IRON MARKET REVIEW.

Import Duties.

The following are the duties in Gold on Iron :

Flat Iron, not less than 1, nor more than 6 inches wide, nor less than ⅛, nor more than 2 inches thick. *Round Iron*, not less than ¼, nor more than 2 inches in diameter, and *Square Iron*, not less than ¼, nor more than 2 inches square ₰ lb. 9-10 of 1c. *Flat Round or Square Iron*, of larger or smaller sizes than the above mentioned, per lb 1 35-1000

Provided, that all iron in slabs, blooms, loops, or other forms, less finished than bars, and more advanced than pig iron, except castings, shall pay the same as iron does.

Provided, that none of the above iron shall pay less than 35⅗ per cent.

Railroad Iron	63c. per 100 lb.
Boiler plates, or other plate iron not less than 3-16 of an inch thick, per lb	1 35-100 c.
Scrap castings per ton	$5 40
" wrought " "	7 00
Pig Iron per ton	6 00

Iron ore 10 per cent. *ad valorem*.

New York.

May 8, 1874.

Business has been more dull during the last week than for two months past, and prices are weak all around, although some dealers attempt to stand firm. There is not a regular quotation that cannot be shaded, unless it be Lehigh forge, and in some cases the concessions show a great weakness in the market. The anticipated builders' strike, which we mentioned in our last, has proved a failure; the larger contractors not attempting to enforce the ten-hour system. From the large number of old buildings being torn down, many of which will, no doubt, be replaced with iron, there should be a little stronger demand from our local foundries, as it is now thought we can anticipate no serious trouble from strikes this season.

From Messrs. BIGELOW & JOHNSTON'S circular for the month ending April 30, 1874, we learn that the importations at this port, from January 1st to April 30th, inclusive, were:

	1874. TONS.	1873. TONS.	DECREASE. TONS.
New Iron Rails	None.	27,988	27,988
" Steel "	24,032	25,715	1,683
Old Rails	622	4,498	3,876
Scotch Pig Iron	14,541	18,141	3,600

American Pig.—There have been no important transactions during the past week. We note the sale of 700 tons of the Lehigh Company's iron, at figures below our regular quotations. We learn that 500 tons of the above was No. 1 iron, and sold for consumption in the Lehigh Valley. In the absence of transactions, quotations are nominal. We think even the best brands could be slightly shaded from our higher quotations, excepting forge irons; while for brands not so well established, and perhaps fully as good, concessions are being made from our lower figures. There is but very little of Lehigh forge in the market, and as it is the most popular of our American forge irons, it has become quite firm in price, and large quantities, for immediate delivery, could not be obtained. We quote:

No. 1, Foundry Anthracite	$33 00@$35 00
No. 2. " "	31 00@33 00
Grey Forge	26 00@ 29 00
White and Mottled	22 00@ 26 00
Salisbury Charcoal Carwheel	62 00

Scotch Pig.—The demand for Scotch pig iron has been very light for the last week. We note sales of 150 tons of Coltness, 100 tons Langloan, 50 tons Summerlee, and 100 tons Eglinton. A cable telegram received on the 6th inst. gives Glasgow quotations as follows: Gartsherrie, 98/; Langloan, 105/; Glengarnock and Summerlee, 98/; Carnbroe, 93/; and Eglinton, 90/, or an advance of from 8 to 9/ per ton since the date of our last report. Coltness is reported out of the Glasgow market; but, by cable, under date of the 5th inst., we learn that it was held at 120/. This advance is supposed to be caused by a sharp *bull* movement, and is unwarranted by the state of the demand; but the strikes now in progress in Scotland, with the strike that began in the North of England at the beginning of this week, are used as levers to bull the market. Our best informed dealers think the advance can only be temporary, and that Scotch pig iron will soon reach a lower point than has been touched this year. From a letter shown us, bearing date of April 25th, from Glasgow, we notice that the masters are quite firm in their demands for another reduction of 20 per cent. in wages, which would make a reduction of 36 per cent. from what they were before the dispute began. They feel quite confident of being able to drive the men to an acceptance of their terms. Although the report of a strike of 80,000 miners in the North of England had its effect on the Glasgow market, yet it has given no perceptible strength to this market, which, with the iron in yard and to arrive, is well supplied for some time to come. The market is in such a state that it is impossible to stimulate it. A very marked decline would but very little improve the demand from consumers, although it might create a speculative demand. We quote: Eglinton, $34@36; Coltness, $40; Glengarnock, $37@38; Carnbroe, $36@37; and Langloan, $37. We are informed that a lot of 200 tons of Eglinton was offered at less than $34, on the dock, for prompt cash. This lot had been sold to arrive, and the purchaser broke the contract in the face of a falling market, upon its not being filled to the word, although it was in spirit; and the holders, rather than meet the expense of placing it in yard, offered to sell at a concession. We are informed that the lot is now in yard, and held firm at ruling rates.

Iron Rails.—There have been no transactions during the past week. The following we quote from Messrs. BIGELOW & JOHNSTON'S circular, and it is still applicable: "The market for *Foreign* remains in the same dull state, notwithstanding that some parcels can be bought for cash at exceedingly low figures. There seems, however, to be a prevailing idea that the bottom has not been reached, and buyers for cash are, therefore, very shy. In *American* (during the past month) there have been a few transactions, mostly on time, but at prices which are not commensurate with the risk. The business generally is in a very unsatisfactory state." We quote American at $59@60, currency, at the works, and Foreign at $51@54, gold, here.

Bessemer Rails.—The above mentioned circular is correct, and we quote as follows: "Steel rails are in moderate enquiry, and with the lower prices abroad can now be offered at comparatively low rates, but the same influences affecting the demand for iron, are felt more or less in this article also." We quote Foreign at $95@97.50, gold; and American at $100@102.50, currency.

Old Rails.—There has been no movement in this article during the past week. T rails are quoted at $38@39, but we learn of an offer to sell, made this day, at a marked concession, without creating business.

Scrap Iron.—The market is very quiet. We note sale of 150 tons of old car wheels on private terms, and 1,000 tons of wrought scrap No. 1 extra, for shipment from England, at about $42.50, here. We understand that the latter sale was made two or three weeks ago, but was withheld from the Press. Wrought is quoted at $40@42, and cast $28@32.

The North of England Strike Ended.

LONDON, Thursday, May 7, 1874.

The coal miners of Durham have yielded to the terms of the employers and the strike has ended.

Baltimore,

May 5, 1874.

The market for pig iron is dull, and we have no sales reported. We quote Scotch at $40 per ton from yard, and American anthracite at $33 for No. 1; $31 for No. 2, and $29 for No. 3, *American*.

Boston.

May 2, 1874.

Pig iron is dull and weak, with an occasional sale below our quotations. We quote yard lots of American pig iron at $35@40, including No. 2. X. at $36@38, and No. 1 at $38@40. We quote Eglinton, at $43@45; and Charcoal, at $50@60.—*Commercial Bulletin.*

Chicago,

May 6, 1874.

ROGERS & Co., dealers in Scotch and American pig iron, report the market as follows :

There is no improvement in the demand for pig iron. Our quotations are as follows, 4 mos. time:

No. 1 Coltness	$46 00@ ....
No. 1 Gartsherrie	45 00@ ....
No. 1 Summerlee	44 00@ ....
No. 1 Glengarnock	43 00@ ....
No. 1 Eglinton	42 00@ ....
Warner's "American Scotch"	40 00@ ....
No. 1 Grand Tower Mo. ores (Bituminous)	38 00@ ....
No. 2, " " "	33 00@ ....
No. 1 Forge	30 00@ ....
Union "A" 1 (Anthracite)	35 00@ ....
Union "B" 1 (Anthracite)	33 00@ ....
No, 1 Lake Superior (charcoal)	41 00@42 00
No. 2 Lake Superior "	38 00@40 00
No. 3 Lake Superior "	43 00@45 00
No. 4 Lake Superior "	45 00@48 00

Cincinnati.

May 5, 1874.

Reported by TRABER & AUBERT, commission merchants for the sale of pig iron, blooms, ore, etc.

Our market for pig iron continues dull and depressed. Prices irregular and lower. We quote:

CHARCOAL.

Hanging Rock, No. 1, Foundry	$36 00@38 00—4 mos
" No. 2, "	34 00@35 00—4 mos
" Mill	30 00@31 00—4 mos
Tennessee No 1, Foundry	35 00@37 00—4 mos
Tennessee. No. 2 "	33 00@34 00—4 mos
" Mill	30 00@31 00—4 mos
Missouri, No. 1, Foundry	37 00@38 00—4 mos

STONE COAL.

Ohio No. 1, Foundry	35 00@36 00—4 mos
" No. 2, "	32 00@33 00—4 mos
Ohio Mill	29 00@30 00—4 mos
Missouri, No. 1, Foundry	35 00@36 00—4 mos
" No. 2, "	33 00@34 00—4 mos
" Mill	30 00@31 00—4 mos

CAR-WHEEL.

Hanging Rock, C. B	55 00@60 00—4 mos
Tennessee "	55 00@57 00—4 mos
Missouri "	55 00@57 00—4 mos
Alabama "	55 00@57 00—4 mos

BLOOMS.

Charcoal	85 00@100 00—cash

SCRAP IRON.

Cast	1 00@ 1 25—cash
Wrought	1 40@ 1 75—cash

Cleveland

May 5, 1874.

C. E. BINGHAM & Co., dealers in pig iron and iron ores, report the market as follows :

Our market for pig iron is very dull, and shows no sign of immediate improvement. Prices have declined somewhat since our last report. We quote as follows:

No. 1, Anthracite Foundry	$33 00@34 00—4 mos
No. 2, " "	30 50@32 00—4 mos
No. 1, Bituminous "	33 50@34 50—4 mos
No. 2, " "	31 00@32 50—4 mos
No. 1, Grey Forge Bituminous	27 00@29 00—4 mos
No, 2, Close Grey	26 00@27 00—4 mos
No. 1, Massilon Black Band	36 00@37 00—4 mos
No. B-1 " "	34 50@35 50—4 mos
No. 2 " "	33 00@34 00—4 mos
No. 1, Lake Superior Charcoal	40 00@41 50—4 mos
No. 2, " "	38 00@39 00—4 mos
No. 3, " "	43 00@44 50—4 mos
Nos. 4, 5, 6, " "	47 00@50 00—4 mos
American Scotch	34 00@35 00—4 mos

Detroit.

May 5, 1874.

Scotch pig, net	$44 00@ ....
Lake Superior pig, No. 1	44 00@ ....
" " No. 2	43 00@ ....

Louisville.

May 5, 1874.

GEORGE H. HULL reports the market as follows:

The market is dull and lower. Sales are confined to small lots for immediate use, at prices quoted below.

The usual time, 4 mos., is allowed on the quotations below:

HOT BLAST—CHARCOAL.

No. 1 foundry, from Hanging Rock ores			$36 00@38 00
No. 2	"	"	33 00@35 00
No. 1, forge,			30 00@31 00
No. 1, foundry,	" Tennessee	"	34 00@36 00
No. 2	"	"	32 00@33 00
No. 1, forge,	"	"	30 00@31 00
No. 1, foundry,	" Alabama	"	31 00@36 00
No. 1,	" " Iron Mountain	"	38 00@40 00

HOT BLAST—STONECOAL.

No. 1, foundry, from Missouri ores			34 00@35 00
No. 2,	"	"	32 00@33 00
No. 1, forge	"	"	30 00@31 00

COLD BLAST—CHARCOAL.

Car Wheel from	Hanging Rock	ores	60 00@62 00
"	" Tennessee	"	50 00@53 00
"	" Alabama	"	54 00@55 00
"	" Georgia	"	54 00@55 00
"	" Missouri	"	50 00@55 00
"	" Kentucky	"	50 00@55 00

Philadelphia.

May 7, 1874.

The same dullness, that has marked trade for some time past, still prevails; and, if anything, is a little worse. We learn of no important transactions having taken place since the date of our last. The Lehigh Crane Iron Co. are said to have blown in two of their furnaces. We quote: No. 1 foundry pig iron, at $33@34; No. 2, at $30@32; forge, at $27@28; and white and mottled, at $22@26. Old rails are quoted at $40@42; wrought scrap, $37@40; new rails are quoted at $60@63 at the mills.

Pittsburgh.

May 5, 1874.

Reported by A. H. CHILDS, commission merchant for the sale of pig iron, blooms, ore, &c.:

This week's report must be only a repetition of the now amiliar story of dull market and drooping trade. Sales of gray forge iron are made in a small way at $27@28, 4 mos., but some concession, either in time or price, is necessary to induce purchasers to accept round lots. Foundry metal is quiet and unchanged. I quote:

No. 1 Foundry, anthracite or bituminous.		$32 00@34 00	—4 mos
No. 2, "	"	30 00@31 00	—4 mos
No. 1, Grey Forge, "	"	27 00@28 00	—4 mos
No. 2, " "	"	27 00@	—4 mos
White and mottled "	"	26 00@26 50	—4 mos

The Pittsburgh *Commercial* reports the following sales for week ending May 1st:

IRON MADE FROM LAKE SUPERIOR ORES, SMELTED BY BITUMINOUS COAL.

100 tons gray forge,	$28 00	—4 mos
100 tons white and mottled, cold short	25 50	—4 mos
100 tons open gray, red short	28 50	—4 mos
100 tons soft silvery	27 00	—4 mos
40 tons white, neutral	26 00	—4 mos
50 tons white and mottled, neutral	25 50	—4 mos
50 tons No. 1 foundry	30 00	—4 mos
40 tons No. 1 foundry	30 00	—4 mos

ALLEGHENY COKE.

200 tons No. 1 foundry	private terms

HANGING ROCK CHARCOAL.

43 tons No. 1 foundry	38@40 00	—4 mos
5 tons cold blast	— 66 00	—4 mos

ANTHRACITE.

10 tons No. 1 foundry	— 30 00	—4 mos

St. Louis, Mo.

May 2, 1874.

Trade very dull, and prices unchanged. We quote:

HOT BLAST STONE COAL PIG.

No. 1 foundry from Iron Mountain and Maramac ores,	$32@34
No. 2 foundry from Iron Mountain and Maramac ores,	29@31
No. 3 forge from Iron Mountain and Maramac ores,	25@29
No. 1 Massilon,	43@..
No. 1 Tennessee, cold short,	36@..
No. 1 Ohio, cold short,	40@..

HOT BLAST CHARCOAL PIG.

No. 1 foundry from Iron Mountain and Maramac ores,	35@40
No. 2 foundry from Iron Mountain and Maramac ores,	34@36
No. 1 foundry from Tennessee ores,	35@37
No. 1 forge from Tennessee ores,	31@33

COLD BLAST CHARCOAL PIG.

Hanging Rock car wheel,	60@64
Tennessee,	58@60

MISSOURI IRON ORES.

Iron Mountain Co.'s Quotations.

Iron Mountain, per ton	$8 00
Benton Creek, "	7 50
Surface ores, "	8 00
Red and brown hematites, per ton	5 00@6 50
Pilot Knob, per ton	5 00
Rails, 56 to 60 lb. inclusive	66 00@68 05

THE BRITISH IRON TRADE.

LONDON, April 18, 1874.

Trade has reached that point where the disastrous effects of the recent reductions in prices are showing. The weaker firms are failing or showing signs of being "shaky." Messrs. SAMUEL OSBORN & Co., of the Clyde Steel Mills, have failed with liabilities at about £85,000; Mr. SAMUEL HIPKINS, of Tipton and Oldburry, ironmaster, has suspended payment, with liabilities at £35,000; and several smaller firms have also failed, and numerous other failures are impending. Merchants, who must realize, or have no confidence in the future, are offering at much below the lowest quotations of makers, and completely disorganizing the market. There is no telling how low a point iron will reach in the case of a few large failures. The usual monthly returns issued by the Cleveland Ironmasters' Association have ceased to appear on account of Messrs. BOLCKOW, VAUGHAN & Co. refusing to furnish information on the subject. People who looked for information contained in those statistics are very much surprised and disappointed. This would indicate that stocks would show a marked increase. If such is the case, prices must decline, unless an unexpected demand should turn up.

In the North of England there is a general scarcity of orders, and in most of the other districts it is the same. The Bessemer steel mills are doing a full amount of work, but prices have fallen in sympathy with the iron market. There are indications of an improvement in the crucible steel business. In South Staffordshire, medium qualities of pig iron are selling at 50/ per ton less than the prices ruling six months ago. The report from Birmingham states that Belgian bars are being sold at from 30/@40/ per ton less than the South Staffordshire makes; and as the quality is fully equal, it is doing much injury to the trade, which, in fact, is almost entirely confined to Belgian productions. The make of pigs has been reduced from 12,000 tons per week, the average of the last two years, to less than 5,000 tons, and is now being further reduced. There are but 60 of the South Staffordshire furnaces blowing, out of 160 built, the remainder having been blown out or damped down.

The reduction of the ironworkers' wages is generally considered as not likely to cause trouble, but there may be some more strikes among the coal miners; but even these will hardly be of great duration. The strike among the South Staffordshire coal miners still continues, with no immediate indications of giving way, either on the part of workmen or masters.

In Wales the iron business shows no improvement. In fact, the complaints of the scarcity of orders are becoming more numerous. At a meeting of the ironmasters, held in Cardiff on the 15th inst., it was resolved to issue notices, on Monday next, for the termination of all contracts. No decision was arrived at as to the precise reduction in wages to be enforced; but this question will come on for consideration at an adjourned meeting to be held in Cardiff on the 14th proximo. It is thought it will be from 10 to 20 per cent. There will, undoubtedly, be a strike of more or less severity; but there is no other course for the masters to pursue, as trade is in such a state that rails sold at £9 afford no profit, and in most cases show a loss, so that the masters had better close their works if the men object to a reduction.

At New Castle upon Tyne, prices of pig iron range from 55@58/ per ton for forge, and for No. 3, 59@62/ 6d. At Darlington, the quotations are: No. 4, (forge), 54@56/, and No. 3, 58@60/. At Birmingham, cold blast all mine pigs are being quoted at £7@7, 10/, and hot blast, at £6@6, 10/. Inferior qualities are from 10@15/ per ton cheaper. "Bradley Bridge charcoal," per ton of 2240 lb., is quoted as follows: Gray, £15; mottled, £15. 10/; white, £16. Bessemer pig, f.o.b., at Duddon or Barrow, is quoted at £8 for No. 1; £7, 17/ 6d. for No. 2, and £7, 15/ for No. 3. Indian charcoal pigs are quoted in this city at £10@12. Rails are quoted from the various manufacturing districts at £8, 12/@£9, 10/ for ordinary sections.

Scotland.—The market for Glasgow warrants closed on Wednesday at 75/@76/. The Blochairn Iron Company, Limited, who had to suspend payment in consequence of the failure of Messrs. HANNAY & SONS, is now expected to tide over the crisis. The shipments of pig iron from Scotch ports for the week ending the 11th inst., were 9,655 tons, against 20,150 tons for the corresponding week in 1873; making a total decrease since December 25, of 57,084 tons. The imports of Middlesborough pigs into Grangemouth for the week were 1,280 tons, as compared with 660 tons for the corresponding week last year; and a total increase for 1874 of 17,682 tons. The ironmasters have placed coal on the market in such abundance, and at such low prices, as to have quite unsettled the trade, thereby compelling the coalmasters to stand firm in their demands for a reduction of wages. The miners are willing to resume work at the 20 per cent. reduction of wages; but with the ironmasters in particular, they will not be permitted to do so, until they have submitted to a reduction equal to about 30 per cent. below what they were previous to the dispute. Since last week a decline of 20/ per ton has taken place in manufactured iron, but trade is duller than ever. A number of works are stopped altogether, and the majority are only able to keep moving. The following are the approximate quotations of makers' iron: Gartsherrie, No. 1, 87/ 6d.; No. 3, 80/; Coltness, 92/ 6d. for No. 1, and 80/ for No. 3; Summerlee, No. 1, 86/; No. 3, 78/; Carnbroe, 83/ for No. 1; and 78/ for No. 3; Langloan, 90/ for No. 1; Calder, 92/ 6d. for No. 1; and 80/ for No. 3; Glengarnock, No. 1, 85/; No. 3, 80/; Eglinton, No. 1, 80/ 6d; No. 3, 80/; Dalmellington, No. 1, 80/; No. 3, 78/; Carron, 87/ 6d.

METALS.

NEW YORK, May 8, 1874.

Gold Coin.—During the last week gold has ranged from 112⅛@113⅜, and closed yesterday at 112¾.

Bullion.—Fine silver bar is quoted at 1,28⅛@1,29¼, gold, per ounce; and fine gold bar at par ($20,67 gold, per ounce,) to ¼ per cent. premium.

Copper.—Upon a close canvass of the market we find that sales have aggregated about 500,000 lb, Lake, at 24¾@25c., the majority of the sales having been made at 24¾c. Spot is now held at 24¾@25c. and future at 24½@25c. The combination among the manufacturers, referred to in our last, has not been successful, but individual firms are importing at a loss of from 1@1¼c. per lb., with the hopes of breaking the combination among the dealers. The cable quotations from London, on the 6th inst., were: Chilie Bars £75@76; and best selected, £85@86, with prices firm.

Tin.—The market has been very dull. Prices are a little stronger here, and have advanced in London about £3 since our last. A cable telegram of the 6th inst., from London, quoted Straits at £99@100; L. and F. £103. Another of the same date quoted L. and F. at 104. The market closed in London on the 7th inst. at £105 for L. and F. The strike in Wales still continues, with no prospects of an early termination. We quote sales of 5 tons L, and F. at 21½c.; 5 tons ditto, at 21¾c.; and 100 slabs Straits, at 24¾c., all gold. We quote, L. and F. at 21¾@22c. (costs 22½c. to lay it down here at present); Straits, 24½@25c.; Refined English, 22¾@23c.; and Banca 26½@27c.

Lead.—There has been no change in the lead market since our last, except that it may be a little duller. There have been no further arrivals. We learn of no important sales. Domestic is quoted at 6c. gold, and Foreign, at 6½@6¾c. gold.

Spelter.—The transactions for the past week have been very light. We quote Foreign at 6⅝c.@6¾c., gold; and Missouri at 7c., currency.

Zinc.—The market is quiet, and we have no transactions reported. We quote Silesian and Mosselman sheet at 8¼c.@8½c., gold; and Western at 8¼c.

Antimony.—The market is very quiet, with but quite light transactions. Prices remain unchanged. We quote at 12½c.@12¾c., gold.

Manganese.—We quote: Pyrolusite, crystallized, at 7½c.; Manganite, 5c.; and Psilomelane, or hard, at 3½c.

Quicksilver.—The demand continues as strong as for some time past, being in excess of the supply. The latest London quotation, by mail, is £19 15/ per bottle (76½ lb.); in this city, $1.43@1.45, gold, per lb.; and in San Francisco, $1.35.

San Francisco Stock Market.

BY TELEGRAPH.

NEW YORK, May 7, 1874.

Our report from the San Francisco Stock Market is dated the 5th inst. With the exception of a slight advance in Raymond and Ely, and Eureka G. V., the list has declined. The most noteworthy feature in the report is the decline in Yellow Jacket, the report placing it at $64—a decline of $17 per share as compared with our last. On the 4th inst. sales of Hale & Norcross were effected at $35½; Overman, $38: and Consolidated Virginia, $77½ per share respectively. A dividend of $1 per share has been declared by the Eureka Consolidated Mining Co., payable on the 5th inst. The Belcher Mining Co. also declare a dividend of $5 per share, payable on the 9th inst.

Savage	63	Imperial	4⅝
Crown Point	84	Raymond & Ely	23
Yellow Jacket	64	Meadow Valley	—
Kentuck	11	Eureka V G	10
Chollar Potosi	55	Ophir	—
Gould & Curry	19	Hale & Norcross	—
Belcher	81		

Boston Stock Market.

BOSTON, May 7, 1874.

We annex the prices bid for copper stocks at the first session of the Boston Stock Board:

Allouez	7¾	Pewabic	8
Calumet and Hecla Co.	129½	Phœnix	14
Copper Falls	21	Quincy	36
Central	28	Ridge	6½
Franklin	4¾	Rockland	1
Mesnard	1	St. Clair	2
National	3	Star	1¾
Petherick	1½		

American Institute of Mining Engineers.

OFFICIAL BULLETIN.

Announcements to Members and Associates.

I. The ENGINEERING AND MINING JOURNAL, which is the Organ of the Institute, and contains its proceedings, transactions and notices of meetings, will be sent to each Member and Associate on the payment of his annual dues. Back numbers cannot, as a rule, be sent.

II. Dues (ten dollars per annum) are payable on election and at the annual (May) meeting. Members and associates elected at the February meeting pay ten dollars only to May of the following year. Remittances should be made, as far as possible, by P. O. Order, payable to the Secretary.

III. The Council earnestly requests members to forward to the Secretary, for preservation, copies of all printed mining and geological reports, particularly pamphlets, which may fall in their way. It is believed that by this means a large amount of valuable fugitive information concerning different regions and

properties in this country, may be caught and preserved.

IV. The Fourth Annual Meeting will be held in St. Louis, Mo., on Thursday morning, May 21, 1874, the first session having, by order of the Council, been postponed from Tuesday, the usual day, to Thursday, in order to allow members living at a distance to arrive in time. The Local Committee of Arrangements consists of Prof. W. B. Potter, Washington University, and Mr. James R. Gage.

Thomas M. Drown, Secretary, 1123 Girard street, Philadelphia, Pa.

MISCELLANEOUS.

MISCELLANEOUS.