

Albert P. Johnson

REPORTS

OF THE

INSPECTORS OF MINES

OF THE

ANTHRACITE COAL REGIONS

OF

PENNSYLVANIA,

FOR THE

YEAR 1873.



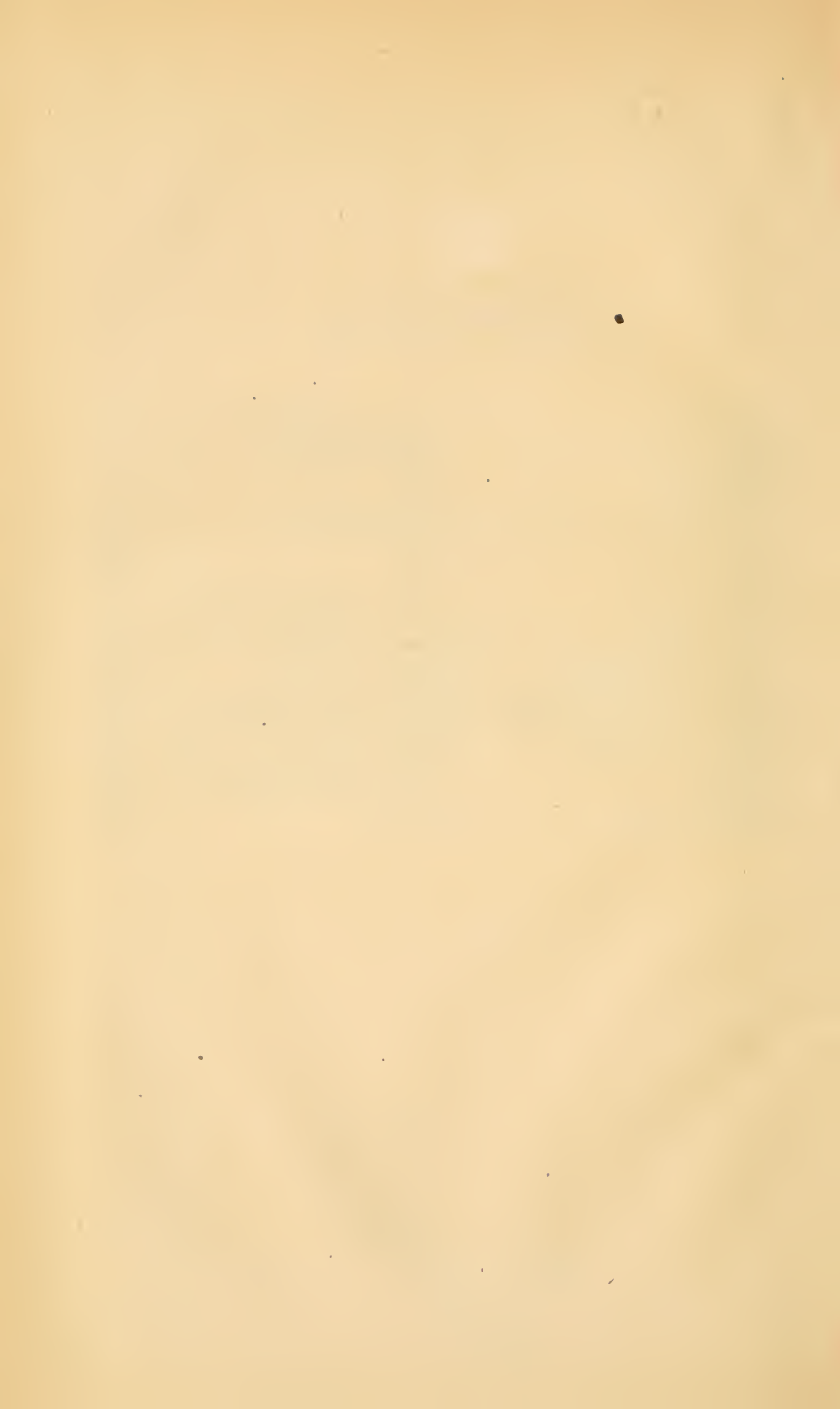
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COMMUNICATION.

To His Excellency, JOHN F. HARTRANFT,
Governor of the Commonwealth of Pennsylvania :

SIR:—In compliance with the requirements of an act of General Assembly of the Commonwealth, approved the fifth day of April, 1870, entitled "An Act for the preservation of the records of the inspectors of mines in the mining district of Schuylkill," etc., I have the honor to herewith submit a report of all matter and information as had been furnished me by the inspectors of mines of the district aforesaid, showing that one hundred and twenty-six persons lost their lives, and that three hundred and seventy-nine persons were maimed and injured in and about the district collieries during the year 1873, as the following statements will exhibit :

That in Pottsville district 45 collieries were in operation, and that 29 deaths occurred.

That in Ashland district 66 collieries were in operation, and that 53 deaths occurred.

That in Shamokin district 44 collieries were in operation, and that 44 deaths occurred.

And of the 379 persons that were maimed 34 of these died subsequently of such injuries, leaving 74 widows and 273 orphans. That there has been 35 deaths and 114 injuries in the district this year more than was in 1872.

These excesses in deaths and injuries are classified in their respective order :

In Pottsville district the deaths are 12 and the injuries 43 more this than last year.

In Ashland district the deaths are 11 and the injuries 72 more this than last year.

In Shamokin district the deaths are 12 and the injuries 1 more this than last year.

The causes of which deaths and injuries are detailed in tabulated forms, and are much larger than was anticipated ; but investigations into these casualties show that very many of them were purely accidental, chiefly the result of negligence, inexperience and haste. The disaster at the Henry Clay colliery, June 10, where 10 persons perished, and another at the Honey

COMMUNICATION.

Brook colliery, December 6, where 3 persons perished, are exceptions, both of which had been the result of rashness. [Refer to District Inspectors' reports on that head.]

The season closed with a larger shipment of coal than that of any former year. Other subjects of information applicable to miners and mining interests are herewith submitted for your Excellency's consideration.

I have the honor to be, with great respect,

Your Excellency's obedient servant,

P. F. M'ANDREW, *Clerk.*

REPORT

OF THE

CLERK OF THE MINING DISTRICT OF SCHUYLKILL.

To the Senate and House of Representatives of the Commonwealth of Pennsylvania :

GENTLEMEN :—In compliance with the requirements of an act of General Assembly of the Commonwealth, approved the fifth day of April, A. D. 1870, entitled "An Act for the preservation of the records of the inspectors of mines," etc., I have the honor to herewith submit my annual report of all official information and matter of record furnished me by the inspectors aforesaid relating to coal mines and collieries in their respective districts for your consideration, exhibiting their condition, ventilation and safety; their resources and capacity for producing coal, the number and character of the casualties that had taken place during the year, giving a tabulated exhibit of coal tonnage of the different counties and districts, and the proportionate number of tons mined to each death in the said districts, compared with the like tabulation in former years, and a number of interesting subjects for the study of miners and persons who are or may become interested in mines and mining, and mine machinery, etc.

It is our painful duty to record the fact that the casualties are larger this year than were those of 1872 by 35 deaths and 114 injuries, as follows:

In Pottsville district 46 collieries are worked ; 29 persons lost their lives this year to 17 last year.

In Ashland district 68 collieries are worked ; 53 persons lost their lives against 42 last year.

In Shamokin district 56 collieries are worked ; 44 persons lost their lives this year to 32 last year.

Notwithstanding the hopeful anticipations entertained of a reasonable reduction in the number of casualties we find the case to be the reverse, although the Pottsville district collieries are 26 less than last year it did not mitigate the casualties, the tonnage did not decrease, nor was the force of employees increased, but the steady state of the coal trade throughout the season will account for this fact, and the increase in the casualties is applicable to the same cause.

Besides this the working of deep old mines are a menacing source of danger that is not experienced in newer collieries ; the large accumulation of gases and the different ventilation, the decay of their timbers and yielding to pressure and crumbling of the supports adds to their insecurity. The disaster of June 10, at the Henry Clay colliery, in Shamokin district, frightfully increased the death roll of that district. By referring to Inspector Hemingray's report on that colliery will be found the cause of that disaster fully explained.

In the Ashland district the shipments are larger, the collieries are newer and more numerous and a larger force employed; the coal seams are thicker as a generality; the working of mines are more dangerous than when the seams are thinner and risks are more consequent.

In regard to shaft and slope accidents the case is not so favorable as might be expected. Eight persons lost their lives by the brakage of ropes and chains, the parties themselves being in a great measure responsible for and accessory to these misfortunes by their unguarded conduct in the premises, acting in contravention of law.

Steam boilers, too, are much better attended to, the engineers and superintendents of mines are evincing greater industry in their safety and condition than was the case in former times.

Ingress and egress safety roads are more numerous, and communications made more safer for miners to travel in for their safety and health; the parties that suffer from this class of accidents, appears, are themselves much to blame.

Coal, rock and slate falls have proved very disastrous, but investigations into this class of accidents show that the party victims are, in a great measure, responsible for these casualties; it being more the result of heedlessness and inattention than any want of supporting materials. Fifty-eight persons lost their lives by this class of accidents.

Haulage in mines. This is a subject which deserves attention, and without a proper observance of and a compliance with the working regulations of a mine by this class of employees, and its enforcement by the bosses, it will always result in injury; some 22 persons lost their lives by being run over and crushed by mine wagons. Haulage will always be a prolific source of casualties; as it is known some 8,000,000 tons of coal have been mined, and about as much more of impurities, that the haulage of so large an amount of matter under ground will, in a measure, offer a palliation for these accidents, and that, too, when handled by the most irresponsible and incorrigible of the force employed.

Powder and blast explosions are and always will be a standing menace to miners' safety, and until a better system be adopted and a more stringent regulation be enforced, that this danger may be ameliorated, the handling of powder in mines is fraught with great danger.

Fire-damp explosions command the highest rank in mine dangers, and are the source of a large share of misery and expenditure, and one of the most difficult elements to control. Gases are not as well understood by the miners as should be, and we find this to be the case lately, when old practical miners are under examination, that few only have any reasonable intelligence of gases.

For this reason we consider it to be a duty to bring to these reports such information as may in any way benefit the mining classes by selecting extracts from the works of proper authors on mines, mining, gases, instruments, etc., and what information we are able to impart from our own experience, carefully avoiding the introduction of any unfounded theory that lead to mistaken ideas. Not having the remotest desire or ambition to appear as instructor in this connection, further than to explain the uses of the instruments used in mines and the nature and character of gases; this, in behalf of miners, we feel it our duty to impart, and for which we have the encouraging approval of public sentiment and the generous kindness of many gentlemen who accord to us the fullest liberty of their libraries, from which to select subjects, from the works of eminent authors, for our study and guidance in matter selected for this report. Although meeting with some reflections from a few parties that claim a higher distinction to

information than we unfortunately claim, nevertheless we aim at but one distinctive object, our duty to discharge and our trust to protect.

Cheerfully acknowledging our obligations to Benjamin Bannan, Esq., for coal statistics from its inception in Pennsylvania to the close of this year; a very valuable adjunct to this subject. To Prof. P. W. Sheaffer, C. E., for diagram showing the quantity of coal mined in the Anthracite regions of the State. To Col. David P. Brown, for an economical and safe plan of working the Mammoth coal seam, *with notes*. To Gen. Henry Pleasants, for drawings of sections of the P. R. C. and I. C. S. new shafts. To Andrew Cochran, Esq., C. E., for descriptive map, etc., to which we add C. W. Williams, of Liverpool, for constituent weight and measures of gases, which will be found at the end of the report.

Having endeavored to do our duty in this matter, hoping our labors may be appreciated by the proper authorities who govern the interest of the Commonwealth.

Having the honor to be,

With great respect,

Your obedient servant.

P. F. M'ANDREW, *Clerk.*

NAMES OF COLLIERIES in operation in the District of Schuylkill for the year ending December 31, A. D. 1873.

A.		55. Grant.	110. New Boston.
1. Alaska, No. 1.		56. Girard Mammoth.	111. Norton.
2. Alaska, No. 2.		57. Girardsville.	112. North Mahanoy.
B.		58. Girard.	113. New Kerk.
3. Buckville.		59. Glendower.	114. North American.
4. Bull Run.		60. Glentworth.	O.
5. Beechwood.		61. Greenwood.	115. Oak Dale.
6. Boston Run.		H.	116. Oak Hollow.
7. Bear Ridge.		62. Heckscherville.	117. Otto's, 1, 2, 3.
8. Barry.		63. Hickory Shaft.	P.
9. Big Mine Run.		64. Hoffman.	118. Phoenix, No. 2.
10. Bear Run.		65. Hill Side.	119. Phoenix, No. 3.
11. Brady.		66. Hazle Dell.	120. Pyne.
12. Buck Ridge.		67. Honey Brook.	121. Preston, Nos. 1 and 2.
13. Burnside.		68. Henry Clay.	122. Preston, No. 3.
14. Bear Valley.		69. Hickory Ridge.	123. Preston, No. 4.
15. Bear Valley Shaft.		70. Hickory Swamp.	124. Primrose.
16. Brookside.		71. Helfenstine.	125. Plank Ridge.
17. Big Mountain.		I.	126. Phoenix, Nos. 2 and 3.
18. Big Lick.		72. Indian Ridge.	127. Phoenix.
19. Ben. Franklin.		K.	128. Peach Mountain.
20. Big Run Gap.		73. Kear.	129. Pine Forest.
C.		74. Kentucky.	R.
21. Caledonia.		75. Keystone.	130. Raven Dale.
22. Cameron.		76. Koh-i-noor.	131. Richardson.
23. Colkett.		77. Knickerbocker.	132. Reliance.
24. Cuyler.		78. Kemble.	133. Royal Oak.
25. Coal Ridge.		79. Kalua.	S.
26. Cambrian.		L.	134. Stewartsville.
27. Centralia.		80. Luke Fidler.	135. Shamokin.
28. Coal Mountain.		81. Lambert.	136. Short Mountain.
29. Copley.		82. Locust Spring.	137. St. Clair Drift.
30. Colorado.		83. Lancaster.	138. St. Clair Shaft.
31. Cedar Hill.		84. Lower Rauch Creek.	139. Sharp Mountain.
32. Coal Dale.		85. Lincoln.	T.
D.		86. Locust Creek.	140. Tamaqua.
33. Diamond.		87. Locust Dale.	141. Taylorville.
34. Diamond, No. 2.		88. Lehigh, No. 3.	142. Tracy.
35. Draper.		89. Lawrence.	143. Thomaston.
36. Diamond, No. 3.		90. Lehigh, West.	144. Tower City.
E.		91. Live Oak.	145. Trevorton.
37. Enterprise.		92. Lambert, No. 2.	146. Thomas.
38. East Franklin.		M.	147. Tunnel.
39. Eureka.		93. Monitor.	148. Tunnel Ridge.
40. Emory.		94. Manchester.	149. Trenton.
41. Excelsior.		95. Mammoth Vein.	U.
42. Elmwood.		96. Mine Hill.	150. Union, No. 1.
43. Enterprise, No. 2.		97. Middle Port.	151. Union, No. 2.
44. Ellengowan.		98. M'Neil.	W.
45. Eagle.		99. Mahanoy City.	152. West Shenandoah.
46. Eagle Hill.		100. Malvern.	153. Wm. Penn.
47. E. Mammoth.		101. Myers.	154. West Mahanoy.
48. East Pine Knot.		102. Monitor, No. 2.	155. West End.
49. Ellsworth.		103. Marion.	156. Williamstown.
F.		104. Morton.	Y.
50. Forestville.		105. Marshall.	157. Yorkville.
51. Furnace.		106. Middle Creek.	158. York Colliery.
52. Foelt & Whittaker.		N.	159. York Farm.
53. Franklin.		107. New Locust Gap.	
G.		108. North Side.	
54. George Fales.		109. North Gilberton.	

COLLIERY STATISTICS BY COUNTIES.

Exhibiting the several items of interest in the respective counties in the year 1873.

	Schenckkill.....	Northumberland....	Columbia.....	Dauphin.....
Visits made.....	586	153	20	15
Miles traveled.....	8,886	2,622	120	600
Hands employed.....	15,108	3,672	1,060	1,417
Deaths.....	92	29	2	3
Injuries.....	319	48	7	5
Widows.....	51	20	1	2
Orphans.....	207	62	4	.....
Slopes worked.....	113	19	5	5
Shafts worked.....	16	2	.....	.....
Drifts worked.....	54	49	2	4
Fans used.....	84	9	3	3
Steam engines.....	563	77	28	22
Steam power.....	33,594	3,209	2,145	1,942
Steam boilers.....	1,439	205	70	45
Coal seams.....	206	58	10	5
South dips.....	91	20	6	1
North dips.....	30	12	4	4
Furnaces.....	12	9	2	.....
Air shafts.....	30	14	3	2
Collieries.....	129	32	7	5

NOTE.—We give the above for local reference, interesting to the respective counties.

COLLIERY STATISTICS BY DISTRICTS.

Exhibiting the several items of interest relating to their capacity and character, compared with 1872.

	POTTSVILLE DIST.		ASHLAND DIST.		SHAMOKIN DIST.	
	1873.	1872.	1873.	1872.	1873.	1872.
Visits made.....	296	290	268	219	210	.....
Miles traveled.....	4,427	4,147	3,420	3,012	4,568	.....
Hands employed.....	5,078	7,306	9,395	12,371	4,845	.....
Deaths.....	29	17	53	42	44	32
Injuries.....	117	74	161	89	101	102
Widows.....	15	9	31	25	28	15
Orphans.....	61	41	114	68	98	60
Slopes worked.....	47	63	55	57	41	.....
Shafts worked.....	9	13	6	8	3	.....
Drifts worked.....	9	27	42	75	59	.....
Steam fans.....	29	39	45	45	26	.....
Steam engines.....	204	223	332	330	156	.....
Horse power.....	16,203	15,960	17,255	17,454	7,858	.....
Steam boilers.....	494	534	862	674	257	.....
Coal seams.....	80	150	118	158	78	.....
South dips.....	37	69	47	47	34	.....
North dips.....	10	13	20	19	19	.....
Furnaces.....	7	7	8	12	3	.....
Air shafts.....	16	63	16	54	18	.....

NOTE.—The above interesting references are given respecting the different districts. The Shamokin district was not represented last year, having no inspector.

TABLE No. I.

Names of persons killed in and about the mines in the mining district of Schuylkill for the year ending December 31, 1873.

Date.	Names of the persons killed.	Names of the collieries.	Wife....	Children	Remarks.
Jan. 21,	Wesley Yhoo	Mahanoy City.....	1	5	Died; foot crushed in rollers on November 20, 1872.
22,	John Heim	Beechwood	1	6	Died; injured, rope broke, with two loaded cars falling on him.
23,	John Neiman	Locust Dale	1	4	Died; injured by a blast.
28,	John Huth	Middle Creek.....	1	1	Killed by a rock's slip.
28,	John Spinker.....	Middle Creek.....	1	7	Killed by a fall of rocks.
31,	William Dudley	St. Clair Shaft.....	1	2	Died; injured by an explosion of gas on 13th instant.
	John Munday	New Kirk.....	1	2	Killed; run over by a dirt wagon.
	7 persons.				
Feb. 5,	William Stohil.....	East Mine Shafts.....			Killed; fell 210 feet while adjusting air pipes.
5,	William Hartman	Wm. Penn Shaft.....			Killed; jammed at the breaker.
11,	William Seymour.....	Monitor			Killed by a fall of coal—"accidental."
11,	Henry Zimmerman.....	Burnside.....	1	5	Killed; ran over by wagon, breaking of the rope.
27,	John Carney	Daniel Webster.....	1	5	Killed by an explosion of gas.
	5 persons.				
Mar. 1,	Walter Neill	Beechwood	1	5	Killed by a fall of rocks while at work.
6,	Henry Wright.....	Indian Ridge.....	1	2	Killed; fell 300 feet in the shaft.
19,	John Conners, 18 years.....	Williamstown.....			Died; ran over in getting on wagons.
27,	Matthew Farrell.....	Bear Ridge.....	1	3	Killed by a large fall of coal.
	4 persons.				
April 4,	James Gaughan.....	Honey Brook	1	3	Killed by a fall of coal in the tramway.
17,	William Grant, operator.....	Plank Ridge	1	7	Killed by a mass of coal at foot of slope.
17,	Walter Gibbs, boss.....	Plank Ridge	1	6	Killed by a mass of coal at foot of slope.
21,	Dominiek Gavin.....	East Mine Shafts.....	1	1	Killed; fell off a platform in the shaft.
21,	Frank Lynch	Focht & Whittaker	1	6	Killed by a fall of coal.
22,	Robert Linton	Koh-i-noor Shaft.....	1	6	Killed by a fall of coal.
22,	John Harford	Koh-i-noor Shaft.....	1	5	Killed by a fall of coal.
22,	Adam Campbell	Big Mountain.....	1	5	Killed by a fall of rocks.
26,	James Bachus.....	New Kirk.....	1	2	Killed by an explosion of fire-damp.
29,	9 persons.				
May 6,	James M'Garvey.....	Honey Brook			Killed by a fall of coal while working.
6,	Richard Williams.....	Tunnel Ridge.....	1	5	Killed.
9,	William Brannan.....	Kear's Mine Hill Gap.....	1	5	Killed; crushed by slope timbers.
12,	Michael E. Ketry	Coal Dale	1	8	Killed; drawn into a pulley in crossing slope rope.

INSPECTORS OF MINES.

May	20,	Thomas Walsh.....	Colorado.....	.....	Died; crushed by a fall of coal.
	22,	Catharine Brannan, 14 yrs..	Glen Carbon.....	.....	Killed; fell into an open breast while passing by.
	26,	John Monaghan.....	Big Mine Run.....	1	Killed by a premature explosion of a blast.
		7 persons.			
June	3,	Felix Hagan.....	Bear Run.....	1	Killed; crushed by cage and slope rollers, riding against rules.
	7,	Wm. Umpenhower, 10 yrs..	Monitor.....	.....	Killed in rollers while working.
	8,	William Herb.....	Brookside.....	1	Died; injured by fall of coal 18th instant.
	8,	Thomas Derrick.....	Glen Dover.....	.....	Died; burned by an explosion of gas.
	8,	Aseah Orme, 19 years.....	Hickory Slope.....	1	Died; leg mortified, injured by fall of coal.
	10,	John S. Hays, boss.....	Henry Clay.....	5	Killed.
	10,	Michael Merfish.....	do.....	1	Killed.
	10,	Enoch Magenskie.....	do.....	1	Killed.
	10,	Lawrence Rogolskie.....	do.....	1	Killed.
	10,	Anthony Harris.....	do.....	1	Killed.
	10,	William Drumhiser.....	do.....	1	Killed.
	10,	Daniel Paul.....	do.....	2	Killed.
	10,	Nicholas Paulus.....	do.....	1	Killed.
	10,	Conrad Drumhiser, boss.....	do.....	1	Killed.
	10,	Michael Deia.....	do.....	1	Killed.
	10,	Edward Sweeney.....	East Pine Knot.....	.....	Killed; crushed between the hopper and counter screen.
	24,	Isaac Bevans.....	Lehigh, No. 3.....	3	Died same day; injured by a fall of coal.
	24,	—— Davis.....	Big Lick.....	1	Killed; burned to death by fire-damp.
	24,	—— Thomas.....	Big Lick.....	1	Killed; burned to death by fire-damp.
		19 persons.			
July	7,	Jacob Hingle.....	Montelius.....	1	Killed by a fall of coal.
	9,	Thomas Rescole.....	Lincoln.....	1	Killed by a fall of coal.
	9,	Charles Dursch.....	Boston Run.....	.....	Killed by a fall of coal.
	9,	Adam Winkle.....	Keystone.....	1	Killed; crushed between wagon and props.
	9,	Michael O'Neill.....	East Franklin.....	.....	Died from injuries in the mines.
	21,	William Durkin.....	Beechwood.....	.....	Died; head fractured by coal on the 18th instant.
	26,	Lewis Schultz.....	Heckscherville.....	.....	Killed; crushed in the counter screens.
	29,	James Brannan, Sr.....	Ellengowan.....	1	Killed by a fall of coal.
	30,	Donnelly Rowe.....	Ellengowan.....	6	Killed by a fall of coal; legs amputated.
		9 persons.			
Aug.	3,	Alfred Price.....	Diamond, No. 1.....	.....	Died; fell down a chute on the 1st instant.
	4,	Hugh Doolin.....	East Mine Shafts.....	.....	Died same day by explosion of dualin.
	9,	George Greathhead.....	Monitor, Wadesville.....	1	Died; injured by a fall of coal on 6th instant.
	11,	Hector Williams.....	Tunnel Widge.....	1	Killed by a fall of coal while at work.
	14,	Thomas Corcoran.....	Rebanco.....	1	Killed by a fall of coal.
	15,	Emanuel Powell.....	East Franklin.....	2	Killed by a discharge of a blast.
	18,	Patrick Brannan.....	St. Clair Shaft.....	1	Died; mortally injured by a fall of coal.
	20,	Philip Krell.....	Alaska.....	.....	Died; mortally injured by a fall of coal.
	21,	Dan. Hottenbach.....	Luke Fidler.....	1	Died; mortally injured by a fall of coal.

This disaster resulted from the incautious act of the mine boss, Conrad Drumhiser, while exploring old works and igniting the fire-damp, which killed himself and suffocated his men in the lower level by after-damp, brought down by the down-cast ventilation.

TABLE No. I—Continued.

Date.	Names of the persons killed.	Names of the collieries.	Wife	Children	Remarks.
Aug.	25, John Martin, boy	Gilberton .....	.....	.....	Killed in the cog wheels.
26,	Philip Neisley	Ravens' Dale .....	.....	.....	Died; mortally injured by a fall of coal.
27,	John Cummings	Ellengowan .....	.....	.....	Killed; a timber fell on him in the shaft.
29,	Thomas Coyte	Eagle Hill	1	15	Died; mortally injured by a fall of coal.
30,	Christian Hensel	Lehigh, No. 3	1	2	Killed; fell off a loaded coal train.
Sept.	4, Patrick Maher	Knickerbocker .....	.....	.....	Killed by a fall of coal.
6,	Thomas McLaughlin	Girardsville .....	.....	.....	Killed by a fall of coal.
7,	Walter Fitzsimmons	Eagle Hill	1	5	Killed, being burned by fire-damp.
8,	Joel Dresler	Burnside	1	.....	Killed by a fall of gangway coal.
11,	Benjamin Bird	Bear Valley	1	2	Killed by a fall of breast coal.
12,	Joseph Jones	Honey Brook	1	3	Died from lock-jaw from injuries.
13,	Joseph Burk	Franklin .....	.....	.....	Killed by being run over by wagons.
13,	David Montilus	Cameron .....	.....	.....	Killed; was crushed to death by wagons.
17,	Richard Matthews	Indian Ridge	1	.....	Killed by a fall of coal.
17,	James Ryan	Primrose .....	.....	.....	Killed; a slope chain broke, wagon fell on him.
18,	William Paul	Montilius .....	.....	.....	Killed; crushed to death by wagons.
18,	William Morgan	Burnside .....	.....	.....	Killed by a fall of coal.
20,	Lawrence Burns	Otto Red Ash	1	6	Killed by a fall of coal.
20,	Henry Trego	Bear Valley	1	4	Died; leg crushed by wagons.
22,	Frederick Marshden	Coal Ridge .....	.....	.....	Killed; missed his hold, fell 100 yards in the slope.
22,	Stephen Horn	Plank Ridge	1	4	Died; burned by fire-damp explosion.
25,	Thomas McCarthy	Girardsville .....	.....	.....	Killed by a fall of gangway coal.
30,	John Shields	Anchor .....	.....	.....	Killed by a fall of coal.
Oct.	18 persons.	Koh-i-noor .....	.....	.....	Killed; crushed in the rollers.
5,	Frederick Mehl	Shenandoah .....	.....	.....	Died from injuries received in the mine.
5,	Charley Walsh	Montilius	1	4	Died of injuries.
9,	William Becker	Hickory Swamp .....	.....	.....	Killed by a fall of coal.
9,	George Stephenson	Gilberton	1	5	Died; burned by fire-damp.
10,	John Williams	Gilberton .....	.....	.....	Died; burned by fire damp.
11,	Edward Brecken	L. Ranch Creek .....	.....	.....	Killed; kicked by a mule.
15,	John Kinney	Boston Run	1	4	Killed by a fall of coal.
20,	James Bowden	New Philadelphia	1	5	Killed; fell into an abandoned shaft.
27,	William Sreen	Black Valley	1	2	Died while walking up his slope.
29,	Richard Hofman .....	.....	.....	.....	.....

25,	John Kisima.....	Reliance.....	1	4	Killed by a fall of coal.
	11 persons.				
Nov.	3,	William Rosser.....	1	3	Killed; crushed in gangway by wagons.
	8,	Thomas Lyshaw.....	1	4	Killed by a fall of coal.
	10,	M. Wilson.....	1	4	Killed; crushed by wagons.
	10,	Patrick Connor.....	1	4	Killed by a fall of coal.
	10,	Peter Egan.....	1	4	Killed; smothered in a dirt chute.
	18,	John Williams.....	1	5	Killed by an explosion of a blast.
	22,	Peter Kambizlor.....	1	1	Killed by a cog-wheel falling on him.
	22,	Peter Clarey.....	1	6	Killed by a fall of coal.
	23,	William Jones.....	1	6	Killed by an explosion of fire-damp.
	23,	Thomas Heston.....	1	1	Died; injured, chain broke, fell into slope.
	30,	10 persons.	1	1	
Dec.	2,	Patrick Farrell.....			Killed by a premature blast.
	6,	Alexander Brown.....			Killed by the breaking of slope chain.
	6,	Patrick Dolan.....			Killed by the breaking of slope chain.
	6,	John Richards.....			Killed by the breaking of slope chain.
	13,	James Graham.....	1	5	Killed by a fall of coal.
	16,	William Williams.....	1	5	Killed by a fall of coal.
	16,	Peter Linnett.....	1	5	Killed; crushed by wagons.
	18,	Thomas Whales.....	1	4	Killed; skull crushed by wagons.
	27,	W. Jones.....	1	4	Killed by the caving in of the slope.
	27,	Henry Goshall.....	1	4	Died; injured by the caving in of the slope.
	28,	Frank Whalon.....	1	4	Died of injuries at the city hospital.

NOTE.—Two persons have died since closing this list.

One hundred and twenty-six persons came to their death by the foregoing casualties. Thirty-four persons of this number died of said injuries.

RECAPITULATION OF THE CHARACTER OF THESE CASUALTIES.

- 47 persons lost their lives by fall of coal.
 - 8 persons lost their lives by breaking of chains, ropes, &c.
 - 4 persons lost their lives by falling into breaker rollers.
 - 7 persons lost their lives by falling into slopes and shafts.
 - 3 persons lost their lives by falls of top rock.
 - 1 person lost his life by a fall of props.
 - 23 persons lost their lives by explosions of fire-damp.
 - 2 persons lost their lives by explosions of powder.
 - 6 persons lost their lives by explosions of blasts.
 - 12 persons lost their lives by being run over by wagons.
 - 2 persons lost their lives by caving in of a slope.
 - 1 person lost his life by being kicked by a mule.
 - 1 person lost his life in walking up a slope.
 - 9 persons lost their lives, being crushed in cog-wheels, falling into schutes, openings, machinery, &c.
- 126 deaths left 74 widows and 273 orphans.

TABLE No. II.

Names of the persons who were maimed and injured in and about the mines of the mining district of Schuylkill, during the year ending December 31, A. D. 1873.

Date.	Names of the injured persons.	Names of the collieries.	Remarks.
Jan. 17,	John Shearer...	Mariam	Severely injured; fell forty feet off trestle-work.
17,	John O'Brien...	Cambrian.....	Leg broken in the mines by a fall of coal.
20,	John Neiman...	Locust Dale....	Head fractured by a blast; died.
28,	Wm. Bergen....	East Pine Knot..	Severely burned by an explosion of gas.
28,	Pat. M'Donnell..	East Pine Knot..	Foot crushed by a fall of coal.
29,	Michael Snyder,	Mid. Creek shaft	Leg severely injured by a fall of rock.
29,	Wm. Kelly	Mid. Creek shaft	Leg severely injured by a fall of rocks.
29,	Wm. Simmons..	Mid. Creek shaft	Leg and thigh broken by a fall of rocks.
31,	A boy.....	Lincoln.....	Leg amputated by a fall of dump car.
	9 persons.		
Feb. 18,	Thomas Fahy...	Plank Ridge....	Head crushed by mine wagons.
27,	Patrick Quinn...	Daniel Webster,	Severely burned by an explosion of gas.
27,	Albert Evans....	Glen Carbon....	Eyes destroyed by a lump of coal.
27,	Patrick Dean....	Lehigh, No. 3...	Thigh fractured by a lump of coal.
	4 persons.		
Mar. 1,	J. Goodhead....	Koh-i-noor.....	Head and back injured by a fall of coal.
1,	Wm. Conway....	Ellengowan....	Severely injured by falling into the shaft.
3,	Frank Richards,	Beaver Run....	Severely injured; kicked in the face by a mule.
3,	John Dumon....	Shenandoah city	Severely injured by a fall of coal.
3,	Con. Flynn	Plank Ridge....	Severely injured by a fall of coal.
3,	Robert Linton...	Plank Ridge....	Mortally injured; run over by a dirt car; died.
7,	George Lorah...	Koh-i-noor.....	Leg amputated; crushed in machinery.
7,	James Brooks...	Koh-i-noor.....	Back severely injured by a fall of coal.
7,	Benj. Jones....	Bear Run.....	Fingers cut off by a fall of coal.
7,	Thos. Maning....	Grant.....[ker,	Hand severely injured by a piece of coal.
7,	Michael Mulvey,	Focht & Whita-	Hand severely injured; crushed by a dirt car.
7,	Henry Faust....	Lost Creek.....	Leg amputated; run over by a dirt car.
12,	Wm. Duim	Koh-i-noor.....	Face and hand burned badly by powder.
12,	Daniel Anspach,	Kalmia	Shoulder broken by a fall of slate.
13,	Thos. Maguire..	Heckscherville..	Slightly burned by an explosion of gas.
13,	Michael Horan..	Heckscherville..	Slightly burned by an explosion of gas.
13,	Wm. Hughes....	Tunnel, No. 8...	Head injured by a piece of coal.
14,	S. Monaghan....	Mariam	Leg broken by a fall of coal.
14,	Jacob Auman...	Cameron.....	Arm and jaw broken; fell off breaker-building.
14,	John B. Rush...	Glen Carbon....	Severely burned by fire-damp.
14,	John Boyle	Glen Carbon....	Severely burned by fire-damp.
14,	Patrick Ward...	Glen Carbon....	Severely burned by fire-damp.
14,	Gavin Holten...	Glen Carbon....	Severely burned by fire-damp.
19,	A. H. Reed	Tower City.....	Arm broken, fingers cut off.
19,	Daniel Hughes..	Turkey Run....	Fingers mashed by car bumpers.
19,	George Bendle..	Girardsville....	Leg broken at the breaker.
20,	Michael Larkin,	Boston Run....	Head injured; fell 70 yards in mainway.
20,	John Purell....	Bear Run.....	Injured by falling against a battery.
21,	Patrick Coogan,	East Pine Knot..	Injured by a fall of coal.
27,	Wm. Edwards..	Ravens Dale....	Severely burned by an explosion of fire-damp.
27,	David Edwards,	Ravens Dale....	Severely burned by an explosion of fire-damp.
27,	Philip Darby....	Phoenix, No. 2..	Severely burned by explosion of powder.
28,	M. Hoffman....	Short Mountain,	Head injured between car bumpers.
	33 persons.		
Apr. 9,	Ned Kehoe.....	Mahanoy City...	Legs and face injured by a blast.
9,	Thomas Boyle...	Monitor	Badly hurt by a fall of coal.
9,	Theo. Gender...	Monitor	Badly hurt by a fall of coal.

ANNUAL REPORT OF THE

TABLE OF INJURIES—Continued.

Date.	Names of the injured persons.	Names of the collieries.	Remarks.
Apr. 9,	Geo. Holywood.	Slope 5. L. N. Co	Badly hurt by a fall of slate.
10,	Richard Coal...	Hillside.....	Shoulder broken by a fall of slate.
10,	John Murphy...	Stanton.....	Hand crushed by car bumpers.
10,	Theo. Ginter....	Locust Gap.....	Ribs broken; crushed between timbers and wagon.
10,	A miner.....	Locust Gap.....	Legs broken by a fall of coal.
14,	Anthony Kane..	Union, No. 2....	Ankle broken by a fall of coal.
14,	Pat. Dougherty..	Continental.....	Nose and ribs broken by a fall of coal.
14,	Jas. Monaghan..	Continental.....	Severely crushed by a fall of coal.
17,	M. Monaghan....	Plank Ridge....	Back broken by a fall of coal.
17,	Peter Berne....	Plank Ridge....	Severely injured by a fall of coal.
17,		Knickerbocker..	Severely injured by a fall of coal.
17,		Knickerbocker..	Severely injured by a fall of coal.
21,	Henry Jones....	Thomas.....	Leg broken by a fall of coal.
21,	Peter Gorman....	Oak Hollow....	Ankle fractured by a fall of coal.
21,	David D. Evans..	St. Nicholas....	Leg broken by a fall of coal.
22,	Chas. Seltzer, 13,	Koh-i-noor.....	Head severely crushed by timbers.
22,	Michael Loftus..	Plank Ridge....	Thigh broken by a fall of coal.
22,	Wm. Arthur....	Knickerbocker..	Leg broken by a fall of coal.
22,	David Rupp....	Coal Run.....	Severely injured by a fall of coal.
22,	Wm. Lawter....	Rauch Creek....	Hand badly burned by explosion of gas.
25,	Thos. Jourdan..	Lost Creek.....	Leg broken; eyes injured by explosion of a blast.
28,	Rich'd Winlack,	Commercial....	Severely hurt; fell off the breaker platform.
28,	Patrick Collier..	Oak Dale.....	Leg broken; run over by a dirt car.
29,	James Bachus...	New Kirk.....	Mortally burned by an explosion of gas.
29,	John Barrnick..	Lost Creek.....	Severely burned by explosion of powder.
29,	James Hower... 29 persons.	Lost Creek.....	Severely burned by explosion of powder.
May 3,		Diamond.....	Severely burned by an explosion of gas.
5,	John Campbell..	Big Mountain..	Severely crushed between wagons.
5,	James Stewart..	Otto Red Ash...	Back injured by a fall of slate.
5,	Frank Deitinger	Gir'd Mammoth	Leg and foot crushed; run over by dirt car.
5,	Patrick M'Can..	Shenandoah city	Fingers cut off in coupling wagons.
10,	Amasa Orme....	Hickory slope..	Leg broken by a fall of coal; died June 8.
12,	Frank Clark....	Bear Valley....	Mortally injured by a blast.
12,	John Hause....	Mahanoy city...	Leg and arm broken; 3 fingers cut off; crushed by wagons.
18,	William Herb..	Brookside... ..	Body crushed by fall of coal; died June 6.
21,	Edward Byllis..	Turkey Run....	Body crushed by a fall of coal.
21,	A miner.....	Plank Ridge....	Body burned by an explosion of gas.
21,	J. Maguire, boy,	Colkett.....	Slightly crushed between the screens.
24,	Robert Peel....	Lost Creek.....	Head and ears burned by explosion of gas.
24,	Robinson Smith,	Raven Run.....	Spine injured; crushed by the wagons.
24,	Martin Reynolds 18 persons.	Glen Carbon....	Slightly burned by an explosion of gas.
June 2,	Leon'd Depinger	L. Rauch Creek,	Mortally crushed by a large piece of coal.
3,	William Ryan..	Greenwood.....	Leg crushed by a piece of coal.
3,	The engineer...	Cambrian.....	Injured by the explosion of the cylinder.
4,	Thos. Derrick...	Glen Dower.....	Mortally burned by an explosion of gas—died June 8.
4,	James Edwards.	Glen Dower....	Badly burned by an explosion of gas.
4,	A boy.....	Glen Dower....	Badly burned by an explosion of gas.
5,	Wm. Hughes...	St. Clair shaft..	Hand crushed while coupling wagons.
6,	Edward Sweeny	East Pine Knot.	Foot crushed by the screen and hopper.
10,	W. Brown, ope'r	Daniel Webster.	Leg broken and injured; fell 60 yards down the slope.
10,	Several men....	Luke Fidler....	Injured; rope broke while ascending the slope.
10,	M. Grady.....	Indian Ridge...	Arm and leg broken; run over by a wagon on the plane.

TABLE OF INJURIES—Continued.

Date.	Names of the injured persons.	Names of the collieries.	Remarks.
June 10,	Philip Orgle . . .	Boston Run . . .	Foot crushed by a wagon.
10,	George Wright . .	Koh-i-noor . . .	Arms badly burned by explosion of gas.
10,	John Boyle . . .	Oak Dale . . .	Seriously crushed by a fall of coal.
10,	John Philips . . .	Oak Dale . . .	Seriously crushed by a fall of coal.
10,	Wm. Roberts . . .	Tunnel . . .	Eyes injured by a premature blast.
14,	Dan. Holmback . .	Luke Fidler . . .	Legs broken by a fall of coal.
14,	Frank Deibler . .	Big Mountain . .	Body crushed by a runaway wagon.
18,	A. Gallagher, boy	Colorado . . .	Legs broken in getting on moving wagon.
20,	James Lander . .	Beechwood . . .	Eyes injured by kick of mule in the slope.
20,	William Davis . .	Big Lick . . .	Mortally burned by an explosion of gas.
26,	John Thomas . . .	Big Lick . . .	Mortally burned by an explosion of gas.
20,	A miner . . .	Girard . . .	Severely injured by explosion of a boiler
20,	Michael Mulvey . .	Malvern . . .	Foot crushed ; run over by a wagon.
20,	Thomas Hanson . .	Knickerbocker . .	Head crushed by a blast.
20,	Ebenezer Davis . .	Brookside . . .	Foot crushed by a fall of coal.
20,	James Lankin . .	Franklin . . .	Severely burned by an explosion of gas.
20,	A miner . . .	Franklin . . .	Severely burned by an explosion of gas.
20,	A miner . . .	Franklin . . .	Severely burned by an explosion of gas.
20,	John Roach . . .	East Mine shaft . .	Legs broken by a fall of rocks.
20,	Wm. Pitkitts . . .	Tremont . . .	Foot injured by a fall of coal.
20,	A miner . . .	L. Rauch Creek . .	Badly burned by fire-damp, gas.
20,	A miner . . .	L. Rauch Creek . .	Badly burned by fire-damp, gas.
20,	A laborer . . .	L. Rauch Creek . .	Badly burned by fire-damp, gas.
20,	A boy . . .	L. Rauch Creek . .	Badly burned by fire-damp, gas.
26,	Isaac Bevan, 13,	Lehigh, No. 3 . . .	Mortally injured by a fall of coal ; died same day.
27,	Patrick Shields . .	Eagle Hill slope . .	Eyes destroyed by a piece of coal.
28,	James Casey . . .	Locust Dale . . .	Foot crushed by the wagon and rope.
30,	Dan'l Campbell . .	Taylorville . . .	Injured by an explosion of gas.
30,	Lewis Jones . . .	Oak Dale . . .	Seriously injured by a fall of coal.
30,	Geo. Radford, Sr	Hickory shaft . . .	Head severely injured by discharge of a blast.
30,	Geo. Radford, Jr	Hickory shaft . . .	Severely injured by discharge of blast.
	46 persons.		
July 3,	Anthony Devitt . .	Maize & Lewis . .	Head injured ; caught between wagons.
10,	J. Scheppe . . .	Wm. Penn . . .	Severely injured by falling off a trestle.
11,	Dan. O'Connell . .	Bear Run . . .	Hand crushed by a fall of coal.
11,	Frank Detinger . .	Gir'd Mammoth . .	Leg and foot crushed ; run over by a dirt wagon.
11,	Patrick M'Cue . .	Shenandoah city . .	Fingers cut while spraging wagons.
14,	C. M'Cullough . .	St. Clair shaft . .	Leg crushed ; run over by a wagon.
14,	Peter Halvey . . .	Preston, No. 3 . . .	Severely burned by an explosion of gas.
14,	Wm. Thomas . . .	Preston, No. 3 . . .	Slightly burned by an explosion of gas.
14,	Lewis Wilde . . .	Preston, No. 3 . . .	Slightly burned by an explosion of gas.
14,	Bartly Murphy . .	East Franklin . . .	Arm broken.
17,	George Jones . . .	Heckscherville . .	Thigh broken by a fall of coal.
18,	William Durkin . .	Beechwood . . .	Mortally injured by a blast ; died 21st.
18,	Robert Thomas . .	Brookside . . .	Severely injured by a blast.
18,	Wm. Shadel . . .	Brookside . . .	Severely injured by a blast.
25,	John Witrell . . .	Greenwood . . .	Head and arm injured by a fall of coal.
26,	James Clemson . .	Hill & Harris . . .	Severely injured under a wagon.
28,	Thomas Young . .	Williamstown . .	Head severely cut by a fall of coal.
	17 persons.		
Aug. 1,	John Cummings	Hickory shaft . . .	Head and hands injured in the drum while in motion.
1,	Percival Boltz . .	Hickory shaft . . .	Head and hands injured while fixing the spiders.
1,	Thomas Tracy . .	Primrose . . .	Severely injured by a fall of gang-way rocks.
1,	David Powell . . .	Koh-i-noor . . .	Severely injured by a fall of slate and top rocks.
1,	James Powell . . .	Koh-i-noor . . .	Severely injured by a fall of slate and top rocks.

TABLE OF INJURIES—Continued.

Date.	Names of the injured persons.	Names of the collieries.	Remarks.
Aug. 2,	Wm. Price.....	Diamond, No. 1.	Mortally injured; fell 50 yards down a breast; died on the 3d inst.
2,	Thomas Dorey..	Bear Run.....	Severely injured by a blast in coal.
4,	M. O'Donnell...	East Mine shaft.	Severely injured by a blast of Dualin in the shaft.
4,	J. M'Glaughlin..	East Mine shaft,	Severely injured while drilling out old hole.
4,	A helper.....	East Mine shaft,	Severely injured by drill-hole which had missed.
6,	Sily'r Malacus..	Reliance.....	Severely injured by a fall of coal.
6,	John Lehy.....	Turkey Run....	Hand lacerated by a circular saw.
7,	John Keho.....	Plank Ridge....	Shoulder severely cut by a fall of coal.
7,	Josiah Strasser..	Greenback.....	Leg broken by a fall of coal.
9,	Martin Burk....	Heckschersville,	Severely burned by an explosion of gas.
9,	M. Burns.....	Heckschersville,	Severely burned by an explosion of gas.
9,	John Haughney,	Glen Carbon....	Severely burned by an explosion of powder.
11,	Edward Young,	Wm. Penn.....	Arm crushed by wagon.
11,	Henry Miller...	Diamond, No. 2.	Severely injured by an explosion of powder.
		B. Best.	
14,	J. Churchhill...	Reliance.....	Severely injured by a fall of coal.
14,	Alfred Price....	Diamond, No. 2.	Dangerously injured; fell down a coal schute.
15,	Pat. Brannan....	St. Clair shaft...	Head shockingly burned by an explosion of gas; died 18th inst.
15,	Jas. Hargraves..	St. Clair shaft...	Severely burned by an explosion of gas.
15,	John Hogan.....	St. Clair shaft...	Slightly burned by an explosion of gas.
15,	A small boy.....	St. Clair shaft...	Slightly burned by an explosion of gas.
18,	Clem. Gregory...	Beechwood.....	Slightly burned by an explosion of gas.
18,	James Adams....	Beechwood.....	Slightly burned by an explosion of gas.
18,	Philip Krell....	Alaska.....	Mortally injured by a fall of coal; died 21st inst.
21,	A miner.....	Otto Red Ash....	Mortally injured by a blast.
21,	Frank Williams,	East Franklin...	Toes cut off by revolving screen.
21,	Edward Owens,	Minersville.....	Severely crushed while coupling cars.
21,	John W. Lewis,	Draper.....	Hand hurt.
22,	Philip Neisley..	Raven Dale.....	Mortally injured by a fall of coal; died.
22,	Wm. Shertle....	Forestville.....	Severely injured by a blast.
22,	T. L. Richards..	Tunnel Ridge...	Severely burned by explosion of powder.
22,	Chas. Huges....	Ellengowan.....	Severely crushed in the new shaft.
22,	Lloyd Roth.....	Cameron.....	Ankle broken by a fall of coal.
22,	Wm. Simmons..	Cameron.....	Foot crushed by wagons.
22,	Oliver Kreeger..	Hickory Swamp,	Knee broken by a fall of rocks.
25,	Thos. Pierce....	Greenwood.....	Severely hurt in the mines.
25,	Dan O'Neil.....	East Franklin...	Severely burned by fire-damp.
25,	Thos. Prosser...	East Franklin...	Severely burned by fire-damp.
26,	John Cook.....	Ellengowan....	Severely hurt by a fall of timber.
28,	Frank Williams,	East Franklin...	Foot crushed at breaker by wheels.
28,	Chas. Walsh....	Burnside.....	Both knees hurt; fell in a schute.
28,	John Walsh....	Beechwood.....	Badly burned by fire-damp.
29,	Joseph Miller...	Middle Port.....	Leg broken; fall of breaker machinery.
29,	Thos. Jennings..	Middle Port.....	Hand shattered; fall of breaker mach'y.
29,	Two others.....	Middle Port.....	Severely injured; fall of breaker mach'y.
29,	W. Fitzsimmons	Eagle Hill.....	Mortally burned by fire-damp; died.
30,	Fred. Wenkle...	Tunnel Ridge...	Leg terribly injured.
30,	John Wagner...	L. Rauch Creek,	Severely burned by an explosion of gas.
30,	David Hopkins..	Pine Forest.....	Severely burned by an explosion of gas.
30,	Evan J. Thomas,	Pine Forest.....	Severely burned by an explosion of gas.
30,	Thomas Jones...	Carbon Run.....	Arm broken.
Sept 5,	John Perry.....	Preston, No. 4...	Severely burned by an explosion of gas.
5,	Edward Reese...	Preston, No. 4...	Severely burned by an explosion of gas.
5,	Peter Joyce.....	Big Mine Run...	Arm amputated; run over by wagons.
8,	Lewis Dehel....	New Boston.....	Arm broken; fell off a wagon.

TABLE OF INJURIES—Continued.

Date.	Names of the injured persons.	Names of the collieries.	Remarks.
Sept. 8,	Henry Wenkle.	Tunnel Ridge...	Head injured; back and arm broken by coal.
8,	Wm. Green.....	Preston, No. 2...	Leg badly injured; crushed by a wagon.
8,	Hiram Michael..	Raven Run	Arm broken; head and side crushed by a fall of coal.
10,	John Colohan...	Girardsville.....	Back and face crushed by a fall of coal.
11,	Edward Mulhall.	Oak Dale.....	Leg broken by a fall of coal.
11,	Thomas Holmes	Lehigh, No. 10..	Foot crushed by meddling with the cage.
15,	B. M'Glaughlin.	Knickerbocker..	Collar bone broken by a fall of prop timbers.
15,	Patrick Ward...	Indian Ridge ...	Slightly crushed by the wagons.
15,	Patrick Bagley..	Plank Ridge....	Severely burned by an explosion of gas.
15,	Patrick	Plank Ridge....	Severely burned by an explosion of gas.
16,	Lewis Lower....	Union, No. 1....	Arm broken; fell down the tip chute.
17,	Edward Annyl..	Oak Dale.....	Severely burned by an explosion of gas.
17,	Dan. Williams..	Oak Dale.....	Severely burned by an explosion of gas.
17,	James Ryan.....	Primrose.....	Mortally inj'd by breaking of slope rope.
17,	Wm. Harris.....	Primrose.....	Slightly inj'd by breaking of slope rope.
17,	Henry Davis.....	Primrose.....	Slightly inj'd by breaking of slope rope.
17,	Wm. Jenkins....	Primrose.....	Slightly inj'd by breaking of slope rope.
17,	Wm. Adams.....	U. Rauch Creek,	Slightly crushed by wagons.
17,	John Davis.....	Anchor.....	Severely burned by an explosion of gas.
17,	Michael M'Gee..	Glen Carbon....	Arm broken; run over by wagons.
18,	Edward Mason..	Atkins.....	Head severely cut by a bolt in a wagon.
20,	Elijah Hale.....	Hickory shaft...	Arm broken by a fall of coal.
20,	Henry Giles....	Hickory shaft...	Severely burned by an explosion of gas.
20,	James Lyttle...	Hickory shaft...	Arm cut off and a leg broken; run over.
20,	A miner.....	Hickory shaft...	Severely burned by an explosion of gas.
22,	T. Meigsberger..	Brady.....	Severely hurt by a fall of gangway coal.
22,	A. Polander.....	Brady.....	Mortally hurt by a fall of gangway coal.
22,	Ludwig Sobasky	Montelius.....	Arm broken; crushed by a wagon.
22,	M. Tallot.....	Plank Ridge....	Severely burned by an explosion of gas.
22,	Stephen Horn...	Plank Ridge....	Mortally injured by an explosion of gas; died.
22,	James Pearson..	Knickerbocker..	Severely kicked by a mine mule.
22,	Wm. Rose.....	L. Rauch Creek,	Severely burned by explosion of powder.
22,	Patrick Fahey..	Indian Ridge....	Severely burned by an explosion of gas.
22,	Henry Trego....	Bear Valley.....	Mortally injured between wagons.
22,	Rodger Gilroy..	Girardsville.....	Severely injured by a fall of coal.
26,	M. Mulvey.....	Malvern.....	Foot crushed; run over by a wagon.
26,	Wm. Burl.....	Tunnel.....	Severely hurt; fell down a breast.
30,	Geo. Clemens...	Kear.....	Foot crushed; rolled over by a log.
Oct. 5,	David Hammer,	Kear.....	Lost an only eye; struck by a pick.
5,	Hiram Focht...	L. Rauch Creek,	Severely hurt by a fall of top slate.
5,	Geo. Llewellyn..	Tunnel.....	Head and back crushed by wagons.
6,	John Geveney..	Lentz & Bowman	Arm fractured; fell off a mule.
6,	Wm. Baker.....	Lentz & Bowman	Mortally injured by an explosion of powder; died.
8,	Pat. Hendricks..	Thomas.....	Severely crushed by a large fall of coal.
8,	Ed. Braeken....	Gilberton.....	Severely burned by an explosion of gas.
8,	John Williams..	Gilberton.....	Severely burned by an explosion of gas; died.
10,	Pat. O'Donnell..	Wm. Penn.....	Severely injured by a fall of coal.
10,	John Skevan....	Thomas.....	Leg broken; run over by a wagon.
10,	John Hanson...	Knickerbocker..	Severely burned by discharged cartridges.
10,	George Adams..	Brookside.....	Foot crushed by a fall of slate.
10,	Adam Bendigo..	Brookside.....	Arm broken by an accident.
14,	John Kenny....	L. Rauch Creek,	Dangerously injured; kicked by a mule.
16,	Dan. Davis.....	Tunnel.....	Severely injured by a fall of coal.
16,	A miner.....	Stewardsville..	Shoulder crushed by a fall of coal.
20,	Peter Skovirton,	Caledonia.....	Foot crushed between wagons.
20,	David S. Lewis..	Tunnel.....	Severely injured by a fall of coal.
20,	A boy.....	Girardsville....	Hand severely injured by a blast.
22,	Edward Kelly..	Mine Hill Gap..	Severely injured by a fall of coal.

TABLE OF INJURIES—Continued.

Date.	Names of the injured persons.	Names of the collieries.	Remarks.
Oct. 22,	Alex. Morrison,	Lehigh, No. 3...	Severely injured by a locomotive engine.
22,	John Dickenson,	Shenandoah city	Severely injured by fall of coal.
22,	John Conly.....	New Kirk.....	Thigh broken and injured by a blast.
27,	Martin Gebbia...	Hickory shaft...	Severely burned by an explosion of gas.
28,	J. S. O'Donnell...	Buckville.....	Shoulder broken by a fall of coal.
28,	Jas. Campbell, 13	Big Mountain...	Crushed in the breaker cog-wheels.
28,	Wm. Gable.....	Buck Ridge.....	Crushed by a fall of top rocks.
29,	Patrick Roland,	Preston, No. 4...	Head badly cut by a dumper.
31,	Patrick Doolan...	Beechwood.....	Severely burned by an explosion of gas.
31,	James Doolan...	Beechwood.....	Severely burned by an explosion of gas.
31,	Patrick Green...	Minersville.....	Lost an eye by a fall of coal.
31,	Stephen Davis...	Minersville.....	Head and breast injured by a fall of coal.
31,	Thos. Jackson...	Hill & Harris...	Thumb cut off by a fall of coal.
Nov. 3,	John Daddow...	Plank Ridge.....	Head injured by a fall of top rocks.
4,	Frank Shearer...	Live Oak.....	Severely burned by an explosion of gas.
4,	Thomas Jones...	Kear.....	Fingers mashed by a wagon door.
4,	J. Henderson...	Anchor.....	Legs (both) broken by a fall of coal.
6,	Jos. Swansbury,	Preston, No. 1...	Head severely injured by a fall of rocks.
6,	Isaac Dando.....	Turkey Run.....	Severely injured by a fall of coal.
6,	T. Rhoades, 19,	Forestville.....	Arm fractured by a wagon.
6,	W. Mullin, boy,	Live Oak.....	Leg crushed by a wagon.
6,	Jacob Kreise...	L. Rauch Creek,	Hip fractured by a fall of coal.
6,	John Hughes...	Live Oak.....	Head badly cut by a fall of coal.
7,	Thos. Thomas...	Otto.....	Severely burned by an explosion of gas.
7,	Patrick Bierney,	Otto.....	} Severely burned by an explosion of gas while introducing an extinguisher to remove the fire-damp gas.
7,	Wm. Brannan...	Otto.....	
7,	Wm. Manning...	Otto.....	} Severely burned by an explosion of a keg of powder.
11,	Thomas Harris...	Thomas.....	
12,	Frank Whalen,	Silliman's.....	Mortally injured; died in hospital.
12,	Andy Duffy.....	St. Clair shaft...	Badly scalded by steam.
13,	Henry Cavanagh	Otto.....	} Nine persons were burned by an explosion of fire-damp gas. A shot in the inside heading removed about 5 tons of coal; the air course had been blocked up, checking the air current; ventilation being restored, a shot was fired, exploding the fire-damp that had accumulated for the time being; hence the result.
13,	Ed. Gottshall...	Otto.....	
13,	Benjamin Cox...	Otto.....	
13,	Benjamin Davis,	Otto.....	
13,	Alex. Frazer...	Otto.....	
13,	Robert Moore...	Otto.....	
13,	Martin Doran...	Otto.....	
13,	Frank Thomas...	Otto.....	
13,	Frank Sherman,	Otto.....	
15,	John Haine.....	Bear Valley.....	
20,	George Sharp...	Buck Ridge.....	Arm shot off by a drill; premature blast.
20,	Patrick Fulton...	Kear.....	Nose injured by a stroke of a drill.
21,	Peter Kuntzler,	Mahanoy City...	Mortally injured; cog-wheel fell on him; died.
21,	Darby Coyle...	Preston, No. 2...	Leg and eyes injured by a fall of coal.
22,	Thos. Flannagan	New Philadelp'a	Arms broken, eyes lost by fire-damp explosion.
22,	Wm. Stephens...	Kear.....	Severely injured by an explosion of gas.
22,	Thos. O'Neill...	Kear.....	Severely injured by an explosion of gas.
22,	M. Moergan.....	Preston, No. 2...	Severely injured by a fall of coal.
22,	Benj. Moyer.....	Locust Gap.....	Arm broken by breaking of signal wire.
27,	M. Conners.....	Pine Forest.....	Dangerously injured by fire-damp gas.
27,	Ed. Evans.....	Pine Forest.....	Severely injured by fall of coal.
30,	Thos. Morris...	Anchor.....	} Mortally injured; the slope chain broke and precipitated the wagon and the men to the bottom; died.
30,	George Beddow,	Anchor.....	
30,	Stephen Jones...	Anchor.....	} Both arms broken; fell from breaker.
Dec. 4,	John Miller.....	Silliman.....	
4,	Peter Krell.....	Silliman.....	Severely injured by a fall of slate.
4,	Hugh Evans....	St. Nicholas...	Mortally injured.
5,	A Polander.....	Brady.....	Severely burned by explosion of powder.
5,	John Hagerty...	Brady.....	Severely burned by firing a cartridge.

TABLE OF INJURIES—*Continued.*

Date.	Names of the injured persons.	Names of the collieries.	Remarks.
Dec. 6,	John Richards...	Honey Brook...	Severely injured by the breaking of a spreader ring attached to the wagon, 90 yards from bottom of slope; the wagon shunted the track, breaking the said ring and precipitating 13 men to the bottom, killing 3 men and injuring seven more.
6,	John Dolan....	Honey Brook...	
6,	John Archebold...	Honey Brook...	
6,	James Dives....	Honey Brook...	
6,	Den. M'Mullin...	Honey Brook...	
6,	Luke Whittaker	Honey Brook...	
6,	James Castles...	Honey Brook...	Arm amputated; crushed by a wagon.
9,	B. Williams, boy	Kear	
10,	John Morgan ...	Lost Creek.....	Hand badly crushed by a wagon.
10,	F. M'Connick...	Mahanoy City...	Mortally injured; crushed by wagons; died.
10,	Patrick Larken,	Beechwood.....	Ankle sprained by a fall.
15,	Robt. Anderson...	Luke Fidler ...	Leg amputated by falling of ear in shaft.
15,	Frank Bixeler...	Luke Fidler....	Severely injured; the chain broke.
15,	Chas. M'eafer...	Live Oak.....	Leg broken by a fall of coal.
16,	Robert Gorrell...	Hazle Dell.....	Seriously injured by a fall.
18,	James Ryan ...	East Mahanoy...	Eyes seriously injured by a blast.
19,	Rush M'Hale....	Eagle, No. 1....	Thigh broken by a fall of coal.
22,	John Leary.....	Kear	Severely burned by an explosion of gas.
24,	John Carroll....	Colorado.....	Leg broken by a fall of slate.
24,	John Morgan ...	Forestville.....	Severely burned by an explosion of a keg of powder.
27,	Henry Gotshall,	Buck Ridge.....	Mortally injured by caving in of slope; died.
27,	Simon Wetsell,	Buck Ridge.....	Severely injured by caving in of slope.
27,	James Maley....	Turkey Run....	Eye destroyed by a splinter of coal.
27,	Wm. Holshoe ...	Buck Ridge.....	Severely injured by caving in of slope.
27,	Jno. G. Williams	Buck Ridge.....	Skull fractured by a fall of coal.
30,	Joseph Clarke ..	Montilius.....	Leg broken by a fall of coal.
31,	James Tregallis,	Primrose	Severely injured by a blast.

Three hundred and seventy-nine persons were maimed and injured during the year, 34 of whom died subsequently of such injuries, and many others are still suffering and their recovery doubtful, and others that are crippled for life.

The causes of these casualties are such,

That 77 persons had been severely burned by explosions of fire-damp.
 4 persons had been kicked by vicious mules.
 15 persons had been crushed and run over by wagons.
 13 persons had been burned by explosions of powder.
 26 persons had been injured by explosions of blasts.
 11 persons had been injured by falls of slate.
 11 persons had been injured by breaking of slope chains.
 1 person had been injured by explosion of a boiler.
 73 persons had been injured by falls of coal.
 6 persons had been injured by falls of sundry characters.
 34 persons had been mortally injured and died subsequently.
 12 persons had been injured by falls into rolls, screens and wheels.

And 96 persons had been seriously injured otherwise.

379 casualties occurred during the year, against
 265 in the year 1872, being an excess of

114 casualties in 1873.

Number of persons who were maimed, and the character of their injuries, during the year 1873:

7	persons had each their shoulders broken.
13	persons had each an arm broken.
2	persons had each both arms broken.
5	persons had each lost an arm.
46	persons had each a leg broken.
3	persons had each both legs broken.
2	persons had each lost a leg.
1	person had both legs amputated.
5	persons had each lost an eye.
3	persons had each lost both eyes.
13	persons had each a hand crushed.
16	persons had each a foot crushed.
7	persons had each their fingers cut off.
2	persons had each lost their toes.
24	persons had each their heads crushed and injured.
3	persons had each a leg and arm broken.
6	persons had each their backs broken.
77	persons were each burned by explosions of fire-damp.
<hr/>	
235	persons were maimed and injured.
154	persons were otherwise injured.
<hr/>	
389	persons' names are recorded on injured rolls.

MONTHLY CASUALTIES IN 1873.

	Killed	Maimed	Widows	Orphans	Aggregate
January.....	7	9	5	24	45
February.....	5	4	1	5	15
March.....	4	33	3	10	50
April.....	9	33	8	41	91
May.....	7	19	4	19	49
June.....	19	36	12	32	99
July.....	9	29	4	13	55
August.....	14	59	9	31	113
September.....	20	48	9	24	101
October.....	11	34	7	29	81
November.....	10	42	8	35	95
December.....	11	33	4	9	57
	126	379	74	273	852

INSPECTORS OF MINES.

COAL TONNAGE OF THE MINING DISTRICT OF SCHUYLKILL, PROPORTIONATE TO THE DEATHS AND INJURIES IN THE SAME, FOR FIVE YEARS, ENDING DECEMBER 31, A. D. 1873.

1869. Gross tonnage, 4,688,994 tons.	1870. Gross tonnage, 3,938,429 tons.	1871. Gross tonnage, 5,859,000 tons.	1872. Gross tonnage, 7,537,468 tons.	1873. Gross tonnage, 8,008,598 tons.
81,994-1 death. 51,556-1 inju'y. 151,296-1 widow 31,259-1 orph'n 339-1 emp'd.	35,161-1 death. 15,628-1 injured. 54,700-1 widow. 15,628-1 orphan. 187-1 empl'd.	45,341-1 death. 14,408-1 injured. 88,636-1 widow. 22,162-1 orphan. 197-1 empl'd.	83,829-1 death. 24,669-1 inju'd. 154,826-1 widow. 44,600-1 orphan 247-1 empl'd	63,561-1 death. 21,131-1 inju'd. 108,224-1 widow 29,335-1 orphan 377-1 empl'd

Gross tonnage of coal mined in Schuylkill district during five years, ending December 31, A. D. 1873, including the coal mined in Schuylkill, Northumberland, Columbia and Dauphin counties, respectively, is 8,008,598 tons.

COUNTY CASUALTIES IN THE LAST FIVE YEARS.

DATE.	SCHUYLKILL.				NORTHUMBL'D.				COLUMBIA.				DAUPHIN.			
	Killed...	Maimed,	Widows,	Orphans,	Killed...	Maimed,	Widows,	Orphans,	Killed...	Maimed,	Widows,	Orphans,	Killed...	Maimed,	Widows,	Orphans,
1869.....	56	86	30	150	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1870.....	112	252	70	250	14	35	7	26	2	9	1	.....	1	2	1	2
1871.....	102	339	57	162	20	54	8	26	2	.....	.....	.....	6	14	1	6
1872.....	66	226	38	124	11	26	4	16	8	10	5	12	8	13	2	11
1873.....	92	319	51	207	29	48	20	62	2	7	1	4	3	5	2	.....
Total.....	428	996	246	893	74	137	39	130	14	16	7	16	18	21	6	19

RECAPITULATION OF DEATHS AND INJURIES IN THE ANTHRACITE COUNTIES DURING THE YEAR 1873.

COUNTIES.	Killed.	Maimed.	Widows.	Orphans.	Total.
Schuylkill.....	92	319	51	207	669
Northumberland.....	29	48	20	62	159
Columbia.....	2	7	1	4	14
Dauphin.....	3	5	2	.....	10
Carbon.....	.....	.....	.....	.....	.....
Luzerne.....	.....	.....	.....	.....	.....

RECAPITULATION OF DEATHS AND INJURIES IN THE THREE MINING DISTRICTS OF SCHUYLKILL IN 1873.

DISTRICTS.	Killed.	Maimed.	Widows.	Orphans.	Total.
1st or Pottsville.....	29	117	15	61	222
2d or Ashland.....	53	161	31	114	359
3d or Shamokin.....	44	101	28	98	271
Aggregate.....	126	379	74	273	852

Exhibition of the several interests of the capacity and characters of the collieries in the District of Schuylkill, in 1873.

18	furnaces in the district.
50	natural outlets or air-holes.
20,718	hands employed at the collieries.
100	steam fans in operation.
110	drift collieries in operation.
18	shaft collieries in operation.
143	slope collieries in operation.
1,433	steam boilers in operation.
692	steam engines in operation.
41,316	horse-power of steam engines.
49	north dip coal seams worked.
118	south dip coal seams worked.
276	coal seams on the different tracts.

COAL TONNAGE OF COUNTIES IN 1873.

COUNTIES.	Sold coal.	Consumed coal	Total tons mined.
Schuylkill	4,727,328	900,000	5,627,328
Northumberland	1,234,070	170,000	1,404,070
Columbia	281,818	20,000	301,818
Dauphin	635,382	40,000	675,382
Carbon			
Luzerne			
	6,878,598	1,130,000	8,008,598

The above coal tonnage is here given for a reference for each respective county.

Amount of coal shipped from the several collieries in Schuylkill county during the year ending December 31, 1873.

NAMES OF COLLIERIES.	LOCATIONS.	OPERATORS.	LANDOWNERS.		Tonnage in
					1873.
					Tonnage in
					1872.
Anchor.....	Heckscherville.....	J. Wadlinger.....	P. R. C. and I. company.....		10,047
Phoenix, No. 3.....	Phoenix Park.....	Lloyd & Glover.....	P. R. C. and I. company.....		829
Phoenix, No. 4.....	Phoenix Park.....	J. O. Maley.....	P. R. C. and I. company.....		1,392
Live Oak.....	M. H. Gap.....	Wm. Murry.....	P. R. C. and I. company.....		16,414
New Kirk.....	New Kirk.....	Fry & Co.....	P. R. C. and I. company.....		26,493
Cedar Hill.....	Silver Creek.....	P. R. C. and I. company.....	P. R. C. and I. company.....		9,173
Ellsworth.....	New Castle.....	J. R. Davis.....	P. R. C. and I. company.....		286
Monitor.....	Wadesville.....	Wm. Dennings.....	P. R. C. and I. company.....		11,643
Eagle.....	St. Clair.....	G. W. John.....	P. R. C. and I. company.....		70,142
Pine Forest.....	St. Clair.....	G. W. Snyder.....	P. R. C. and I. company.....		97,406
Coal Dale.....	Summit Hill.....	L. C. and Nav. company.....	Lobhigh C. N. company.....		60,500
Oak Dale.....	Glen Carbon.....	O. D. C. and M. company.....	P. R. C. and I. company.....		48,137
Kear.....	M. H. Gap.....	P. R. C. and I. company.....	P. R. C. and I. company.....		225
Alaska.....	Tamaqua.....	Gen. H. Calk.....	P. R. C. and I. company.....		16,753
Tamaqua.....	Tamaqua.....	P. R. C. and I. company.....	P. R. C. and I. company.....		16,834
Taylorville.....	Glendower.....	T. Shollenberger.....	P. R. C. and I. company.....		9,088
Eagle Hill.....	Eagle Hill.....	J. C. Oliver.....	P. R. C. and I. company.....		59,763
Lambert.....	New Philadelphia.....	T. Bohanan & Co.....	Swayne & Able.....		9,810
Mammoth Vein.....	Silver Creek.....	T. Williams.....	Swayne & Able.....		12,968
East Pine Knot.....	Greenbury.....	P. R. C. and I. company.....	P. R. C. and I. company.....		46,987
Diamond.....	Wadesville.....	Martz & Co.....	P. R. C. and I. company.....		7,560
Glentworth.....	Eagle Hill.....	J. C. Oliver.....	P. R. C. and I. company.....		7,560
Raven Dale.....	Raven Dale.....	W. H. Starr.....	P. R. C. and I. company.....		54,262
Richardson.....	Glen Carbon.....	O. D. C. and M. company.....	P. R. C. and I. company.....		64,067
Buckville.....	Buckville.....	P. R. C. and I. company.....	P. R. C. and I. company.....		1,755
St. Clair.....	St. Clair.....	A. Jackson.....	P. R. C. and I. company.....		2,138
Primer s.....	Mahanoy City.....	C. B. Neill.....	L. V. R. R. company.....		25,000
Draper.....	Gilberton.....	Wm. Draper.....	Gilbert & Shearer.....		125,544
Bear Ridge.....	New Planes.....	Munper & Co.....	Gilbert & Shearer.....		4,649
Girard Tunnel.....	New Planes.....	Munper & Co.....	Gilbert & Shearer.....		1,445
M'Neal.....	Yeatesville.....	M'Neal C. company.....	P. R. C. and I. company.....		8,349
Hillside.....	Mahanoy City.....	P. R. C. and I. company.....	P. R. C. and I. company.....		2,513
Grant.....	Mahanoy City.....	Moody & Co.....	Delano land company.....		41,617
Cayler.....	Raven Run.....	Heaton Bros.....	Cayler.....		59,606
East Mahanoy.....	Mahanoy.....	Focht & Co.....	Delano land company.....		5,339
Elmwood.....	Mahanoy.....	P. R. C. & I. company.....	P. R. C. and I. company.....		

COAL SHIPPED FROM SCHUYLKILL COUNTY—Continued.

NAMES OF COLLIERIES.	LOCATIONS.	OPERATORS.	LANDOWNERS.	Tonnage in 1873.	Tonnage in 1872.
Mahanoy City	Mahanoy	P. R. C. and I. company	P. R. C. and I. company	101,289	
Enterprise	Asbland	J. R. C. Caver	P. R. C. and I. company	9,234	
Girard Mammoth	Raven Run	Donaldson's	Girard estate	39,996	
Lost Creek	Lost Creek	Philadelphia C. company		63,459	
Malvern	Mahanoy City	L. V. R. R. company	L. Valley R. R. company	50,000	
New Boston	New Boston	White & Co.	Delano land company		
Girardsville	Girardsville	Moody & Co.	Philadelphia city lands.	18,822	
Shenandoah, West	Shenandoah	Miller & Co.	Gilbert & Sheaffer	84,947	
Keystone	Locust Dale	P. R. C. and I. company	P. R. C. and I. company	9,487	
Knickerbocker	Yatesville	P. R. C. and I. company	P. R. C. and I. company	24,845	
Gleadow	Mahanoy City	J. B. Boylen	L. V. R. R. company	45,596	
William Penn	Shenandoah	P. R. C. and I. company	P. R. C. and I. company	50,000	
St. Nicholas	St. Nicholas	F. Donaldson	P. R. C. and I. company	89,360	
Cambrian	Asbland	P. R. C. & I. company	P. R. C. and I. company	88,149	
Barry	Yatesville	Stiekney & Co.	P. R. C. and I. company	17,291	
Ellengowan	Maple Dale	P. R. C. and I. company	P. R. C. and I. company		
Girard	Girardsville	Beatty & Co.	Philadelphia city tract	76,409	
Big Mine Run	Asbland	Taylor & Lendsy	Locust Mt. C. and I. Co.	40,425	
West Lehigh	M'Neal	Jersey C. R. R.	Jersey Central R. R.	11,742	
Koh-i-noor	Shenandoah City	R. Heckscher	Gilbert & Sheaffer	10,000	
Tunnel Ridge	Mahanoy City	G. W. Cole	P. R. C. and I. company	104,743	
Honey Brook	New Pottsville	L. and J. C. R. R. company	L. and J. C. R. R. company	83,760	
Kentucky	Tuscarora	Donohue & Co.	Kentucky Bank et. al.	196,956	
Forestville	Woodside	P. R. C. and I. company	P. R. C. and I. company	13,096	
Gleadower	Gleadower	T. Shollenberger	P. R. C. and I. company	19,601	
St. Clair shaft	St. Clair	P. R. C. and I. company	P. R. C. and I. company	40,477	
Hickory shaft	Wadesville	Draper & Co.	P. R. C. and I. company	73,235	
Peach Mountain	Tuscarora	R. Bewbotham	P. R. C. and I. company	78,519	
Bull Run	Bull Run	L. C. and Nav. company	Lehigh C. and Nav. Co.	4,318	
Beechwood	Mt. Laffee	P. R. C. and I. company	P. R. C. and I. company	114,000	
Thomaston	Thomaston	P. R. C. and I. company	P. R. C. and I. company	89,649	
Manchester	Wadesville	Alden & Co.	P. R. C. and I. company	18,168	
Mammoth	New Castle	J. Dennings	P. R. C. and I. company	4,359	
Greenwood	Bull Run, W.	L. C. and N. company	Lehigh C. and Nav. Co.	317	
Sharp Mountain	Pottsville	J. Wood	Richardson	88,122	
				7,441	

INSPECTORS OF MINES.

Yorkville	Pottsville	Baltzler	Richardson	600
Little Tracy	Pottsville	W. Clarke	P. R. C. and I. company	250
N. Americ	Pottsville	J. Faust	P. R. C. and I. company	250
Mine Hill	Minersville	W. Ansty	P. R. C. and I. company	200
York Colliery	Pottsville	W. Llewellyn	A. Russell, agt	400
York Farm	Pottsville	Job Rich	A. Russell, agt	600
Middleport	Shenandoah	R. Holoan	P. W. Sheaffer	765
Turkey Run	Shenandoah	Brenizer	Gilbert & Sheaffer	77, 489
Stanton	New Planes	Miller & Hoek		52, 989
Preston, No. 2	Girardville	P. R. C. and I. company	P. R. C. and I. company	67, 781
Big Mine Run	Ashland	P. R. C. and I. company	P. R. C. and I. company	11, 742
Boston Run	Gilberton	P. R. C. and I. company	P. R. C. and I. company	62, 000
Tunnel	Ashland	P. R. C. and I. company	P. R. C. and I. company	1, 475
Preston, No. 3	Girardville	P. R. C. and I. company	P. R. C. and I. company	54, 557
Preston, No. 4	Girardville	P. R. C. and I. company	P. R. C. and I. company	65, 227
Gilberton	Gilberton	Boston C. company	Gilbert & Sheaffer	80, 560
Hoffman	Mahanoy	Lehigh C. R. R. company	Lehigh C. and R. R. Co	26, 777
Indian Ridge	Shenandoah	P. R. C. and I. company	P. R. C. and I. company	49, 080
Furnace	Gilberton	Atkins & Bro.	Gilbert & Sheaffer	133, 103
Suffolk	St. Nicholas	F. Donaldson		74, 061
Plank Ridge	Shenandoah City	P. R. C. and I. company	P. R. C. and I. company	106, 279
Shenandoah City	Shenandoah City	J. S. Neill	P. R. C. and I. company	53, 250
Thomas	Shenandoah City	Thomas C. company	Girard heirs	24, 026
Lehigh, No. 3	Shenandoah City	Philadelphia C. company	Girard heirs	66, 825
Beaver Run	Mahanoy City	P. Bowman & Co	L. V. R. R. company	74, 430
Lawrence	New Planes	Lawrence & Co.	Gilbert & Sheaffer	50, 000
Diamond	Ashland	Brenzle, P.	P. R. C. and I. company	3, 722
Bear Run	Gilberton	Miggan & Co.	P. R. C. and I. company	150
Copley	Mahanoy City	Leutz & Co	L. V. R. R. company	250
North Mahanoy	Mahanoy City	P. R. C. and I. company	P. R. C. and I. company	
Pioneer shaft	Ashland	A. Jones	P. R. C. and I. company	
Myers	Ashland	Myers	P. R. C. and I. company	

Amount of coal shipped from the collieries of Columbia county in 1873.

NAMES OF COLLIERIES.	LOCATIONS.	OPERATORS.	LANDOWNERS.	Tonnage in Tonnage in 1873.	Tonnage in Tonnage in 1872.
Locust Run.....	Ashland.....	P. R. C. and I. company....	P. R. C. and I. company.....	.....	84,369
Centralia.....	Centralia.....	Dr. Provost.....	Locust Mt. C. and I. Co.....	.....	469
Continental.....	Centralia.....	R. Gorrell & Co.....	Locust Mt. C. and I. Co.....	.....	93,139
Norton.....	Centralia.....	R. Gorrell & Co.....	Locust Mt. C. and I. Co.....	.....	N. G. W.
Hazle Dell.....	Centralia.....	R. Gorrell.....	Locust Mt. C. and I. Co.....	.....	63,889
Union, No. 2.....	Centralia.....	Judge Ryan & Co.....	Girard heirs.....	.....	47,394
Coal Ridge.....	Reno.....	Barton & Bro.....	Locust Mt. C. and I. Co.....	.....	50,698
Locust Dale.....	Locust Dale.....	P. R. C. and I. company....	P. R. C. and I. company.....	.....	29,964
Eagle, No. 2.....	Centralia.....	P. R. C. and I. company....	P. R. C. and I. company.....	.....	6,090

Amount of coal shipped from the collieries of Northumberland county during the year ending December 31, 1873

NAMES OF COLLIERIES.	LOCATION.	OPERATORS' NAMES.	LANDOWNERS' NAMES.	Tonnage in 1873.	Tonnage in 1872.
Cameron.....	Trevorton.....	M. R. R. and M. Co.....	Min. R. R. and M. Co.....	103,969	76,510
Hickory Swamp.....	Shamokin.....	do.....	do.....	82,572	49,296
Luke Fidler.....	do.....	do.....	do.....	67,381	76,812
Hickory Ridge.....	do.....	do.....	do.....	2,786	23,882
Burnside.....	do.....	do.....	do.....	77,725	68,109
Buck Ridge.....	do.....	May & Co.....	P. R. C. and I. Co.....	71,422	89,384
Stewartville.....	do.....	May & Audenreid.....	Renshaw and others.....	79,104	91,560
Monitor.....	Mt. Carmel.....	Monfluis.....	Locust Mt. C. and I Co.....	77,929	58,185
Henry Clay.....	Locust Gap.....	G. W. John.....	P. R. C. and I. Co.....	77,876	64,290
Bear Valley.....	Shamokin.....	A. Filton.....	do.....	67,659	61,721
George Fales.....	Charbon Run.....	Goodwill, <i>et al.</i>	do.....	8,572	6,097
Reliance.....	Shamokin.....	do.....	do.....	74,639	63,794
Big Mountain.....	do.....	Baumgarder.....	do.....	70,277	67,924
Excelstor.....	do.....	Puterson & Co.....	do.....	63,778	51,617
Trevorton.....	do.....	Ex. C. M. Co.....	do.....	60,761	59,281
Locust Spring.....	Trevorton.....	P. R. C. and I. Co.....	do.....	1,619	863
Helfenstine.....	Shamokin.....	do.....	do.....	605	21,845
Ben. Franklin.....	Helfenstine.....	do.....	do.....	39,682	27,743
Coal Ridge.....	do.....	Douty & Bauman.....	do.....	50,698	50,698
Enterprise.....	Mt. Carmel.....	Burton & Bro.....	do.....	12,399	23,600
Margie Franklin.....	Shamokin.....	do.....	do.....	21,163	85
Greenback.....	do.....	Ent. C. Co.....	do.....	29,182	25,537
Brady.....	do.....	do.....	do.....	129	620
Daniel Webster.....	do.....	Guiterman.....	do.....	14,348	14,843
Lambert.....	do.....	Wm. Brown.....	do.....	11,201	13,627
Franklin.....	do.....	do.....	M. R. R. and M. Co.....	2,587	7,135
Morton.....	do.....	do.....	P. R. C. and I Co.....	19,433	12,897
Shamokin.....	do.....	Morton & Bro.....	N. C. R. R. Co.....	18,067	22,804
Hickory Ridge.....	do.....	Weaver & Co.....	Hays, Kelso & Keller.....	15,331	23,882
Black Diamond.....	do.....	J. Langdon.....	M. R. R. and M. Co.....	8,177	15,925
Lancaster.....	do.....	Selwenk & Co.....	Henry Saylor.....	3,432	2,141
Marshall.....	do.....	Smith & Keiser.....	M. R. R. and M. Co.....	5,207	5,207
	do.....	Reese & Bro.....	Wm. H. Marshall.....		

AMOUNT OF COAL SHIPPED—Continued.

NAMES OF COLLIERIES.	LOCATION.	OPERATORS' NAMES.	LANDOWNERS' NAMES.	Tonnage in 1873.	Tonnage in 1872.
Locust Gap.....	Locust Gap	Graber & Kemble.....	P. R. C. and I. Co.....	2,143	54,883
Royal Oak.....	Shamokin	Tillot & Bro .....	.....do.....	700	
A. S. Wolf.....	Aggregate shipments of Northumberland county in 1873.....			1,234,069	50,982
Marian.....	Location, Locust Gap; land owner's name, P. R. C. and I. Co.....				14,883
Caledonia.....	Location, Locust Gap; land owner's name, P. R. C. and I. Co.....				8,177
Frank Gowen .....	.....				5,920
	Aggregate shipments of Northumberland county in 1872				1,221,327

INSPECTORS OF MINES.

Northumberland county shipments in 1873	1,234,069 tons.
Home consumption.....	170,000 "
Screenings	5,000 "
Amount of coal mined	1,409,069 "
In 1872, gross tons.....	1,391,327 "
Increase in 1873	<u>17,742 "</u>

AMOUNT OF COAL SHIPPED IN DAUPHIN COUNTY COLLIERIES DURING THE YEAR ENDING DECEMBER 31, 1873.

Names of collieries.	Location.	Operators' names.	Landowners' names.	Tonnage in 1873.	Tonnage in 1872.
Big Lick.....	Williamst'n,	S. B. R. R. Co.	Sum. Br. R. R. Co.,		
Williamstown, ..	do	do	do..... do.....		
Short Mount'n, ..	do	do	do..... do.....		
E. Franklin	do	do	do..... do.....		
Amount of coal shipped.....				635,382	450,328
Local consumption				40,000	40,000
Aggregate tons of coal mined.....				<u>675,382</u>	<u>490,328</u>

COLLIERIES IN OPERATION IN THE MINING DISTRICT.

Their operators, landowners and names, the number of coal seams worked and thickness of coal.

No.	COLLIERIES.	OPERATORS.	No. of coal seams.	Thickness of coal.	LANDOWNERS.
1.	Anchor	J. Wadlinger	3	40	Philadelphia and Reading coal and iron company.
2.	Phoenix, No. 3	Lloyd & Co.	1	8	Philadelphia and Reading coal and iron company.
3.	Phoenix, No. 4	James O. Malley	1	8	Philadelphia and Reading coal and iron company.
4.	Live Oak	William Murry	1	30	Philadelphia and Reading coal and iron company.
5.	New Kirk	Fry & Shoemaker	2	25	Philadelphia and Reading coal and iron company.
6.	Cedar Hill	P. R. C. and I. Co.	2	17	Philadelphia and Reading coal and iron company.
7.	Ellisworth	John R. Davis	2	60	Philadelphia and Reading coal and iron company.
8.	Monitor	William Demings	2	20	Philadelphia and Reading coal and iron company.
9.	Eagle	George W. John	4	60	Philadelphia and Reading coal and iron company.
10.	Pine Forest	George W. Snyder	2	50	Philadelphia and Reading coal and iron company.
11.	Coal Dale	L. C. and Nav. Co.	2	79	Philadelphia and Reading coal and iron company. Lehigh coal and navigation company.
12.	Oak Dale	O. D. Min. Co.	2	23	Philadelphia and Reading coal and iron company.
13.	Keat	P. R. C. and I. Co.	2	29	Philadelphia and Reading coal and iron company.
14.	Alaska	General Cake	2	26	Philadelphia and Reading coal and iron company.
15.	Tamaqua shaft	P. R. C. and I. Co.	3	35	Philadelphia and Reading coal and iron company.
16.	Taylorville	T. Shollenberger	1	25	Philadelphia and Reading coal and iron company.
17.	Eagle Hill	J. C. Oliver	1	40	Philadelphia and Reading coal and iron company.
18.	Lambert	Bohman & Co.	2	12	Philadelphia and Reading coal and iron company. Swayne & Able, Philadelphia.
19.	Mammoth	W. Williams	2	26	Swayne & Able, Philadelphia.
20.	East Pine Knot	P. R. C. and I. Co.	3	43	Philadelphia and Reading coal and iron company.
21.	Diamond drift	W. H. Marz & Co.	1	6	Philadelphia and Reading coal and iron company.
22.	Glentworth	J. C. Oliver	1	9	Philadelphia and Reading coal and iron company.
23.	Ravendale	William Starr & Co.	1	10	Philadelphia and Reading coal and iron company.
24.	Richardson	Oak Dale C. Co.	3	30	Philadelphia and Reading coal and iron company.
25.	Buckville	P. R. C. and I. Co.	3	45	Philadelphia and Reading coal and iron company.
26.	St. Clair drift	Adam Jackson	1	6	Philadelphia and Reading coal and iron company.
27.	Kentucky	Shall & Donohoe	1	6	Philadelphia and Reading coal and iron company.
28.	Forestville	P. R. C. and I. Co.	2	11	Philadelphia and Reading coal and iron company.

29..	Glendower.....	P. R. C. and I. Co.....	3	39	Philadelphia and Reading coal and iron company.
30..	St. Clair shaft.....	P. R. C. and I. Co.....	3	40	Philadelphia and Reading coal and iron company.
31..	Hickory shaft.....	Hickory C. Co.....	3	40	Philadelphia and Reading coal and iron company.
32..	Peach Mountain.....	B. Rowbotham.....	1	8	Kentucky Bank tract.
33..	Bull Run.....	L. C. and Nav. Co.....	2	20	Lehigh coal and navigation company.
34..	Beechwood.....	P. R. C. and I. Co.....	3	45	Philadelphia and Reading coal and iron company.
35..	Thomaston.....	P. R. C. and I. Co.....	3	45	Philadelphia and Reading coal and iron company.
36..	Manchester's.....	Alden & Co.....	2	12	Philadelphia and Reading coal and iron company.
37..	Mammoth Vehm.....	J. Denning.....	1	39	Philadelphia and Reading coal and iron company.
38..	Greenwood.....	L. C. and Nav. Co.....	2	14	Lehigh coal and navigation company.
39..	Sharp Mountain.....	J. Wood.....	2	13	Richardson estate.
40..	Yorkville.....	G. Baltazer.....	1	7½	Richardson estate.
41..	Little Tracy.....	William Clark.....	1	6	Philadelphia and Reading coal and iron company.
42..	North America.....	L. Faust.....	1	4	Philadelphia and Reading coal and iron company.
43..	Mine Hill.....	William Anstey.....	1	6	Philadelphia and Reading coal and iron company.
44..	York Colliery.....	William Dlewellyn.....	1	6	A. Russell, agent for estate.
45..	York Farm.....	Job Reeh.....	2	12	A. Russell, agent for estate.
46..	Middleport.....	R. Holohan.....	1	3½	P. W. Sheaffer.

ASHLAND DISTRICT COLLIERIES.

No.	COLLIERIES.	OPERATORS.	No. of coal seams.	Thickness of coal.	LANDOWNERS.
47.	Turkey Run.....	Brenizer & Co.....	3	35	John Gilbert & P. W. Sheaffer.
48.	Stanton.....	Miller & Co.....	3	35	Philadelphia and Reading coal and iron company.
49.	Preston, No. 2.....	P. R. C. and I. Co.....	3	45	Philadelphia and Reading coal and iron company.
50.	Rig Mine Run.....	P. R. C. and I. Co.....	3	45	Philadelphia and Reading coal and iron company.
51.	Boston Run.....	P. R. C. and I. Co.....	3	30	Philadelphia and Reading coal and iron company.
52.	Tunnel.....	P. R. C. and I. Co.....	3	30	Philadelphia and Reading coal and iron company.
53.	Preston, No. 3.....	P. R. C. and I. Co.....	3	42	Philadelphia and Reading coal and iron company.
54.	Preston, No. 4.....	P. R. C. and I. Co.....	4	35	Philadelphia and Reading coal and iron company.
55.	Gilberton.....	Boston C. Co.....	1	25	Philadelphia and Reading coal and iron company.
56.	Hoffman.....	L. C. and R. R. Co.....	1	14	Lehigh coal and railroad company.
57.	Indian Ridge.....	P. R. C. and I. Co.....	1	15	Philadelphia and Reading coal and iron company.
58.	Furnace.....	Atlepis & Bro.....	1	12	John Gilbert et. al.
59.	Primrose.....	C. B. Nevills.....	5	42	Lehigh coal and railroad company.
60.	Draper.....	Draper & Co.....	5	26	Gilbert & Sheaffer.
61.	Bear Ridge.....	Munmer & Co.....	2	45	Gilbert & Sheaffer.
62.	Girard Tunnel.....	Munmer & Co.....	2	35	Gilbert & Sheaffer.
63.	M'Neal.....	M'Neal C. Co.....	3	30	Philadelphia and Reading coal and iron company.
64.	Hill Side.....	P. R. C. and I. Co.....	4	42	Philadelphia and Reading coal and iron company.
65.	Grant.....	Moody & Co.....	2	16	Delano estate.
66.	Cuyler.....	Heaton & Bros.....	2	30	Cuyler estate.
67.	E. Mahanoy.....	Focht & Whitaker.....	2	19	Delano estate.
68.	Elmwood.....	P. R. C. and I. Co.....	2	18	Philadelphia and Reading coal and iron company.
69.	Mahanoy City.....	P. R. C. and I. Co.....	2	18	Philadelphia and Reading coal and iron company.
70.	Enterprise.....	J. R. Cleaver.....	1	6	Philadelphia and Reading coal and iron company.
71.	Continental.....	R. Gorrill & Co.....	4	55	Philadelphia and Reading coal and iron company.
72.	Girard Mammoth.....	J. & T. Donaldson.....	3	25	Loeast Mountain coal and iron company.
73.	Union, No. 2.....	Judge Ryan & Co.....	3	25	Mr. Cuyler.
74.	Coal Ridge.....	Barton & Bro.....	2	40	Philadelphia city tract.
75.	Lost Creek.....	Philadelphia Coal company.....	2	20	Loeast Mountain coal and iron company.
76.	Malvern.....	L. V. R. R. Co.....	4	35	Girard estate.
				28	Delano estate.

77.	New Boston	White & Co.	2	14	Philadelphia city tract.
78.	Grardsville	Moody & Agard	2	7	Gilbert & Shearer.
79.	Shenandoah, West	Miller & Matze	1	36	Philadelphia and Reading coal and iron company.
80.	Keystone	P. R. C. and I. Co.	1	40	Philadelphia and Reading coal and iron company.
81.	Locust Dale	P. R. C. and I. Co.	1	46	Philadelphia and Reading coal and iron company.
82.	Knickerbocker	P. R. C. and I. Co.	3	28	Lehigh Valley railroad company.
83.	Glendon	J. B. Boylen	3	24	Philadelphia and Reading coal and iron company.
84.	William Penn	F. Donaldson	3	17	Philadelphia and Reading coal and iron company.
85.	St. Nicholas	Atkins & Co.	1	26	Philadelphia and Reading coal and iron company.
86.	Cambrian	Stickney & Co	2	22	Philadelphia and Reading coal and iron company.
87.	Barry	Gorrell & Co	1	16	Philadelphia and Reading coal and iron company.
88.	Norton	P. R. C. and I. Co.	5	45	Philadelphia and Reading coal and iron company.
89.	Ellengowen	Beatty & Garrettsen	3	30	Philadelphia city tract.
90.	Grand	Taylor & Lindsy	3	30	Locust Mountain coal and iron company.
91.	Big Mine Run	M'Neil C. Co.	2	35	Jersey Central railroad company.
92.	West Lehigh	R. Heckscher	1	35	John Gilbert.
93.	Koh-i-noor	G. W. Cole	2	26	Philadelphia and Reading coal and iron company.
94.	Tunnel Ridge	I. and N. J. C. R. R.	3	32	Lehigh and New Jersey Central railroad.
95.	Honey Brook	F. Donaldson	2	16	Locust Mountain coal and iron company.
96.	Suffolk	R. Gorrell	2	30	
97.	Hazle Dell		1	20	
98.	Centralia		1	11	
99.	Coal Mountain	Barton & Bro.	1	35	Philadelphia and Reading coal and iron company.
100.	Plank Ridge	P. R. C. and I. Co.	2	35	Philadelphia and Reading coal and iron company.
101.	Shenandoah City	J. Neil	2	35	Philadelphia and Reading coal and iron company.
102.	Thomas	Thomas C. Co.	2	32	Philadelphia and Reading coal and iron company.
103.	Lehigh, No. 3	P. Coal Co.	2	35	
104.	Beaver Run	P. Bowman	1	7	Lehigh Valley railroad company.
105.	Lawrence	J. Lawrence Co	1	30	
106.	Diamond	P. Brenzle	1	6	Philadelphia and Reading coal and iron company.
107.	Bear Run	Wiggan & Co.	2	24	Lehigh Valley railroad company.
108.	Copley	Leitz & Bowman	3	22	Philadelphia and Reading coal and iron company.
109.	N. Mahanoy	P. R. C. and I. Co.	1	16	Philadelphia and Reading coal and iron company.
110.	Pioneer, South	Jones & Co.	6	6	Philadelphia and Reading coal and iron company.
111.	Myers	Myers	1	16	Philadelphia and Reading coal and iron company.

SHAMOKIN DISTRICT COLLIERIES.

Names of the collieries, operators and landowners, and the number and thickness of coal seams on the different tracts, in 1873.

No.	NAMES OF COLLIERIES.	NAMES OF OPERATORS.	Veins	Feet in thickness.	NAMES OF THE LANDOWNERS.
112.	Monitor.....	G. W. John.....	1	25	Philadelphia and Reading coal and iron company.
113.	Mariam.....	Harris, superintendent.....	1	25	Philadelphia and Reading coal and iron company.
114.	Stewartsville.....	Monfils.....	2	25	Locust Mountain coal and iron company.
115.	Catedoma.....	Schwink & Co.....	3	15	Henry Saylor, et. al.
116.	Reliance.....	Baumgardner.....	3	16	Philadelphia and Reading coal and iron company.
117.	Brady.....	A. Guiterman.....	3	18	Philadelphia and Reading coal and iron company.
118.	Moerton.....	Moerton.....	2	12	Northern Central railroad company.
119.	Henry Clay.....	R. Langdon.....	2	11	Bell's heirs, Philadelphia & Reading coal and iron co.
120.	Enterprise.....	Baumgarten.....	2	12	Philadelphia and Reading coal and iron company.
121.	Hickory Ridge.....	M. R. R. and M. Co.....	2	12	Mineral railroad and mining company.
122.	Back Ridge.....	May & Co.....	8	50	Renshaw & Johnston.
123.	Luke Fidler.....	M. R. R. and M. Co.....	5	35	Mineral railroad and mining company.
124.	Lambert.....	William Brown.....	2	11	Mineral railroad and mining company.
125.	Franklin.....	William Brown.....	2	11	Philadelphia and Reading coal and iron company.
126.	Locust Spring.....	P. and R. C. and I. Co.....	1	18	Philadelphia and Reading coal and iron company.
127.	Lancaster.....	W. R. Smith.....	3	16	Mineral railroad and mining company.
128.	Cameron.....	M. R. R. and M. Co.....	5	30	Mineral railroad and mining company.
129.	Royal Oak.....	Tillett & Co.....	1	37½	Philadelphia and Reading coal and iron company.
130.	Locust Gap.....	Graber & Kimble.....	1	20	Philadelphia and Reading coal and iron company.
131.	Burnside.....	Isaac May.....	2	13	Philadelphia and Reading coal and iron company.
132.	Hickory Swamp.....	M. R. R. and M. Co.....	2	12	Philadelphia and Reading coal and iron company.
133.	Shamokin.....	Martin & Co.....	1	5	Hays & Keller.
134.	George Fales.....	Hine & Co.....	2	15	Philadelphia and Reading coal and iron company.
135.	Marshall.....	Reese & Brothers.....	3	12	Philadelphia and Reading coal and iron company.
136.	Bear Valley.....	Goodwell & Co.....	3	21	William H. Marshall.
137.	Bear Valley shaft.....	P. and R. C. and I. Co.....	Sinking.		Philadelphia and Reading coal and iron company.
138.	Alaska shaft.....	P. and R. C. and I. Co.....	Sinking.		Philadelphia and Reading coal and iron company.
139.	Phoenix, No. 2.....	P. and R. C. and I. Co.....	1	12	Philadelphia and Reading coal and iron company.

140.	Phoenix, No. 3.	P. and R. C. and I. Co.	1	6	Philadelphia and Reading coal and iron company.
141.	Diamond, No. 1.	J. Wadlinger.	3	18	Philadelphia and Reading coal and iron company.
142.	Lower Rauch Creek	Miller, Graf & Co.	1	15	Philadelphia and Reading coal and iron company.
143.	E. Franklin	P. and R. C. and I. Co.	2	45	Philadelphia and Reading coal and iron company.
144.	Brookside	Reppier & Co.	1	10	Philadelphia and Reading coal and iron company.
145.	Tower City	Reppier & Jordon.	3	26	Philadelphia and Reading coal and iron company.
146.	Pyne	J. C. White.	4	24	Philadelphia and Reading coal and iron company.
147.	Big Mountain	Paterson & Co.	1	9	Philadelphia and Reading coal and iron company.
148.	Colkett	Eckel and others	1	3	Philadelphia and Reading coal and iron company.
149.	Eureka	Eckel and others	1	3	Philadelphia and Reading coal and iron company.
150.	West End	Eckel and others	1	3	Philadelphia and Reading coal and iron company.
151.	Kemble	Kemble	1	4	Philadelphia and Reading coal and iron company.
152.	Otto's	P. and R. C. and I. Co.	1	12	Philadelphia and Reading coal and iron company.
153.	Trevorton	P. and R. C. and I. Co.	3	21	Philadelphia and Reading coal and iron company.
154.	Williamstown.	S. B. R. R. Co.	1	8	Summit Branch railroad company.
155.	Big Lick.	S. B. R. R. Co.	1	8	Summit Branch railroad company.
156.	Short Mountain	S. B. R. R. Co.	3	24	Summit Branch railroad company.
157.	Helfensine.	P. and R. C. and I. Co.	1	10	Philadelphia and Reading coal and iron company.
158.	Middle Creek shaft.	P. and R. C. and I. Co.	1	10	Philadelphia and Reading coal and iron company.
159.	Emery	P. and R. C. and I. Co.	1	6	Philadelphia and Reading coal and iron company.
160.	Excelsior	Kingsley	2	28	Philadelphia and Reading coal and iron company.
161.	Ben. Franklin.	Douty & Co.	2	20	Philadelphia and Reading coal and iron company.
162.	Northside.	E. Miller	1	7	Philadelphia and Reading coal and iron company.
163.	Big Run Gap	Tunnell	2	20	Summit Branch railroad company.
164.	Lincola	L. Miller	1	5	Summit Branch railroad company.
165.	Kalmia	Philips & Shearer	1	9	Philadelphia and Reading coal and iron company.
166.	Greenback	Philips & Shearer	1	9	Philadelphia and Reading coal and iron company.

ACCIDENTS.

It is to be greatly regretted that the large increase in the number of fatal accidents in and about the collieries of this district during the year far exceeds those of the preceding year of the inspectorship; particularly in this case is the increase in the number of deaths in the collieries of Pottsville district, where the smallest number of collieries are worked. An excess, under other years, was certainly to be expected, on account of the vigilance evinced by the inspectors of mines in their respective districts. This increase in deaths and injuries must be attributed partly to the increase of business, yet the proportion is still greater, to the amount of work done and the number of persons employed, than the average in the collieries of Great Britain, Belgium or France.

	Great Britain.	Nova Scotia.
Number of persons employed at mines.....	370, 881	3, 522
Tons of coal mined.....	117, 439, 251	880, 950
Lives lost by sundry accidents.....	1, 075	13
Persons employed to each life lost.....	345	271
Tons of coal mined to each life lost.....	109, 246	67, 765

The increase of death cannot be accounted for on the plea that the increase of shipments, the bad condition of the mines, or that their peculiar dangerous condition is increased. With but few exceptions their general condition is better, while there is no evident change in the seams or strata. The system of mining has undergone no innovation and ventilation, as a permanent auxiliary to mining in deep coal mines is absolutely established. The steam suction fan system largely predominates over all other antiquated means used formerly, and is so far an improvement on the old Winin sheet, water fall blowing fan and furnace, as the locomotive is on the cart. The system of raising coals out of mines, at present in use, cannot be easily improved upon for safety and service, as a number of able mechanics of every class are present to supply all needs, and are competent for any emergency that arises in mining and pumping at the collieries, yet, with all the safeguards, the death toll has increased fearfully.

It would seem to be due, crediting the various reports to be correct, from the verdicts of coroners' courts to common place report, that to rashness, ignorance and inexperience on the part of the employees, coupled with an unpardonable curse, the incompetency of the mine bosses and want of order, system and good government of the employees, we will assume this opinion, and hazzard any contradiction. There are many miners, as well as managers of mines, who know much more about dire things than they really know about their proper duties, having a practical cunning, inculcated from the habits of the mines, and an evasive method of explaining away subjects of importance, or in common parlance, *boring and talking a man to death*. That, when any serious casualty or even the smallest event that may occur, personal interest steps in, and criminal negligence and guilty parties are covered over by contradictory reports and menial vacillation. Consequently very little blame can be attached to the operator, who commonly relinquishes his duties to the mine boss, yet a feeling of something more than seems to be expressed in the reluctance evinced by many of them in reporting accidents that occur in mines under their direct superintendence.

The most plausible palliations are resorted to always when accidents do occur; and amongst this class may casualties be expected. Nevertheless

a more strict surveillance by the parties in charge has elsewhere been attended with a sensible diminution of casualties in the ratio of deaths to tonnage, and doubtless, if attended to properly, would also be succeeded by the same happy results.

Any person conversant with the mining statistics of Great Britain since the inauguration of the inspection law, some twenty years ago, will see the proportion of deaths to the number of persons employed has decreased from one in two hundred and nineteen persons employed in 1853 to one in three hundred and forty-five persons employed in 1873.

A general observance of order and good government of the mine, coupled with a much more stricter discipline, would bear its good results, at least it would be nothing more than the duty of managers and mine bosses to make the rules of caution more strict and general, when workmen are entering the mine, and enforce the same with proper dignity during the hours of labor; and particularly those who are not practical or schooled in mines should receive particular warning of dangers to which they may be exposed. The boss should never absent himself from the mine while a single person of his shift is working or on duty in the mine.

It will be noticed by reference to those statistics that, besides fatal accidents, many serious ones occur which, in their consequences, result as disastrous as though they were fatal. Many are maimed, disabled and blinded, which makes their maintenance a burthen on relations and friends. Full as this part of our list of casualties may appear, I have every reason to believe it is incomplete, and that the reports of a number of casualties have been withheld for causes having no honorable grounds.

EXPLOSIONS OF GAS.—(CARBURETTED HYDROGEN GAS.)

This species of casualties may be properly attributable to the following causes: First.—A want of competent management. Second.—Fire-bosses who draw pay and elude duty, and who can, with wonderful adroitness and tact, exonerate themselves on all occasions from blame or any participation in criminal negligence on their part, and never found at their post of duty, because they are a sort of privileged characters, more in the capacity of secret service men than fire-bosses. To such persons may be attributed many fearful casualties on the part of the employees' inattention to orders, individual ignorance and incompetency deserves especial comment. In view of all the terrible examples seen amongst miners in their disfigurement and contorted appearance, it would appear of itself to be a sufficient subject of warning. But no amount of counsel will overcome this horrid recklessness practiced amongst miners.

EXPLOSIONS OF POWDER.

This species of accidents has no valid extenuation in any way to excuse the sufferers by this sort of accidents, for it is evident that it is nothing short of sheer recklessness, by no means uncommon in the handling of powder by mine employees, in charging holes, temping of the powder, drilling out missed holes, the making of cartridges, carrying naked lights in proximity to powder barrels or loose packages, kept near their persons, which not only endangers their own lives but the lives of many others. The temperature of powder flame is as high as 1,100° Fahrenheit, while that of boiling water is 212°, besides the virulence of the acid of the nitre of the powder adds still a poisonous influence to the burn. Most everybody is conversant with powder and its agency, still how incautious people are in handling it, while its palpable effects are visible among miners

EXPLOSIONS OF BLASTS.

Blasting rocks or coal is attended with a certain degree of danger, and should always be entrusted to men of practice and experience rather than to novices, as we have known it to be. There are many disappointments in this sort of work that requires to be properly understood by the workman. But he may be fortunate for a time in his rude and even crude management of shots and drilling out missed shots, which only emboldens him still more, depending more on good luck than judgment, soon may fall a victim to his own folly and ignorance. No amount of caution can insure safety to persons handling powder or drilling out missed holes or temping shots. The force of powder is surprising. One pound of common powder enclosed in a small drill hole will remove about four and a-half tons of solid rock. It would, therefore, be prudent for the miner to consult his safety before entering precipitately upon meddling with powder in an incautious or hasty manner.

FALLS IN MINES.

Most of the casualties resulting from falls of coal and rock in mines are chiefly due to negligence of the injured parties in not setting sufficient and timely props of the upper or superincumbent strata, and remove bodies of loose coal or rocks known to be such, for the most practical miner cannot at all times judge correctly by sounding the top coal or rock by any means at his command. Nor can he correctly judge his safety in the surrounding coal, owing to slips and parting in the seam. Often these large blocks are displaced by escape gas that a moment before appeared solid. The miner should never enter his working place after a temporary absence, without instituting a general examination of the surrounding. Upon timely propping, and in sufficient numbers, and watchfulness his principle safety lies. Accidents will sometimes occur with the most careful persons. But usually that indifference which gains on persons inured to dangers, brought on by habit, is the source of most injury, which fall under this class of accidents. There are other causes of accidents, in falls of roof, known as geological fossils, strange formations imbedded in the rock and coal seams, which often escape the eye of the most practical miner. The falls of these blocks, pottubs or rolls are sudden and deadly, and their situation in the roof cannot be detected.

When the dip of the seam is greatly inclined, the face of the breast is trimmed, the sides sheared along the rib, the foundation well undermined, the coal well holed, and then if "lypes" run through the coal as irregular cubes, in large blocks, the drag of the coal and the escape of gas, may, when the facing is prepared in this state, bring down large masses so suddenly that escape is impossible. There are other sources of danger which relate to decayed timbers and loose material lying over the gangways, that remains in its position for a long time, which is subject to come down by a slight jar. This source of danger receives but little attention and often results fatally. Other dangers arise from want of examining the eruptions of blasts. The miner should carefully survey the surrounding, and sound every part so as to make himself safe. But men are found who will always work contrary to rules and system, from an inordinate desire to gain a temporary advantage in time or make more money. For such imprudence there is no excuse.

SHAFT AND SLOPE ACCIDENTS.

The principle sources productive of accidents in slopes and shafts arise from various causes. In sinking shafts dangers arise from windage of

ropes and chains, the slipping of the pulleys, the rude construction of the tubs and their attachments, the absence of tub-guides, the falling of material, blasting, inundations, and precipitancy of the men in riding into and out of these excavations, as seen by the death of four miners at the Koh-i-noor shaft, in 1870, while five men were ascending in the tub. The windage of the wire rope, in passing over the pulley, caused a giddy sensation in the miners, who stood on the edge of the tub holding on to the rope, one of them in loosing his balance caused a general *death grab* amongst them and fell from the whirling ascending engine of death, the distance of 100 feet, to the rocks at the bottom of the shaft; had guides been used at the time probably the accident would not have occurred.

Great caution is necessary in sinking shafts and slopes, and it should be ranked amongst the catalogue of criminal offences to employ any but calm, prudent, practical miners, of long experience and of sound judgment, to do such work. Many persons are subject to fits of giddiness after inordinate smoking or drinking, or may be out of composure by domestic cares and numerous uneasiness of mind which would affect them when under such circumstances. Amongst these evils we must class forgetfulness, and often men are subject to spells of this kind that they really forget everything and become confused, bordering on insanity. We would suggest that the boss carefully inform himself of the mental and physical condition of men placed in responsible situations, as one person so influenced may cause the death or injury of many valuable lives.

ACCIDENTS BY MACHINERY.

The operation of machinery is a source from which springs numerous accidents, and generally results in death; persons in charge of steam engines, when the steam is low and the engine stands on centre steam, are apt to step upon the arms of the fly-wheel, or use a lever to over-balance the draw of the engine, in either case he may be drawn into the race and crushed to death, the re-placing of beltings while the machinery is in motion is a source of accidents, oiling and setting loose keys, under the like circumstance, is fruitful of accidents, particularly when pumps are in operation in shafts or high dipping slopes are dangerous sources of accidents, so is unprotected wheels and rollers, screens and car loading, oiling machinery while in motion is insecure; none but proper government and practical persons should be in such employment, or suffered to be in proximity to these sources of danger.

ACCIDENTS BY MINE WAGONS.

Mine wagons are principally handled by irresponsible, wild youths, that become inured to fast driving of mules upon inclined grades as well as upon levels in the different lifts of the mines, having no retreats or loopholes along these roads for safety, but take their chances at best. These boys are subject to many disadvantages, as follows: A boy of 16 years of age may be put in charge of three or four mules, there may be three or four such teams used inside, and the haulage is generally managed under their own rules, but subject to perform duties required of them by bosses, loaders, miners, &c. To a stranger this is one of the most intricate employments of man. In large mines of extensive excavations, where 250 men are at work, these brave fellows are obliged to forward the miners' timbers in the morning or at the miners' will, and in their passage through these wild caverns the rumbling commotion created by these trains, the firing of shots, the impenetrable powder-smoke, black and fire-damp, the bustle of miners

and loaders, bosses and track men, these worthy boys rush on in the gloom when, in a number of cases, the space between the gangway timber will hardly admit of the passage of a wagon, over ill constructed railroads and sloughed gutters they fly at full speed, standing on the spreader chains or traces, carrying an armful of sprags at each trip to slacken speed in case of danger; yet, without the slightest pity for their lot, they are hustled about by the older folks, as boys generally are. The slightest derangement to a train may cost him his life by being crushed to death by wagons, timbers, or jammed by trains, and commonly in a gloomy passage. This is without a doubt a prolific source of accidents.

In collieries that produce say 12,000 tons of prepared coal per month, it must be evident these drivers appear to be fully occupied and evidently content with their work.

ACCIDENTS BY STEAM BOILER EXPLOSIONS.

Throughout this district but few casualties occur from this source of accidents, except that which took place at G. H. Potts' Diamond colliery, at Minersville, March 21, 1870, when eight persons lost their lives by the bursting of the boilers used at the breaker. This accident occurred about seven o'clock A. M. The boys collected in the boiler house to get warm prior to going to work, the engineer being late at his post of duty, and on moving the engine for work the accident occurred, causing a frightful scene of anguish among the friends and spectators of these victims. The building was demolished, and one of the boilers was thrown from its bed some 100 yards distant, and became a useless mass. Though the rents appeared to be of strong metal, the investigation in this case was not conducted by a competent body, and no positive conclusion arrived at. Since then three other boiler explosions took place, but fortunately no lives were lost. Had there been more accidents of this sort, no one would be surprised that is familiar with the appearance and condition in which very many steam boilers are now often kept at some of the mining establishments. A condition probably due to a spirit of false economy more than it is due to ignorance of the engineman or bad material, however this case may be, it would be more prudent to remove suspected boilers than make good the damage occasioned by explosion.

Since the steam boiler inspection act of 1871 went into operation, there were but three boiler explosions in the district where there are 1,433 boilers in use, yet these explosions resulted in no personal injury, further than delaying the works; to mention these facts and show how much of these responsibilities rest upon persons in charge of steam boilers, and how much at fault in cases of accidents to persons and property for a non-discharge of duty, and the little notice that is taken of the many warnings given until a serious accident occurs.

In view of the still increase in the coal trade a like increase must also take place in the mining force, and consequently a proportionate increase in accidents may be expected to follow; but the office of the inspector and duty of managers is anxiously looked to partially lessen these grievances.

INJUNCTIONS.

A few operators were found who worked their mines in actual contravention of law, and legal proceedings were obtained for their restraint; their condition was found to be such that any increase in their expenditure would cause their suspension and throw the miners out of employ-

ment as well as the operator out of the market; the gravity of such a case required very careful consideration.

An inspector in such cases meets with many objections, not being desirous to cause the suspension of the mine, and his anxiety to protect life and property, places him in an enviable predicament; but duty compels him to act vigorously, regardless of the claims of interested parties, and apply the proper restrictions which subjects him to much inconvenience.

VENTILATION LAW OF 1870.

SECTION 1. *Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania in General Assembly met, and it is hereby enacted by the authority of the same,* That the owner or agent of every anthracite coal mine or colliery shall make, or cause to be made, an accurate map or plan of the workings of such coal mine or colliery on a scale of one hundred feet to the inch, and where there is more than one seam of coal worked in said coal mine or colliery the map or plan shall exhibit the workings in each seam of coal, and shall state the general inclination of the strata with any material deflections therein in said workings, and the boundary lines of the lands of said coal mines or colliery, a true copy of which map or plan the said owner or agent shall deposit with the inspector of coal mines and collieries for the district for which the coal mine or colliery is situated, within four months from the passage of this act, and one copy shall be kept at the office at each colliery; and the said owner or agent shall furnish to the inspector aforesaid, on the first day of January and July, in every year hereafter, a statement, or map or plan of the progress and of the workings of each coal mine or colliery during the year past up to date, to enable the inspector to mark the same on the map or plan of the coal mine or colliery furnished him, and deposited with said inspector as hereinbefore provided for; and when any coal mine or colliery is worked out preparatory to being abandoned, when any level or lift thereof is being finished with a view and for the purpose of being abandoned, or when any of the pillars thereof are to be removed the owner or agent of such coal mine or colliery shall have the map or plan furnished as hereinbefore provided, or such portions thereof as the case may require, carefully verified, and notice shall be given to the inspector of the coal mines and collieries for the district, in writing, of the purpose to abandon or remove the pillars as the case may be.

SECTION 2. That whenever the owner or agent of any coal mine or colliery shall neglect or refuse or from any cause fail, for the period of two months, to furnish the inspector the map or plan of or the addition thereto provided for in the first section of this act, or if the inspector finds, or has reason to believe that any map or plan of any coal mine or colliery, furnished him under the provisions of this act, is materially inaccurate or imperfect, he is hereby authorized to cause an accurate map or plan of the actual workings of such coal mines or colliery to be made at the expense of the owner thereof, the cost of which shall be recoverable by law, as other debts are recoverable from said owners.

SECTION 3. That four months from and after the passage of this act it shall not be lawful for the owner or agent of any anthracite coal mine or colliery, worked by or through a shaft or slope, to employ any person in working within such coal mine or colliery, or to permit any person to be such coal mine or colliery for the purpose of working therein, unless they are in communication with every seam or stratum of coal worked in such coal mine or colliery, for the time being at work, at least two shafts or

slopes or outlets, separated by natural strata, of not less than one hundred and fifty feet in breadth, by which shafts, slopes or outlets distinct means of ingress and egress are always available for the persons employed in the coal mine or colliery; but it shall not be necessary for the two shafts, slopes or outlets to belong to the same coal mine or colliery, if the persons therein employed have ready available means of ingress and egress by not less than two shafts, slopes or outlets, one of which may belong to another coal mine or colliery: *Provided*, That a second outlet can be had through coal; but that if any tunnel or shaft be required, work upon the same to commence immediately after the passage of this act, and continue until its final completion, with not less than three shifts in each twenty-four hours, and as many hands to be employed as can be put to work to advantage, the inspector to be the judge as to the least number of hands engaged per shift. This section shall not apply to opening a new coal mine or colliery, nor to any working for the purpose of making a communication between two or more shafts, slopes or outlets, so long as not more than twenty persons are employed at any one time in the said new mine or workings; and the term "owner" used in this act shall mean the immediate owner, proprietor, lessee or occupier of a coal mine or colliery, or any part thereof, and the term "agent" shall mean any person having, on behalf of the owner, the care or direction of a coal mine or colliery, or of any part thereof.

SECTION 4. The owner or agent of any coal mine or colliery to which there is but one shaft, slope or outlet may petition the court of common pleas in and for the county in which such coal mine or colliery is situated, which said court is empowered to act in the premises, setting forth that in consequence of intervening lands between the workings of his coal mine or colliery and the most practicable point, as the case may be, at which to make or bring to the surface from the workings of his mine, he is unable to make a slope or outlet, in accordance with the requirements of this act, whereupon the court may make an order of reference and appoint three disinterested persons, residents of the county, viewers, one or more of whom shall be a practical mining engineer; all of whom, after being sworn to a faithful discharge of their duties, shall view and examine the premises, and determine as to whether the owners ought or ought not, under the circumstances, have the privilege of making an additional outlet through or upon any intervening lands in accordance with this act, as the case may require, and report in writing to the next term of the court, which report shall be entered and filed of record; if the finding of the viewers, or any two of them, is in favor of the owner of the coal mine or colliery, he may make an additional shaft, slope or outlet, under, through or upon intervening lands as may be determined upon and provided for by the award; if the finding of the viewers is against the owner, or if no award be made by reason of any default or neglect on the part of the owner, he shall be bound by the provisions of this act in the same manner as if this section had not been enacted; in case the said owner or agent desires to and claims that he ought to make an additional outlet under, through or upon any adjoining or intervening lands to meet the requirements of this act for the ingress and egress of the men employed in his or their coal mine or colliery, or he or they shall make a statement of the facts in the petition, with a survey setting out the point of commencement and the point of termination of the proposed outlet which he or they, their engineers, agents and artists, may enter upon said intervening lands and survey and mark, as he or they may find it proper to adopt, for such additional outlet, doing no damage to the property explored; and the viewers shall state in their report what damages shall be sustained by the

owner or owners of the intervening lands, by the opening, constructing and using of the outlet; and if the report is not appealed from, it shall be liable to be confirmed or rejected by said court as to right and justice shall appertain; and any further and all proceedings in relation thereto shall be in conformity with like proceedings as in the case of a lateral railroad across or under intervening lands, under the act in relation to lateral railroads, approved the fifth day of May, 1832, and the supplements thereto, so far as the provisions of the same are applicable hereto; and the notices to the owners of intervening lands of the intention to apply for the privilege of making an outlet and of the meeting of viewers shall be given, and the costs of the same shall be paid as provided for in the said act of the fifth of May, 1832, and the supplements thereto.

SECTION 5. Any of the courts of law or equity of this Commonwealth, having jurisdiction where the coal mine or colliery proceeded against is situated, upon the application of the inspector of coal mines and collieries of the proper district, acting in behalf of the Commonwealth, shall prohibit, by injunction or otherwise, the working of any mine in which any person is employed in working for the purpose of working in contravention of the provisions of this act, and may award such costs in the matter of the injunction or other proceedings as the court may think just; but this section shall be without prejudice to any other remedy permitted by law for enforcing the provisions of this act.

SECTION 6. The owner, lessee, operator or agent of every coal mine or colliery shall erect or provide at or near the mouth or entrance to such mine, and maintain the same at all times; where men are employed in such a mine, a suitable building or buildings, provided with soft water and properly lighted and warmed, for the use of the men employed in such mine to wash and change their clothes when entering the mine and returning therefrom.

SECTION 7. The owner or agent of every coal mine or colliery shall provide and establish for every such coal mine or colliery an adequate amount of ventilation, and not less than fifty-five cubic feet per second of pure air, or thirty-three hundred cubic feet per minute for every fifty men at work in such mine, and as much more as circumstances may require, which shall be circulated through to the face of each and every working place throughout the entire mine, to dilute and render harmless and expel therefrom the noxious poisonous gases to such an extent that the entire mine shall be in a fit state for men to work therein, and be free from danger to the health and safety of the lives of the men by reason of said noxious poisonous gases. The ventilation may be produced by using blowing engines, air-pumps, forcing or section fans, of sufficient capacity and power, or other suitable appliances, as to produce and insure constantly an abundant supply of fresh air throughout the entire mine; but in no case shall a furnace be used in the mine where the coal breaker and schute buildings are built directly over and covering the top of the shaft, for the purpose of producing a hot upcast air; and there shall be an intake air-way of not less than twenty square feet area, and the return air-way shall not be less than twenty-five square feet area.

SECTION 8. The better to secure the ventilation of every coal mine and colliery, and provide for the health and safety of the men employed therein, otherwise and in every respect the owner or agent, as the case may be, in charge of every coal mine or colliery, shall employ a competent and practical inside overseer, to be called mining boss, who shall keep a careful watch over the ventilating apparatus, over the air-ways, the traveling ways, the pumps, the sumps, the timbering, to see as the miners advance in their

excavations that all loose coal, slate or rock overhead is carefully secured against falling over the arrangements for signaling from the bottom to the top, and from the top to the bottom of the shaft or slope, over the metal tubes from the top to the bottom of the shaft or slope, for the purpose of talking through, and all things connected with and appertaining to the safety of the men at work in the mine. He or his assistants shall examine carefully the workings of all mines generating explosive gases every morning before the miners enter the coal mine or colliery, and shall ascertain that the mine is free from danger, and the workmen shall not enter the mine until such examination has been made and reported, and the cause of danger, if any exist, be removed; and he and his assistants shall also, every evening, when the workmen leave the mine or colliery, go over the mine and see that the doors of the passageways are all properly closed, and that all the air-ways are free and unobstructed to the passage of air through them; and it shall be the duty of the mine boss to measure the ventilation at least once per week, at the inlet and outlet, at or near the face of all gangways, and all measurements to be reported to the inspector once per month.

SECTION 9. All and every of the safety lamps used in the coal mines or collieries shall be the property of the owner thereof, and shall be under the charge of a suitable person under direction of the mining boss, who shall keep them clean and in good order; and the mining boss shall provide that all doors assisting or effecting the ventilation of the mine shall be so hung and adjusted so that they will close of their own accord and cannot stand open, and the main doors on the traveling roads shall be double, and an extra door shall be fixed to be closed only in the event of an accident to one of the others, and the sides and top of such door shall be built with stones and mortar in mines in which the inspector shall deem it necessary, and shall so order, and all main doors shall be provided with an attendant, whose constant duty shall be to guard them and prevent their being left open; and every mine having explosive gas in every part of such a mine or mines shall be divided into two, four or more panels or districts, each ventilated by a separate spit or current of air, and fifty persons shall be the greatest number of persons that shall work in any one panel or district at the same time; and bore holes shall be kept twenty feet in advance of the face of each and every place, and if necessary, on both sides, when the same is driven towards or approaching an abandoned mine or part of a mine suspected to contain inflammable gasses or which is inundated with water.

SECTION 10. The owner or agent of every coal mine or colliery, opened or operated by shaft or slope, shall provide and maintain a metal tube from top to bottom of such slope or shaft, suitably calculated and adopted to the free passage of sound therein, through which conversation may be held by and between persons at the bottom and the top of the shaft or slope; and also the ordinary means of signaling to and from the top of the shaft from the bottom; and also provide an improved safety catch and a sufficient cover overhead on every carriage used for lowering or hoisting persons; and they shall provide and arrange that flanges or horns of sufficient dimensions are attached to the sides of the drum of every machine that is used for lowering or hoisting in or out of any mine; an adequate break shall be attached to every drum or machine worked by steam or water power that is or will be used for lowering or raising persons into or out of any of said mines, and the main link attached to the swivel of the wire rope shall be made of the best quality of iron and tested by weights or otherwise satisfactorily to the inspector, and bridle chains shall be attached to

the main link from the cross pieces of the carriage, and no single link chain shall be used for lowering or raising persons into or out of any said mines. And no boy under twelve years of age shall work or enter any mine, and proof must be given of his age by certificate or otherwise before he shall be employed, and the father or any other person who shall conceal or misrepresent the age of any boy shall be guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine not less than ten dollars nor more than one hundred; and no owner nor agent shall employ any boy knowing that he has not attained to twelve years of age. The neglect or refusal of any persons or parties to perform the duties provided for and required to be performed by sections six, seven, eight, nine and ten of this act, by the parties therein required to perform them, shall be taken and be deemed a misdemeanor by them, or either of them, and upon conviction thereof, they, or any or either of them, shall be punished by imprisonment and fine, or either, at the discretion of the court trying the same.

SECTION 11. No owner or agent of, or at any coal mine or colliery operated by shaft or slope, shall place in charge of any engine, whereby the men are lowered into or hoisted out of the mine, any but experienced, competent, sober engineers; and every engineer so placed in charge of an engine shall constantly attend to the engine of which he has charge, and shall not allow any person, except such as may be deputed by the operator or agent, to touch or meddle with it or any part of its machinery. He shall work his engine slowly, with great care when any person is ascending or descending the shaft or slope, and when any person is about to descend or ascend the shaft or slope the men at the bottom or top, as the case may be, must inform the engineer, by the metal tube, the signal or otherwise, thereof; and no one shall interfere with or in any way intimidate the engineer in the discharge of his duties, nor ride upon a loaded wagon or cage in any shaft or slope, and in no case shall more than ten men ride on any wagon or cage at one time in any of the said mines, and upon any person violating the provisions of this section he shall be held and deemed guilty of a misdemeanor, and upon conviction thereof he shall be punished by fine and imprisonment, at the discretion of the court trying the same.

SECTION 12. Whenever loss of life or serious personal injury to any person shall occur, by reason of any explosion or other accident whatever, in or about any coal mine or colliery, it shall be the duty of the person having charge of such coal mine or colliery to give notice thereof forthwith, by mail or otherwise, to the inspector of coal mines and collieries for the district, and to the coroner of the county if any person is killed thereby, and due notice shall be given by the coroner of any inquest to be held as the result of any such explosion or accident. And it shall be the duty of the said inspector or his deputy to immediately repair to the scene of the accident, and make such suggestions as may appear necessary to secure the safety of the men, and if the result of the explosion does not require an investigation by the coroner he shall investigate into and ascertain the cause of the explosion or accident, and make a record thereof, which he shall preserve with the records of his office; and to enable him to make the investigation he shall have power upon such occasion to compel the attendance of persons to testify, and to administer oaths or affirmations thereto, the cost of which investigation shall be paid by the county in which the accident occurred, in the same manner as costs of inquests held by the coroner or justices of the peace are now paid; and the failure of the person in charge of the coal mine or colliery to give notice to the inspector and coroner, as provided for in this section, shall subject him to a fine of not less than twenty-five dollars, nor more than one hundred dollars, to be recovered as other fines are to the county treasury.

SECTION 13. All boilers for generating steam in and about coal mines and collieries shall be kept in good order, and the owner or agent thereof shall have them examined and inspected by a competent boiler-maker or other well qualified person, as often as once in six months, and oftener if needed, and the result of such examination, under oath, shall be certified in writing to the inspector for the district; and all machinery in and about the mines, and especially in the coal breakers where boys work, shall be properly fenced off, and the top of each shaft shall be securely fenced off by vertical or flat gates covering the area of said shaft; and the entrance of every abandoned slope and air or other shafts shall be securely fenced off.

SECTION 14. Upon the passage of this act the Governor of the Commonwealth of Pennsylvania shall, upon the recommendation of a board of examiners, selected for that purpose, composed of three reputable miners in practice and two reputable mining engineers, to be appointed by the judges of the court of common pleas of Luzerne county, all of which shall be sworn to a faithful discharge of their duties, appoint three properly qualified persons to fill the office of inspector of coal mines and collieries of Luzerne and Carbon counties, whose commissions shall be for the term of five years or during good behavior, but they shall at all times be subject to removal from office for neglect of duty or malfeasance in the discharge of duty, as hereinafter provided for; and the person so appointed shall have attained the age of thirty years, be a citizen of Pennsylvania, and have a knowledge of the different systems of working coal mines, and have been intimately connected with the anthracite coal mines of Pennsylvania for a period of five years, and have had experience in the working and ventilation of coal mines, where fire-damp and noxious gases are evolved. Before entering upon their duties they shall take an oath or affirmation, before an officer qualified to administer the same, that they will perform the duties of the office with impartiality and fidelity, which oath or affirmation shall be filed in the office of the prothonotary of the county; and they shall provide themselves with the most approved modern instruments and chemical tests for carrying out the intentions of this act.

The examiners provided for in this act shall be appointed by the judges of the courts of common pleas for the county, at the first term of the court in each year, to hold their place during the year, and vacancies shall be filled by the court as they occur; and the said examiners shall meet whenever candidates for the office of inspector of mines are to be appointed, of which meeting public notice shall be given in at least two papers published in the county, at least two weeks before the meeting.

The examiners shall agree in their recommendation of candidates to the Governor, and they shall recommend only such as they find qualified for the office; the said examiners shall receive three dollars per day for every day they are actually engaged in the discharge of the duties of examiners under this act, to be paid to them by the county; one inspector shall be appointed for the district in the Wyoming coalfield, Luzerne county, laying east of and including Jenkins township, and one district shall be composed of that part of Wyoming coalfield laying west of Jenkins township and west of the Susquehanna river, and one other district shall be composed of that part of Luzerne county laying south of the Wyoming coalfield, together with Carbon county.

SECTION 15. The term of office of the Inspector of Coal Mines, appointed under an act for the better regulation and ventilation of mines, and for the protection of the lives of the miners in the county of Schuylkill, approved April the twelfth, one thousand eight hundred and sixty-nine, shall expire on the first day of June, Anno Domini one thousand eight hundred and

seventy, and in his room three inspectors of mines, for the counties of Schuylkill, Dauphin, Northumberland and Columbia, shall be appointed by examiners, to be appointed by the court of common pleas of Schuylkill county, in the manner and form provided by the fourteenth section of this act; and the said examiners and inspectors when so appointed shall be subject to like regulations and duties, and entitled to like privileges, franchises and salaries as are in the said section provided for the examiners and inspectors for the counties of Luzerne and Carbon; and the inspectors for the said counties of Schuylkill, Dauphin, Northumberland and Columbia, shall be assigned to duty in separate districts in said counties; which said districts shall be laid out and fixed by the examiners as aforesaid, to be appointed by the court of common pleas of the county of Schuylkill.

SECTION 16. It shall be the duty of the court of common pleas of the proper county, whenever a petition signed by not less than fifteen reputable coal operators or coal miners, or both, setting forth that any inspector of coal mines and collieries, grossly neglects the duties, or that he is incompetent, or that he is guilty of malfeasance in office, to issue a citation in the name of the Commonwealth, to the said inspector to appear, at not less than fifteen days' notice, on a day fixed, before said judges, when the said court shall proceed to inquire into and investigate the allegations of the petitioners; and if the court find that the said inspector is grossly neglectful of his duties, or that he is by reason of causes that extend before the appointment, or that have arisen since his appointment, incompetent to perform the duties of said office, or that he is guilty of malfeasance in office, the court shall certify the same to the Governor of the Commonwealth, who shall declare the office of inspector of the district vacant, and proceed, in compliance with the provisions of this act, to appoint a properly qualified person to fill the office of inspector; and the costs of the said investigation before the court shall be borne by the removed inspector; but if the allegations of the petitioners are not sustained by the final judgment of the court the costs shall be paid by the petitioners.

SECTION 17. The salaries of the said inspectors appointed for Luzerne and Carbon counties shall be three thousand dollars each; the maps and plans of mines, and the records thereof, together with all papers relating thereto, shall be kept by the inspector, properly arranged and preserved in a convenient place in the district for which each inspector shall have been appointed.

SECTION 18. Each of the inspectors of coal mines and collieries shall give his whole time and attention to the duties of the office; and it shall be his duty to examine all the coal mines and collieries in his district as often as his duties will permit him to do so, to see that every necessary precaution is taken to insure the safety of the workmen, to see that the provisions of this act are observed and obeyed; and it shall also be each inspectors duty to attend at every inquest held by the coroner or coroners in his district upon bodies killed in or about the coal mines or collieries.

SECTION 19. That any miner, workman, or any other person, who shall knowingly injure any safety-lamp, water gauge, barometer, air-course, brattice, or obstruct or throw open air-ways, or carry lighted pipes or matches into places that are worked by safety lamps, or handle or disturb any part of the machinery of the hoisting engine, or open a door, and not have the same closed, whereby danger is caused in the mine, or enter any place of the mine against caution, or disobey any order given in carrying out the provisions of this act, or shall ride upon a loaded car or carriage, in any shaft or slope, or on any plane in or around any of said mines, or

do any other act whereby the lives or the health of persons, or the security of the mines or the machinery, is endangered; or any miner having charge of a working place in any coal mine or colliery, who shall neglect or refuse to keep the roof thereof properly propped and timbered, to prevent the falling of coal, slate or rock, shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by imprisonment and fine at the discretion of the court.

LIVE STOCK AMENDMENT.

That any engineer who leaves his work without giving due notice of the same, thereby endangering the lives of the live stock in the mines, shall be fined not less than fifty dollars, nor more than five hundred dollars, and six months' imprisonment.

SECTION 20. It shall be lawful for any inspector to enter, inspect and examine any coal mine or colliery of his district, and the works and machinery belonging thereto, at all reasonable times, by day or night, but so as not to impede or obstruct the working of the coal mine or colliery, and to make inquiry into and touching the state and condition of such coal mine or colliery, works and machinery, and the ventilation of such coal mine or colliery, and the mode of lighting or using lights in the same, and into all matters and things connected with or relating to the safety of the persons employed in or about the same; and especially to make inquiry whether the provisions of this act are complied with, in relation to such coal mine or colliery; and the owner or agent of such coal mine or colliery is hereby required to furnish the means necessary for such entry, inspection, examination and inquiry, of which the said inspector shall make an entry in the record of his office, noting the time and material circumstances of the inspection.

SECTION 21. No person who shall act or practice as a land agent, or as a manager, viewer or agent of any coal mine or colliery, or as a mining engineer, or be interested in operating any coal mine or colliery, shall act as inspector of coal mines and collieries under this act.

SECTION 22. It shall be the duty of each inspector to make an annual report of his proceedings to the Governor of the Commonwealth at the close of every year, in which he shall fully enumerate all the accidents in and about the coal mines and collieries of his district, making in tabular form those accidents producing death or serious injury to persons, and the state of the workings of said mines, with regard to the safety of the working men therein, and to the ventilation thereof; and the result of his labors generally shall be fully set forth.

SECTION 23. The salaries of the inspectors of coal mines and collieries, and the expenses of carrying into execution the provisions of this act, shall be paid by the State Treasurer out of the treasury of the Commonwealth, upon the warrant of the president judge of the court of common pleas of Luzerne county, for the salaries of the inspectors for Luzerne and Carbon counties, and upon the warrant of the president judge of the courts of common pleas of Schuylkill county, for the inspectors for the counties of Schuylkill, Columbia, Northumberland and Dauphin; and all inspectors under this act shall reside in the districts for which they were appointed.

SECTION 24. That for any injury to persons or property occasioned by any violation of this act, or any wilful failure to comply with its provisions, by any owner, lessee or operator of any coal mine or opening, a right of action shall accrue to the party injured for any direct damage he may have sustained thereby; and in any case of loss of life by reason of such wilful neglect or failure aforesaid, a right of action shall accrue to the widow and

lineal heirs of the person whose life was lost for like recovery of damages for the injury they shall have sustained.

SECTION 25. All laws of the Commonwealth that are inconsistent with the provisions of this act are hereby repealed.

B. B. STRANG,

Speaker of the House of Representatives.

CHAS. H. STINSON,

Speaker of the Senate.

APPROVED—The 3d day of March, 1870.

CLAIMS OF THE EXAMINING BOARD IN APRIL, 1873.

His Honor, Cyrus L. Pershing, president judge of the courts of Schuylkill county, in compliance with an act of General Assembly, did appoint Messrs. Frederick J. Anspach, of Shamokin, and George B. Strauch, of Pottsville, civil and mining engineers, and Michael Corcoran, of Helfenstein, Thomas Pickering, of St. Clair, and John Young, of Ashland, practical miners, as a board of examiners, to hold their commissions one year. They having examined all applicants that presented themselves formally for the office of Inspector of Mines in Shamokin district, and after sixteen days' session, found Mr. Wm. Hemingray the best qualified for the duties of that office, and duly recommended his appointment to his Excellency, Governor John F. Hartranft, who immediately commissioned him as inspector of said district, made vacant by the resignation of inspector Edmunds.

The claim of said board, amounting to \$337 79, for printing, publishing, fees, &c., was referred to the commissioners of Schuylkill county, which claim is still unpaid; this matter had been brought to the notice of the Honorable Judges Pershing and Dimmick, who, in review of the case, do not accord the case standing over for legislative action. The bills thus created have been often presented and payments refused, occasioning unpleasant comments upon the action of the commissioners and the act creating the examining board.

Thus far the said board of examiners patiently awaits the action of the present Legislature in the matter, hoping this case may meet with a prompt decision, and hereafter to place the court in power to decide this claim, enforce its payment, and regulate and direct the proper observance and the faithful discharge of his duty in all things necessary and expedient to carry the law into effect.

DINAMITE OR GIANT POWDER

is made by mixing nitro glycerine with infusorial earth; it is an ungrained powder, of a grayish brown color, resembling moist saw dust in appearance. Insoluble in water, it is not affected by time or exposure to air and moisture; it congeals at about 42° Fahrenheit; in the open air or in ordinary packing it burns without exploding. Its combustion produces carbonic acid, hyponitrous acid and water; when heated above 212° (the boiling point of water) it throws off noxious fumes and becomes weakened and finally destroyed.

For storage it should be kept in a situation having a temperature between these extremes; when frozen it can be thawed by being kept for a time in this proper temperature. It is perfectly safe to thaw this powder by placing the cartridge in an open vessel and the vessel then placed in hot water; when it becomes soft it is then ready for use, and its power unimpaired as it freezes slowly; no undue haste is required in its application.

Unlike gun powder, its explosion is instantaneous; the whole mass of powder explodes as if a single grain. This quality, in connection with its extraordinary evolution of gases, causes its explosive effect to be especially great in solid substances. Its explosion produces carbonic acid, nitrogen and water.

There are three methods of exploding it: 1st, by a violent explosion in or into it; 2d, by confining it in a strong vessel and applying fire to it, or in heating the vessel sufficiently; 3d, by a percussion shock so intense as to produce heat and violence. Practically it cannot be exploded by accident; fire alone will not explode it, nor heat in any form, nor will any amount of weight upon it or simple pressure of any kind explode it. It cannot be exploded by any of the ordinary movements, accidents, or incidents which attend its handling, transportation or use. The pressing it into cartridges, or ramming into bore-holes with a *wooden rod*, however hard, throwing it about, or even the crushing or violent overturning of wagons, or the collision of railway cars, will not explode it. The burning of gunpowder unconfined is not sufficient. When set on fire while under confinement in some strong vessel, the burning of the powder produces gases, which, finding no escape, at length cause a pressure so great as to produce, with the least heat of the burning, an explosion of unburned powder.

A vessel of the strongest tin has not the requisite strength. It, like boxes, barrels and packages, &c., will be burst by the gases before the pressure is sufficient to produce an explosion.

Cartridges.—Except in special cases it is better to use the powder in the form of a cartridge; it is more certain and more economical in time and power.

Fuse.—Ordinary fuse may be used; but to make sure of a discharge in all cases, and to keep the powder from being burned by fire from a leaky fuse, the best fuse is recommended and a size to fit the caps precisely.

Caps.—Caps are manufactured for the special purpose of exploding Giant powder. They are more heavily charged with fulminate than ordinary ones, and corresponding care should be taken in their handling and use. A pair of cutting nippers, with their edges blunted, may be used in securing the caps tightly and firmly to the fuse.

Drill-holes, charges, &c.—As to the diameter and depth of holes, and where they should be made, and the direction they should take, and also as to the quantity of powder to be used, and other matters, no definite rules can be laid down for blasting with any explosion. As a general rule for the drill-hole and charge for Giant powder should be comparatively small. Experience has proven that $\frac{3}{4}$ inch octagon steel with $3\frac{1}{2}$ pound hammers, by single hand drillers, are best adapted to use powder to the greatest advantage. Holes of one inch in diameter are sufficiently large for any ordinary work, and for light work smaller holes should be used; the hole should determine the resistance and charge of powder needed.

As Giant powder, from its quickness, is nearly as effectual without tamping as with it, and cannot be advantageously used with tamping at all in natural fissures, it is therefore recommended to take advantage of its extraordinary quality as is practicable.

Charging.—The charge must fit and fill the bottom of the hole, and be solidly packed. This is a prerequisite to an effective blast, thus: Take a cartridge just the size of the bore, and cut it into sections from one to two inches long. With a hard wood rammer as will run in the hole press these sections into the bore-hole one by one, with sufficient force until each section is driven to the bottom and expanded laterally, so as to fill up all

crevices. Any size cartridge may be used if put in as above directed. In wet holes these sections should be rolled in additional paper, and the ends closed to prevent the powder from getting wet. Metallic rammers must not be used.

Firing the Charges.—The modes of exploding the charge are various. After the cap is placed on the end of the fuse, with nippers press firmly around the edge into the fuse. Some soap, grease or wax should be rubbed around the upper end of the cap to make the same air and water tight. Now insert the fuse into the bore-hole until the cap rests on the charge; then take a small piece of cartridge, say $\frac{3}{4}$ of an inch, push it down with the ram-rod, and press it around the cap so that the cap is inserted in the powder half its length, but never deeper, because if part of the fuse were in the powder above, the cap would be burnt up without exploding.

Another way of exploding the powder is to cut off an inch in length of a cartridge, smaller in dimensions than the bore-hole. Press into this piece of so called "priming cartridge" the cap, after it is well secured to the fuse, and with a string tie both together, to prevent the cap from being withdrawn; then let this priming cartridge down the bore-hole until it rests upon the charge, and fire the fuse.

The stronger grades of this powder don't require tamping, and whenever *water tamping* can be used, as, for instance, in all downward holes, it should be applied, because it excludes all particles of air and forms an even column on the charge. Should the blast miss fire, put in another primer. [Department of Mines, N. S., 1873.]

In view of the large number of steam engines in use in the coal regions, and the interest connected with their use, and the number of persons who are employed for managing the same, a great many of whom have but really little knowledge of their necessary requirements, and the competent knowledge necessary for their proper care and management, we are induced to submit the following subject to their attention, being well aware of the necessity of understanding the subject well and proper in and about the collieries:

THE STEAM ENGINE.

In giving details of the steam engine we shall only touch upon what is useful in its construction. The diversity of their construction is so varied that it would require a greater description and a larger space than is necessary to be here given.

The first grand essential is the cylinder, which may be constructed of any form, but commonly in a longitudinal circle, with numerous attachments—pipes, nozzles, valves, &c.—used for the admission and emission of steam to and from it. These auxiliaries are of different forms and patterns, to suit their different places and purposes, receiving their motion by different contrivances, such as eccentrics, levers, hand-gear, &c.

The eccentric being nothing more than a circular sheave with a hole through it, more near to one side than the other, the sheave being fixed upon the engine shaft, and counter rods connect the valves, and may be said to be the first power—of the engine department—in similarity to the engine with that of the pendulum to the clock; the former describing a slide and the latter a vibrating movement. Each will continue to move so long as its momentum power be kept up; the one depending upon weights or springs and the other upon the elastic force of steam. To render the eccentric as effective as possible the steam ports are constructed of certain proportions and made as long as the cylinder's diameter will admit; so that by a slight motion of the valve a large orifice may be gained. In con-

densing engines it is common to allow the area of each steam port to equal 1-30th, and in high pressure engines 1-16th of the square of the cylinder's diameter.

To enable the eccentric to approximate hand power, the slide valves are placed at select distances in advance of the piston, and these distances are termed leads, so that at each return of stroke the steam in the cylinder may approach to an equal density with that in the steam boiler. Where high velocities are necessary the lead of the valves is of great advantage in cutting off the steam before the engine completes its full length of stroke, but where power is the object it requires the steam to be continued to the end of the stroke.

Here are illustrated the two extremes of the mechanical power of steam. The one point is that of running at full speed and carrying no weight; the other is that of being loaded until the engine cannot move. The duty then of the practical mind is to study the useful effect.

The following results are given by engineers of passenger steam packets and locomotive engines:

When the lead of the valve is.....	0	inch	.....	the velocity=1.
Do.....do.....do.....	$\frac{1}{8}$	"	.....	do.....=1.016
Do.....do.....do.....	$\frac{1}{4}$	"	.....	do.....=1.032
Do.....do.....do.....	$\frac{3}{8}$	"	.....	do.....=1.048
Do.....do.....do.....	$\frac{1}{2}$	"	.....	do.....=1.075
Do.....do.....do.....	$\frac{5}{8}$	"	.....	do.....=1.103

STEAM.

In an elastic gaseous body formed of water, combined with caloric, transparent and colorless in its pure state, when in contact with the atmosphere it becomes a dense white mass, and ultimately returns to water, its original condition.

At 212° Fahr. scale, it is equal to 14.7 lbs avoirdupois per square inch, or the pressure of the atmosphere upon each square inch of surface; one cubic inch of water will produce one cubic foot of steam at 212° Fahr., and by still increasing its temperature steam may be raised to several times the weight of the atmosphere, provided due caution be taken to strengthen the boiler for the necessary pressure required.

That steam boilers should be constructed of the very best material known to manufacturers is eminently necessary, as steam highly rarified in the steam engine is of much more utility than steam of a moderate soft elasticity, as the subjoined table will exhibit:

ELASTICITY OF STEAM, BY M. ARAGO, AND OTHERS.

The elasticity of steam, the atmospheric pressure being 1	Corresponding temperature in degrees of Fahrenheit	Elasticity of steam, the atmospheric pressure being 1	Corresponding temperature in degrees of Fahrenheit	Elasticity of steam, the atmospheric pressure being 1	Corresponding temperature in degrees of Fahrenheit
1	212	10	358.78		
1½	234	11	366.85	30	457.16
2	250.5	12	374	35	472.73
2½	263.8	13	380.66	40	486.59
3	275.2	14	386.94	45	499.14
3½	285	15	392.86	50	510.6
4	293.7	16	398.48		
4½	300.3	17	403.83		
5	307.5	18	408.92		
5½	314.24	19	413.78		
6	320.36	20	418.46		
6½	326.26	21	422.96		
7	331.7	22	427.28		
7½	336.86	23	431.42		
8	341.78	24	435.56		
9	350.78	25	439.34		

Elastic force in atmospheres.	Elastic force in lbs. per square inch	Degree's of heat Fahrenheit ..	Difference of temperature, Fahrenheit..	Volume in cubic feet, water being 1....	Velocity into a vacuum in ft. per second....
1	14.7	212	.....	1,711	1,566
2	29.4	250.52	38.52	905	1,610
3	44.1	275.18	24.66	623	1,638
4	58.8	293.72	18.54	479	1,658
5	73.5	308.84	15.12	394	1,674
6	88.2	320.36	11.52	331	1,688
7	102.9	331.70	11.34	288	1,700
8	117.6	341.96	10.26	255	1,710
9	132.3	350.78	8.82	229	1,720
10	147	358.88	8.10	209	1,729
12	176.4	374	15.12	190	1,742
15	180.5	392.86	18.86	135	1,765
20	294	418.45	25.59	111	1,786
30	441	457.16	38.71	77	1,823
50	735	510.60	53.44	42	1,873

Hence it follows, by the preceding table, that as small accessions of heat produce increased expansive force, small abstractions of heat will also reduce highly elastic steam in an equal degree. When an engine is first set in motion, the pressure of steam has to overcome the friction and inertia of the standing machinery; but once in motion, the impetus once acquired maintains the motion independent of the action of steam, friction being the only thing to encounter. Therefore, if steam continues to act as forcible as at first starting, it will communicate additional force to the piston, and will perform its movements with greater accelerated velocity.

The following table will show the elevation of steam at additional pressure beyond the atmosphere, and the increase of water required to maintain the same :

Atmosphere	Pounds per square inch above the atmosphere.....	Temperature in degrees of Fahrenheit	Volume of steam, water being 1.....	Cubic inches of water in a cubic foot of steam.....	Elastic force in inches of mercury ..	Elastic force in feet of water
1.19	2.5	220	1,496	1.14	5.15	5.76
1.22	3	222	1,453	1.18	6.18	6.91
1.29	4	225	1,366	1.25	8.24	9.22
1.36	5	228	1,282	1.33	10.3	11.52
1.70	10	240	1,044	1.64	20.6	23.05
2.04	15	251	883	1.93	30.9	34.57
2.38	20	260	767	2.23	41.2	46.10
2.72	25	268	678	2.52	51.5	57.62
3.06	30	275	609	2.81	61.8	69.15
3.40	35	282	553	3.09	72.1	80.67
3.74	40	288	506	3.38	82.4	92.20
4.08	45	294	468	3.66	92.7	103.72
4.42	50	299	435	3.93	103.0	115.25
4.76	55	304	407	4.20	113.3	126.77
5.10	60	309	382	4.48	123.6	138.30

Hence, it will be observed, that water enclosed in a steam tight boiler may be made to imbibe caloric until the steam becomes so strong as to rend the strongest boiler asunder, to prevent which, the safety valve is introduced; and according to custom is nothing more than a common mitre brass valve, and varies in size to suit the boiler, of which there are different forms. For marine boilers its size varies from 4 to 5 inches in diameter, and for stationary and locomotive boilers, from 3 to 4 inches are the general sizes of valves now in practical use.

HOW TO ASCERTAIN THE AREA OF A VALVE.

RULE:—Multiply the diameter by the diameter, which is called squaring the diameter, and the product is the circular area; to obtain the square area we multiply by 7,854, and this will give the superficial square in inches; consequently the weight on the safety valve, in pounds avoirdupois, divided by the area in circular or square inches, is equal to the pressure in pounds upon each square inch of the steam boiler.

RULE:—When the weight is placed upon the valve direct, thus: Area of valve multiply pressure per square inch, equal whole weight; and also whole weight divide area of valve, equal pressure per square inch.

EXAMPLE:—Diameter of valve equal 4 inches, loaded with 50 pounds to the square inch, what weight is there upon the valve?

Thus:— $4 \times 4 = 16 \times .7854 = 12.5664 \times 50$ lbs. = 628.3200 lbs. or 628 lbs. 5 oz. = whole weight upon the valve.

Case 2:—628.3200 lbs. being upon the valve, what is the pressure in pounds per square inch?

Here:— $4^{\circ} \times .7854 = 12.5664 \div 628.3200 = 50$ lbs. per square inch.

When the valve is loaded with a lever and poise, it then becomes necessary to understand the nature and action of such contrivances, as there is

no proper rule for calculating this connection of the lever. Here are inserted the action of 6 different dimensions of levers:

Thus:—A lever 20 inches long from centre of fulcrum to where the weight is suspended, and 2 inches long from fulcrum to centre of valve, the weight of the lever being 4 lbs. 9 oz., require the weight to counterpoise it. To obtain this test suspend weights from the hole which takes the fulcrum pin and rests the pivot, which acts upon the valve as the centre of motion.

Test No.	1	lever,	20	inches	by	2-inch	fulcrum,	by	4	lbs. 9	oz.,	takes	19	lbs.	to	poise	it.
“	2	“	20	“	3	“	“	“	4	lbs. 9	oz.,	“	12	“	“	“	“
“	3	“	24	“	2	“	“	“	5	lbs.,	“	“	28	“	“	“	“
“	4	“	24	“	2½	“	“	“	5	lbs.,	“	“	21	“	“	“	“
“	5	“	24	“	3	“	“	“	5	lbs.,	“	“	16	“	“	“	“
“	6	“	24	“	3½	“	“	“	5	lbs.,	“	“	13½	“	“	“	“

The popular rule for calculating the action of the lever upon the valve is so far from the actual truth that it is not recommended for adoption, viz: Divide the whole length of the lever by the length of the fulcrum to valve, and that quotient by half the weight of the lever. A nearer approximation is to divide the whole length of lever by length of fulcrum to valve, and quotient by the square root of the weight of the lever.

EXAMPLE ON NO. 4 LEVER:—Thus, $24 \div 2.5 = 9.6$. Then the square root of the weight of lever.

Here, $\sqrt{5 \text{ lbs.}} = 2.236 \times 9.6 = 21.4656 \text{ lbs.}$ This gives nearly $\frac{1}{2}$ pound too much. The same on No. 3 test would bring the action of the lever $1\frac{1}{4}$ lbs. too little.

Having substituted the above formula there will be but little difficulty in adjusting the load the safety valve has to bear.

EXAMPLE 2:—Suppose it is required to blow off the steam at 50 lbs. per square inch, and we select No. 2 test lever for that purpose, what weight will be required to be hung on the end of the lever?

Here, lever 20 inches long by 2 inches fulcrum, by 4 lb. 9 oz. = 19 lbs., then deduct 19 pounds from 50 pounds = 31 lbs., which = the required weight.

Select No. 3, and blow off at 60 lbs. per square inch, what then will be the result? This, 24 by 2 inch fulcrum by 5 lbs. = 28; hence deduct 28 from 60, which = 32 pounds, the required weight upon the lever's end.

A lever 24 inches long, with 2 inches fulcrum, weighs 5 lbs., actuated by 28 lbs., riding over a valve 3 inches in diameter; valve and pivot being 4 lb. weight and 32 lb. weight to be on the end of the lever, require the total pressure on the valve, likewise the pressure in pounds per square inch.

Here, according to formula:—Valve No. 3 suppose to be 3 inches in diameter. Hence $32 \times .7854 = 7.0686$ or 7 square inches.

Whence $28 \times 7 = 196$ and 32×7 plus 4 lbs., weight of valve, = 228.

Therefore $196 + 228 = 424$ lbs.; total pressure upon the valve and $424 \div 7 = 60$ pounds per square inch upon the boiler = 4 atmospheres.

Again, suppose you graduate the test lever, No. 3, it being 22 inches long from valve to the end where the weight is suspended.

Thus, 22 inches divided by $5\frac{1}{2} = 4$ divisions, require the weight when removed to each division alternately.

Here, by rule of three:— $22:60::5\frac{1}{2}:15$ lbs. = first division; $22:60::11:30$ lbs. = second division; $22:60::16\frac{1}{2}:45$ lbs. = third division. Then $22:60::22:60 = 60$ lbs. lever end.

In resolving these values the learner will not fail to be instructed in this most essential requisite.

When a spring balance is applied to the lever of a safety valve the distance between fulcrum and valve equals the diameter of valve in inches;

and the distance between fulcrum and spring balance, or the end of lever, equals as many times the diameter of the valve as there are square inches in its area.

WORK OF STEAM USED EXPANSIVELY.

When steam is used expansively it is allowed to enter the cylinder for only part of the stroke, and for the remaining portion the piston is moved by the expansive force of the steam; this is the most ingenious as well as the most economical way of employing steam power, as all the available labor is taken out of the elastic vapor before it is condensed. It is worthy of remark that with the increase of the volume of steam, or any elastic fluid, its elasticity or pressure is decreased at the same ratio, that is to say if its volume be increased two times its pressure will be only one-half what it was at first, and so on.

If an engine has a 3 foot 10 inch stroke, and the steam be cut off at 2 feet 4 inches, let the space through which the steam acts expansively be divided into 6 equal parts, and each interval will be expressed by a $\frac{1}{4}$ foot. Now the rule given by Simpson is generally adopted, viz.: "To the sum of the extreme ordinates add 4 times the sum of the even ordinates and twice the sum of the odd ordinates, then this sum multiplied by $\frac{1}{3}$ the common distance between the ordinates will give the required area," according to Marriotte's law.

EXAMPLE 1.—In a condensing engine, the length of the stroke being 3 feet 10 inches, the steam is cut off at 2 feet 4 inches of the stroke, the pressure of steam in the cylinder being 20 lbs., and the elasticity of the vapor in the condenser is 4 lbs. Required, the work performed upon one inch of the piston in one stroke.

As the 6 divisions of ordinates, designated by letters, are $\frac{1}{4}$ foot, or 3 inches apart, it follows that 2 feet 4 inches plus 6 times 3 inches gives 3 feet 10 inches=stroke.

Let A. B., C. D., E. F., &c., in figures, represent the series of ordinates, $\frac{1}{4}$ foot apart; steam being admitted into the cylinder of the elastic force of steam at 20 lbs. to the square inch; and if it be cut off when the piston is at A. B., 2 feet 4 inches of the stroke, it is evident that the remaining part of the stroke, viz: 1 foot 6 inches, will be completed by the expansion of the steam. And, according to Marriotte's law, we have for each interval the corresponding units of pressure indicated by the divisional lines of figures from A. B. to M. N.

Let A. B. represent pressure of steam; multiply length of stroke in feet and decimal parts to where steam is cut off. Divide A. B. plus $\frac{1}{4}$ foot, equal C. D. Continue the operation and similar results will follow for each separate ordinate.

Hence: A. B.=20 lbs.

The following explanatory diagram is hereto subjoined for an extended illustration, showing the system of practical calculations used by M. Marriotte in his able treatise upon steam engines :

Hence A. B.=20 lb.

$$C. D.=\frac{2.33 \times 20}{2.58}=18 \text{ lb.}$$

$$E. F.=\frac{2.33 \times 20}{2.83}=16.46 \text{ lb.}$$

$$G. H.=\frac{2.33 \times 20}{3.08}=15.16 \text{ lb.}$$

$$I. J.=\frac{2.33 \times 20}{3.33}=13.09 \text{ lb.}$$

$$K. L.=\frac{2.33 \times 20}{3.58}=13.00 \text{ lb.}$$

$$M. N.=\frac{2.33 \times 20}{3.83}=12.19 \text{ lb.}$$

CYLINDER.			
M	3/4 ft.		N
K	3/4 ft.	Ft., in.	L
I	3/4 ft.	Ft., in.	J
G	3/4 ft.	Ft., in.	H
E	3/4 ft.	Ft., in.	F
C	3/4 ft.	Ft., in.	D
A	3/4 ft.	Ft., in.	B
TWO FEET FOUR INCHES.			

Then plus 2 extreme ordinates 20 lb.+12.19 lb.=32.19 lb. plus 4 times the sum of the even ordinates, thus 4 (18+15.16+13.=184.64) plus 2 times the sum of the odd ordinates, thus 2 (16.46+13.09)=59.10. Total sum of ordinates=275.93.

Then multiply $\frac{1}{3}$ of $\frac{1}{4}$ foot, thus $.085 \times 275.93=22.90$ lb.=area or thus $20+12.19+4(18+15.16+13)+2(16.46+13.09)=275.93 \times .083=22.90$ lb.

Work done before the steam is cut off, that is A. B.=20×2 feet 4 inches=46.60.

Work done against the piston by the vapor in the condenser=3 feet 10 inches×4=15.32.

Hence total work on one inch of piston 22.90+46.60—15.32=54.18.

EXAMPLE 2.—Required the same as in the last example. When the stroke is at 5 feet, the steam cut off at 2 feet of the stroke, the ordinates being 6 inches each interval. The pressure of steam in the cylinder equal 20 lb. and the elasticity of the vapor in the condenser equal 4 lb. per square inch.

Here, 20 lb. pressure=A. B.

$$\frac{2 \times 20}{2\frac{1}{2}}=16 \text{ lb., C. D.}$$

$$\frac{2 \times 20}{3}=13.33 \text{ lb., E. F.}$$

$$\frac{2 \times 20}{3\frac{1}{2}}=11.4 \text{ lb., G. H.}$$

$$\frac{2 \times 20}{4}=10 \text{ lb., I. J.}$$

$$\frac{2 \times 20}{4\frac{1}{2}}=8.88 \text{ lb., K. L.}$$

$$\frac{2 \times 20}{5}=8 \text{ lb., M. N.}$$

Then, by Simpson's rule, 20 plus 8 plus 4 times (16 plus 11.3 plus 8.88) plus 2 times (13.33 plus 10)=219.78×by $\frac{1}{3}$ of $\frac{1}{2}$, or .1666=36.61=area.

The work is done before the steam is cut off=2 feet \times 20 lbs., pressure=40 lbs. plus 36.61 lbs.=76.61 lbs., minus work done against the piston by the vapor in the condenser=4 lbs. \times 5 feet=20 lbs.

These valves give 36.61 plus 40 minus 20=56.61.

When total work on 1 inch of piston=56.61 pounds.

Example 3.—Two oscillating marine engines, (condensers,) whose cylinders are 42 inches in diameter, and steam admitted by the elastic force of 20 lbs. per square inch; the length of stroke being 3 feet and 10 inches, making 30 strokes per minute, and working with piston rods 5 inches in diameter. It is desired to know what these valves will work up to in effective horse-power.

GENERAL RULE FOR FINDING POWER OF ENGINES.

Square the diameter of the piston in inches and parts, deduct half the circular area of the piston rod, multiply .7854, multiply length of stroke in feet and decimal parts, multiply the number of strokes per minute, multiply the number of pounds pressure per square inch of safety valve, minus one-fifth ($\frac{1}{5}$) of the whole for modulus or friction, and divide by 33000, or equal horse-power.

In the above example,

$$\frac{42 \times 42 - 12.5, \text{ half are of piston rod} \times .7854 \times 3.83 \times 30 \times 20}{33000}.$$

$-\frac{1}{5}$ =76.635 horse-power of one engine; hence 76.635 \div 2=153.270 horse-power, the same valves working 23 $\frac{1}{2}$ strokes per minute, gives 120 horse-power.

STEAM SHIPS.

How to ascertain the speed of a steam ship with revolving paddles.

Rule.—A steamer of 17 feet 6-inch paddle-wheel, the rims of the wheels being 4 inches broad, for which deduct twice 4 inches and 1 inch clearance for working, brings the wheel to 16 feet 9 inches diameter, making 30 revolutions per minute. How many miles per hour?

Here—16 feet 9 inches \times 3.1416=52.6218, or 52 feet 7 $\frac{1}{2}$ inches=1 revolution. Then 52.6218 \times 30 revolutions \times 60 minutes \div 3 feet, or 1 yard \div 1,760 yards for miles=17.93 miles, or 18 miles nearly per hour; and 60 minutes \div 17.93=3.34, or 3 minutes and 20 seconds in completing 1 mile. This rule can be relied upon as being correct.

HORSE POWER OF STEAMERS, PADDLE-WHEELS.

Suppose the four engines that propel the paddles of the Great Eastern to have steam of the elastic force of 20 pounds to the square inch admitted into the cylinders; the pistons moving through 140 feet of space in one minute, thus describing 10 revolutions per minute, or equal 14 feet each per minute; the diameter of pistons being 74 inches each, the piston rods being 9 inches each in diameter. It is desired to know the horse-power that these values will give.

Here: 74 \times 74= $\frac{1}{5}$ area of 9 inches for piston rods \times .7854 \times 10 \times 10 \times 20 \div 1.5=9562653,40800 \div 33000=289.77=horse-power of these engines. This rule holds good for all such measurements.

PUMPING ENGINE WORK CONSIDERED.

Suppose an engine drawing water from a mine 100 fathoms deep, through the aid of three sets of pumps; the bottom set lifts the water 50 fathoms,

it being 18 inches diameter in working barrel; the two top sets are each 12 inches diameter, and lift the water to top of shaft, being 50 fathoms more. It is here desired to know the probable amount of units of labor required to overcome the whole weight of spears, spear plates, wye ends, swords, joints, buckets, clacks, clack bows, bolts and nuts, together with the column of water. The 18-inch pump is worked by spears 6 inches square; the 2 12-inch pumps are worked by spears $4\frac{1}{2}$ inches square, each set made of memel timber, in 20 feet lengths, or 60 joints in both sets of spears.

Rule to calculate the spears.—Multiply the side of the spear into itself, and is called the square, then multiply by the number of fathoms in the shaft, then by the number of feet in a fathom=6 feet. Multiply by 12 the inches in a foot, then divide the whole by the number of cubic inches in one pound, of which memel fir contains 48.876 cubic inches to 1 pound.

Operation.— $6 \times 6 \times 100$ fathoms $\times 6 \times 12$ inches = 259200 cubic inches $\div 46.876$ = 5530 lb = weight in pounds of 6 inch spears.

Then: $4.5 \times 4.5 \times 100 \times 6 \times 12$ = 145800 cubic inches $\div 46.876$ = 3111 lb. = weight of $4\frac{1}{2}$ inch spears.

60 spear plates, 5 inches by $\frac{5}{8}$ inches thick in the middle, taper to $\frac{3}{8}$ at the ends for 18 inch pump. Hence average thickness = $\frac{1}{2}$ inch $\times 5$ inches broad $\times 9$ feet long $\times 3.33 \times 60$ = 4495 lb. weight of large spear plates.

60 plates $\times 4\frac{1}{2} \times \frac{1}{2}$ thick $\times 9$ feet long $\times 3.33 \times 60$ = 4045 lb. weight of small spear plates.

480 by $\frac{7}{8}$ inch bolts and nuts for spear plates = 1680 lbs. The total of these valves is as follows, viz.: $5530 + 3111 + 4495.8 + 875 + 1680$ = 19763.8 lb. $\times .66$, for modulus or friction of pump. = 13026.288 + 19736.8 lb = 32763 lb.

The column of water, the weight of which is required to be obtained. Square the diameter of each set of pumps in inches, multiply by .7854, this will bring them into square inches; add the square areas of the three pumps together, multiply by 50 fathoms, multiply by 6 feet, multiply by 12 inches, and divide by 27.648 cubic inches of water in 1 lb., this gives 62582.942 lb. = whole weight of water. Then plus 32763 lb. weight of spears, &c., = 95345.942 lb. = the weight the engine has to lift.

Hence, if an engine be working 6 lifts a minute, describing 8 feet of stroke, it is evident the whole weight will be moved through 48 feet of space in one minute, and the calculation will read thus: $95345.942 \times 6 \times 8$ = 4576605.216 $\div 33000$ = 138.68, or $138\frac{3}{4}$ horse-power nearly. This rule can be relied upon for its simplicity and truth in all calculations for obtaining the weight to be raised and the horse-power of the engine.—[*Iron Trades Guide.*]

Observe.—The student in mechanics must remember that a true mechanical square is 90 degrees, or a quadrant, and is, to all intents and purposes, a right angle; consequently half this angle is 45 degrees; all obtuse angles are greater than 45 degrees, and acute angles are smaller than that number.

The young machinist or engine driver should apply himself to the study of the law of friction or the *modulus* of a machine.

Example.—If 20-horse power be applied to a machine lifting 12,000 cubic feet of water per hour, to the height of 40 feet, what is the friction of the machine?—[*Morin.*]

Thus, work applied per hour = $20 \times 33000 \times 60$ = 396000; work done = $12000 \times 62\frac{1}{2}$ lbs. $\times 40$ = 300,000,000.

Hence $\frac{20 \times 33,000 \text{ lbs.} \times 60}{12,000 \times 62\frac{1}{2} \text{ lbs.} \times 40}$ = .75 friction of machine.

these mines, if mutually inclined, that would effect a proper submission to the rules decided upon for their proper government, that careless persons would not attempt to disregard or violate, and all know that the elements of danger is ever present, and the person appointed to manage the mine should receive due respect in discharge of his duties. First of these dangers are falls of coal and rock; 2d, explosions of gas, powder and blasts; 3d, suffocation; 4th, reckless working and haulage and a disregard of discipline.

The candid miner will tell you that very many accidents were occasioned by imprudent conduct of persons who, through some sort of fatality, mismanage their business, and may be for a time successful, but eventually will come to grief. The record of accidents are commonly made up of such.

GASES, THEIR CHARACTER, CONSTITUTION, MEASURE AND WEIGHT.

Carbonic Oxide.—This gas is one of the results of burning carburetted hydrogen with an imperfect supply of air, and gets the name of choke-damp of the miner. The blue flame that flickers over our common coal fires is caused by the combustion of carbonic oxide. The miner may escape the fire of the explosion, but cannot escape suffocation by the after-damp.

Black-Damp.—Carbonic acid gas, or carbonic-dioxide, is a colorless gas, yielding an acid taste and a slight pungent odor, and nearly double the weight of common air. When subjected to a pressure of $38\frac{1}{2}$ atmospheres it is condensed into a colorless fluid. This gas extinguishes all burning bodies placed in it, and is fatal to life. Diluted largely with air, it acts as a narcotic poison. Fatal effects have resulted from entering old workings, wells, vats, &c. When this gas accumulates freely, for a precautionary measure, a lighted lamp should be introduced into these places, which on its coming into contact with it, the light will become extinguished; if not, the place is safe. In 1800 Mr. Woodhouse determined the true nature of this gas.

Carbonous oxide is still another deleterious gas, colorless, and emitting a peculiar suffocating odor. It requires 40 times its volume of water for solution. It is readily combustible. Its characteristic is a clear blue flame, and unites with chlorine and forms phosgen gas. It is totally irrespirable, being an active deadly poison. One per cent. mingled with common air will prove fatal. This gas will readily pass through heated cast iron metal, such as stoves or furnaces of this metal, and is assumed to give rise to serious diseases in many instances. With sufficient ventilation no danger need be apprehended from this gas.

Sulphuretted Hydrogen, Hydro-sulphuric Acid Gas.—When sulphur and hydrogen are set free together they form a colorless, transparent gas, giving the odor of rotten eggs. It is produced by the putrefaction of all organic substances containing sulphur, and is exceedingly deleterious when respired. It exists in many of our mines, mingled with other equally deleterious gases. Rotten timber saturated or partly submerged in water gives off large quantities of this gas, and renders the waters of many wells nauseous. 1-1500th of this gas destroyed small birds; 1-800th of it killed a large dog, and 1-120th killed a horse.—*Brande.*

Sulphurous Acid.—When burned in air it unites with the oxygen, forming a colorless gas of a peculiar disagreeable taste, and a most suffocating smell. It extinguishes a light, and is respired with great difficulty, and has the quality of bleaching that with which it comes in contact. This gas is also generated in some coal mines.

Hydrogen.—Hydrogen gas occurs free in volcanic gases, forming, according to Brande, 45 per cent. of it. It is a colorless, odorless and tasteless gas.

It is the lightest known form of matter, being 14 times lighter than air, and 11,000 times lighter than water. It diffuses greater than any known gas. Its refractive power on light is very remarkable, being $6\frac{1}{2}$ times that of air. It is combustible at 500° , and readily combines with the oxygen of the air.

Its flame is a pale white color. It does not of itself support combustion or respiration. A lighted lamp placed in it is soon extinguished, and an individual placed in it soon loses his life. This gas is also generated in coal mines, and designated by the miner as white-damp.—*Graham*.

Oxygen.—This is the most important of all the elements in nature, and enters into all the chemical changes, and in most of them it acts the prominent part. Its condition is a gas resembling common air, which is only a mixture of many gases. Its characteristics is a colorless, transparent, tasteless, inodorous gas, resembling common air, and possesses the same mechanical properties. The term oxygen signifies air-former. Its diffusion is very extensive; it constitutes one-fifth of the weight of the atmosphere, eight-ninths of the ocean and all aqueous bodies, nearly one-half of the solid matter that forms the crust of the globe—rocks, earth, animals, plants and existing substances. It unites with all the elements, forming a compound termed oxide; its combining character is termed oxidation, and its separating character is termed deoxidation. It is a principle supporter of combustion, and all substances that burn in air burn in pure oxygen gas. The least spark upon a wick will catch fire from it; so will iron wire burn in it, and phosphorus will produce a light so brilliant in it that the eye cannot endure it; atmospheric oxygen is diluted with four times its bulk of another gas, (hydrogen,) which, if taken alone, extinguishes fire altogether, but when combustion takes place the hydrogen is converted to watery vapor, and carbonic acid is set free, both escaping away into the atmosphere. Oxygen seizes upon the hydrogen, if present in sufficient quantity, and in this combustion the carbon is set free in the form of burnt spark, which, when it touches the oxygen, is extinguished; but when the burning body contains a disproportionate amount of carbon as turpentine, more of it is set free than can be consumed by the oxygen, and the flame smokes; but when the hydrogen is in excess as in alcohol there is much heat, little light and no smoke; when mingled these gases correct their defects, and form the basis of the “burning mixtures;” oxygen is then a universal reservoir from which every living thing is supported in life. When the oxygen is consumed by respiration or temperature, carbon remains and death is the result.

Nitrogen.—This is a most deleterious gas; after respiration, and washed with lime water, it will not support respiration or combustion, and chemistry shows it constitutes four-fifths of the atmosphere; it combines with oxygen and numerous acids, and forms a component part of many vegetable and animal substances, but it is an odorless, colorless and tasteless gas, slightly lighter than air, never being liquified by cold or pressure. It combines with carbon, and at a high temperature with oxygen. It is a non-supporter of combustion, and at ordinary temperatures is not itself combustible. It is irrespirable, though it exerts no poisonous effects upon the tissues; its characteristic is suffocation, though so far different when free that the compounds formed by nitrogen are amongst the most energetic known. The corrosive nitric acid, the nitro-glycerine, the poisonous prussic acid, and the alkaloids all contain nitrogen. In mining nomenclature it received the name of stone-damp.

Sulphur is known to exist in union in most specimens of coal gas, and from stagnant pools; it is extensively mined in Sicily from large deposits in blue clay formation; it has an extensive affinity to combine with metals;

it melts at 230° to a yellow liquid, and at 450° changes to molasses color substance, which, if quenched in cold water, becomes elastic like india rubber, but from this allotropic condition it gradually returns to its original state.—*Youmans*.

The subject upon those gases common to coal mines has been extracted from the works of modern authors, who have labored long and diligently for the enlightenment of humanity and to ameliorate their condition. The miner, for whose principal benefit we have penned the foregoing subject, may become more acquainted with his principal enemy in the mine should he study this subject carefully, and consult his own and his co-laborers' interest. In connection with this information we will also explain the uses of the different instruments which science has brought to aid him in his dangerous calling. The miners, in modern times, are next in importance to the army of a nation, and to discipline and diffuse knowledge amongst them would be an act of pure philanthropy.

The American miners of this day are, as a body, very far in advance of the miners of any other country. The wholesome constitutional liberty granted to the people, and the superior system of our common schools elevates them above any others in the same calling. But, comparatively speaking, our mining is but in its infancy, comparably so. Then to become acquainted with the uses of mine instruments for detecting gases, and knowing the constituent elements of which these different gases are composed, would enable the miner, in nineteen cases out of twenty, to protect himself from falling a victim to these dangers that momentarily seek their victim.

Instruments used in Mines.—Amongst which are: 1st. The safety-lamp, of which there are many patterns. 2d. The anemometer or air meter, the casella and biriam. 3d. The thermometer, for measuring the temperatures. 4th. The barometer, for ascertaining the weight of the air. 5th. The hygrometer, for ascertaining the quantum of vapor. 6th. The clinometer, for measuring the dip of the seams.

With a proper knowledge of the real uses of these different instruments the person using them ought to know the fundamental principles of arithmetic to enable him to make the different calculations correctly, and be guided in conformity with the laws under which they are governed; and, indeed, our experience with these tests clearly demonstrates the truths which these scientific guides have so clearly established, that we beg the liberty of recommending their use in all the large collieries as a measure of safety.

Safety Lamps.—Sir Humphrey Davy, in his scientific researches, happily discovered and invented his safety lamp. Davy discovered that flame would not readily pass through a closely woven wire gauze, and constructed a tube-like covering—the result of several experiments. This covering is placed over the light, securely fastened to an oil stock, through which a wire picker passes to the wick. Its office is to force up or draw down the wick as required, or to extinguish the flame all together if found necessary. The gauze arrests the passage of the flame and prevents its communication with the surrounding gas, as the air which enters the lamp to support its light expands in the lamp, and must force its way through the upper part of this covering. This creates a draught within the gauze. Should the air be charged with fire-damp it readily takes fire in the lamp, and is prevented from exploding by coming in contact with the metal gauze, and for a time is arrested, when the wick is carefully withdrawn and the lamp permitted to cool. But should the flame be permitted to continue to burn for a longer period, the heated gauze would yield to the force of the expand-

ing flame, and a general explosion would be the result to the miner who, through ignorance or delay, places or finds himself in such circumstances.

In a current of air whose velocity exceeds 7 feet per second, should the air be charged with fire-damp or explosive gas? But test is too much for safety; the safety lamp may be in a situation where the air current does not exceed 4 feet per second, and in the hands of a practical miner, who is certain of his safety under any circumstance. Now to show that he is not safe at all times in this case, we will suppose a blast is fired in an adjoining heading, breast, or tunnel, the shock from which would instantly propel the current and force the explosive gas through the gauze, or a large fall of the upper strata occurred, or the lamp by an accident fell from its position, all of which would increase the velocity of the current, or a wind-gate got displaced; any of those conditions would be likely to increase danger, so that in vigilance alone lies safety.

There are numerous patterns of safety lamps in public use. The improvements claimed for them is of little consequence, except for the use of common laborers and miners. The Davy lamp, for the detection of explosive gases, is the most sensitive of all the others, and may be carried in air currents having a velocity of 30 feet per second, which if an explosion took place under such condition the result would be fearful; and, strange as it may appear to the outside world, we have found these lamps in the hands of the most ignorant green hand when working in these terrible elements of destruction with as much apparent coolness as if in a hay field; but safety does not always follow in the wake of ignorance and carelessness as is evidently seen by our death roll in this report, for the laborer of to-day may become a miner to-morrow in localities that makes the cultivated practical man shudder. We have often entered into these caverns of death to find men working there who could not explain any thing of gas, or its destructive quality, but complaining of all sorts of sickness and weaknesses and felt very loth to vacate the place when forced to do so.

The lamp patterns now in market are the Davy, the Stephenson, the Clanny, the Bolton, the New Castle, the British, and the Fireman's lamp. The 6-inch wire gauze, $1\frac{1}{2}$ inches in diameter, with gauze hood, and the oil stock to be only $1\frac{1}{4}$ inch deep, with lock and key. The gauze webs are different patterns; some 676 meshes to the square inch, while others have 720, 784, 1,024 and as high as 1,156. This branch of manufactory has its adulterated articles as well as other marketable wares; the preference is conceded to the 728 mesh web.

Cleanliness in lamps is an essential requisite; such as a clean wick, good oil and a well brushed gauze, and the lamp kept securely locked while in use. Its examination should be frequent; the thumb to be pressed tightly on the hood to ascertain if the web was burned or rotten; to press the cylinder between the thumb and finger to carefully scrutinize the meshes and to see that none were broken; to examine its wick, the oil, stock and lock and its general features; never to swing it about carelessly while in use, and none but practical persons to use them. The different colors exhibited by the light indicates the different sort of gases that prevails, such as orange, blue, white, red and green, as will be seen by a reference to the subject upon gas above.

Anemometer, or Air Meter.—The Cassela and Biriam are the most common in use, they are of different diameters, from 2 to 12 inches, with a dial plate, having from 2 to 6 indexes, the readings are units, tens, hundreds, thousands, tens of thousands and millions. The number of vanes are greater on the large instruments; from 8 on the small to 16 on the large ones.

In finding the volume of air supplied per minute it is necessary to select a proper location in the gangway slope inlet or outlet, to allow the instrument to run one minute before your reconing commences, then read off from its face the velocity given, this gives the velocity only, but a table of corrections is used in connection with the Cassela instrument, from a number corresponding to the velocity registered on the instrument must be added until the instrument registers as high as 600, a number that will not occur in any mine in the district. The Biriam registers in a similar manner, but its corrections are different, as will be seen below :

TABLE OF CASSELA CORRECTIONS.

Velocity found,	Tabular number	True velocity..	Velocity found,	Tabular number.....	True velocity..	Velocity found,	Tabular number.....	True velocity..
<i>Fect.</i>	<i>Plus.</i>	<i>Equal to</i>	<i>Fect.</i>	<i>Plus.</i>	<i>Equal to</i>	<i>Fect.</i>	<i>Minus.</i>	<i>Equal to</i>
20	29	49	320	14	334	620	1	619
40	28	68	340	13	353	640	2	638
60	27	87	360	12	372	660	3	657
80	26	106	380	11	391	680	4	676
100	25	125	400	10	410	700	5	695
120	24	144	420	9	429	720	6	714
140	23	163	446	8	454	740	7	737
160	22	182	460	7	467	760	8	752
180	21	201	480	6	486	780	9	771
200	20	220	500	5	505	800	10	790
220	19	239	520	4	524	820	11	809
240	18	258	540	3	543	840	12	828
260	17	277	560	2	562	860	13	847
280	16	296	580	1	581	880	14	866
300	15	315	600	zero 0	600	900	15	885

When the true velocity is known, and the section area of the opening is ascertained, use the velocity for the multiplicand and latter for a multiplier.

Thus, say velocity 200 feet plus 20 feet=220, the true velocity, we assume the section area of the opening to measure 42 square feet. We take the velocity 220 + 42=8,800 cubic feet of air supplied per minute. By the provisions of an act of Assembly, approved the 3d day of March, 1870, it was required that 66 cubic feet of air should be the minimum standard for each man per minute, thus giving 3,300 cubic feet of healthy pure air to every 50 men. Fifty lamps require as much air for their combustion as 8 men, and each mule as much as 8 men.

In this case we will assume the following :

50 men, 50 miners' lamps and 2 mules.

50 lamps= 8½ men.	}	74½) 8800=118 1-8 feet each.
20 mules=16 men.		
Total=74½ men.		
		149) 17600=118 1-7 feet.
		149
		270
		149
		1210
		1192

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18 over, or 9 feet=1-7 feet.

This would supply nearly double the required quantum of air. Although this result may appear satisfactory, yet it may not be sufficient to render harmless the quantum of noxious gases, vapor and impurities generated in the mine. As we see in this case the velocity is only $3\frac{1}{2}$ feet per second, or $2\frac{1}{2}$ miles per hour, scarcely perceptible.

Unless the mine in this case was tolerably free from noxious impurities, the ventilation could not be satisfactory; hence the inspector's duty would be to direct an increase in the supply of air, as it would insure safety.

RULE.—Biriam, the measurements of the velocity taken as above, *i. e.* 220 feet the section area, the opening being 42 square feet. Here we multiply the velocity, 220, by $97=213.40$. We reject the two right hand figures, 40, and we have 213, which we multiply by the square area of the opening, 42. Then $3213+42=8946$ feet, to which we add 40 for the number which overcomes the inertia of the investment, making the actual number of cubic feet of air supplied= 8986 .

Thus 220 velocity.
 .97 constant decimal fraction as a multiplier.

1540
1980

21340

42 area of opening as measured.

426
852

8946

Plus 40 number to overcome inertia.

Equal 8986 cubic feet, answer.

The difference in this case being 186 feet, which is of little importance in this respect. The Cassela instrument appears to be the one adopted by the War Department for marine and land service.

Thermometer.—An instrument to measure temperatures, and was invented by M. Sanctoria in 1590. This instrument is formed of a delicate glass tube, with a bulb at its bottom which is filled with mercury; its face is divided into a scale of equal parts. In Fahrenheit's scale the zero is fixed at 32 degrees, rising to an unlimited number and falling down to 60° . With the greatest accuracy it registers the slightest change in the atmosphere, either up or down, or in fluids by the expansion or contraction of the mercury in the bulb.

Mercury is possessed of very remarkable properties, and is well adapted to this purpose. Its ability to accommodate itself to these conditions and changes of atmospheric temperatures is singularly peculiar and uniform. For a very low temperature alcohol is preferred, as it is known never to solidify, under any condition, even with the most intense artificial cold of the carbonic acid bath.

There are different thermometers in use, but only three of which are in practice, viz:—Fahrenheit, a Hollande's scale, is adopted in America, while Centigrade's and Beamur's are used in Europe. There are two fixed points in each—the boiling, and melting of ice points. But the gradations on these scales differ in such arbitrary degrees that we deem it but proper to explain their different readings so as to reconcile their variations.

RULE.—To convert Fahrenheit's to Centigrade's deduct 32° and \div by 18° . To convert Centigrade's to Fahrenheit's, \div by 18 and plus 32° . To convert Fahrenheit's to Beamur's deduct 32° \div by 4, and \div by 9° . To convert Beamur's to Fahrenheit's \div by 9° , \div by 4° , and plus 32° .

A very little practice in these calculations will very soon perfect a person in this rule, and is undoubtedly correct. The value of the use of this instrument in mines cannot be too highly recommended in ascertaining the character and condition of the air by its temperatures.

Barometer.—Its name implies "air meter," by which the weight of the atmosphere is nicely measured. There are many patterns of barometers in use, but we only wish in this case to describe the Aneroid instrument, being the one used by the inspectors of mines. The Aneroid instrument ranges in size from 2 to 6 inches in diameter, and registers by an index on its watch-like disk the different changes in the atmosphere from stormy, much rain, rain, change, fair, set fair, to very dry weather. The sweep of the disk is graduated in inches, from 1 to 31 inches; each inch is graduated into 10,000 parts. The atmospheric pressure upon every square inch of our globe at the sea level is ascertained to be 14.72 lbs., when the barometer indicates 30 inches, and the temperature found by the thermometer to be 60° Fahrenheit, 100 cubic inches of air weighs $30\frac{8}{10000}$ grains avoirdupois, while 100 cubic inches of water would only weigh $25\frac{1}{4}$ grains. Air of this density is taken as a standard of density, or the zero of its weight, but under contrary conditions it weighs heavier when it indicate 31 inches to 15 pounds per square inch, and this weight is adopted; but when the instrument indicates 28 inches the weight per square inch is not so great as will be observed by a table hereto annexed.

The air grows more lighter as we ascend above sea level, and heavier as we descend below sea level.

The use of a barometer in coal mines, in connection with the thermometer, is for the purpose of detecting gases. First—These instruments are used at the head of the slopes or shafts to ascertain the temperature of the outside atmosphere by the thermometer, and its weight or gravity by the barometer. The operator makes note of these conditions, enters the mine and approaches the district which he desires to examine. Here he examines both these instruments and makes note also; then, by the indication on the thermometer, he sees the temperature of the mine is many degrees higher than it was found outside. It determines the condition of the air to be warmer, and consequently expansive in the proportion as shown by the table. Then should the barometer fall below its outside indication, or stand at its original point, notwithstanding the depth of the shaft, it at once indicates the rarity of the air in the mine to be so much lighter, showing that if the mine air was pure and at such a depth, it ought to indicate heavier. But when such is not the case, it determines the fact that under such condition the air is diluted with fire-damp gas, which causes it to become rarified and lighter, so that the person using the instruments observes the changes instantly, and declares the true character of the air, and by reference to the table may determine its true condition. He then uses his safety lamp to make the necessary examination of the locality, and should he find its ventilation defective he would at once direct a remedy for security. He would then use his anemometer to ascertain the quantum of air supplied, and if not found satisfactory he would still direct the necessary increase in the volume of air, sufficient for the removal of the noxious element, so as to make it safe. He would still continue his explorations of the other districts of the mine in like manner, making the necessary tests and keeping his notes of the same until the conclusive evidence

of the safe condition of the mine had been determined. Copies of these notes should be transcribed upon the inspectors journal, and a like copy upon a journal to be kept at the mine.

TABLE.—CONDITION OF AIR BY ITS VELOCITY, HEAT AND DENSITY.

Velocity in miles per hour.....	Velocity in feet per minute.....	Pounds per square foot, in proportion to its velocity	Air—its degrees of heat or rarity	Grains weight in a cubic foot at these temperatures	Expansion of heated air as per volume.....
		<i>lbs. ozs. drs.</i>			
1 mile,	88	0 0 1¼	32	559	100 bulks
2 miles,	176	0 0 5	42	539	102 “
3 “	264	0 0 11	52	529	104 “
4 “	352	0 1 4½	62	518	106 “
5 “	440	0 1 15½	72	506	109 “
6 “	528	0 2 14	82	495	111 “
7 “	616	0 3 15	92	487	113 “
8 “	704	0 5 1	102	479	115 “
9 “	792	0 6 7½	112	470	117 “
10 “	880	0 7 14	122	461	119 “
11 “	968	0 9 9	132	453	121 “
12 “	1,056	0 11 8	142	446	123 “
20 “	1,760	2 0 0	222	380	140 “

The preceding table will exhibit to the reader the velocity of the air in feet per mile and minute, its actual pressure upon a superficial square foot, and the degrees of heat or rarity; its weight in grains per cubic foot, and its expansive force as per the degrees of heat attained; thus, on 8 grains weight; and 2 cubic feet for each 10 degrees of increase heat in the temperature. This table will enable the experimenter to calculate the changes of the air to a nicety.

Hygrometer.—Is an instrument which determines the quantum of vapor suspended in the air. The *wet bulb preferred*, and consists of two thermometers fixed upon a graduated plate, one of these bulbs is covered with linnen cloth, which is submerged in water. The evaporation of the water from the wet bulb reduces the temperature of the wet thermometer to which it is attached in proportion to the draught of air, and consequent rapidity of evaporation.

The other thermometer indicates the actual temperature; the difference being noted, a mathematical formula enables the experimenter to determine the dew drops in the air, or the amount of condensed vapor floating or absorbed in the air. And the number of degrees in the difference of the temperatures indicates the actual dryness of the air. The amount of vapor in the air influences the barometer, and it is necessary to make a correction for the tension of the vapor in the air.

When the atmosphere is highly charged with vapor it deposits dew upon any surface colder than itself. For instance, when a warm humid morning succeeds a cold night we can perceive every object covered with dew; this occurs in consequence of the radiation from the earth reducing the temperature below the “dew point.”

Clinometer.—This instrument is used in ascertaining the dip of slopes and incline planes, and is usually made of wood, in form of a carpenter’s rule, having a metallic graduated quadrant attached to the lower limb, the bubble tube is attached to the movable limb by a screw near each end, and

the head of one of the screws conceals the slot in the bar, which admits a slight vertical movement to the screw when loose, and with it to that end of the tube. Therefore, in order to adjust the bubble this screw is first loosened a little and then moved up or down a trifle, as may be required, and then tightened.

A strait edged bar is laid on the incline plane upon which is laid the Clinometer, and the bubble limb of the instrument is moved to a horizontal position until the bubble rests precisely at the centre of the tube, the upper edge of the tube limb will bisect the degree on the metallic quadrant corresponding to the degree of dip or slope of the incline plane.

These instruments are found very convenient; and may be carried in the pocket without any inconvenience. They accurately measure any angle of dip corresponding to the degrees on the quadrant, and are very useful for mine managers, being convenient, portable and accurate.

Numerous illustrations of the utter recklessness with which men will expose themselves to terrible dangers, although acknowledged imminent, are familiar, invisible and temporary doubtful, both in connection with land and maritime steam boilers. In Great Britain the "Mine Regulation Act," under the head of "General Rules," states: "Every steam boiler shall be provided with a proper steam gauge to show, respectively, the pressure of steam and the height of water in the boiler, and also with a proper safety valve."

MAPS OF COLLIERIES IN 1873.

A list of maps of collieries, furnished by operators and land owners to inspectors of mines, prepared by competent engineers, fully detailing the workings of the several coal mines, is now on record in this office, January 1, A. D. 1874.

POTTSVILLE DISTRICT MAPS.

1. Beechwood.....	1 slope.	23. Feeder dam.....	1 slope.
2. Norwegian.....	1 "	24. Ravendale.....	1 "
3. Oak Hill.....	2 slopes.	25. Pine Forest.....	1 shaft.
4. Duncan.....	1 slope.	26. Kentucky.....	1 slope.
5. Kear.....	3 slopes.	27. Peach Mountain.....	1 "
6. E. and West Pine Knot.....	2 "	28. Swift Creek.....	1 "
7. Thomaston, shaft and slope.		29. New Kirk.....	1 "
8. Heckscherville..	1 shaft and 1 slope.	30. Wabash.....	1 "
9. Richardson.....	1 " " 1 "	31. Rewesdale.....	1 "
10. Glendower.....	1 slope.	32. Tamaqua.....	1 shaft.
11. Taylorville.....	1 "	33. Greenwood.....	1 slope.
12. Monteray.....	1 "	34. Bull Run.....	1 "
13. Diamond, Wolf Creek.....	2 slopes.	35. Coal Dale.....	1 "
14. Kear, Wolf Creek.....	1 slope.	36. Commercial.....	3 slopes.
15. Forestville.....	1 "	37. Ledger Vein.....	1 slope.
16. Diamond, Wolf Creek.....	1 "	38. Silver Creek.....	1 "
17. Phenix, Nos. 1 and 2.....	2 slopes.	39. Glentworth.....	1 "
18. Phenix, No. 3.....	1 slope.	40. Eagle Hill.....	1 slope and 1 shaft.
19. Eagle.....	1 "	41. Live Oak.....	1 slope.
20. Hickory.....	1 shaft.	42. York Farm.....	1 "
21. Manchester.....	2 slopes.	43. Delaware, New.....	2 slopes.
22. Monitor.....	1 slope.		

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ASHLAND DISTRICT MAPS IN 1873.

1. Keystone.....	2 slopes.	25. Wm. Penn.....	1 shaft.
2. Locust Dale.....	1 slope.	26. Ellen Gowan ...	1 shaft and 6 drifts.
3. Cambrian.....	1 “	27. Girard.....	1 shaft and 1 slope.
4. Tunnel.....	1 “	28. Coal Ridge.....	1 “
5. Focht & Co.....	1 “	29. Silver Brook.....	1 shaft.
6. St. Nicholas.....	1 “	30. Honey Brook.....	4 slopes.
7. Suffolk.....	3 drifts.	31. Reno, Columbia county.....	1 slope.
8. Tunnel Ridge.....	1 slope.	32. Hoffman, Schuylkill co.....	1 “
9. Glendon.....	1 “	33. Colorado.....	2 drifts and 1 “
10. Oak Hollow.....	1 “	34. Preston, Nos. 1, 2, 3, 4.....	4 slopes.
11. Copley.....	1 “	35. Lost Creek.....	1 slope.
12. Bear Run.....	1 “	36. Knickerbocker.....	1 “
13. Primrose.....	1 “	37. Thomas.....	1 “
14. Silliman.....	1 “	38. Girard Mammoth.....	2 drifts.
15. Bear Ridgg.....	1 “	39. Lehigh, No. 3.....	1 slope.
16. Turkey Run.....	1 shaft.	40. Big Mine Run.....	1 “
17. Gilberton.....	1 slope.	41. Focht & Althouse.....	1 “
18. Cuyler.....	1 drift.	42. Girardsville ...	6 drifts and 1 “
19. Shenandoah City.....	1 slope.	43. Hazle Dell.....	1 “
20. Shenandoah, West.....	1 “	44. Continental.....	1 “
21. Plank Ridge....	1 shaft and 1 “	45. Centralia.....	1 “
22. Grant.....	2 drifts.	46. Union, No. 1....	2 drifts and 1 “
23. M'Neal.....	2 slopes.	47. Union, No. 2.....	1 drift.
24. Barry.....	1 slope.		

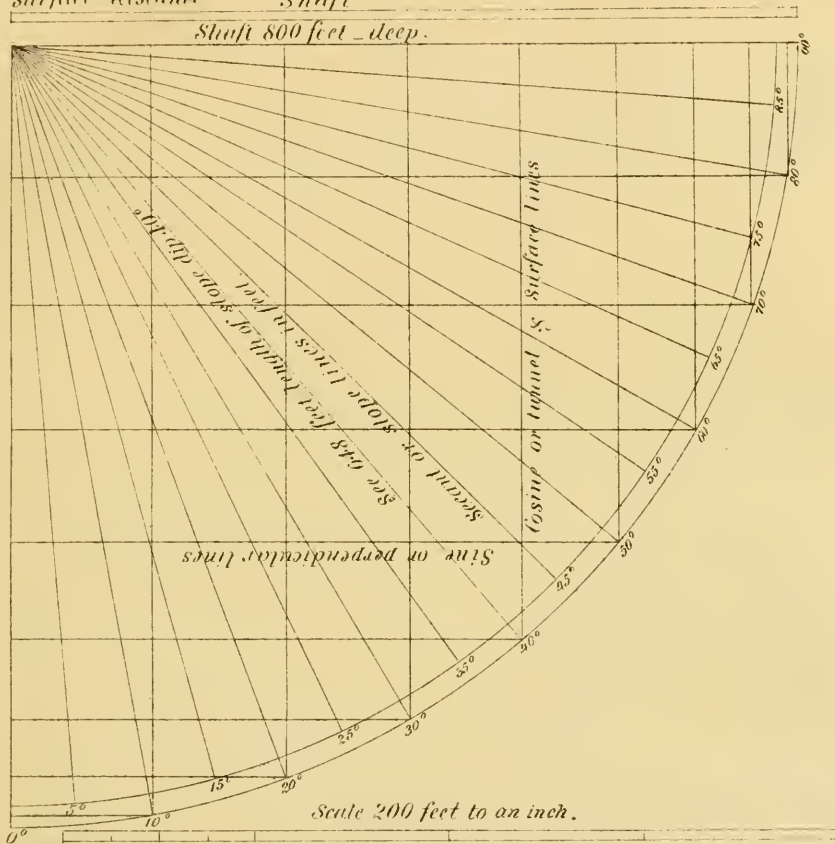
SIAMOKIN DISTRICT MAPS IN 1873.

1. Short Mountain.....	1 slope.	19. Kalmia.....	1 drift.
2. Big Lick.....	1 “	20. Phoenix, Nos. 2 and 3.....	2 slopes.
3. Williamstown.....	1 “	21. Upper Rauch Creek.....	1 slope.
4. Stewartsville.....	1 “	22. Lower Rauch Creek.....	2 slopes.
5. Morton.....	.....	23. Reliance.....	1 slope.
6. Cameron.....	.....	24. Enterprise.....	1 “
7. Hickory Swamp.....	.....	25. Locust Spring.....	1 “
8. Hickory Ridge.....	.....	26. Mariam.....	1 “
9. Burnside.....	.....	27. A. S. Wolf.....	1 “
10. Buck Ridge.....	.....	28. Otto's, Nos. 2 and 3.....	3 slopes.
11. Henry Clay.....	.....	29. Colket.....	1 slope.
12. Bear Valley.....	.....	30. West End.....	1 drift.
13. George Fales.....	.....	31. Eureka.....	1 “
14. Trevorton.....	.....	32. Brookside.....	1 slope.
15. Daniel Webster.....	.....	33. Tower City.....	1 “
16. Big Mountain.....	.....	34. Pyne.....	2 slopes.
17. Ben. Branklin.....	.....	35. Middle Creek, new.....	1 shaft.
18. Helfenstine.....	.....	36. Lincoln.....	1 drift.

One hundred and twenty-five maps of collieries, having the necessary extensions added as is required by law, are on file, and the same deposited in the safe of the Merchants' Exchange Bank, Pottsville, for safety. Most of these maps are very expensive and valuable, and their destruction by fire would be a source of great inconvenience and expense.

How to find the depth of Shafts, the length of Tunnels and surface distances upon any of the given degrees of dip of slopes on the following diagram.

Rule—Multiply the sine of the degree of dip of slope, by its length in feet for the required depth of shaft, and the cosine of the degree of dip of slope by the length of slope in feet for the required length of tunnel or surface distance



Deg.	Sines.	Cosines.	Deg.	Sines	Cosines	Deg.	Sines	Cosines.
5°	08716	99619	35°	57358	81915	65°	90631	42262
10°	17365	98481	40°	64279	76604	70°	93469	34202
15°	25882	96593	45°	70710	70710	75°	96593	25582
20°	34202	93969	50°	76604	64279	80°	98481	17365
25°	42262	90631	55°	81915	57358	85°	99619	08716
30°	50000	86603	60°	86603	50000	90°	10000	00000

Thus . 40° = 64279 × 648 feet Length of slope = 416.49552 or depth of shaft line and Cosine 40° 76604 × 648 feet Length of slope = 496.39322 ft. tunnel or Surface line showing a Slope 648 feet long on a 40° dip gives a Shaft line of 416½ feet and a tunnel or Surface line of 496½ feet.

The required distances may be readily found by applying the edge of a graduated ruler to any of the given lines in the diagram. —

REPORT

OF THE

INSPECTOR OF MINES OF POTTSVILLE DISTRICT, COMPRISING ALL THE COLLIERIES LYING EAST OF THE WEST BRANCH OF THE SCHUYLKILL RIVER AND SOUTH OF THE BROAD MOUNTAIN, IN SCHUYLKILL COUNTY, FOR THE YEAR 1873.

His Excellency, JOHN F. HARTRANFT,
Governor of the Commonwealth of Pennsylvania :

SIR:—In compliance with the requirements of an act of General Assembly, approved the 3d day of December, A. D. 1870, entitled "An Act providing for the health and safety of persons employed in coal mines," etc., I have the honor to herewith submit my annual report for the year 1873, of all collieries in my district, respectively. I do respectfully refer your Excellency to the subjects herein reported in detail, viz :

To statements of the general condition and character of the mines ; the system of ventilation and drainage of the same ; the number and character of the casualties that occurred during the year ; the number of steam engines, boilers and fans in operation ; the name, number and thickness of the coal seams worked ; the temperature and pressure of the air circulating in the different mines compared with its outside condition, and the quantity of air supplied by the system of ventilation adopted in each. All casualties are classified in tabulated forms, showing their extent and character, and those of them that resulted in death, etc.

Collieries are numbered in the order of their inspection and descriptive statements of their condition given in detail. Injunctions have been obtained against two collieries restraining their operation in contravention of law. Proceedings had been taken against persons violating the law in riding into and out of mines that are by law prohibited to do so.

In general, ventilation and safety roads are receiving especial attention. I am pleased to say the collieries of the district, by a large majority, are in good condition ; but I do regret it to be my painful duty to inform your Excellency that the casualties that resulted in death exceed those of last year by twelve, (12,) and the injuries are forty-eight, (48,) all of which appear to be purely accidental and chiefly the result of carelessness and of undue haste.

The decrease in the number of active collieries in the district this year is considerable ; but no new ones had been opened, therefore the tonnage will not be as large as that of 1872. The adoption of steam fan ventilation in most all these collieries will radically remove a number of grievances that heretofore had been truthfully complained of, and their future prospects are encouraging.

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Hoping our duties have been properly discharged in the interest of law and safety of men,

I have the honor to be

Your Excellency's obedient servant,

FRANK SCHMELTZER,

Inspector.

POTTSVILLE DISTRICT CASUALTIES IN 1873.

Names of persons who were killed, and names of the collieries where the accidents occurred.

DATE.	NAMES OF THE KILLED.	NAMES OF COLLIERIES.	Wife.....	Children....	REMARKS.
Jan. 22.	John Helm.....	Beechwood.....	1	6	Died; injured; rope broke with two loaded cars.
28.	William Dudley.....	St. Clair shaft.....	1	2	Killed; burned by an explosion of gas.
31.	John Munday.....	New Kirk.....	1		Died; run over by a dirt wagon.
Feb. 3.	William Stahl.....	East Mine shaft.....			Killed; fell 210 feet in the shaft.
11.	William Seymore.....	Monitor.....			Killed; crushed by a fall of coal.
March 1.	Walter Neill.....	Beechwood.....	1	5	Killed; crushed by a fall of rocks.
April 21.	Dornnek Gavin.....	East Mine shaft.....	1	1	Killed; fell off platform into shaft.
29.	James Brocius.....	New Kirk.....	1	2	Killed by an explosion of fire-damp.
May 9.	William Brannan.....	Kears Mines.....	1		Killed by being crushed by slope timbers.
12.	Michael E. Keltry.....	Coaldale.....			Killed; drawn into the pulley by the slope rope.
22.	Miss Kate Brannan.....	Glen Carbon.....	1	8	Killed; fell in while passing an open breast.
June 7.	William Umberhower.....	Monitor.....			Killed; fell into the rollers while working.
8.	Thomas Derrick.....	Glendower.....			Died; injured by a fall of coal.
9.	Josiah Orme.....	Hickory Slope.....			Died; head fractured by a fall of coal.
16.	Edward Sweeney.....	East Pine Knot.....			Killed in the counter screens.
21.	William Durkin.....	Beechwood.....			Killed by an explosion of gas.
26.	Lewis Schultz.....	Anchor.....			Died; injured by a fall of coal.
Aug. 4.	Hugh Doolan.....	East Mine shaft.....	1		Killed; crushed between hopper and chute.
15.	George Greathhead.....	Monitor.....	1	3	Died; injured by an explosion of gas.
18.	Patrick Brannan.....	St. Clair shaft.....	1		Killed by a fall of coal.
20.	Phillip Krell.....	Alaska.....			Died; burned by an explosion of gas.
26.	Phillip Neisley.....	Raven Dale.....			Died; injured by a fall of coal.
29.	Thomas Coyle.....	Eagle Hill.....	1	15	Died; injured by a fall of coal.
7.	Walter Fitzsimmons.....	Eagle Hill.....	1		Killed by an explosion of gas.
30.	John Shields.....	Anchor.....	1	5	Died; burned by an explosion of gas.
Sept. 27.	William Steen.....	New Philadelphia.....			Killed by a fall of coal.
Oct. 29.	Richard Holman.....	Minersville.....	1	2	Killed by falling into the shaft.
Nov. 10.	Peter Egan.....	Beechwood.....			Died in ascending his slope.
30.	Thomas Heston.....	Anchor.....	1	7	Killed in the dirt chute—fall of dirt. Died; injured by the breaking of slope chain.

POTTSVILLE, OR FIRST, DISTRICT.

Names of persons who were maimed and injured in the year ending December 31, A. D. 1873 :

DATE.	NAMES.	COLLIERIES.	REMARKS.
Jan. 28.	William Bergen.....	East Pine Knot.....	Burned by an explosion of gas.
28.	Patrick M'Donnell.....	do.....	Foot crushed by a fall of coal.
Feb. 25.	Robert Evans.....	Glen Carbon.....	Eye destroyed by lump of coal.
March 13.	Thomas Maguire.....	Anchor.....	Burned by an explosion of gas.
13.	M. Horan.....	do.....	Burned by an explosion of gas.
14.	William Hughes.....	Tunnel, No. S.....	Head injured by a lump of coal.
14.	J. Branau Rush.....	Glen Carbon.....	Severely burned by fire-damp.
14.	John Boyle.....	do.....	Severely burned by fire-damp.
14.	Patrick Ward.....	do.....	Severely burned by fire-damp.
14.	Gavin Holden.....	do.....	Severely injured by a fall of coal.
21.	Patrick Coogan.....	East Pine Knot.....	Severely burned by fire-damp.
27.	William Edwards.....	Raun's Dale.....	Severely burned by fire-damp.
27.	David Edwards.....	do.....	Severely hurt by fall of coal.
27.	Theodore Gender.....	Monitor.....	Severely hurt by falling off platform.
9.	George Hollywood.....	Slope 5, L. N. Co.....	Leg broken by a dirt wagon.
28.	Richard Winlack.....	Commercial.....	Dangerously burned by fire-damp.
28.	Patrick Collier.....	Oak Dale.....	Leg broken by a fall of coal—died.
29.	J. Bachus.....	New Kirk.....	Burned by fire-damp gas.
10.	Amasa Orme.....	Hickory Slope.....	Leg crushed by a fall of coal.
24.	Marin Reynolds.....	Glen Carbon.....	Mortally burned by fire-damp—died.
3.	William Ryan.....	Greenwood.....	Severely burned by fire-damp.
4.	Thomas Derrick.....	Glendower.....	Severely burned by fire-damp.
4.	James Edwards.....	do.....	Hand crushed by wagons.
4.	James Boy.....	do.....	Foot crushed by the screens.
5.	William Hughes.....	St. Clair Shaft.....	Severely crushed by a fall of coal.
6.	Edward Sweeney.....	East Pine Knot.....	Severely crushed by a fall of coal.
10.	John Boyle.....	Oak Dale.....	Eyes injured, kicked by a mule.
10.	John Phillips.....	do.....	Legs broken by a fall of rocks.
20.	James Lander.....	Beechwood.....	Eyes destroyed by a lump of coal.
20.	John Roach.....	East Mine Shaft.....	Burned by an explosion of gas.
27.	Patrick Shields.....	Eagle Hill.....	Severely injured by a fall of coal.
30.	Daniel Campbell.....	Taylorville.....	Head severely injured by a blast.
30.	Lewis Jones.....	Oak Dale.....	Severely injured by a fall of coal.
30.	George Radford, Sr.....	Hickory Shaft.....	Head severely injured by a blast.
30.	George Radford, Jr.....	do.....	Severely burned by a blast.

Month	Name	Location	Accident Description	
July	14.	Charles M'Connellough.	St. Clair Shaft	
	17.	George Jones.	Anchor.	
	18.	William Durkin	Beechwood	
	25.	John Witrell	Greenwood	
	Aug.	1.	John Cummings	Hickory Shaft.
		1.	Percival Bottz.	do
		4.	M. O'Donnell.	E. Mine Shaft
		4.	James M'Glaughlin	do
		4.	A helper	do
		9.	Martin Bush	Anchor
9.		M. Burns	do	
9.		John Haughney	Glen Carboon	
15.		Patrick Brannan	St. Clair Shaft	
15.		James Hargraves.	do	
15.	John Hogan.	do		
15.	A small boy	do		
18.	Clementine Gregory.	Beechwood		
18.	James Adams	do		
18.	Philip Krell.	Alaska		
21.	Edward Owens	Kear.		
22.	Phillip Neisley	Raven Dale		
22.	William Shertle	Billy Best		
25.	Thomas Pierce	Greenwood		
28.	Thomas Walsh.	Beechwood		
29.	Phillip Miller	Middleport.		
29.	Thomas Jinnisy	do		
29.	Two others	do		
29.	Walter Fitzsimmons	Eagle Hill.		
30.	David Hopkins.	Pine Forest.		
30.	Evan J. Thomas.	do		
Sept.	11.	Edward Mulhall	Oak Dale	
	17.	Edward Annyl	do	
	17.	Dan Williams.	do	
	17.	John Davis.	Anchor	
	17.	M. M'Geo.	Glen Carboon	
	20.	Elijah Hale	Hickory Shaft.	
	20.	Henry Giles	do	
	20.	James Lyttle	do	
	20.	A miner	do	
	30.	George Clemens	Kear.	
30.	David Hammer	do		
22.	Edw. Kelly.	do		
22.	John Conly	New Kirk		
27.	Martin Gibbin.	Hickory Shaft.		
Oct.			Leg crushed, run over by a wagon.	
			Thigh broken by a fall of coal.	
			Mortally injured by a blast.	
			Head and arm injured by a fall of coal.	
			Head and hands injured in the drum, fixing shedders.	
			Injured by a blast of dualin while drilling a missed hole.	
			Injured by a blast of dualin while drilling a missed hole.	
			Severely burned by fire-damp.	
			Severely burned by fire-damp.	
			Severely burned by powder.	
		Head shockingly burned by fire-damp—died.		
		Severely burned by fire-damp.		
		Severely burned by fire-damp.		
		Severely burned by fire-damp.		
		Mortally injured by a fall of coal—died.		
		Severely crushed by wagons.		
		Mortally injured by fall of coal—died.		
		Severely injured by a blast.		
		Severely injured in the mine.		
		Badly burned by fire-damp.		
		Leg broken, fell in breaker machinery.		
		Hand shattered in said machinery.		
		Severely injured by same.		
		Mortally burned by fire-damp—died.		
		Severely burned by fire-damp.		
		Severely burned by fire-damp.		
		Leg broken by a fall of coal.		
		Severely burned by an explosion of gas.		
		Severely burned by an explosion of gas.		
		Arm broken, run over by wagons.		
		Arm broken by a fall of coal.		
		Severely burned by fire-damp.		
		Arm cut off and a leg broken by wagons.		
		Severely burned by fire-damp.		
		Foot crushed, rolled over by a log.		
		Lost an only eye, struck by a pick.		
		Severely injured by a fall of coal.		
		Thigh broken by a blast.		
		Severely burned by fire-damp.		

POTTSVILLE, OF FIRST DISTRICT—CONTINUED.

DATE.	NAMES.	COLLIERIES.	REMARKS.
Oct.	James O'Donnell.....	Buckville.....	Shoulder broken by a fall of coal.
31.	Patrick Doolan.....	Beechwood.....	Severely burned by fire-damp.
31.	James Doolan.....	Beechwood.....	Severely burned by fire-damp.
31.	Patrick Green.....	Kear.....	Lost an eye by a fall of coal.
31.	Stephen Davis.....	Kear.....	Head and breast injured by a fall of coal.
Nov.	Frank Sheaffer.....	Live Oak.....	Severely burned by fire-damp.
4.	Thomas Jones.....	Kear.....	Fingers mashed by a wagon door.
4.	J. Henderson.....	Anchor.....	Legs broken by a fall of coal.
6.	Thomas Rhoades.....	Forestville.....	Arm fractured by a wagon.
6.	William Mullen, boy.....	Live Oak.....	Leg crushed by a wagon.
6.	John Hughes.....	Live Oak.....	Head badly cut by a fall of coal.
12.	Andy Duffly.....	St. Clair shaft.....	Badly scalded by steam.
20.	Patrick Fulton.....	Kear.....	Nose injured by a stroke of a drill.
22.	Thomas Flanagan.....	New Philadelphia.....	Arms broken; eyes lost by fire-damp.
22.	Wm. Stephens.....	Kear.....	Severely burned by fire-damp.
22.	Thomas O'Neel.....	Kear.....	Severely burned by fire-damp.
27.	M. Comus.....	Pine Forest.....	Severely burned by fire-damp.
27.	Edw. Evans.....	Pine Forest.....	Severely injured by a fall of coal.
30.	Thomas Morris.....	Anchor.....	} Mortally injured; rope broke, precipitating these three men } to the bottom of the slope—died.
30.	George Reddow.....	Anchor.....	
30.	Stephen Jones.....	Anchor.....	} Mortally injured; rope broke, precipitating these three men } to the bottom of the slope—died.
9.	Benj. Williams.....	Kear.....	
10.	Patrick Larkin.....	Beechwood.....	Arm amputated—crushed by wagons.
15.	Chas. Sheater.....	Live Oak.....	Ankle sprained by fall of coal.
19.	Richard M'Hale.....	Live Oak.....	Leg broken by a fall of coal.
21.	John Leary.....	Eagle, No. 1.....	Thigh broken by a fall of coal.
22.	John Leary.....	Kear.....	Severely burned by fire-damp.
24.	John Morgan.....	Forestville.....	Severely burned by powder.

One hundred and six persons were maimed and injured, and nine others received slight injuries—making a total of one hundred and fifteen casualties in and about the mines of the district during the year ending December 31, A. D. 1873.

NUMBER AND NAMES OF COLLIERIES *in the First, or Pottsville, district in 1873, Frank Schmeltzer, Inspector :*

No.	A.	22. Glentworth.	P.
14.	Alaska.	38. Greenwood.	2. Phoenix, No. 3.
	B.	H.	3. Phoenix, No. 4.
25.	Buckville.	1. Heckschersville.	32. Peach Mountain.
33.	Bull Run.	31. Hickory shaft.	10. Pine Forest.
34.	Beechwood.	K.	R.
	C.	13. Kear slope.	23. Ravendale.
6.	Cedar Hill.	27. Kentucky.	24. Richardson.
11.	Coaldale.	L.	S.
	D.	4. Live Oak.	30. St. Clair shaft.
21.	Diamond.	18. Lambert.	26. St. Clair.
	E.	M.	39. Sharp Mountain.
9.	Eagle.	8. Monitor.	T.
17.	Eagle Hill.	36. Manchester.	15. Tamaqua shaft.
19.	East Mammoth.	37. Mammoth Vein.	16. Taylorville.
20.	East Pine Knot.	43. Mine Hill.	41. Tracy Little.
7.	Ellsworth's.	46. Middleport.	35. Thomaston.
	F.	N.	Y.
23.	Forestville.	5. New York.	40. Yorkville.
	G.	42. North America.	44. York colliery.
29.	Glendower.	O.	45. York farm.
		12. Oakdale.	

FIRST DISTRICT—POTTSVILLE, 1873.

FRANK SCHMELTZER, *Inspector.*

All the collieries in this district are located south of the Broad Mountain and east of the West Branch of the Schuylkill river, in Schuylkill county, as follows, to wit :

No. 1.—ANCHOR.—*John Wadlinger, Operator.*

The colliery is situated in Heckscherville, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a double track slope, sunk in two lifts, 300 yards deep under water level on the south dip of the Crosby coal seam, on a 60° dip, 45 yards of a tunnel driven south, opens the Church seam. 350 yards west of this tunnel the mining is in faulty coal. In the east panel, which is 460 yards long in 12 feet of good coal, 17 hands are here employed. 119 yards east of the hoisting slope 71 yards of a tunnel opens the Daniel seam, from the Crosby gangway, with two working panels east and west. The eastern panel is 460 yards long with 8 breasts, working with 34 hands in coal 24 feet thick. The west panel is 370 yards long, with 6 breasts, working in 9 feet of coal, with 23 men working in it.

Slope No. 2 is sunk 200 yards deep on the south dip of the Leller seam, which slope will be used for drainage, and for a second outlet and traveling road. This slope will be continued 67 yards deeper, and will be 14 yards north of the Crosby and 57 south of the Daniel seams.

Ventilation is produced by the operation of a 40 horse-power fan, and is so practically connected with the workings in the different panels as to produce satisfactory results, though there is a large amount of carburetted hydrogen gas generated the system used to destroy it is ample.

Colliery Log—outside temperature, 42°; inside, 52°; barometer outside, 28₁₀₀³ths; inside average, 28₁₀₀⁸ths. 19,783 cubic feet of air per minute circulated in the Crosby tunnel. Condition of mines favorable. 108 hands working in the inside of the mines; outside hands working about the breaker; 40-horse power steam fan is in use; 6 engines are in use of 426-horse power; 20 steam boilers, all in good order and well conditioned; 14 mules working with 35 mine wagons; 2,400 yards of track in use in the colliery; 3 killed during the year just ended; 11 maimed.

No. 2.—PHENIX, No. 3.—*Lloyd & Glover, Operators.*

This colliery is situated at Phœnix Park, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a double track slope, sunk 197 yards deep, on a 25° south dip of the Big Diamond seam. Its eastern panel is only yet 18 yards long; 70 yards from this level a counter gangway will be open. The west panel is idle at present in 6 feet of coal.

Ventilation is produced at present by natural currents connected with Phœnix, No. 2, west, by means of air pipes into the old gangway, but will soon be superseded by a more thorough system as soon as the new connections are completed.

Hands employed inside and hands employed outside; 5 mules and 65 slope wagons are used; 5 engines are in use, 204-horse power; 10 new boilers are in use, all in good order; 1 new breaker has been erected; 1,600 yards of track are used; the operators are practical men.

No. 3.—PHENIX, No. 4.—*James O. Maley, Operator for the Philadelphia and Reading Coal and Iron Company.*

This colliery is a small one; situated at Phœnix Park, on the estate of the Philadelphia and Reading Coal and Iron Company, and consists of a small slope sunk on a 70° north dip of the Peach Mountain seam in 8 feet of coal, (*Red Ash.*) The character of the work is good and safe. It may be classed amongst *local collieries* or *land sale*.

Ten men are employed in the colliery; 15-horse hoisting engine and 10-horse pumping engine; 2 steam boilers in use, and appear good.

No. 4.—LIVE OAK.—*William Murry, Operator.*

This colliery is situated at Mine Hill Gap, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a double

track slope sunk in 2 lifts, 286 yards deep, on 25° south dip of the E vein; its lower west panel is 100 yards long, while its eastern panel is 850 yards long. Three breasts and skeps are working; in the west slant gangway the coal is 30 feet thick; the condition of the mine is fair.

Ventilation is produced by the action of a fan, the slope being used as a down-cast; the gangway is used as an intake and traverses the mine, returning to the upcast at the fan.

Colliery Log.—Temperature outside, 44°; temperature inside, 72°; difference, 28° favorable. Barometer outside indicated $29\frac{2}{10}$; barometer inside, $29\frac{1}{2}$ inches; $\frac{3}{10}$ favorable. 18,630 cubic feet of air in circulation per minute.

Eighty-five hands employed in the colliery; 7 mules and 40 wagons in use; 4 engines are in use, 200-horse power; 8 steam boilers, all of which are in good order; 1,600 yards of track are in use.

Remarks.—Seven visits have been made to the colliery. The drums are not properly secured; operation had been partly suspended most part of the year.

No. 5.—NEW KIRK.—*Messrs. Fry & Shoemaker, Operators.*

This colliery is situated at New Kirk, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a double track slope, sunk 210 yards deep on a 43° south dip of the F seam, with east and west gangways opened. The east gangway is 350 yards long, working 7 breasts and other extensions; 40 yards of a tunnel from this panel opens the Grager seam. By this tunnel communication will be opened with both slopes; that on the Grager seam will be used for drainage, men and material; 41 hands are employed in this panel; 329 yards of a west gangway is driven with 7 breasts working, etc., and 30 hands employed in it; 100 yards west of the slope a tunnel is in course of driving to the E seam, north of F, employing 20 men in it.

Ventilation.—A 20-horse power fan ventilates these panel workings, and apparently to satisfaction.

Colliery Log.—Outside temperature, 58°; inside temperature, 64°; difference, 6°; outside barometer, $29\frac{3}{10}$ ths; inside barometer, $29\frac{1}{2}$ inches; difference, $\frac{2}{10}$ th inches.

Considerable amount of fire-damp is generated in this mine. 91 men are employed inside; 50 men are employed outside=141 hands; 9 steam engines are in operation=580-horse power; 25 steam boilers, all in good condition, are used; 3,000 yards of track are in use; 10 mules and 50 wagons are worked; 10 visits has been made to this colliery during the year.

No. 6.—CEDAR HILL.—*Philadelphia and Reading Coal and Iron Company, Operators and Landowners.*

The colliery is situated at Silver Creek. It consists of a double track slope, sunk 280 yards deep on a 30° south dip of the F seam. Four panels of work are opened in the slope, *i. e.* 2 panels on the F seam and 2 panels on the 7 feet seam, which has been opened by an 80 yard tunnel, 115 yards west of the slope in its lower lift. The 7 feet west panel is 400 yards long and still extending it. Its east panel is 500 yards long in 9 feet of coal. 167

feet deep of a shaft is sunk from the surface to the saddle of the 7 feet seam for an outlet. Work at present is chiefly confined to extension of gangways and repairs, &c.

Ventilation is produced by natural currents caused to circulate through the working places in separate spits, and traverses to the slope.

Colliery Log.—October 30, outside temperature, 68° ; inside temperature, 70° ; difference, 2° , favorable; outside barometer, $29\frac{2}{100}$ ths; inside barometer, $29\frac{1}{2}$ inches; difference, $\frac{1}{10}$ ths favorable.

Forty-three hands are employed in the colliery; 6 steam engines are in active service=730-horse power; 2 pumps, one a 16 inch and one a 6 inch steam pump; 14 steam boilers, whose condition has not been reported; 10 mules and 31 wagons are worked.

Remarks.—The breaker had been destroyed about a year ago in consequence of which shipments and general mining were suspended, and probably will not be resumed until spring.

No. 7.—ELLSWORTH.—*John R. Davis, Operator.*

The colliery is situated west of New Castle, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a single track slope, sunk 60 yards deep on the escarpment of the E seam, on its northern dip. Its gangway is opened 250 yards, with 5 breasts, working in 60 feet of coal, and another gangway is opening south of the 7 feet seam, all of which workings are in good safe condition.

Ventilation is here produced by action of the natural air currents traversing the working places, and chiefly governed by the action of the atmosphere. Powder smoke is a troublesome agent in the mine.

Colliery Log.—October 22, outside temperature, $-^{\circ}$; inside temperature, $-^{\circ}$; difference, $-^{\circ}$; outside barometer, —; inside barometer, —; difference, —.

Thirty-two hands are employed in and about the colliery; 2 steam engines are in operation=45-horse power; 4 steam boilers (good) are in use.

No map of the colliery had as yet been furnished. 600 yards of track has been laid. This place has only recently been opened, and bids fair to become a remunerative colliery in a short time. Mr. Davis being a practical man in mining and mine management.

No. 8.—MONITOR.—*William Dennings, Operator.*

The colliery is situated a short way west of Wadesville, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a double track slope, sunk 110 yards deep on a 23° south dip of the F or Primrose seam. 900 yards of a western panel has been opened, with 9 breasts working in 8 feet of good coal. 100 yards of an east gangway is opened, and 2 breasts working in 12 feet of good coal. The mines are poorly ventilated. Powder smoke prevails to a troublesome extent.

Ventilation is effected chiefly by the action of a 6 horse-power fan, which in fact has but very little effect.

Colliery Log.—November 8, outside temperature, 54° ; inside temperature, 64° ; difference, 10° unfavorable. Outside barometer, $29\frac{3-100}{100}$ ths; inside temperature, 29 inches; difference, $\frac{3}{10}$ ths unfavorable, showing the presence of a mixture of fire-damp in the air current, which had, in fact, no current at all.

Fifty-two hands employed in and about the colliery; 8 mules and 20 wagons are worked in the mine; 3 steam engines are in operation=86 horse-power; 5 steam boilers; condition not reported; 2,800 yards of track are in use; 7 visits have been made during the year; 3 different firms operated the colliery during the year; no legal break has as yet been put on the drum; drum; the condition of the gangway is dangerous; 10 visits of inspection made during the year.

No. 9.—EAGLE.—*George W. John, Operator.*

The colliery is situated in St. Clair, on the estate of the Pennsylvania and Reading Coal and Iron Company, and has been in successful operation some 29 years, in the proprietorship of the Messrs. John & Sons. It consists of 2 slopes, one on the E seam and one on the D seam and drifts. There are 2 drifts on the Skidmore or D seam. The lower drift gangway is 400 yards long, and has 10 breasts working in 10 feet of coal. The upper drift is 300 yards long, with 6 breasts working.

The D seam slope is 65 yards deep under the drift water level, and 100 yards inside of its mouth. On a 20° south dip 80 yards of gangway has been opened east and 70 yards west, and mining confined to extending the gangways. Two safe outlets are open on this division of the colliery. A locomotive is used here for haulage. The E seam slope gangways are idle, and mining confined to removing pillar coal.

Ventilation in the No. 2 drift and old slope is effected by the action of a 20 horse-power fan, while in the E seam working it is effected by natural currents, while No. 1 drift uses a furnace for that purposes, yet the connections are so systematically arranged that the mine is well ventilated; no gases of any sort are met with in these workings.

Colliery Log.—November 10, outside temperature, 42°; inside temperature, 54°; difference of 12°; outside barometer, 28 $\frac{3}{100}$ ths; inside barometer, 28 $\frac{9}{100}$ ths inches; difference, $\frac{1}{100}$ ths favorable.

One hundred and sixty-nine hands are employed in and about the colliery; 22 mules and 125 wagons are worked in the colliery; 6 steam engines are in service=260 horse-power; 12 steam boilers are in use, condition reported good; pumps are used for drainage; 1 steam 20 horse-power in operation; yards of track have been laid; no deaths; 1 injured during the year.

No. 10.—PINE FOREST SHAFT.—*Mr. George W. Snyder, Operator.*

The colliery is situated east of St. Clair, on the estate of the Pennsylvania and Reading Coal and Iron Company. It consists of a double cage way, sunk 100 yards deep on the 7 feet seam, on which the main gangway is opened in eastward, crosseuts from this gangway into the E seam in sections of 200 yards, and 800 yards east of the shaft a tunnel opens the D seam. 600 yards of a west panel is opened on D seam, with 8 breasts working in 6 feet of coal. 650 yards of a panel is opened on the east side, with 6 breasts working in 5 feet of coal. These breasts are supported by 7 yard pillars.

The E seam panel is 400 yards in from the tunnel, with 4 breasts working in 20 feet of coal. All these panels are worked systematically. The mine produces a large amount of fire-damp, yet the arrangements are so perfect and the regulations so well managed that very little danger need be apprehended, except from gross carelessness.

Ventilation is effected by the operation of a 25 horse-power fan. The air currents are conducted into the working places, and thence traverses the several localities and returns up and out the upcast to the fan.

Colliery Log.—November.—Outside temperature, 70° ; inside temperature, 66° ; difference, 4° favorable; outside barometer, $29\frac{4}{10}$ ths; inside barometer, $29\frac{7}{10}$ ths; difference, $\frac{3}{10}$ ths favorable.

Very slight mixtures of gas in the gangway air currents.

One hundred and ninety-four men and boys are employed in and about the mine; 22 mules and 70 wagons are worked; 7 steam engines are in use=855 horse-power; 29 steam boilers are in use and well conditioned; pumps in use for drainage; 1 fan of 25 horse-power; 12,055 yards of track are laid for use; 6 visits were made on official duty; 20,000 cubic feet of air supplied per minute.

I am pleased to say the officers in charge are competent and industrious and fully alive to the duties devolved upon them.

Charge.—Thomas Maguire and Son inside.

No. 11.—COAL DALE.—*Lehigh Coal and Navigation Company, Operators.*

This colliery is situated at Coaldale, on the estate of the Lehigh Coal and Navigation Company. It consists of 2 openings, one a tunnel and the other No. 5 slope, which is 189 yards deep on a 45° dip on the E seam. The slope is sunk in two lifts, and 2 gangways opened. No. 1 lift is driven to the boundary line, and mining confined to robbing out pillars; but 10 breasts are working; No. 2 lift has 12 breasts working.

The new lift has 2 gangways opened on it, each 150 yards long, with a breast in each in 79 feet of coal; 2 outlets for men to travel in are opened; 363 yards from the tunnel mouth or *entrance* the F seam is opened; its gangways are 780 yards long, with 10 breasts working in 7 feet of coal. The condition of the colliery and the character of the work done is favorable.

Ventilation is produced by natural currents, and atmospheric changes made to circulate through these panels and up into the first left gangway, thence to the surface by air holes, &c.

Colliery Log.—November 12.—Outside temperature, 45° ; inside temperature, 58° ; difference, 13° favorable; outside barometer, 29; inside barometer, $29\frac{3}{10}$ ths inches; difference, $\frac{3}{10}$ ths favorable; no fire-damp found in the gangway air currents; 281 hands employed; 41 mules and 166 wagons working in the mine; 7 steam engines in use=780 horse-power; 14 steam boilers; 2 pumps for drainage; 1 25 horse-power fan; 4,750 yards of track in use; 1 death and 2 injuries during the year; 5 visits of inspection to the mines, etc.

No. 12.—OAK DALE.—*Oak Dale Coal and Mining Company, Operators.*

The colliery is situated at Glen Carbon, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of two separate shaft openings. The deep shaft is 100 yards below water level, on the Church seam. From its gangway a tunnel opens the Daniel and Crossby seams. The gangways of the Church and Crossby seams are driven to the tract lines, and mining confined to pillar robbing, etc. The east Daniel gangway is 123 yards, with 7 breasts working in 6 feet of coal; its west gangway is 110 yards, with three breasts working in it, in nine feet of coal. These seams are worked on a 45° north dip.

The old shaft is 30 yards deep, and opens the Crossby and Daniel seams, and also the New seam, all of which are worked out. Tunnels open the New and Daniel seams on their south dip on a 40° dip. Ten breasts are worked in these seams. Fire-damp to some extent is generated in these seams.

Ventilation is produced by a 20 horse-power fan, put in circulation in proper spits, and ventilating the different panels as it passes out to the fan.

Colliery Log.—November 13, 158 hands inside and out; 22 mules and 80 wagons in active service; 6 steam engines in use=740 horse-power; 17 steam boilers in good condition; 2 pumps; 7,979 yards of tracks laid for use; no deaths and 6 injuries during the year; 5 official visits of examination, investigation and inquiry.

No. 13.—KEAR SLOPES.—*Philadelphia and Reading Coal and Iron Company, Operators.*

The colliery is situated north of the Mine Hill Gap, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of 3 slopes, sunk on the north dip of the E seam, 300 yards deep on their second lift on a 65° dip. No. 1 slope is exclusively used for coal. No. 2 slope is exclusively used for pumps, men and material. No. 3 slope is used for drainage and an out-cast air shaft; a tunnel opens the Lellar seam north lift, with 2 gangways working. West gangway in No. 2 lift is 550 yards, in 6 feet of coal.

East Lellar gangway is 560 yards in 2 feet of coal; second lift in east E gangway is 814 yards, with 7 breasts working; and its west E gangway is 615 yards, with 7 breasts working; east gangway 3c lift, 475 yards, in 20 feet of coal; west Lellar gangway in 3c lift is 605 yards, in 9 feet of coal, and used exclusively as an air course. Its east gangway in 3c lift is 540 yards, in 8 feet of coal, and used as an intake for the counter working.

Mining is chiefly confined to the run system until the boundary is reached, when back mining is resorted to, this secures the mines from crash or sits. Safety lamps exclusively used.

Ventilation is effected by the action of a fan. Nos. 1 and 2 slopes are intakes; the air is conducted in spits into each panel of the mine, and up into the working faces, thence back to the principal out-cast by the action of the fan. This mine generates a large amount of carburetted hydrogen gas—fire-damp. Without a thorough system of ventilation it would be utterly impossible to work the mine. The character of the work doing I consider safe.

Colliery Log.—November 15.—Outside temperature, 44° ; inside temperature, 65° ; difference, 21° fair; outside barometer, $28\frac{7}{10}$ ths, inside barometer, $29\frac{1}{10}$ ths inches; difference, $\frac{1}{10}$ ths fair; 34,000 cubic feet of air in circulation per minute.

Two hundred and twenty hands are employed on the premises; 8 steam engines, all in active use=215 horse-power; 2 steam bull pumps for drainage=1280 horse-power; 26 steam boilers, all reported in good order; 15 head of mules and 40 wagons in use; 1 mile of track in use in the colliery; 1 death and 11 injuries during the year; 7 visits of inspection made during the year.

No. 14.—ALASKA.—*General H. L. Cake, Operator.*

The colliery is situated north of the town of Tamaqua, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of two drift openings on the C and A seams. The C gangway is 1,100 yards, working 4 breasts, etc.; 24 hands engaged; the coal is 9 feet thick. The A drift is 1,200 yards, with two breasts, etc.; working in 8 to 20 feet of coal. These drifts are separated by 150 yards of rock strata. These gangways are expensive to keep in proper order.

Ventilation is produced by natural currents passing in and upwards to outcast air holes, the result of which is not favorable. We have already pointed out the defects and advised the remedies that would remove this condition of things.

One hundred hands are employed at the colliery; 2 steam engines in use, 50 horse power; 4 boilers, considered to be in good order; 19 mules and 50 wagons in active use; 3,000 yards of railroad track laid on the premises. One death and 2 injuries during the year. Four visits of inspection made.

 No. 15.—TAMAQUA SHAFT.—*Philadelphia and Reading Coal and Iron Company, Operators.*

The colliery is situated south of the town of Tamaqua, on the estate of said company. It consists of a shaft and drift opening. The shaft is 100 yards deep on the E seam, the seam dips north from 70° to 80° , the mining is all confined to the westward; 82 yards west of the shaft, in its level, a tunnel opens the D seam. The E seam is also opened by a tunnel 62 yards north, its gangway is 300 yards, and idle; 1,600 yards west of shaft 140 yards of a tunnel is driven to open the E and D seams on their south dips, on a 76° angle—700 yards of a gangway has been opened east from this tunnel, in 35 feet of coal, on the E seam. Drift south on the E seam is 180 yards. Mining had been discontinued in the colliery for some months while under general repair and prospecting for increased developments—which efforts have been successful.

Ventilation is produced by a fan. The system adopted is effective, and produces satisfactory results.

Colliery Log.—November 19.—Outside temperature, 42° ; inside temperature, 54° ; difference, 12° , fair; outside barometer, 29 inches; inside barometer, $29\frac{2}{100}$ inches; difference, $\frac{2}{100}$ fair; slight mixture of gas in the gangway; 8 hands are employed; 7 steam engines are in use—700 horse-power; 13 steam boilers are in use, and in good condition; 1 steam pump, 40 horse-power; 1 pole pump, 16 inch; 4 mules and 60 wagons engaged; 8,000 yards of track are laid in the colliery; 7 visits of inspection had been made. Robert Mackey in charge of the mines; no deaths and 1 injured.

 No. 16.—TAYLORVILLE SLOPE.—*Thomas Schollenberger, Operator.*

The colliery is situated at Taylorville, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of two double track slopes, sunk two lifts 380 yards deep on the south dip of the Daniel seam, on a 60° angle.

Four gangways are opened on the hoisting slope. Lower West gangway is 475 yards, working 7 breasts, &c.; the Lower East gangway is 315 yards,

working 5 breasts, &c.; East Counter gangway is 300 yards, working 8 breasts, &c.; West Counter gangway 300 yards, working 5 breasts, &c., in coal from 5 to 7 feet thick. Mining in these panels is a safe operation, and the system in use is a practical one.

Ventilation is effected by the action of a 40-horse power fan. The air is conducted from the slope to these panels through which it is caused to traverse on its outward course to the fan out-cast.

The single track slope is used exclusively for pump, and men and mining materials, and is made a safe egress and ingress traveling way. These slopes are only 20 yards apart.

Colliery Log.—One hundred and twenty-four hands employed inside and out; 10 mules and 20 wagons in use; 7 steam engines in use, and their capacity is 710-horse power; 12 steam boilers, condition not reported; 2,330 yards of railroad track in use; no deaths and no injuries during the year; 4 visits made this year. Outside temperature, 70° ; inside, 75° ; difference, 5° . Outside barometer, 29 inches; inside, 29 $\frac{3}{100}$ ths; difference, $\frac{3}{100}$ ths; 23,000 cubic feet of air in circulation per minute.

Richard Purcell in charge of the colliery.

No. 17.—EAGLE HILL.—*James C. Oliver, Operator.*

The colliery is situated at Eagle Hill, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a shaft and an inside slope. The shaft is 100 yards deep; 20 yards south, on the slope bottom, a tunnel opens the E seam—140 yards of a slope is sunk south of this tunnel on a 25° south dip to the E seam, which seam is here parted in two branches, and 4 gangways are opened on these branches; in the west the coal is 60 feet thick. Mining is chiefly confined to robbing pillars. A second slope is now in course of sinking, which is intended to be sunk 100 yards under the present lift, and from that level drive tunnels to other seams. The character of work doing is considered safe.

Twenty-horse power fan produces ventilation. Safety lamps are principally used, as a large amount of fire-damp is generated in these old panels and the air courses obstructed by debris, etc.

Colliery Log.—Outside temperature, 70° ; inside, 78° ; difference, 8° ; fair. Outside barometer, $29\frac{2}{100}$; inside, $29\frac{4}{100}$; difference, $\frac{2}{100}$; fair. One hundred and thirty-two hands employed; 7 mules in use and — wagons; 7 engines in use—330-horse power; 15 boilers, condition good; pumps; 7,000 yards of railroad track. Two deaths and two injuries. Eight visits of inspection made.

Shaft and slope engines, chains and tackle are in good order. John Heron in charge of the colliery.

No. 18.—LAMBERT.—*Thomas Bohannon & Co., Operators.*

This colliery is situated west of New Philadelphia, on the estate of Messrs. Swayne and Able, of Philadelphia. It consists of a double track slope, sunk 200 yards deep, on a 30° south dip, on the Palmer seam. Its west panel is 500 yards, and 10 breasts working, employing 33 hands. Its east panel is 500 yards, and 8 breasts are working with 29 hands.

Ventilation is produced by the action of a 10-horse power steam fan. The slope is used as a down-cast. The air is conducted into the different panels,

through the working places and out to the upcast. The ventilation and general condition of the mines are favorable.

Two engines in use; a 50-horse power hoisting engine; a 30-horse power breaker engine, and a 10-horse power fan=90-horse power, with 7 boilers that are reported to be in good condition. 100 hands are employed in and about the colliery; 6 mules and 30 wagons are in use; 4 visits of inspection had been made.

No. 19.—MAMMOTH VEIN SLOPE.—*William Williams, Operator.*

The colliery is situated at Silver Creek, on the estate of Messrs. Swayne & Able. It consists of a double track slope sunk 100 yards deep on a 30° south dip of the D seam, with 2 gangways opened. The west gangway is 100 yards long, and ends in a fault; the east gangway is 1,600 yards long, and all idle. A tunnel is driven 800 yards east of the slope from the gangway south 86 yards to the E seam, which here is found split in 14 feet of coal; an east gangway is opened 400 yards in the new seam, with 7 breasts working; its lower split is 12 feet thick. Mining in the lower seam is chiefly confined to robbing out pillars. The destruction of the breaker by fire suspended operation in the colliery for many months.

Ventilation is produced by a fan which supplies sufficient air for the working of the colliery.

One hundred and twelve hands are employed at the colliery; 5 steam engines are in use, with 15 boilers reported to be in good condition; persons are prohibited to ride in the slope; 12 mules and 60 wagons are working; I consider the colliery in good condition; 4 official visits have been made.

No. 20.—EAST PINE KNOT.—*Philadelphia and Reading Coal and Iron Company, Operators.*

The colliery is situated north-east of the Mine Hill Gap, on the estate of the said corporation. It consists of a double track slope sunk on a 65° south dip on the E seam, 228 yards deep. The west gangway has been driven to the tract line and finished; the east gangway is 1,400 yards long, with 5 breasts working in 25 feet of coal.

The Lellar and Crosby veins are opened by a tunnel; 300 yards of gangway are open on the Crosby seam, and are abandoned; 800 yards of gangway is opened on the Lellar seam and stands idle. 100 yards deep of a new lift has been sunk on the West Pine Knot colliery as a second lift. Both these collieries are idle at present.

A 25-horse power fan ventilates the mines, but find it a difficult matter to accomplish that object, owing to a crush on the E seam gangway. Though the air is systematically conducted to the working places and returns to the outcast, a considerable amount of fire-damp is generated in the mine, so that it becomes necessary to use safety lamps. The management of the colliery and the system adopted to extract coal in a safe manner receives my approbation.

Colliery Log.—189 hands are employed in the colliery; 10 head of stock and 60 wagons are used; outside temperature, 72°; inside temperature, 74°; difference, 2°; favorable. Outside barometer, 28 $\frac{2}{100}$; inside barometer, 29 inches; difference, $\frac{2}{100}$; favorable; indicating the air to be free

from fire-damp in the gangways, though an amount of it is generated among the loose coal in the old breastings; 7 steam engines are in use=450-horse power; 22 steam boilers are in good condition; pumps are used for drainage; 5,000 yards of track are in use; 1 death and 4 injuries during the year.

No. 21.—DIAMOND DRIFT.—*Messrs. Motzs & Berluchy, Operators.*

This colliery is situated near Wadesville, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a drift opened on the J seam, north dip 50° . The drift is 500 yards long, in fault, and idle. Nine breastings are working in 6 feet of good coal, flanked by 7 yard pillars. The north dip gangway is 89 yards long, and ends in a fault. Twenty-five hands are employed in and about the mine.

Ventilation is produced by natural currents, which proved inadequate to supply proper ventilation.

One 10-horse power engine runs the breaker; one boiler in use; the machinery and breaker attachments are secured against accident; no deaths or injuries took place during the year; 8 visits of inspection had been made.

No. 22.—GLENTWORTH SLOPE.—*James C. Oliver, Operator.*

The colliery is situated at Eagle Hill, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a double track slope, sunk 210 yards deep on a 30° south dip on the G seam. The east panel is 700 yards long, with 8 breastings, &c., working in 9 feet of Red Ash coal. The western panel is 650 yards long, with 7 breastings, working in 12 feet of coal. The top state is not secure to mine large panels, as it is generally soft and slaty. I recommend the improvement that has been made in the mine for its workmanship and safety.

Ventilation is effected by the action of a 40-horse power fan. The air is conducted to the face to the working places, thence traverse them to the out-cast on its return. The air doors are properly adjusted and the mine generates a considerable amount of gas, and it is necessary to use safety lamps and employ a fire boss.

Colliery Log.—135 hands are employed in the colliery; 8 mules and 26 wagons worked; outside temperature, 73° ; inside temperature, 76° ; difference, 3° ; fair. Outside barometer, 29 inches; inside barometer, $29\frac{3}{100}$ ths inches; difference, $\frac{3}{100}$ ths; fair. Six steam engines are in use=245-horse power; 8 steam boilers, their condition is not reported; 2 steam pumps used for drainage; 2,040 yards of railroad track in use; no deaths and no injuries during the year; 4 visits of inspection were made during the year.

No. 23.—RAVEN DALE SLOPE.—*William H. Starr & Co., Operators.*

The colliery is situated at Raven's Dale, north of Port Carbon, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a double track slope, sunk 185 yards deep on a 35° south dip of the G seam. The mine is opened in two panels. The east gangway is 900

yards long and idle, except robbing out pillars. The west gangway is 1,100 yards, and working 10 breasts in 9 feet of coal, with inadequate ventilation for mining, chiefly due to the contracted air courses adopted. For this, and sundry other causes, the court issued an injunction suspending operations until the requirements of law had been complied with.

A 20-horse power fan is used for ventilating the mine, but for sundry causes is of little effect, for reasons above given. The bad condition of the slope and gangways has been truthfully complained of, and the opposition evinced by the operators to make the necessary repairs is not at all creditable.

Colliery Log.—Outside temperature, 40° ; inside temperature, 68° ; difference, 28° ; danger. Outside barometer, $29\frac{7}{100}$; inside barometer, $29\frac{6}{100}$; difference; danger; indicating the air was impregnated with fire-damp. By accurate measure 231 cubic feet only was circulating in the air-course at gangway face. Forty-eight hands employed inside; 49 hands outside=97; 11 mules and 40 wagons working; 4 engines in use=160-horse power; 10 boilers, no report of; 1 death and 3 injuries during the year=4; 10 visits of inspection during the year.

No. 24.—RICHARDSON SLOPE.—*Oak Dale Coal and Mining Company, Operators.*

The colliery is situated at Glen Carbon, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a double track slope sunk 200 yards deep on a 66° south dip of the Crosby seam, opened in two panels. The west panel is 900 yards, with 7 breasts working; the east panel is 500 yards, with 4 breasts working. A tunnel 45 yards south opens the Church seam, and east and west panels opened on it. The west panel is 250 yards, and 2 breasts working; the east panel is 500 yards, with 4 breasts working in average thickness of 6 feet of coal. A tunnel is in progress of opening the Daniel seam. I do approve of the system adopted to open and work the colliery.

Ventilation is produced by the action of a 40-horse power fan. Each panel is ventilated by a separate spit of air, and the supply is abundant.

Colliery Log.—Outside temperature, 78° ; inside temperature, 74° ; difference, 4° ; safe. Outside barometer, $29\frac{3}{100}$ ths; inside barometer, $29\frac{4}{100}$ ths inches; difference, $\frac{1}{100}$ ths; safe. 160 hands inside; 83 hands outside; total hands=243; 10 mules and 90 wagons worked on colliery; 7 engines are in use=284-horse power; 18 boilers are in use; condition, no report made; 2 pumps are in use in the old slope; track railroad in use; 1 death and 9 injuries=10 casualties; 6 visits of inspection during the year.

No. 25.—BUCKVILLE SLOPE.—*Philadelphia and Reading Coal and Iron Company, Operators.*

The colliery is situated at Buckville, west of Tamaqua, on the estate of said corporation. It consists of a double track slope sunk 280 yards deep on a 45° south dip of the F or Holmes seam, and opened in two panels; west is 750 yards with 8 breasts working. At the face of the west gangway 96 yards of a tunnel north opens the E seam, in 25 feet of coal, (the F seam is 10 feet.) From bottom of the slope 35 yards south a tunnel opens the G seam, in 4 feet of coal, breasts chiefly 10 yard with 7 yard pillars. A new slope will be sunk on the G seam, used for pumps, men and

handling material. I am able to say the character of the work done and the condition of the colliery is favorable.

A 10-horse fan supplies ventilation, and the system and application adopted is proper and commendable. Fire-damp prevails to some extent, and for this purpose a fire-hoss is employed

Colliery Log.—Outside temperature, 42° ; inside temperature, 62° ; difference, 20° ; danger. Outside barometer, $29\frac{9}{100}$; inside barometer, $29\frac{1}{100}$ inches; difference, $\frac{8}{100}$; danger. 75 hands inside, 46 hands outside=121 hands; 9 mules and 26 wagons working; 7 engines are in use=460 horse-power; 14 boilers are in use; condition, good; 3 pumps are in use=1,500-horse-power; 1,180 steam; 140 H. steam; 2,276 railroad tracks in use; no deaths and 1 injury=1; 4 visits of inspection had been made. Jonathan Bowen, assistant superintendent. Thomas Davis in charge of the colliery.

No. 26.—ST. CLAIR.—*Adam Jackson, Operator.*

The colliery (*small*) is situated in St. Clair, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a drift opened on the Holmes seam, on a 10° south, in 2 panels. The main gangway is 500 yards long. The slant gangway is 250 yards, with 7 breasts working in 6 feet of coal. I do approve of the system adopted to work the colliery.

A furnace and natural air currents effect ventilation, which in this small colliery is effective.

A 10-horse power breaker engine, with 2 boilers; 9 mules and 9 wagons are worked.

No. 27.—KENTUCKY SLOPE.—*Messrs. Shall and Donohæ, Operators.*

The colliery is situated in Tuscarora, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a double track slope sunk 161 yards deep, on a 60° south dip of the E seam. All gangways are finished, and mining chiefly confined to robbing out pillars and loose coal. The slope was flooded in March to September; on the 28th of October a like misfortune occurred.

Sixteen hands are mining and working in the upper level, and 14 hands outside; 5 engines are in use=205-horse power; 11 boilers are used, and in good condition; no deaths and 3 injuries during the year; 2 visits had been made. The manner of working is safe and satisfactory.

No. 28.—FORESTVILLE SLOPE.—*Philadelphia and Reading Coal and Iron Company, Operators.*

This colliery is situated at Forestville, on the estate of the said corporation. It consists of a drift and a single track slope. The slope is sunk 50 yards deep on a 25° south dip of the G seam, 300 yards east of the slope; 36 yards of a tunnel opens the Billy Best coal seam in 2 panels. Its east panel is 900 yards long with 16 breasts, etc., working in 5 feet of coal; on the lower gangway the breasts are 100 yards long; the counter gangway is 533 yards long, with 14 breasts working on this counter, with

90 yards of a mining run in 5 feet of coal. This colliery is well managed in all its details.

Ventilation is produced by a 10-horse power steam fan; the slope being used as an intake and the air conducted in spits into and through the working places and returned to the fan upcast with satisfactory results. The mine generates fire-damp largely.

Colliery Log.—Outside temperature, 44° ; inside temperature, 60° ; difference, 16° —danger; outside barometer, $29\frac{8}{100}$ ths; inside barometer, 29 inches; difference, $1\frac{8}{100}$ ths—danger; 68 hands inside; 35 hands outside=103 hands; 10 mules and 64 wagons working; 4 engines are in use=85 horse-power, in good condition; 7 boilers are in use, repaired and in good order; 7,333 yards of railroad track in use; no deaths and 5 injuries during the year; 7 visits of inspection made; Daniel Hock in charge of the colliery.

No. 29.—GLEN DOWER SLOPE.—*Philadelphia and Reading Coal and Iron Company, Operators.*

This colliery is situated at Glen Carbon, on the estate of the said corporation. It consists of a double track slope sunk 300 yards deep on a 45° north dip of the Crosby seam, and opened in 4 working panels; the east gangway is 250 yards long and mining chiefly confined to robbing out pillar coal; the west is 850 yards with 6 breasts working, etc., in 12 feet of coal; a second out-let is opened here. A tunnel opens the south dip of the Crosby seam 80 yards north on a 66° dip; 2 panels are opened; the west gangway is 200 yards long and idle; the east gangway is 250 yards, with 5 breasts working in coal 8 to 18 feet thick. All work executed in this mine is done with a view to permanency and on a practical plan. Fire-damp is largely generated in the mine.

Ventilation is produced by the action of 2 fans, one of which is located 1,200 yards west of the slope, the operation of which is very favorable and safe.

Colliery Log.—Outside temperature, 80° ; inside temperature, 72° ; difference, 8° —favorable; outside barometer, $28\frac{7}{100}$ ths inches; inside barometer, $29\frac{1}{100}$ ths; difference, $1\frac{3}{100}$ ths inches—favorable; with an abundance of fresh air in circulation; hands inside, 73; hands outside, 88=161; 21 mules and 40 wagons in the work; 8 engines are in use=975 horse-power, in good order; 21 boilers are in use and reported in good condition; 4,050 yards of railroad track are laid in the colliery; no deaths and 3 injuries during the year; 4 visits of inspection had been made.

No. 30.—ST. CLAIR SHAFT.—*Philadelphia and Reading Coal and Iron Company, Operators.*

The colliery is situated in St. Clair, on the estate of the said corporation. It consists of a double cageway shaft, sunk 500 feet deep on the E seam. The excavations in this colliery have been on a most extended scale, scarcely having a precedent in the county. The present panels on the E seam are nearly exhausted. The 7 feet seam was extensively worked, but is also comparatively exhausted. Two incline planes are driven up 80 yards to upper seams, by which the coal from these panels are brought to the foot of the shaft. The Millingham gangway, on the E seam, is 600 yards, with

8 breasts working; its counter gangway is 400 yards, with 11 breasts working. Nineteen men are detailed for repairing gangways, etc. Fire-damp is generated in the mine, and requires the use of safety lamps.

Ventilation is produced by a fan. The Kirk slope, *old*, which is situated a mile north, is used for an intake, and the St. Clair shaft used as an out-cast—wherein the fan is located. The reverse would likely be the practical plan, but the change would be expensive. The mine generates fire-damp. Fire-bosses and safety lamps are the security of the miners, and a proper submission to rules.

Colliery Log.—Outside temperature, 36° ; inside temperature, 64° ; difference, 28° ; favorable. Outside barometer, $29\frac{1}{10}$ inches; inside temperature, $29\frac{3}{10}$ inches; difference, $1\frac{2}{10}$ inches; favorable. One hundred and forty-five hands employed—inside, 98; outside, 47. Twenty mules and 70 wagons in working the mine; 7 engines are in use=240-horse power; 1 bull pump 500=740-horse power; 13 boilers are in use, reported in good condition; 3,000 yards of railroad tracks are used. Two deaths and 7 injuries during the year. Six visits of inspection were made.

No. 31.—HICKORY SHAFT.—*Hickory Coal Company, Operators.*

The colliery is situated at Wadesville, near St. Clair, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a double cageway, and a pump chamber, sunk 696 feet below water level, on the south dip of the 7 feet seam. An incline plane, 247 yards long, opens the seam. Two panels have been opened in the 7 feet seam. Its east gangway is 700 yards long, and are working 16 breasts in it; the west gangway is 300 yards long, and are working 10 breasts in it. The E seam east gangway are 650 yards long, with 18 breasts working, and its counter gangway is 100 yards long, with 4 breasts working. Its west gangway is 680 yards long, with 18 breasts opened, and its counter gangway has 6 breasts working. Seven principal gangways are opened, with 72 breasts working. The vastness of the excavations in this mine can scarcely be described, as the one-half of the mine is idle.

Fire-damp is largely generated, but the management of the ventilation is, with ordinary care, successful.

Ventilation is produced by the action of a powerful fan, located one-half mile north of the shaft, with effective results.

Colliery Log.—Outside temperature, 62° ; inside temperature, 72° ; difference, 10° ; favorable. Outside barometer, $29\frac{1}{2}$ inches; inside barometer, $29\frac{7}{10}$ inches; difference, $1\frac{2}{10}$ inches; favorable. 535 hands employed; inside, 335; outside, 200; 30 mules and 100 mine wagons working; 7 engines are in use=745-horse power; 24 boilers are in use; examined and reported good; drainage by water-tanks; 10,000 yards of railroad track in practical use; 1 death and 12 injuries during the year; 6 visits of examination made. Mr. Daniel Althouse, general manager and superintendent of mines.

No. 32.—PEACH MOUNTAIN SLOPE.—*B. Rowebotham, Operator.*

This colliery is situated west of Tuscarora, on the estate of Gideon Bast and Kentucky Bank. It consists of a single track slope, sunk 65 yards deep on a 78° south dip, in 2 panels. Its west panel is worked out. Its

east panel, 700 yards, with 5 breasts, working in 8 feet of coal, with mining runs of 70 yards. An egress and ingress out-let is in course of construction. These breasts are flanked by 6 yard pillars.

Ventilation is produced by means of a furnace, the slope being used as a downcast, and the air conducted into the face of working places; thence back to the out-let. The character of the work done is safe—ventilation only moderate.

Colliery Log.—July 19th, outside temperature, 74° ; inside temperature, 64° ; difference, 10° ; less favorable. Outside barometer, 29 inches; inside barometer, $29\frac{1}{100}$ ths; difference, $1\frac{1}{100}$ ths; favorable. Fire-damp is generated to some extent in the mine.

Fourteen hands are employed—inside, 7, and outside, 7 boys; 3 mules and 8 mine wagons worked in the mine; 2 engines are in use=60-horse power; 3 boilers are in use—condition not reported; 1 pump; 500 yards of railroad track is in use on the colliery; no deaths, injuries or casualties; 3 visits of inspection were made.

NO. 33.—BULL RUN TUNNEL.—*Lehigh Coal and Navigation Company, Operators.*

This colliery is situated 2 miles east of Tamaqua, on the estate of said corporation. It consists of a tunnel driven North 331 yards to the E seam. All of this level has been worked out. A slope 70 yards deep has been sunk at the end of the tunnel on a 40° south dip, with 2 panels opened. Its east panel is 1,100 yards, with — breasts working in it. Its west gangway is 708 yards, with 17 breasts working. A new trial slope is in course of sinking—30 yards of which is completed. I consider this one of our safest collieries, and is the best managed in the district. The mine evolves fire-damp.

Ventilation is produced by a 20-horse power fan. The tunnel is used as an intake. The air is conducted in spits into the face of the working places traversing them, and going out to the fan, giving satisfactory results.

Colliery Log.—Outside temperature, 70° ; inside temperature, 58° ; difference, 12° ; fair. Outside barometer, $28\frac{1}{2}$ inches; inside barometer, $28\frac{6}{100}$ ths inches; difference, $1\frac{6}{100}$ ths; fair. 20,000 cubic feet of air is in circulation per minute.

Two hundred and eighteen hands are employed—inside, 108, and outside, 110; 17 mules and 100 mine wagons worked in the mine; 7 engines are in use=440-horse power, in good order; 12 boilers are in use, and in good condition; 1 pump is in use, steam of 250-horse power; 4,000 yards of railroad on the colliery; no deaths or injuries during the year; 3 visits were made on examination. W. H. Zahmer, general superintendent and company's engineer.

NO. 34.—BEECHWOOD SLOPE.—*Philadelphia and Reading Coal and Iron Company, Operators.*

This colliery is situated at Mount Laffee, on the said company's estate. It consists of a double track slope sunk 300 yards deep on a 55° south dip of the E seam. Five gangways are opened in the colliery with 55 breasts

working, etc. As regards air and safety of miners it has not an equal in the district; carburetted hydrogen gas is generated in large quantities in all parts of the mine; the efficiency of the means of ventilation is such that unless gross carelessness an explosion is not anticipated. The safety lamp is the only one used in mining, and there are competent fire bosses always on duty; the system of mining and mine regulations is satisfactory.

Ventilation is produced by the action of a 30 horse-power fan, with ample air courses; the working places receives the fresh air, passing through the headings, etc., to the out-cast.

Colliery Log—November 12.—Outside temperature, —°; outside barometer, —. 334 hands employed; inside, 242; outside, 92 hands; 22 mules and 100 wagons working in the mine; 5 engines are in use=314 horse-power; 15 boilers are in condition; 1 steam pump=120 horse-power; 28,628 yards of railroad track in use in the colliery; 5 deaths and 9 injuries during the year=14; 6 visits of inspection made. Mr. Jonathan Bowen, assistant superintendent for company in charge.

No. 35.—THOMASTON SLOPE.—*Philadelphia and Reading Coal and Iron Company, Operators.*

This colliery is situated at Thomaston, on the estate of the said corporation. It consists of 2 double track slopes, sunk 280 yards deep on a 43° north dip of the Crosby seam, with east and west panels opened; the east gangway is 800 yards long and is communicated with No. 1 slope, which slope is used for drainage, men and material; the west gangway is 900 yards in 10 feet of coal, with 8 breasts working; 86 yards of a tunnel from the Crosby north opened the Church seam, with 2 panels opened; its west panel is 600 yards, with 7 breasts opened; the east panel is 500 yards, with 6 breasts opened in 7 feet of coal; a tunnel from the Crosby south opened the Daniel seam; its east panel is 450 yards, with 6 breasts opened; its west panel is 80 yards, with 2 breasts working in 8 feet of coal; the character of all work done in these panels is favorable; the mine generates a large amount of fire-damp.

Ventilation is effected by a 40-horse power fan. The working places receive fresh supply of air from the slopes, and traverses through these places outward to the fan out-cast, with favorable results. The fire-boss and safety lamp are needed for protection.

Colliery Log.—August 20, outside temperature, 74°; inside temperature, 70°; difference, 4°; favorable. Outside barometer, 29 $\frac{2}{10}$ ths; inside barometer, 29 $\frac{1}{2}$; difference, 1 $\frac{3}{10}$ ths; favorable. 194 hands employed; inside, 104; outside, 90; 16 mules and 30 mine wagons in the work; 6 engines are in use=380-horse power; 26 boilers are in use; 1 pump in use—capacity, (steam,) 90-horse power; 4,090 yards of railroad laid on the colliery; no deaths and no injuries during the year; 5 visits of inspection made; 18,500 cubic feet of air in circulation per minute.

No. 36.—MANCHESTER SLOPES.—*Messrs. Parker & Alden, Operators.*

The colliery is situated at Wadesville, west of St. Clair, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of two small slopes, one 170 yards deep on the Orchard seam on a 15° south dip.

20 yards of a tunnel running south from the bottom of this slope opens the north dip of the Orchard seam, the west gangway of which is 300 yards, and 6 breasts are working in it in 6 feet of coal, with mining runs of 30 yards each.

Ventilation is produced by a furnace, and the gangway is used as an intake, supplying the working places with air, and circulating through these workings on its return outwards. 23 hands are employed on the colliery; 2 engines in use=75-horse power, with 6 boilers; 2 mules and 9 mine wagons in use. The character of the work done is a safe operation. Some small amount of fire-damp is generated. Powder smoke is the most troublesome enemy.

No. 37.—MAMMOTH VEIN.—*Joseph Dennings, Operator.*

The colliery is situated west of the town of New Castle, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a double track slope sunk 70 yards deep, on a 45° dip south on the E seam, with east and west panels open. On the west 40 yards is open. The east gangway is 60 yards long. That panel is worked into the Rippler old west workings. The west panel is not very favorable, yet a large amount of coal may be recovered by proper care.

Ventilation is produced by natural currents, affected by a change of the atmosphere. A detailed description in connection with this report is deemed unnecessary. 25 hands are employed; 2 engines=28-horse power, are in use; 2 boilers are used; all of which machinery, ropes and tackle are in good condition; 4 visits had been made to the colliery.

No. 38.—GREENWOOD SLOPE.—*Lehigh Coal and Navigation Company, Operators.*

This colliery is situated at Greenwood, two miles east of Tamaqua, on the estate of said company. It consists of a double track slope, sunk in 2 lifts 282 yards deep on a 50° south dip of the F. seam. Its east gangway is 1,600 yards, with 7 breasts working in 8 feet of coal. Its west gangway has been driven to the tract line and finished. Sixty-six yards of a tunnel run north, opens the E seam, 70 yards west of the slope. Six hundred yards of gangway is open on its east panel, with 8 breasts working in 25 feet of coal. The mine I have found to be well managed and in good condition, reflecting credit upon those in charge.

Ventilation is produced by the action of two 15-horse power fans, one of which is erected west of and at the pumping slope, while the other is 900 yards east of the hoisting slope. The slope and gangways are used as intakes, the air conducted to the working face of the breastings, &c., passing up into the upper opening and traversing the works on its return to the fan out-casts. I commend the system adopted in conducting the ventilation of the colliery. Fire-damp is generated in the mines, and a resort to the safety lamps is necessary. Proper respect paid to the regulations and rules of governing the mine will certainly diminish accidents. Those officers know and do their duty.

Colliery Log.—November 14, outside temperature, 78°; inside temperature, 74°; difference, 4°; presence of black-damp. Outside barometer,

78, $\frac{5}{100}$; inside barometer, 29, $\frac{4}{100}$; difference, $\frac{1}{100}$ inches. 140 hands are employed; inside, 65; outside, 75; 25 mules and 60 slope wagons are working in the mine; 7 engines are in use=851-horse power; 21 boilers in use, in good condition; no deaths and 3 injuries during the year.

No. 39.—SHARP MOUNTAIN.—*Joseph Wood, Operator.*

This colliery is situated south of Pottsville, on Mr. Richardson's estate. It consists of a single track slope, sunk 110 yards deep, on the Bartolet seam, on a 70° north dip. Its west gangway is worked out 55 yards of a tunnel, driven 70 yards west of the slope; opened a White Ash vein $7\frac{1}{2}$ feet thick; the west gangway is 750 yards, with 3 breasts; the character of the work done is considered safe.

Ventilation is produced by natural currents. There are 3 outlets accessible for men to travel in; 2 engines=25-horse power, and only one boiler is used; 3 head of stock is worked; 14 hands are employed; 2 visits of inspection were made.

No. 40.—YORKVILLE.—*George Baltaiser, Operator.*

This is a small landsale colliery south of Pottsville. It consists of a tunnel driven south 64 yards to a White Ash seam; 60 yards west of this tunnel a slope is sunk 55 yards, and on the seam. Its gangway is 300 yards long, with 5 breasts working, in $7\frac{1}{2}$ feet of coal. The work done I consider safe; 2 outlets are made for ingress and egress.

Ventilation is produced by natural currents. 13 hands are employed at the colliery; 3 mules and 2 wagons are in use. In March the slope was flooded, and did not go into operation until September.

No. 41.—LITTLE TRACY—*Wm. Clark, Operator.*

The slope is situated near Wadesville, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a small slope sent 55 yards deep on the Little Tracy or L. seam. The east gangway is 150 yards long; 1 breast and the gangway is working 4 feet of coal.

Ventilation is produced by natural currents. 5 persons are employed; 2 mules and 2 wagons are worked in the colliery.

No. 42.—NORTH AMERICA.—*Lewis Faust, Operator.*

This colliery is situated north of Pottsville, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a slope sunk 25 yards deep, on the Tracy seam. Its west gangway is 150 yards long. A tunnel opens the north dip 60 yards west of the slope. Its gangway is 80 yards long, with 2 breasts working in 4 feet of coal.

Ventilation is produced by natural currents, and results satisfactorily. 7 hands are employed; 1 horse and 2 wagons are worked on the premises. Although these collieries are but small land sales it is but proper our time and attention be given to ascertain the men's safety.

No. 43.—MINE HILL.—*William Anesty, Operator.*

This is a small colliery, situated north of Minersville, on the estate of the Philadelphia and Reading Coal and Iron Company. It had but lately been destroyed by fire. It consisted of a slope sunk 50 yards deep on the south in the Diamond or J seam. The mine is in good condition, but the improvements are utterly destroyed. 2 engines=50-horse power were destroyed; 4 boilers, 8 slope wagons and a lot of machinery and material and several tons of prepared coal shared the same fate; no insurance whatever; 15 hands are out of employment.

No. 44.—YORK COLLIERY.—*Llewellyn & Co., Operators.*

The colliery is situated west of Pottsville, on the estate of A. Russel *et al.* It consists of a single track slope sunk 55 yards deep on a west dip of the Gate seam, with one gangway 800 yards long, with 4 breasts working. The condition of the mine and ventilation is moderate, as ventilation is produced by natural currents, and the openings are but small, yet they are managed for safety and durability. 1 engine=20-horse power, with 2 boilers, are in use; 12 hands are employed on the colliery; 2 mules and 4 mine wagons; 850 yards of railroad track are laid for use

No. 45.—YORK FARM SLOPE.—*Job Rich, Operator.*

The colliery is situated west of Pottsville. It consists of a single track slope sunk 150 yards deep on the south dip of the tunnel seam, on a 28° angle. 300 yards of a west panel is opened into the basin; a gangway was open on the north dip, but run too near the surface, and was abandoned; the coal is 7 feet thick; good red ash.

Ventilation has been retarded in consequence of the robbing of the pillar coal; the only difficulty met with is the trouble given by powder smoke.

Ten hands are employed; 1 mule and 4 wagons are used; 300 yards of railroad track are laid; 1 20-horse power hoisting and breaking engine with 2 boilers are in use.

No. 46.—MIDDLE PORT.—*Richard Holohan, Operator.*

The colliery is situated east of Middle Port, on the estate of P. W. Sheaffer. It consists of a drift opened on a 45° north dip of the Palmer seam. Its gangway is 200 yards, with 6 breasts working, &c., in $3\frac{1}{2}$ feet of coal; the superstrata is a flaty shoal, and dangerous in mining, but the work is secure and safe to work in.

Ventilation is produced by natural currents, scarcely sufficient to dilute the powder smoke, which sickens miners whenever it comes in contact with them in their work. 10 hands are employed in mining and preparing coal for family use.

STATISTICS OF COLLIERIES IN POTTSVILLE DISTRICT.

No. of collieries.	NAMES OF COLLIERIES.	LOCATION OF COLLIERIES.	NAMES OF OPERATORS OR SUPERINTENDENTS.	Kind of collieries worked.....	Years in operat'n	Number of coal seams worked...	DIP OF C. SEAMS.		Aggregate thick-ness in feet	STEAM POWER.		BOILER POWER.		MINES.		
							Deg. north,	Deg. south,		Number of engines...	H. P. of engines.....	No. of st'm boilers....	Cond't'n of boilers....	Slopes.....	Shafts.....	Drifts.....
1.	Anchor, No. 3.	Beckscherville	J. Wadlinger	Slope, 2	.....	4	60	45	6	496	20	Good..	2		
2.	Phoenix, No. 3.	Phoenix Park	Lloyd & Glover	Do	.....	1	70	30	5	15	10	..	1		
3.	Phoenix, No. 4.	Jas. O'Maley	Do	Do	.....	1	70	8	5	15	2	..	1		
4.	Live Oak	Mine Hill Gap	Wm. Murry	Do	.....	1	25	30	4	200	3	..	1		
5.	New Kirk	New Kirk	Shoemaker & Co	Do	.....	1	43	20	9	580	25	..	1		
6.	Cedar Hill	New Philadelphia	P. and R. C. and I. Co.	Do	.....	1	31	9	6	730	14	..	1		
7.	Elsworth	New Castle	W. R. Davis	Do	.....	1	40	60	3	45	5	..	1		
8.	Edgemoor	W. D. Jennings	W. D. Jennings	Do	.....	3	23	5	6	86	4	..	1		
9.	Flag	St. Clair	G. W. Snyder	Do	29	3	35	45	2	855	12	..	3			
10.	Pine Forest	St. Clair	L. C. and Nav. Co.	Shaft	.....	2	45	79	7	780	14	..	1		
11.	Coal Dale	Summit Hill	L. C. and Nav. Co.	Slope	.....	2	45	25	6	740	17	..	1		
12.	Oak Dale	Glen Carbon	P. and R. C. and I. Co.	Shafts	.....	3	40	65	42	465	26	..	3		
13.	Kear	Mine Hill Gap	P. and R. C. and I. Co.	Slopes	.....	4	40	29	2	50	4	..	1		
14.	Alaska	Alaska shaft.	Frederic H. Coker	Drifts	.....	2	75	45	7	700	13	..	2		
15.	Amador	Tamaqua	P. and R. C. and I. Co.	Shaft	.....	1	60	45	1	7	12	..	1		
16.	Tamaqua	Glen Carbon	T. Spollenmeyer	Shaft	.....	1	60	60	7	330	12	..	1		
17.	Eagle Hill	Eagle Hill	J. C. Oliver	Shaft & slope	.....	2	25	8	4	90	7	..	1		
18.	Lambert	New Philadelphia	Robaman & Co.	Do	.....	2	30	30	5	260	12	..	1		
19.	Mammoth vein	Silver Creek	Wm. Williams	Do	.....	3	65	42	7	450	22	..	1		
20.	East Pine Knot	Greenberry	P. and R. C. and I. Co.	Do	.....	1	50	6	1	10	1	..	1		
21.	Diamond	Wadesville	W. Matz & Co.	Drift	.....	1	30	21	6	245	8	..	1		
22.	Beach	Edgemoor	W. G. Winters	Slope	.....	1	30	20	7	280	10	..	1		
23.	Beach Dale	Edgemoor	W. G. Winters	Do	.....	3	63	20	7	280	13	..	1		
24.	Richardson	Glen Carbon	O. D. C. and M. Co.	Do	.....	3	45	40	7	460	14	..	1		
25.	Buckville	Buckville	P. and R. C. and I. Co.	Do	.....	3	45	6	1	10	2	..	1		
26.	St. Clair shaft	St. Clair	A. Jackson	Drift	.....	1	10	60	12	5	205	..	1		
27.	Kentucky	Tamaqua	Donohoe & Shoof	Slope	.....	1	25	30	4	85	7	..	1		
28.	Foresville	Foresville	P. and R. C. and I. Co.	Do	.....	1	25	45	3	975	21	..	1		
29.	Glendower	Glen Carbon	P. and R. C. and I. Co.	Do	.....	2	45	30	3	240	15	..	1		
30.	St. Clair shaft	St. Clair	P. and R. C. and I. Co.	Shaft	.....	3	15	24	1	745	24	..	1		
31.	Hickory shaft	Wadesville	H. C. Co.	Do	.....	2	40	8	2	60	3	..	1		
32.	Peach Mountain	Tuscarora	R. Revell	Slope	.....	1	78	40	4	440	12	..	1		
33.	Bull Run	Tamaqua, East	L. C. and Nav. Co.	Do	.....	1	40	35	5	314	15	..	1		
34.	Beechwood	M. Laffee	P. and R. C. and I. Co.	Do	.....	3	43	25	6	380	26	..	2		
35.	Branson	Wadesville	P. and R. C. and I. Co.	Do	.....	3	43	15	4	25	6	..	2		
36.	Wagon Wheel	Wagon Wheel	W. G. Winters	Do	.....	1	45	42	2	75	5	..	1		
37.	Mammoth vein	New Castle	Jos. Jennings	Do	.....	1	40	33	2	85	21	..	1		
38.	Greenwood	Bull Run	L. C. and Nav. Co.	Do	.....	2	45	70	7	25	1	..	1		
39.	Sharp Mountain	Pottsville	Jos. Wood	Do	.....	1	60	4	1	25	2	..	1		
40.	York Farm	Pottsville	Baltaser	Do	.....	1	70	7	6	30	4	..	1		
41.	North America	Pottsville	L. Faust	Do	.....	1	36	6	1	50	2	..	1		
42.	Vine Hill	Minersville	Wm. Anstey	Do	.....	1	25	13	1	30	3	..	1		
43.	Wagon Wheel	Pottsville	John M. Swelley	Do	.....	1	25	13	1	20	2	..	1		
44.	York Farm	Pottsville	John M. Swelley	Do	.....	1	25	13	1	20	2	..	1		
45.	Middleport	Middleport	R. Holohan	Drift	.....	1	45	3	1	20	2	..	1		

STATISTICS OF COLLIERIES IN POTTSVILLE DISTRICT—(CONTINUED.)

No. of collieries,	VENTILATION USED.			EMPLOYEES.			THERMOMETER TESTS.			BAROMETER TESTS.			Quantum of air supplied.....	GASES.		Miles traveled...	CASUALTIES.			Annual shipments of coal.....
	Steam fans, H. P.	Furnace ...	Natural	Condition of ventilation	Men	Boys	Total force,	Out'side temperature.	Inside temperature..	Difference of temperature	Outside barometer ..	Inside barometer ..		Difference of barometer	Fire damp.		Black damp	Per cent. of gas.....	Deaths.....		Injuries....	Total.....
1	40			Good.....	60	14	74	42°	52°	10°	28 3-10	28 8-10	5-10	F.		6	3		14	
2				"	10	12	22	44	66	22	29 2-10	29 2-10	3-10	"		6				
3	30		Nat.	"	70	11	81	54	72	18	29 2-10	29 2-10	3-10	"		4				
4	50		"	"	100	40	140	68	70	2	29 2-10	29 2-10	3-10	"		4				
5	20		"	"	30	10	40	70	70	0	29 2-10	29 2-10	3-10	"		4				
6			Nat.	"	20	12	32	55	54	1	29 3-10	29 3-10	3-10	"		4				
7			"	Indiffer't	25	30	55	54	64	10	29 3-10	29 3-10	3-10	"		6	10	70		
8	6	F	Nat.	"	108	61	169	42	54	12	28 8-10	28 8-10	1-10	"		4	6	42	1	1
9	20	F	Nat.	"	140	54	194	70	66	4	29 4-10	29 7-10	2-10	"		4	6	42		
10	25	F	Nat.	"	134	31	165	45	58	13	29	29 3-10	29 3-10	3-10	"		4	6	20	1
11	20		"	"	114	31	145	44	65	21	28 7-10	29 1-10	4-10	"		6	7	58	11	12
12	30		"	Good.....	188	34	222	44	65	21	28 7-10	29 1-10	4-10	"		6	4	72	1	3
13	30		"	Indiffer't	75	25	100	75	75	0	29 2-10	29 2-10	2-10	"		6	7	126	1	1
14	8		"	Good.....	8		8	42	54	12	29	29 2-10	2-10	"		4	4	88	2	4
15	20		"	"	90	44	134	70	75	5	29	29 3-10	2-10	"		4	4	48	2	4
16	40		"	"	100	32	132	70	78	8	29 2-10	29 4-10	2-10	"		4	4	48	2	4
17	20		"	"	62	40	102	70	78	8	29 2-10	29 4-10	2-10	"		4	4	48	2	4
18	10		"	"	82	30	112	70	78	8	29 2-10	29 4-10	2-10	"		4	4	48	2	4
19	10		"	"	82	30	112	70	78	8	29 2-10	29 4-10	2-10	"		4	4	48	2	4
20	25		"	"	140	52	192	72	74	2	28 9-10	29	9-10	"		4	4	60	1	4
21			Nat.	"	16	9	25	72	74	2	28 9-10	29	9-10	"		4	4	60	1	4
22	40		"	"	100	35	135	73	76	3	29	29 3-10	3-10	"		4	4	46		
23	20		"	"	48	49	97	40	68	28	29 7-10	29 5-10	2-10	"		6	10	60	1	3
24	40		"	"	160	83	243	78	74	4	29 3-10	29 4-10	2-10	"		5	6	120	1	9
25	10	F	"	"	75	46	121	40	62	22	29 3-10	29 1-10	8-10	"		4	104	1	1	1
26	10		"	"	10	12	22	40	62	22	29 3-10	29 1-10	8-10	"		4	28			
27	10		"	"	10	12	22	40	62	22	29 3-10	29 1-10	8-10	"		4	28			
28	10		"	"	68	35	103	44	60	16	29 5-10	29	8-10	"		6	7	84	5	5
29	25		"	"	161	73	234	80	72	8	29 7-10	29 1-10	3-10	"		4	4	98	3	3
30	40		"	Fair.....	98	47	145	86	66	30	29 7-10	29 3-10	3-10	"		6	6	48	2	7
31	20		"	Good.....	335	200	535	62	72	10	29 2-10	29 3-10	2-10	"		6	6	42	1	12
32	40	F	"	Bad.....	14	14	28	64	64	10	29	29 1-10	2-10	"		5	3	66		
33	20		"	Good.....	102	111	213	70	83	12	29 1-10	29 1-10	1-10	"		6	3	120		
34	30		"	"	242	192	434	70	83	12	29 1-10	29 1-10	1-10	"		6	3	120		
35	30		"	"	104	90	194	74	70	4	29 2-10	29 5-10	3-10	"		6	5	60	5	9
36	36	F	"	Bad.....	13	10	23	74	70	4	29 2-10	29 5-10	3-10	"		6	4	32		
37	15	F	Nat.	"	15	10	25	74	70	4	29 2-10	29 5-10	3-10	"		6	4	32		
38	15		"	Good.....	65	75	140	78	74	4	29 2-10	29 5-10	3-10	"		6	5	198	3	3
39	10		Nat.	"	10	4	14	74	74	4	29 2-10	29 4-10	1-10	"		4	2	4		
40	40		"	Poor.....	9	5	14	74	74	4	29 2-10	29 4-10	1-10	"		4	2	4		
41	40		"	"	5	2	7	74	74	4	29 2-10	29 4-10	1-10	"		4	2	4		
42	40		"	"	7	5	12	74	74	4	29 2-10	29 4-10	1-10	"		4	2	4		
43	43		"	"	10	5	15	74	74	4	29 2-10	29 4-10	1-10	"		4	1	4		
44	44		"	"	7	8	15	74	74	4	29 2-10	29 4-10	1-10	"		4	1	4		
45	44		"	"	7	8	15	74	74	4	29 2-10	29 4-10	1-10	"		4	1	4		

REPORT

OF THE

INSPECTOR OF ASHLAND DISTRICT, COMPRISING ALL THE COLLIERIES IN SCHUYLKILL COUNTY LYING NORTH OF THE BROAD MOUNTAIN, AND ALL THE COLLIERIES IN COLUMBIA COUNTY, WITH THE NEW BOSTON COLLIERY, TO THE NUMBER OF SIXTY-EIGHT, FOR THE YEAR 1873.

His Excellency, JOHN F. HARTRANFT,

Governor of the Commonwealth of Pennsylvania :

SIR:—In compliance with the requirements of an act of General Assembly, approved the 3d day of March, A. D. 1870, entitled “An Act providing for the health and safety of persons employed in coal mines,” &c., I have the honor to herewith submit my report of the collieries of this district for the year 1873, bringing to your Excellency’s notice the different subjects referred to herein; showing the number of active collieries in the district, their steam power, boilers, fans and system of ventilation in use; their condition and character, the number of casualties that occurred, and their consequent result. Careful examinations of each colliery have been made, with a view to their safe ventilation and safe working, to the establishment of proper inlets and outlets, and to see that the provisions of the law were properly complied with, giving a descriptive statement of each colliery in detail.

I do very much regret that the increase in deaths this year exceed that of last year by eleven, and the injuries 60. To account for this increase in the accidents it is assumed there has been more persons employed, the season more steady and a larger amount of coal mined in the district than was in any previous year, besides many of these injuries were the acts of the sufferers, to a certain extent, and carelessness and incompetency. Yet from the improvement in the system of mining and ventilation and the proper condition of outlets and safe traveling roads I am not without hope that a favorable decline in casualties will result from the good discipline and precautionary measures of safety adopted by mine superintendents and bosses.

Having endeavored to discharge our duty with impartiality and with a proper respect for all, while careful to uphold the dignity of the law, being mindful of our responsibility to those employed in mines, and do deeply deplore the loss of so many valuable persons of our own calling,

With great respect,

I have the honor to be your

Excellency’s obedient servant,

JOHN ELTRINGHAM,

Inspector of Mines.

NUMBER AND NAMES OF COLLIERIES *in the Second, or Ashland, district
in December, 1873, John Eltringham, Inspector.*

B.
1. Boston Run.
15. Bear Ridge.
41. Barry.
45. Big Mine Run.
58. Bear Run.

C.
20. Cuyler.
28. Coal Ridge.
40. Cambrian.
52. Centralia.
53. Coal Mountain.
61. Copley.
65. Colorado.

D.
60. Diamond.
14. Draper.

E.
22. Ellenwood.
24. Enterprise.
43. Ellen Gowan.

F.
12. Furnace.
21. Focht & Whittaker.

G.
19. Grant.
26. Girard Mammoth.
30. Girardsville.
44. Girard.

H.
10. Hoffman.
18. Hillside.
51. Hazle Dell.
49. Honey Brook.

I.
11. Indian Ridge.

K.
34. Keystone.
36. Knickerbocker.
47. Koh-i-noor.

L.
29. Locust Creek.
35. Locust Dale.
57. Lehigh, No. 3.
59. Lawrence.
1. Lehigh, West.

M.
17. M'Neill.
23. Mahanoy City.
31. Malven.
64. Myers.

N.
9. North Gilberton.
32. New Boston.
42. Norton.
62. North Mahanoy.

O.
66. Oak Hollow.

P.
3. Preston, No. 2.
7. Preston, No. 2.
8. Preston, No. 4.
13. Primrose.
54. Plank Ridge.
68. Preston, No. 1.

S.
2. Stanton.
39. St. Nicholas.
50. Suffolk.
55. Shenandoah.
63. South Pioneer.

T.
56. Thomas.
6. Tunnel.
48. Tunnel Ridge.
67. Trenton.

U.
4. Union, No. 1.
27. Union, No. 2.

W.
33. West Shenandoah.
38. William Penn.
West Mahanoy.

Pioneer.
Hartford.
Hannon.
Eagle.
Silver Brook.

ASHLAND, OR SECOND, DISTRICT.

Names of persons who were killed and of those who died of their injuries in and about the mines of Ashland district, for the year ending December, A. D. 1873.

DATE.	NAMES OF PERSONS KILLED.	NAMES OF COLLIERIES.	Widows.....	Orphans.....	REMARKS.
Jan'y 21..	Westley Yhoee	Mahoning City	1	5	Died; crushed in the small rolls, November 20, 1872.
23..	Joha Neiman	Locust Dale	1	4	Died; mortally injured by a blast.
Feb. 5..	William Hertman	William Penn .....	.....	.....	Killed; crushed between the wagon and breaker.
6..	Henry Wright	Indian Ridge	1	2	Killed; fell 300 feet down into the shaft.
27..	Mathew Farrell	Bear Ridge	1	3	Killed by a fall of coal.
April 4..	James Gaughan	Honey Brook	1	3	Killed by a fall of coal in the tramway.
17..	Wm. Grant, (operator),	Plank Ridge	1	7	Killed by a fall of coal at foot of slope.
17..	Walter Gibbs	Plank Ridge	1	6	Killed by a fall of coal at foot of slope.
21..	Frank Lynch	Focht & Whittaker	1	6	Killed by a fall of coal.
22..	Robert Linton	Koh-i-noor	1	6	Killed by a large fall of coal.
22..	John Harford	Koh-i-noor .....	.....	5	Killed by a large fall of coal.
May 6..	James M'Garvey	Honey Brook .....	.....	.....	Killed by a fall of coal.
6..	Richard Williams	Tunnel Ridge	1	5	Killed by a fall of coal.
20..	Thomas Walsh	Colorado .....	.....	.....	Died; foot crushed by fall of coal and mortified.
26..	John Monaghan	Big Mine Run	1	6	Killed by the premature explosion of a blast.
June 3..	Felix Hogan	Bear Run	1	.....	Killed; fell off the ascending cage.
24..	Isaac Bevin	Lehigh, No. 3	1	3	Killed by a fall of coal.
July 9..	Charley Dursch	Boston Run .....	.....	.....	Killed by a fall of coal.
9..	Adam Winkell	Keystone	1	6	Killed; crushed to death between wagon and timbers.
29..	James Brannan	Ellen Gowan	1	6	Killed by a fall of coal crushing his body.
30..	Donnelly Rowe	Ellen Gowan .....	.....	.....	Died; after amputating both legs; crushed by a fall of coal.
Aug. 11..	Hector Williams	Tunnel Ridge	1	.....	Killed by a fall of top coal while at work.
26..	Wm. John Martin, (13,)	Gilberton .....	.....	.....	Killed; accidentally caught in cog wheel and crushed to death.

Aug.	26.	John Cummings.....	Ellen Gowen.....	1	1	Killed; crushed by a piece of timber.
	30.	Christ Hinsell.....	Lehigh, No. 3.....	2	2	Killed; crushed by cars at the breaker.
Sept.	4.	Patrick Maher.....	Knickerbocker.....	1	1	Killed by a fall of coal.
	6.	Thomas M'Laughlin.....	Girardsville.....	1	1	Killed by a fall of coal.
	12.	Joseph Jones.....	Honey Brook.....	3	3	Died; severely injured; took lock jaw.
	17.	Riedard Mathews.....	Indian Ridge.....	1	1	Killed by a fall of coal.
	17.	James Ryan, (boy,).....	Pitmrose.....	4	4	Killed by a fall of a slope wagon.
	22.	Frederick Marsden.....	Coal Ridge.....	1	1	Died; burned by an explosion of gas.
	22.	Stephen Horan.....	Plank Ridge.....	1	1	Died; burned by an explosion of gas.
Oct.	5.	Frederick Mahl.....	Koh-i-noor.....	1	1	Killed; fell into the rollers.
	5.	Charles Walsh.....	Shenandoah.....	1	1	Died of injuries from coal.
	10.	John Williams.....	Gilberton.....	5	5	Died; burned by an explosion of gas.
	11.	Ed. Breckon.....	Gilberton.....	1	1	Died; burned by an explosion of gas.
	20.	James Bowden.....	Boston Run.....	1	1	Killed by a fall of coal.
Nov.	3.	William Rosser.....	St. Nicholas.....	1	1	Killed; run over by gangway wagons.
	10.	Michael Wilson.....	Turkey Run.....	4	4	Killed; run over by gangway wagons.
	10.	Patrick Connor.....	Plank Ridge.....	1	1	Killed by a fall of coal.
	10.	Thomas Lyshaw.....	Pitmrose.....	1	1	Killed by a fall of coal.
	22.	Peter Kneutzler.....	Mahanoy City.....	1	1	Killed by a cog wheel falling on him.
	26.	Peter Clary.....	Preston, No. 2.....	1	1	Killed by a fall of coal.
	26.	William Jones.....	Honey Brook.....	1	1	Killed by an explosion of a blast.
	2.	Patrick Farrell.....	Big Mine Run.....	1	1	Killed by a premature blast.
	6.	Alexander Brown.....	Honey Brook.....	1	1	Killed by breaking of a spreader ring.
	6.	Patrick Dolan.....	Honey Brook.....	1	1	Killed by breaking of a spreader ring.
	6.	John Richards.....	Honey Brook.....	1	1	Killed by breaking of a spreader ring.
	16.	Frank Whalen.....	West Mahanoy.....	1	1	Died in hospital; injured in the mines.
Dec.	16.	Peter Smet.....	Cuyler.....	1	1	Killed in the breaker rollers.
	18.	Thomas Whales.....	St. Nicholas.....	1	1	Killed; his skull crushed by wagons.

ASHLAND, OR SECOND, DISTRICT.

Names of persons who were maimed and injured in the year ending December, A. D. 1873.

DATE.	NAMES.	COLLIERIES.	REMARKS.
Jan. 17.	John O'Brien.....	Cambrian.....	Leg broken by a fall of coal.
20.	John Neiman.....	Locons, Dale.....	Head fractured by a blast—died.
Feb. 18.	John Fahy.....	Plank Ridge.....	Head fractured by mine wagons.
27.	Patrick Dean.....	Lehigh, No. 3.....	Thigh fractured by a lump of coal.
March 1.	Jonathan Goodhead.....	Koh-i-noor.....	Head and back injured by a fall of coal.
1.	William Conway.....	Ellen Cowan.....	Severely hurt, fell into a shaft.
3.	Frank Richards.....	Beaver Run.....	Severely kicked in the face by a mule.
3.	John Dunane.....	Shenandoah City.....	Severely injured by a fall of coal.
3.	Con. Flynn.....	Plank Ridge.....	Severely injured by a fall of coal.
3.	Robert Lenton.....	.....do.....	Morally injured, run over by a dirt wagon.
7.	George Lerah.....	Koh-i-noor.....	Leg amputated, crushed by machinery.
7.	James Brooks.....	.....do.....	Back injured by a fall of coal.
7.	Benjamin Jones.....	Beaver Run.....	Fingers cut off by a fall of coal.
7.	Thomas Manning.....	Grant.....	Head cut by a lump of coal.
7.	M. Mulvey.....	Copley.....	Head cut by a dirt wagon.
14.	Henry Faust.....	Lost Creek.....	Leg amputated, crushed by a dirt wagon.
14.	William Duim.....	Koh-i-noor.....	Head and hands burned by powder.
19.	Daniel Hughes.....	Turkey Run.....	Fingers mashed by bumpers.
19.	George Bendite.....	Girardsville.....	Leg broken at the breaker.
20.	M. Larkin.....	Boston Run.....	Head cut, fell 70 yards in a manway.
20.	John Purcell.....	Bear Run.....	Seriously injured against a battery.
April 9.	Ned Kehce.....	Mahanoy City.....	Legs and face injured by a blast.
10.	Richard Cole.....	Hill Side.....	Shoulder broken by a fall of slate.
10.	John Murphy.....	Station.....	Hand crushed by bumpers.
14.	Anthony Kane.....	Union, No. 2.....	Ankle broken by fall of coal.
14.	Patrick Dougherty.....	Continental.....	Severely crushed by fall of coal.
14.	James Monaghan.....	.....do.....	Severely crushed by fall of coal.
17.	M. Monaghan.....	Plank Ridge.....	Severely crushed by fall of coal.
17.	Peter Beine.....	.....do.....	Severely injured by fall of coal.
17.	Two miners.....	Kneckerbocker.....	Leg broken by fall of coal.
21.	Henry Jones.....	Thomas.....	Ankle fractured by fall of coal.
21.	Peter Gorman.....	Oak Hollow.....	Leg broken by fall of coal.
21.	D. D. Evans.....	St. Nicholas.....	Head crushed by fall of coal.
22.	Ch. Rice Seltzer.....	Koh-i-noor.....	Thigh broken by fall of coal.
22.	M. Loftis.....	Plank Ridge.....	Thigh broken by fall of coal.

April	22.	William Arthur.	Knickerbocker	Leg broken by fall of coal.
	25.	Thomas Jourdan	Lost Creek	Leg broken by blast.
	29.	John Karmrek.	do	Severely burned by powder.
	29.	James Hower.	do	Severely burned by powder.
May	5.	Frank Detinger.	Girard, Mammoth	Leg crushed by a dirt wagon.
	5.	Patrick M'Can	Shenandoah City.	Fingers cut off by wagons.
	12.	John Hause	Mahanoy City	Leg and arm broken, 3 fingers off by wagons.
	21.	Edward Byllis	Turkey Run.	Body crushed by fall of coal.
	21.	A miner.	Plank Ridge.	Badly burned by fire-damp.
	24.	Robert Peel	Lost Creek	Head and ears burned by fire-damp.
	24.	Robinson Smith	Cuyler.	Spine injured by wagons.
June	3.	The engineer	Cambrian	Injured by the explosion of a cylinder.
	10.	M. Grady	Indian Ridge	Leg and arm broken, run over by car.
	10.	Philip Orgle.	Boston Run	Foot crushed by a wagon.
	10.	George Wright.	Koh-i-noor	Arms badly burned by fire-damp.
	10.	William Roberts	Tunnel	Eyes injured by a blast.
	18.	Anthony Gallagher.	Celorado.	Legs broken in getting on a wagon.
	18.	A miner	Girard	Severely injured by the explosion of a boiler.
	18.	M. Mulvey.	Malven	Foot crushed by a wagon.
	18.	Thomas Hanson.	Knickerbocker	Head crushed by a blast.
	26.	Isaac Bevan (boy)	Lehigh, No. 3	Mortally injured by fall of coal—died.
	28.	James Casey.	Locust Dale	Foot crushed by wagons and rope.
July	3.	Anthony Devitt	West Lehigh.	Head injured, crushed by wagons.
	10.	J. Sheppe.	William Penn.	Severely injured, fell off a trestle.
	11.	Daniel O'Connell	Bear Run	Hand crushed by a fall of coal.
	11.	Frank Detinger	Girard, Mammoth	Leg and foot crushed by wagons.
	11.	Patrick M'Que.	Shenandoah City.	Fingers cut off by spraying wagons.
	14.	Peter Halvey	Preston, No. 3	Severely burned by an explosion of gas.
	14.	William Thomas	do	Slightly burned by fire-damp.
	14.	Lewis Wilde.	do	Slightly burned by fire-damp.
	26.	James Clemson	Hill and Harris	Severely injured, run over by wagon.
Aug.	1.	Thomas Tracy	Prinrose	Severely injured by fall of rocks.
	1.	David Powell	Koh-i-noor	Severely injured by fall of rocks.
	1.	James Powell	do	Severely injured by fall of rocks.
	1.	Thomas Dorey	Bear Run.	Severely injured by a blast in the coal.
	6.	John Lehey	Turkey Run.	Hand lacerated by a circular saw.
	7.	John Kelso	Plank Ridge.	Shoulder cut by a fall of coal.
	11.	Edward Young	William Penn.	Arm crushed by wagons.
	21.	John W. Lewis.	Draper	Hand hurt.
	22.	Thomas L. Richards.	Tunnel Ridge	Severely burned by powder.
	22.	Charles Hughes.	Ellen Gowau	Severely crushed in the new shaft.
	25.	John Cook	do	Severely crushed by fall of timber.
	30.	Frederick Wenkle	Tunnel Ridge	Leg terribly injured.

ASHLAND, OR SECOND, DISTRICT—CONTINUED.

DATE.	NAMES.	COLLIERIES.	REMARKS.
Sept. 5.	John Perry.....	Preston, No. 4.....	Severely burned by fire-damp.
5.	Edward Reese.....	Preston, No. 4.....	Severely burned by fire-damp.
5.	Peter Joyce.....	Big Mine Run.....	Arm amputated—run over by wagons.
5.	Lewis Dehel.....	New Boston.....	Arm broken—fall of a wagon.
5.	Henry Wenkle.....	Tunnel Ridge.....	Head injured—back and arm broken by coal.
8.	William Green.....	Preston, No. 2.....	Leg crushed by wagons.
8.	Hiram Mitchell.....	Raven Run.....	Arm broken—head and side injured by coal.
10.	John Colohan.....	Girardsville.....	Back and face injured by a fall of coal.
11.	Thomas Holmes.....	Lehigh, No. 10.....	Foot cut by the slope cage.
15.	Bartley M'Glaughlin.....	Knickerbocker.....	Collar-bone broken by timbers.
15.	Patrick Ward.....	Indian Ridge.....	Slightly crushed by wagons.
15.	Patrick Bagley.....	Plank Ridge.....	Severely burned by fire-damp.
15.	A miner.....	Plank Ridge.....	Severely burned by fire-damp.
16.	Lewis Lower.....	Union, No. 1.....	Arm broken—fell into the schute.
16.	James Ryan.....	Primrose.....	Severely injured by breaking of slope rope.
16.	Wm. Harris.....	Primrose.....	Slightly injured by breaking of slope rope.
16.	Henry Davis.....	Primrose.....	Slightly injured by breaking of slope rope.
16.	Wm. Jenkins.....	Primrose.....	Slightly injured by breaking of slope rope.
18.	Edward Mason.....	Furnace.....	Head severely cut by a wagon bolt.
22.	M. Tallot.....	Plank Ridge.....	Severely burned by fire-damp.
22.	Stephen Horn.....	Plank Ridge.....	Mortally burned by fire-damp—died.
22.	James Pearson.....	Knickerbocker.....	Severely kicked by a vicious mule.
22.	Patrick Fahy.....	Indian Ridge.....	Severely burned by powder.
22.	Rodger Gelroy.....	Girardsville.....	Severely injured by a fall of coal.
25.	M. Mulvoy.....	Malvern.....	Foot crushed by wagons.
26.	William Burt.....	Tunnel.....	Severely hurt—fell into breast.
6.	G. Llwellyn.....	Tunnel.....	Head and back crushed by wagons.
6.	John Genny.....	Copley.....	Arm fractured—fell off a mule.
6.	William Baker.....	Copley.....	Mortally burned by powder—died.
6.	Patrick Hendricks.....	Thomas.....	Severely crushed by coal.
8.	Edward Braeken.....	Gilberton.....	Severely burned by fire-damp.
8.	John Williams.....	Gilberton.....	Severely injured by fall of coal.
10.	Patrick O'Donnell.....	Wm. Penn.....	Leg broken—run over by a wagon.
10.	John Skevan.....	Thomas.....	Severely burned by a cartridge
10.	John Hanson.....	Knickerbocker.....	Severely injured by a fall of coal.
16.	Dan Davis.....	Tunnel.....	Severely injured by fall of a of coal.
20.	David S. Lewis.....	Tunnel.....	Severely injured by fall of a of coal.
Oct.			

20.	A boy.....	Girardsville.....	Hand severely injured by a blast.
22.	Alexander Morrison.....	Lehigh, No. 3.....	Severely injured by an engine.
22.	J. Dickenson.....	Shenandoah City.....	Severely injured by a fall of coal.
29.	Patrick Rowland.....	Preston, No. 4.....	Head severely cut by a dumper.
29.	Thomas Jackson.....	Hall & Harris.....	Thumb cut off by a fall of coal.
3.	John Daddow.....	Plank Ridge.....	Head injured—fall of top rocks.
6.	Joseph Swansberry.....	Preston, No. 1.....	Head severely injured by a fall of rocks.
6.	Isaac Bando.....	Turkey Run.....	Head severely injured by a fall of coal.
11.	Thomas Harris.....	Thomas.....	Severely burned by a keg of powder.
12.	Frank Whalen.....	Silliman's.....	Mortally injured—died in hospital.
21.	Peter Kuntzler.....	Mahanoy City.....	Mortally injured—a cog wheel fell on him—died.
21.	Darby Coyle.....	Preston, No. 2.....	Leg and eyes injured by a fall of coal.
21.	M. Monaghan.....	Preston, No. 2.....	Severely injured by a fall of coal.
4.	John Miller.....	Silliman's.....	Arm broken—fell off the breaker.
4.	Peter Krell.....	Silliman's.....	Severely injured by a fall of slate.
4.	Hugh Evans.....	St. Nicholas.....	Seriously injured by a fall of slate.
6.	John Richards.....	Honey Brook.....	} 13 men got in a wagon to ride down the slope, contrary to rules; the wagon shunted the track 90 yards from the bottom, the spread ring broke and the wagon and men fell to the bottom, killing 3 and severely injuring 7 others.
6.	John Dolan.....	Honey Brook.....	
6.	John Archibald.....	Honey Brook.....	
6.	James Divers.....	Honey Brook.....	
6.	Dennis McMullin.....	Honey Brook.....	
6.	Luke Whittaker.....	Honey Brook.....	
6.	James Castles.....	Honey Brook.....	
10.	John Morgan.....	Lost Creek.....	
16.	Robert Gerrell.....	Hazle Dell.....	
18.	James Ryan.....	East Mahoney.....	
24.	John Carroll.....	Colorado.....	
27.	James Maley.....	Turkey Run.....	
31.	John Tregallis.....	Primrose.....		Hand badly crushed by wagons. Seriously hurt by a fall. Eyes seriously hurt by a blast. Leg broken by a fall of slate. An eye destroyed by a coal splinter. Hands injured by a blast.

Nov.

Dec.

ASHLAND DISTRICT.

No. 1.—TURKEY RUN.—*Brenizer & Co., Operators.*

The colliery is situated west of Shenandoah City, on the estate of Messrs. Gilbert & Shaefer. It consists of a tunnel open 120 yards south to the E or Mammoth seam; open on the water level, with east and west gangways. The west gangway is open 1,700 yards, and a monkey air-course made along it for an air-course, of a section area of 25 square feet. A counter gangway is sprung from this 80 yards long, and east and west gangways tunneled off. The west side is 350 yards long, with 8 breasts working. The main run is at its boundary limits, and a result is had to robbing back the pillars. A new slope is in the course of sinking within the gangway, to run down 200 yards deep, 100 yards of which is just completed; also a tunnel is started to be driven to the 7 feet seam, 70 yards of which is completed. 850 yards of south dip, west gangway, is driven to the line, and an air-course similar to the other one opens its whole length. There are 5 breasts working on the section. A self-acting plane, 75 yards in length, which is used to shorten the lifts, with east and west gangways open. The dip is easy of access by using switch-back tracks, and in others the tracks are laid into the breastings. An anticlinal rises at the tunnel, and increases as it advances west.

Ventilation is produced by the action of a fan and an air-hole, with some falls in the old breasts. The ventilation is not fully adequate, nor can it be easily remedied until the proposed improvement be completed. The quantum of air supplied was 10,226 cubic feet per minute for 116 men, 12 mules and lamps. No gases have been encountered so far, and consequently there is less apprehension of danger; otherwise the condition of the mine is satisfactory. 3 engines in use; a 120-horse power runs the breaker and plane, with 7 boilers in use, the condition of which is reported to be good; a small locomotive is used for haulage; 4,264 yards of track are laid at the colliery.

No. 2.—STANTON.—*Miller & Hock, Operators.*

The colliery is situated near the Mahanoy Depot, on the estate of Gilbert and others. It consists of a double track slope 131 yards deep, on the south dip of the E seam, 54°. The pump way and traveling road is also located in the slope, which is protected by sheet planking for miners' safety on their way in and out of the mine. 600 yards of an east gangway has been opened, with 4 breasts working, each of which is 10 yards wide, with 8-yard pillars, with working runs of 100 yards, with 30 feet of coal. The section area of the outlet of 54 square feet. The west gangway is open 600 yards, and a monkey air-course along the gangway to its face, with 4 breasts working. The quantum of air supplied was found by measurement to be 10,000 cubic feet for 50 hands; favorable.

Engines in use, 7—to 246-horse power, with 12 good boilers; drainage is produced by an 18-inch pole pump; the drum is well secured by a brake and horns, with new wire ropes, each $1\frac{3}{4}$ inches in diameter. 130 hands are employed in and about the colliery, which I find in good condition; 4 visits.

No. 3.—PRESTON, No. 2.—*Philadelphia and Reading Coal and Iron Company, Operators.*

This colliery is situated west of Girardsville, on the said company's property. It consists of a double track slope, sunk 115 yards in its first lift below water level, on a dip 52° south. Its east gangway is open to its boundary line, and an air-course open all along its length, with five working breasts, and has 75 yards of a working to the water level; a second outlet is also open for travel near the slope. The west gangway is 560 yards long, with an air-course running along its length, and are working 7 breasts with 75 yards of a working run; a chain pillar, 45 yards thick, is left to protect the upper level; a tunnel, 295 yards open north, cuts the Skidmore or D seam on an angle 175° west of the slope. There are east and west gangways open on this seam, each 150 yards long, and working 6 breasts, with man-ways holed in the pillars 7 yards apart.

Ventilation is produced by the action of a 20 horse-power fan, yet some improvement is necessary to supply an adequate amount of air. I had given such directions as appeared proper in order to obviate the deficiency exhibited.

Engines.—There are 5 engines in use, equal to 320 horse-power, with 12 boilers, whose condition appears to be good.

One hundred and eighty hands are employed in and about the colliery; there are 2,474 yards of track laid; I consider the colliery in good ordinary condition, except the D seam panel.

No. 4.—BIG MINE RUN, (UNION.)—*Philadelphia and Reading Coal and Iron Company, Operators.*

This colliery is situated east of Ashland, in Schuylkill county, on the said company's estate, and is 18 years in operation. It consists of a double track slope, sunk two lifts on the south dip of 40° on the E seam, with gangways open east and west. The east gangway is 1,100 yards long, and 8 breasts working, carrying jugular man-ways in each for air-courses, with working runs of 80 yards to the chain pillar that supports the old lift, which chain pillar is 43 yards thick; the upcast in this mine is east of the slope of a section area of 50 square feet; the seam here is 21 feet thick. The west gangways are 1,100 yards long, and ventilated as above, with 8 breasts working, of 12 yards wide, and 67 yards of a working run; the gangway passes under the West Big Mine Run of Taylor & Lindsay. The quantum of air measured was 19,000 cubic feet per minute for 142 hands, etc.; inside there are 115 hands; outside=257 hands; there are 14 mules inside and 16 mules outside=30 head, with 40 wagons in use; 3,810 yards of track is used in and about the colliery.

Ventilation is effected by the operation of a 20 horse-power steam fan, the result of which is satisfactory.

Engines in use.—There are 8 engines of an aggregate power of 475 horses, with 19 boilers; the drums are protected with horns and good wire ropes used in the slope. A new pump slope is under way, 88 feet east of the hoisting slope, of an section area of 124 square feet. When this slope is completed it will be used as an ingress and egress road for miners as well as a pump slope. This will afford great convenience and safety for the hands.

In connection with this colliery a drift is open on the surface in the D or Skidmore seam. At present this district is idle. I found the slope with its ropes, machinery and tackle in good ordinary condition. Four visits were made.

No. 5.—BOSTON RUN.—*Philadelphia and Reading Coal and Iron Company, Operators.*

This colliery is situated south of Gilberton, in the Mahanoy Valley, on the above company's estate. It consists of a double track slope, sunk 114 yards deep on the dip of 55° north; its section area is 210 square feet; the slope workings are newly opened; the west gangway is 1,706 yards long, and 5 breasts are working; there are three schutes to each two breasts; a slant gangway is in course of opening to enable them to extract the upper coal; an air-course is carried along this slant to ventilate this district; 29 yards of a tunnel opened the 7 feet seam on the south, and gangways are open 700 yards and are working 6 breasts; the inlet is open on the centre of this short tunnel; the tunnel has been continued to the 10 feet seam, some 15 yards further, and gangways open 400 yards, with 7 breasts working; these breasts have a mining run of 90 yards; an outlet is located at the centre of this tunnel and a fan erected there to aid in ventilating the colliery; the supply of air was found to be 11,600 cubic feet per minute in a district where 79 men are employed.

Engines in use.—There are 7 engines in use, equal to 230-horse power, with 16 boilers, the condition of which is not reported.

Ventilation is satisfactory; daily shipment, 60 cars; Samuel Tregay is in charge of the colliery; 4 visits made.

No. 6.—TUNNEL.—*Philadelphia and Reading Coal and Iron Company, Operators.*

This colliery is situated at Ashland, on the north slope of the Mahanoy Mountain, on the estate of the said company, late the estate of John P. Brock & Brother. It consists of two slopes for coal purposes and a pump slope. The old slope is abandoned so far as it relates to mining; the new slope is sunk 231 yards deep on the 6 feet seam, dip 65° north; the other slopes are sunk on the same vein for better security and for permanency; the pump slope is sunk 240 yards deep and a single track is laid in its centre for the use of material and men; for convenience and safety also there are two 24-inch pipe columns laid in it for the purpose of drainage; sufficient gangways have been opened on the 6 feet vein for the purpose of connecting these slopes as approaches for accommodation in working the mines; two tunnels are driven from the 6 feet vein to the E seam, or Mammoth seam, the coal of which is taken out to the hoisting slope; 14 breasts are working on the east gangway. The colliery has been remodeled by the Philadelphia and Reading Coal and Iron Company at a great cost and no doubt will, when in proper condition, remunerate the expenditure, as the field of coal is known to be very extensive.

Ventilation is produced by the operation of 2 iron-clad steam fans; one, the common Beadle patent, to be superseded by Goen's patent; the other, the patent Belgian fan, supplying 30,000 cubic feet of air per minute

These mines generate fire-damp largely, hence the necessity of using both fans in connection with the safe working of the mine, the present workings of which are of recent development.

Engines and Power.—There are 9 engines in use of 665-horse power, with 36 boilers; all of whose appointments are in good condition.

Two hundred and twenty-seven hands are employed in and about the colliery, with 21 mules and 55 wagons in use; 2,436 yards of track are laid on the premises. An advantage is claimed in the use of the self-unloading coal cages, or gun boats, which receives the coal at the bottom of the slope from the mine wagons, and then are hoisted by powerful engines to the top of the breaker buildings, where it passes over a curved track, the front wheels of which are low while the hind wheels are large, gives to the cage, when in position, sufficient inclination for the coal to drop out at once. When the cage is withdrawn, it resumes its horizontal position again in the slope.

The lower lift of the new slope is a lift under the old Pioneer workings, late Bancroft, Lewis & Co. The large amount of coal which remains in that colliery will be worked out by this present slope on its western limits without the expenses that would be incurred by erecting a new colliery on the Pioneer premises. Fire-damp prevails to a considerable extent in both these mines, and, in fact, in all the mines in the vicinity of Ashland.

No. 7.—PRESTON, No. 3.—*Philadelphia and Reading Coal and Iron Company, Operators.*

This colliery is situated at Girardsville, on the estate of the said company. It consists of a slope sunk 96 yards below water, on a 72° dip north on the E seam. Two tracks of 66-inch gauge are laid in the hoisting slope, and a 48-inch gauge track laid in the pump slope, used for handling material and the convenience of miners. 228 yards of new gangway have been opened eastward, with a monkey air-course carried alongside for an air passage. There are 8 breasts working in this panel, with but one schute to each breast. 473 yards of a west gangway has been opened, with a like air-course used, and 20 breasts working; and for their ventilation, jugular manways are used in each, with 70 yards of working runs, and 26 yards thick of chain pillars are left to support the upper level.

Ventilation.—An 18 feet steam fan is used for this purpose. The west gangway runs 400 yards westward, and sweeps round an anticlinal to eastward; the upper level is mined out and abandoned. The coal of this colliery is hauled west to colliery No. 4 breaker by a small Baldwin engine that supersedes horse power. The coal of the E seam here exceeds 30 feet in thickness. By measurements of the air I found that a proper supply had been in circulation, and evidently the mine was well ventilated.

Engines.—There are 7 engines in use of an aggregate equal to 394 horses, with 17 boilers in use; all of which are reported to be in good condition.

Forty-five men and 4 boys=49 hands, are employed. No hands are needed outside, as the coal is prepared at the No. 4 Preston breaker. This colliery has lately been remodeled, at great expense, and will be used to develop all the north dipping seam.

No. 8.—PRESTON, No. 4.—*Philadelphia and Reading Coal and Iron Company, Operators.*

The colliery is situated at Girardsville, on the estate of the said company. It consists of a tunnel opening several yards above water level and driven south, and in its course opens four coal seams, with east and west gangways open and extended to the tract line. The principal work doing here is confined to robbing out the coal supports, which never is a safe undertaking.

Ventilation is produced by the natural circulation of the air through fallen breasts, &c. No apprehension of accidents arising from fire-damp explosions need be felt here, as the outlets are numerous, and the accumulation of gases is rendered impossible.

Engines used.—A 20-horse engine is used to run the breaker, and the only power necessary at this colliery.

Twenty-five hands are employed inside and 75 outside; 3,416 yards of track are laid; the coal seam is 25 feet thick; the E, D, 7 feet and small seam are worked in this colliery.

No. 9.—NORTH GILBERTON.—*Boston Coal Company, Operators.*—*H. L. Williams, agent for the company.*

The colliery is situated at Gilberton, on the estate of John Gilbert and P. W. Sheaffer. It consists of two double track slopes, sunk 243 yards deep on a south dip of 43° on the E seam, with gangways running east and west, and having monkey air-courses along side of each for effective ventilation. The east gangway is open 800 yards, and working 10 breasts with 85 yards of a mining run to each. All these breasts have two schutes to each. There are three outlets in this panel of the mine. The west gangway is 900 yards long, and working 4 breasts. The gangway is to be driven to the boundary line from its present face, and then mine back the coal as is the case in long wall mining. Fire-damp gas is generated in considerable quantities in this mine, and every precaution is necessary to prevent accidents from this source of danger.

I found 14,000 cubic feet of air in circulation for 75 hands, and apparently adequate for the necessary supply. Mining in the upper west lift is resorted to robbing back pillars, and for this purpose the old slope is used to get the coal to the surface. The coal of the eastern upper lift has been extracted and the place left idle.

Engines in use.—There are 10 engines, of an aggregate of 442-horse power, with 18 good boilers in use. Two pumps are in use for drainage, viz: One 12 inch pole pump and a 14 inch steam pump, together with all machinery, have been examined and found in good and secure condition.

Fourteen hands in the old top level; 75 hands in the bottom level; 80 hands outside=169 hands; 16 mules and 79 wagons are in use; 3,600 yards of track are laid.

No. 10.—HOFFMAN.—*Lehigh Coal and Railroad Company, Operators.*

The colliery is situated one mile west of Mahanoy City, on the said company's estate. It consists of a double track slope, sunk 95 yards deep on the south dip of B seam, Buck Mountain, on an angle of 50°. A pump

is placed in the slope-way, and used for drainage. East and west gangways are open. The east gangways are 800 yards long, but of late little or no mining had been done in this panel. Eight hundred yards of a west gangway has been opened, and 8 breasts are working, with 65 yards of mining runs. The breasts are open 9 yards wide, and are supported by pillars 6 yards thick, and are ventilated through headings in these pillars 20 to 15 yards apart.

Ventilation was not adequate at the time of my visit; I pointed out the course to be pursued to remedy this defect.

Engines in use.—There are 2 engines of 100-horse power, with 4 boilers, the condition of which had not been reported.

Twenty-five inside hands with 40 outside hands=65. I found the colliery not in a satisfactory condition, yet it does not warrant expenditures to make much of a change.

No. 11.—INDIAN RIDGE.—*Philadelphia and Reading Coal and Iron Company, Operators.*

This colliery is situated east of Shenandoah City, on the said company's estate. It consists of a double panel shaft opening, sunk 110 yards deep of a section area of 200 square feet, (20×10.) The shaft is finely timbered throughout and amply secure. The east gangway is 900 yards long, and has a back air-course gangway in connection with it to its face. Forty breasts are working on this panel, having but one chute to each; all are 8 yards wide, supported by 7 yard pillars. The coal is 25 feet thick, with mining runs of 78 yards. The system of mining this thick seam I have approved of, owing to its safety in mining. Thus, the upper bench or ledge of the seam is left standing until the breasts are driven the proper distance; this ledge of coal is easily removed, and the miner finds it a safer operation than to work the whole seam at once, and affording him much better means of ventilation. A counter gangway is open along the top of these breasts, and as occasion requires, an air-hole is opened into it, and passing up through the pannel working to the outcast. The west gangway is worked in a similar manner, and communicates with the workings of the Messrs. Lee & Grant colliery, on the north dip of that seam, and forms a ventilating medium in this panel of the works. There are 26 breasts open in the west-side workings. The eastern panel is ventilated from the shaft inlet, passing down the cage partitions and inward to the working-fan, returning by the pillar headings to a back brattice to shaft, and passing out in its partitioned air-shaft. I found an adequate amount of air circulating in the works, which are very extensive. 115 miners, 30 laborers and 25 boys are employed inside, and 30 men and 60 boys outside—in all, 260 hands.

Engines and Power.—There are eight engines, equal to 508-horse power, and 14 good boilers in use. I found the shaft machinery with all its tackle and fixtures in good safe condition. I approve of the connection of both these mines for many useful purposes.

No. 12.—FURNACE COLLIERY.—*Atkins & Bro., Operators.*

This colliery is situated east of Gilberton, on the estate of John Gilbert, *et al.* It consists of a tunnel opening to the D seam, with gangway driven east and west. The east gangway is 1,100 yards long, and the coal ex-

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tracted. A tunnel opens the E seam, having, also, east and west gangways opened in it, and this pannel has been exhausted. A self-acting plane is here opened in a small basin, which forms a north and south dip. At the head of this incline plane the E seam flattens out into an extensive coal-field, having a dip of 8° on both inclines. Air-holes are driven from here up through the strata and out to the surface, where a furnace is placed for ventilating the mine. I found an adequate supply of air in circulation, and no complaint about its management. Forty-two hands are employed inside; a 25-horse power engine runs the breaker, which is the only engine needed about the colliery.

No. 13.—PRIMROSE.—*C. B. Nevills & Bros., Operators.*

The colliery is situated a mile east of Mahanoy City, on the estate of the Lehigh Coal and Railroad Company. It consists of a drift open, on the Primrose vein, by which both the north and south dips were worked. The drift is 2,200 yards long eastwardly, the seam inclined upward and formed a west dip, then sunk gradually for some distance when both gangways met; mining is chiefly confined to robbing pillars. One thousand seven hundred yards from the drift 75 yards of a *dry slope* was open, on which is built their breaker. Sunk this slope 50 yards deeper and tunneled to the north dip and again opened gangways. The seam is nearly flat, the east gangway is 300 yards long and working 31 breasts in it; the west gangway is 500 yards and 18 breasts working in it.

A tunnel has been driven south, and in its course 5 coal seams have been cut through. The E seam gangway is 250 yards long, with 6 breasts working in it. The T seam, or *Diamond* gangway, is 200 yards, with 4 breasts working; the 6 feet *Veem* gangway is 200 yards, with some breasts open; the D seam gangway is 175 yards, and some breasts working. Ventilation is produced by the action of a furnace, air-holes and a 12 feet fan, which fan is located on the E vein air-hole. I found a moderate supply of air in these workings.

Engines and Power.—There are 6 engines, equal to 165-horse power, and a seven inch pump, all of which engines and machinery I found in good condition.

No. 14.—DRAPER.—*William Draper & Co., Operators.*

The colliery is situated at south Gilberton, on the estate of Gilbert & Sheaffer. It consists of 2 slopes, sunk in 2 lifts, on the north dip of the Manmoth seam E, 196 yards deep and 196 yards apart. The west slope is sunk 2 lifts below water level and the new lift 110 yards deep, with gangways open. The west gangway is 100 yards long, and are driving an air-hole up to connect with the upper outlet to the fan. The east gangway is 125 yards long, which air will be connected with the east side fan. These panels are troubled with some fire-damp, but precautionary measures have been taken to prevent any accidents from explosions of gases.

The east slope is sunk 100 yards under water level, and is used as the principal hoisting slope. Its east gangway is 1,250 yards long and ends at the line; the length of 24 breasts of this gangway is broken in, but proper efforts are being made to re-open the same.

The west gangway is open 590 yards where a resort is had to robbing out the pillar coal, the inside face breast is open for and used as an outlet.

A small mine locomotive is used for doing the haulage, which is expeditious and satisfactory; 91 hands are employed inside.

Engines.—There are 11 engines of=510 horse-power, with 18 boilers; 2 steam pumps, of 10 and 14 inch columns, all of which are in good condition, except some crushing.

No. 15.—BEAR RIDGE.—*Mumper & Co., Operators.*

The colliery is situated north of the foot of the Mahanoy Planes, on the estate of Gilbert & Sheaffer. It consists of double track slope sunk 240 yards deep, on the south dip of the E seam, on a 51° angle. The coal is hoisted on cages. The coal is a superior article. The east gangway is 500 yards long, with a monkey air-way in connection therewith. An upcast has been opened out west of the slope, and a pump slope is sunk to the first lift east of the hoisting slope, where steam pumps are located, which also forms a second outlet. 179 yards of a tunnel have been driven to the north dip across the basin, where gangways have been opened in 45 feet of coal. At the face of this tunnel an air-way is opened out to the surface. The plan of using but one schute to a breast is adopted here, and has a mining run of 90 yards.

Ventilation is mainly produced by a fan. The mine generates a considerable amount of fire-damp. The supply of air was not fully adequate to be effective. In this case I suggested to Mr. Evans the propriety of placing a door on the gangway, which had the desired effect.

Engines.—There are 7 engines—to 625-horse power, with 20 good boilers. The slope ropes are in good order. The drum has had no brake attachments so far. Under all circumstances I find the colliery in good condition.

No. 16.—GIRARD TUNNEL.—*Mumper & Co., Operators.*

This colliery is situated near the foot of the Mahanoy Planes, in what has been known as the Girard tunnel in olden times, and on the estate of Gilbert & Sheaffer. It consists of an extension of the said tunnel 122 yards north to the E seam. By the application of the diamond drill the question about the locality of the E seam was virtually set at rest, and the tunnel had been opened to the seam, creating another accession to the family of collieries in this district.

Gangways have been opened in some 150 yards, with parallel monkey air-courses and man-ways in the pillars, and air-holes have been driven out to the surface 137 yards. A trial slope sunk 60 yards deep west of the tunnel, from which an air-hole will be made to ventilate the west panel. This west gangway is 195 yards long, with like monkey air-courses. The coal in this seam is 30 feet thick. A furnace will be used for ventilating these mines. There are 3 engines=110-horse power, with 5 new boilers in use. 63 hands are employed in and about the colliery, and only recently commenced mining; 40 cars of coal have been shipped per day, and I am convinced it will become a successful operation. George W. John is in charge of the colliery.

No. 17.—M'NEALL.—*M'Neall Coal Company, Operators.*

This colliery is situated at Yatesville, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of 2 double track slopes, Nos. 1 and 2, sunk 95 and 160 yards deep on south dip of the G or Primrose seam, but are 275 feet asunder. The dip of the vein is 33° . No. 1 slope workings had been driven to the boundary line, and a resort is now had to robbing back the pillars.

No. 2 slope is down two lifts. Its new lift gangway is opened 350 yards east, and working 9 breasts in it; and a second outlet is open out to the upper lift level and is a permanent safe outlet.

Ventilation is effected by the action of a 15 foot fan, (say a 25 horse-power,) and produces an ample supply of air. Some little quantities of fire-damp is generated, but not to any alarming extent.

Two hundred and ten hands are employed in and about the colliery; 5 engines=215 horse-power, and 10 boilers are in use. The average daily shipments are 75 cars.

The management of the colliery is under the superintendence of James Waddell.

No. 18.—HILL SIDE.—*Philadelphiu and Reading Coal and Iron Company, Operators.*

The colliery is situated east and in the limits of Mahanoy City, on the estate of the said corporation. It consists of a double track slope, sunk on the Black Heath vein, on a 33° dip, in two lifts below the water level, with gangways and counters. The east gangway on the new lift is 250 yards long, and the west gangway is 350 yards, with a mining run of 60 yards. An upcast is open east of the slope of a section area of 40 square feet, and another outlet is open in the west panel. 65 yards of a tunnel driven south to the South vein has 60 yards of a gangway open on it. The tunnel will be continued until the north dip is reached. Another tunnel is open east of the slope, and cut these seams on their southern dip. 175 yards of gangway have been open on the Skidmore seam, and are working 13 breasts; a breast has been driven into the upper lift with a view to effect an outlet air-course for this panel of the works. Its west gangways are 150 yards long. The B or Buck Mountain seam is also opened. The pumps are located a short distance west of the slope.

Ventilation is moderate. Some fire-damp is generated in the mine, but not to any extent.

Fifty hands are employed; 5 engines=357 horse-power, with 12 boilers, are in use, all of which, with their machinery and tackle, are in good condition. The opening of the tunnel to the north dipping seams will improve the colliery.

No. 19.—GRANT COLLIERY.—*Moody & Co., Operators.*

This colliery is situated directly north of Mahanoy Tunnel, on the Delano estate. It consists of 2 tunnels, driven north to the B seam; the upper tunnel is driven on a level with the breaker, while the new tunnel is open at the railroad level. The old tunnel gangways are a mile in length eastward, and are robbing out pillars; the lower tunnel opened the 7 feet

seam, and gangways are opened in this pannel, and 8 breasts are working; an air-hole is opened on the middle of the tunnel; the coal is $4\frac{1}{2}$ feet thick in the second vein, and east and west gangways are open with 4 breasts working; these air-holes are connected with the upper level on which a furnace is located; but ventilation was not satisfactory.

Two engines=50-horse power, with 4 boilers, are in use, and in good order and condition; 58 hands are employed.

No. 20.—CUYLER.—*Heaton & Bros., Operators.*

This colliery is situated at Raven Run, north of Girardsville, but on the line of the Lehigh Valley railroad, on the Cuyler estate. It consists of 2 drift openings on the north dip of the B and E seams; 2 parallel gangways run west some 1,760 yards, with a 12-foot coal pillar running between them; throughout this pillar is pierced at the breasts for the light wagons to pass through, the inner gangway being used for loaded trains and the outer one for light trains; besides this, these gangways are used in connection with the system adopted for ventilating the mines by means of check doors; the circulation of the air is produced by the action of a 20-horse power fan that is located at the B drift; these seams are nearly flat; a counter gangway is open on the flat and are working 11 breasts on it, and 5 breasts working on the saddle dip gangway; 82 hands are employed in the mines; a locomotive engine is used for haulage, with 15 mules and 80 wagons and 75 hands outside; 5 engines=95-horse power, with 4 boilers, are in use, the condition of which is satisfactory.

The E seam is worked in connection with the other panels with a gangway 400 yards long, the coal of which is 18 feet thick, and are working 10 breasts on it; this pannel is ventilated by a furnace, and its action is only moderate. The wagons are taken into the breasts from the main gangway to where there are loaded; the drifts are 200 yards apart.

No. 21.—EAST MAHANAY.—*Focht & Whittaker, Operators.*

The colliery is located one mile north-east of Mahanoy City, on the estate of Delano. It consists of a double chambered shaft, its section area is $18 \times 12 = 216$ square feet. Gangways are open in north and south. The east gangway is open 950 yards, and having an air-course in connection with it to its face, working 4 breasts, and have a mining vein of 75 yards, supported by 7 yard pillars, which are holed or pierced by heading every 20 yards of their length for the free passage of air. Ninety-six yards of self-acting plane is used to reach the counter workings 275 yards east of the shaft. This forms a good panel, upon which are worked 14 breasts.

The west gangway is 250 yards long, and 9 breasts are working. The coal seam in this panel is 16 feet thick.

No. 2 Run is 250 yards long, and six breasts are working on it. The panels lying north of the shaft are all finished.

Ventilation.—In reference to this subject I found it but moderately attended to, and not as satisfactory as might be expected. The shaft is used for an intake, the outlet is located 250 yards north of it. A fan is located over the tunnel to ventilate that part of the works, and is effective and

satisfactory. One hundred and seven hands are employed inside and 46 outside.

Engines.—There are 4 engines of an aggregate horse power of 95 horses, with 4 boilers in use, all of which machinery and fixtures are in good order.

No. 22.—ELMWOOD.—*Philadelphia and Reading Coal and Iron Company, Operators.*

This colliery is situated in the western limits of Mahanoy City, upon the said corporations estate. It consists of a double track slope, sunk 110 yards deep on a 37° south dip of the 4 feet seam that underly the E seam. The pumps are located in the slope for drainage, a tunnel 17 yards south opened the E seam, and 11 breasts are working on the east panel, with mining runs of 75 yards, flanked by 8 yard pillars. Seven breasts are working on the west panel and are supported by 8 yard pillars. The seam is fifteen feet thick.

Ventilation is but moderate, and is effected by the discharge of the steam pump. The slope is used for an intake, and the air carried, in close brattice, to the working places, thence returning through the breastings to the outlet, where the exhaust steam propels to the surface.

Engines.—There are 4 engines of an aggregate of 245-horse power, with 10 boilers in use. A 16-inch column steam pump is used for drainage; all of which fixtures and machinery I found in good condition.

Seventy-six hands are employed in and about the colliery; 6 mules and 12 wagons are in use. The slope and slope machinery are in perfect order.

No. 23.—MAHANAY CITY.—*Philadelphia and Reading Coal and Iron Company, Operators, (late Rummel, Hill & Harris.)*

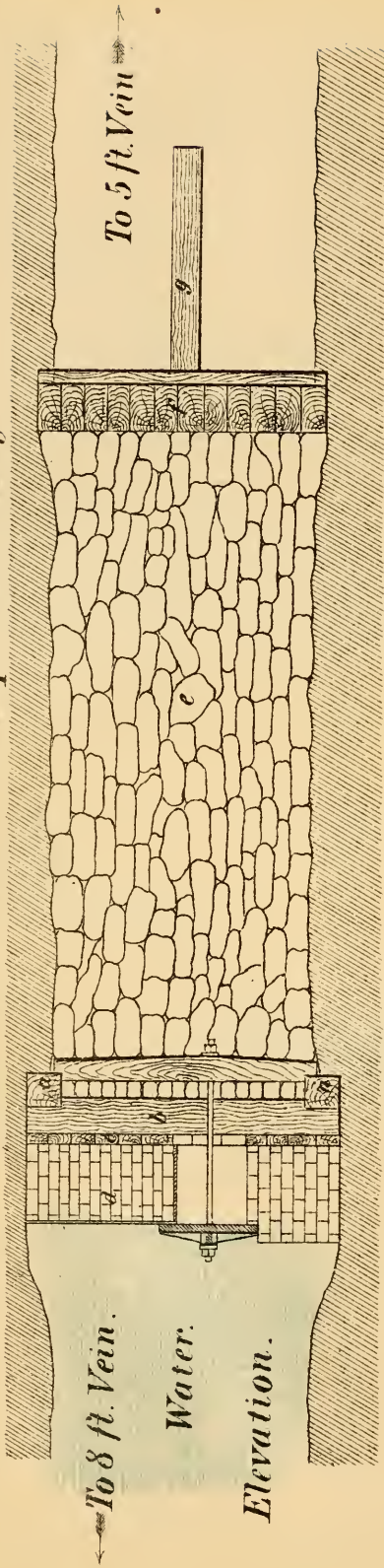
This colliery is situated in the northern limits of Mahanoy City, on the said corporation's estate. It consists of a double slope sunk 170 yards deep on a 33° south dip of the E seam. The eastern panel on this lift is finished. The western gangway is 1,400 yards long. 13 breasts are working in this panel. A monkey air-course is run along the gangway to its face. A solid section of coal, sufficient for 14 breasts, is left standing in this panel until needed, with 85 yards of a mining run to the upper level.

A tunnel 120 yards in length opened the G or Primrose seam south, and gangways have been opened on its north and south dip. Its north gangway is 750 yards long, and four breasts are working in it. Its south dip gangway is 1,050 yards long, and 9 breasts are working on this panel. Both panels are ventilated by monkey air-courses, which is adequate for their purpose.

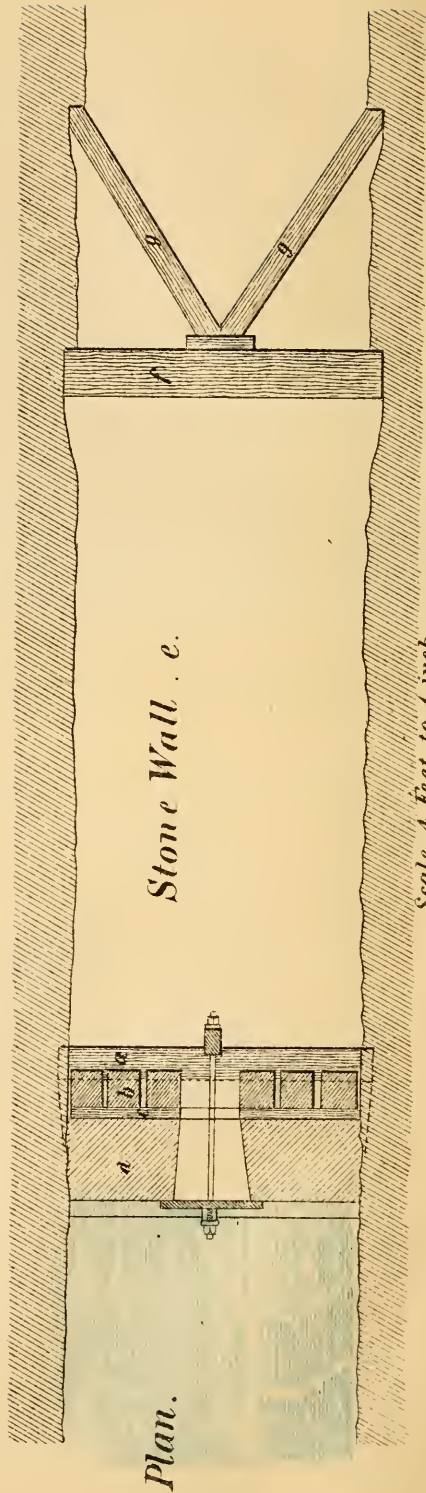
Ventilation is produced by the operation of two steam fans—one located on the E seam, near and west of the slope, and the other fan is located on the G seam. These fans furnish an abundance of air for the healthy and safe working of the mine. I found, by measurement, 22,327 cubic feet of air in circulation for 108 hands.

Engines.—5 engines=210-horse power, and 6 boilers, with a 12-inch steam pump in use.

Dam in Tunnel, Enterprise Colliery.



Elevation.



Plan.

Scale 4 Feet to 1 inch.



No. 24.—ENTERPRISE.—*James R. Clever, Operator.*

This colliery is situated at Ashland, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a slope sunk 85 yards deep, on the six (6) feet seam, on a 46° south dip, with east and west gangways. The gangway of the east panel is 330 yards long, making 6 breasts, supported by 6 yard pillars, and mining run of 65 yards each. The panel is ventilated by an air-hole, open 150 yards east of the slope for this purpose. The western panel is 350 yards long, and 5 breasts are working, with a mining run of 65 yards to each breast. An outlet is open on this panel which serves for a traveling road and upcast air-way.

Ventilation is produced by natural means, (air-holes,) but of a secondary character.

No. 25.—CONTINENTAL.—*Robert Gorrell & Co., Operators.*

The colliery is situated one mile east of Centralia, in Columbia county, on the estate of the Locust Mountain Coal and Iron Company. It consists of a double track slope, sunk 219 yards deep in two lifts, on a 45° south dip of the E seam, in 22 feet of White Ash coal. 1,750 yards of gangway are opened on the east lower panel, having 11 breasts working, supported by 9 yard pillars, with a mining run of 130 yards. A second outlet will be opened in the 58th breast. 350 yards of gangway are open in the west panel gangway; the breastings are finished and are now resorting to robbing back the pillars. The character of work done is satisfactory.

Ventilation is produced by the operation of a 30-horse power fan, which gives good results. The mine generates some black-damp.

Engines.—There are five engines used, of an aggregate of 255-horse power, with 13 good boilers, all in good order.

A tunnel has been opened in northward some — yards, opening 4 coal seams, viz: G, E, D and B seams, which, when opened for mining, will constitute this colliery one of the best in the district. 55 hands are employed inside.

No. 26.—GIRARD MAMMOTH.—*John and Frank Donaldson, Operators.*

The colliery is situated in Raven Run, at Girard Manor, in Schuylkill county, on the estate of Mr. Cuyler. It consists of a tunnel and slope openings. A single track slope is sunk 120 yards deep on the south dip of the D seam, on a 45° dip; 67 yards of the slope is above water level. The tunnel panels are exhausted already, the gangway of which has been preserved for haulage of coal to the breaker. The coal from the slope level is hoisted to the water level gangway only, and greatly facilitates the handling and hauling of the same. The east panel gangway is 280 yards long, and is working 8 breasts in it, with double sashes to each, supported by 6 yard pillars, and having a mining of 100 yards, leaving a strong chain pillar to support the water level gangway. The west panel gangway is 380 yards long, having 10 breasts working in it, and worked as above. Air-courses are opened in connection with jugular manways in these panels for ventilation purposes. In connection with this is a 20-horse power fan, the result of which is satisfactory. 74 hands are employed inside and 75 hands outside=149; 5 mules and 52 wagons are in use.

Engines.—There are 4 engines=138-horse power, and 6 boilers, the condition of which has not been reported to me.

No. 27.—UNION COLLIERY.—*Hon. James Ryon, and J. Anderson, Operators.*

This colliery is situated a mile east of Centralia, in Columbia county, on the Philadelphia city tract. It consists of a drift opened some 80 yards above water level, on the E seam, in 30 feet of coal, dipping 24° to 30° north; all the workings of the colliery is on its east side. This panel has a gangway 2,277 yards in length; 14 breasts are working in with a mining run of 90 yards, and are ventilated by means of a furnace; 110 yards of a tunnel driven south from the drift gangway opened the B seam; this panel is opened in east and west; the eastern panel is 813 yards long, with 8 breasts working; the west panel is 600 yards long, with 3 breasts working; the whole are ventilated by means of a furnace; the mining runs in this division are 110 yards long; 107 hands are employed in the mine and 109 hands outside=216; there are 23 mules used in and about the colliery, and a locomotive is used for haulage; 3 engines of 55-horse power, with 4 boilers, all of which are in good condition.

Remarks.—I am pleased to admit that the system of mining and ventilation is practical and safe; few collieries in the district have a larger field of coal or are more advantageously situated; the good government practiced in the mines is attested to by the absence of accidents; the mine boss, James Keely, is a practical man.

 No. 28.—COAL RIDGE.—*Barton & Brothers, Operators.*

This colliery is situated two miles east of Mount Carmel, in Northumberland county, on the Locust Mountain. It consists of a double track slope, sunk 120 yards deep on the north dip of the E seam, on an angle of 30° , and east and west panels opened. Its eastern panel is 750 yards, with 6 breasts working with a mining run of 75 yards to the old level, and having a second outlet located here; the west panel is 1,000 yards long, working 9 breasts, with a mining run of 75 yards; this panel is ventilated by means of a furnace and air-holes, which here afford moderate ventilation; 40 miners; 28 laborers are inside and 100 hands outside=168 hands; 22 mules and 50 wagons are in use for haulage; 40 tenements are built; 2,550 yards of track are laid; 6 engines=470-horse power, are in use, with 12 boilers; 2 eighteen-inch steam pumps are employed for drainage; the slope and slope tackle are in good condition; the general condition of the colliery is fair.

 No. 29.—LOST CREEK.—*Philadelphia Coal Company, Operators.*

(Gen. H. Cake & Huntzinger, *Firm*; Col. David P. Brown, Gen. Supt. of Mines.)

This colliery is situated in the Shenandoah Valley, at Cast Creek, on the Girard estate. It consists of a double track slope, sunk 100 yards deep on a 33° south dip of the E seam.

 No. 30.—GIRARDSVILLE.—*Messrs. Agard & Moodey Operators.*

The colliery is situated one mile north of the town of Girardsville, in Schuylkill county, on the Philadelphia city tract. It consists of 4 drifts and a new double track slope sunk on a 35° dip south on the E seam, 54

yards to and 125 yards under the water level=179 yards. Its eastern division is opened in 250 yards to where a pump and air-slope is to be opened, and the same to be used for a second outlet, where a fan will be erected for ventilating the mine.

No. 1 drift is opened 450 yards on the D seam, working 10 breasts in 16 feet of coal.

No. 2 drift is 1,500 yards, with 16 breasts working, and ventilated by a 10-horse power fan, and also ventilates the drift workings of No. 3.

No. 3 drift is 1,000 yards, and 18 breasts are working.

No. 4 drift is run to the boundary line, and is robbing back the pillar coal.

No. 5 drift is to the line, and is now robbing out the pillar coal.

These drifts are in lifts one above the other, and about 100 yards apart. An immense amount of coal has been shipped from this colliery of late years. The colliery was originally operated and owned Col. J. J. Connor, who disposed of it to the present firm, and retired from the business. 100 miners and 96 laborers are inside, and 225 hands outside=421 hands; 56 mules and 200 wagons are in use; the daily shipments are 650 tons; there are 2 breakers in use; 9 engines are used of 350-horse power, with 10 boilers; a locomotive is used for haulage; the character of the work doing is considered a safe operation.

No. 31.—MALVEN.—*Lehigh Valley Railroad Company Operators.*

The colliery is situated $1\frac{1}{2}$ miles north of Mahanoy City, on the estate of Delano. It consists of a tunnel opened in north, in which 4 coal seams are opened, and are sinking a new slope on the D seam. A tunnel will also be opened from the bottom of the slope lift, which will open the 7 feet seam and the B seam, as there are 6 workable seams on the estate, which will average 44 feet in thickness. All these panels are ventilated by natural means. The upper drifts being nearly exhausted of coal, a resort is had to robbing the pillars out. 30 miners and 5 laborers are inside; 30 laborers outside; 3 engines of 130-horse power are in use; the daily shipment will average 30 cars=130 tons.

No. 32.—NEW BOSTON.—*White & Co., Operators.*

The colliery is situated at New Boston, one mile south of Mahanoy City, on the estate of —————. It consists of 2 slopes, 1 a double track, sunk 125 yards deep on the south dip of the B seam, on a 25° dip. The works are divided into east and west panels. East panel is 1,400 yards long, with 16 breasts working in it, with working runs of 80 yards. 9 other breasts are working on its counter-gangway, with mining runs of 65 yards. The counter-gangway will be continued to a point where an outlet air-hole will be opened. The pillars in the western panels are to be robbed out.

Ventilation was not quite adequate for a proper supply, and I therefore directed the superintendent to make the necessary changes in the air-courses as would improve the circulation and increase the volume of air. 25 breasts are working, in connection with 2 gangways, in 13 feet of good coal. There are 4 safety roads available for travelers to pass and re-pass

in the mine. 65 miners and 30 laborers are employed inside; 8 mules and 41 wagons are in use; 8 engines=400-horse power, with 12 boilers, are in use; a single track slope is used for a pump-way and fan air-slope and safe traveling; 30 cars of coal are shipped as an average day's work.

No. 33.—SHENANDOAH WEST.—*Messrs. Miller & Maize, Operators.*

The colliery is situated west of Shenandoah City, on the estate of Gilbert & Sheaffer. It consists of a double track slope sunk 95 yards deep on a 20° south dip of the G, or Primrose seam, in 9 feet of coal.

The mine is opened into two divisions, east and west. The east panel is 700 yards long, with 3 slant gangways opened, with 12 breasts working. Ventilation is effected by means of a furnace and 2 outcasts.

The west panel is 400 yards long, and all the coal in this panel is already mined out. The roof slate is not safe for large excavations, consequently it is necessary to work with great care.

Fifty miners, 4 laborers and 18 other hands, are employed; 3 engines of 95-horse power, with 4 boilers, are in use. There are no pumps; the drainage is effected by sort of tanks fixed upon carriages, and are found adequate in this case. Mr. White is a competent man, and manages the colliery well.

No. 34.—KEYSTONE.—*Philadelphia and Reading Coal and Iron Company, Operators.*

This colliery is situated 2 miles west of Ashland, on the estate of the said corporation. It consists of 2 slopes, one for use of coal, the other for air and a pump slope. The coal slope has a double track, and is sunk 122 yards under the water level, in the E seam in 30 feet of coal; and on its north dip of 55° 40 yards of solid ground divides these slopes. The pump slope is used for miners and material, also for drainage; and the plan gives great satisfaction, as the work in the other slope need not be retarded from irregularities occasioned by the passage of men and materials. The mine is worked in 2 panels, east panel is 750 yards long, with 18 breasts opened, each 12 yards wide, supported by 10 yard pillars. A monkey air-course is used in connection with the gangway for properly distributing the circulating air into the working places; this is necessary from the large amount of fire-damp generated in the mine. Also the use of naked lights are prohibited in the main working places, and strict precautionary measures adopted to prevent accidents of any kind.

The western panel is 775 yards long, with an air-course made over the gangway. Six breasts are working in this gangway, of the same dimensions and supports as the others are, and ventilated in a like manner. The pillars are pierced in the centre for manways, for travel, etc. On the 20th of November an explosion of fire-damp took place, which was ignited by an explosion of powder, which set the place on fire for a time, causing a delay of some weeks before work had been resumed. Ventilation is produced by the action of a fan, and found by measurement to be fully effective.

Seventy-five hands are employed inside and 75 outside; 12 mules and 50 wagons are necessary to do the haulage; 8 steam engines of 857-horse

power, with 23 boilers, are in use. A bull engine is used, with a 24-inch column for drainage. All of which, with their machinery and slope tackle are in apparent good order, and the mining system in practice is considered safe.

No. 35.—LOCUST DALE.—*Philadelphia and Reading Coal and Iron Company, Operators.*

This colliery is situated at Locust Dale, in Columbia county, on the estate of the said corporation. It consists of a double track slope, sunk in 2 lifts under water level, 305 yards deep. On the south dip of the E seam, on an angle of 45° , gangways are opened east and west. The east panel is 750 yards long, with 18 breasts, making each 8 yards, with supporting pillars 11 yards thick, and mining runs of 65 yards. The upper lift gangway is supported by a chain pillar of 45 feet thick of coal. The upper lift has been on fire for some time. The tops of the breast are peirced by headings into this level, in order to force any gases that may accumulate on that occasion. The coal is 26 feet thick. The ventilation of this district is very good. 797 yards of a western panel is opened. 32 breasts have been opened, and 2 are working without a fault. The coal is 16 feet thick, and worked like the other side, the ventilation of which is satisfactory; 25,218 cubic feet of air had been obtained by the operation of the fan; 95 hands are employed inside; 12 mules and 44 wagons are used; 46 men and 49 boys are employed outside; 7 engines, of 860-horse power, with 25 boilers, are in use. The drainage of these mines is effected by a bull pump of 2 twenty-two inch columns; a steam pump is located at the west end to pump from the water level—using 3 boilers for this purpose. The daily shipments from the breaker is 70 cars=300 tons.

Morgan Lewis has charge of the inside works, and Wm. Roudenbush of the outside works.

No. 36.—KNICKERBOCKER.—*Philadelphia and Reading Coal and Iron Company, Operators.*

This colliery is situated at Yatesville, 2 miles south of Shenandoah City, on the estate of the said corporation. It consists of a slope, sunk 102 yards deep on the south, 40° dip of the G seam in one lift, under the water level; 2 gangways are opened, 1 nine hundred and ten yards long, with 14 breasts working; 2 seams are worked in connection with this slope, the coal of which is in the aggregate 21 feet thick. A second outlet is opened 165 yards west of the slope. The north dip is opened by a cross-cut in the basin, and opened gangways on both divisions. The east panel is 740 yards, and is finished. The west panel is 185 yards—a self-acting plane. 56 yards in length to the counter of the north dip; its west gangway is 200 yards long, and is finished; a switch-back is driven eastward, and 5 breasts are working on it; another switch-back is opened on the west side, and 3 breasts are working on it. 85 yards of a tunnel are driven south to No. 3 seam, which seam is but the upper branch of the E seam, as it is known the E seam is split here by a slate and rock parting, the east gangway of which is finished; the west gangway is 300 yards, and 6 breasts are working in it. On one of these breasts a 12 feet fan is erected to ventilate these panels. The formation of these veins on the present lift, ex-

cepting the G seam, is not as profitable as might be anticipated, prior to making these improvements. The lower stratas may prove profitable. 60 miners, 14 laborers and 8 boys are employed inside; 7 engines of 210-horse power, with 9 boilers, are in use. The drainage is produced by four 6-inch steam pumps. The present condition of the colliery is only tolerable.

No. 37.—GLENDON.—*J. B. Boylen, Operator.*

The colliery is situated north-east of Mahonoy City, on the estate of the Lehigh Valley Railroad Company. It consists of a double track slope, sunk 90 yards below the water level, on a 23° south dip of the 7 feet seam, and is understood in mining parlance to be a companion of the Mammoth or E seam, in whatever locality the E seam may be found.

Its east gangway is 825 yards long, and the tunnel to the 7 feet vein is 39 yards long. Its east gangways are 400 yards long, and thirteen breasts are working in it. 350 yards of a gangway are opened on the west side, and 13 breasts are working in it, with mining runs of 65 yards each. The water levels are finished but the gangways are maintained for convenience, in connection with ventilation and safe outlets, &c.

Two hundred yards east of the tunnel another tunnel is in course of working to open the 6 feet seam. To ventilate these mines properly I gave my views to Mr. Richardson, who, when these plans are completed, will have the mine in an excellent condition.

Sixty-four miners, 4 laborers and 6 boys are employed inside; 14 mules and 36 wagons are in use; 50 cars are the average daily shipments=225 tons; 4 engines=100 horse-power, with 9 boilers in use, together with all their appurtenances, I find in good condition.

Drainage is effected by the action of a vacuum pump. A second outlet is available for ingress and egress in the old level west of the slopes. The works are in a considerable good condition.

No. 38.—WILLIAM PENN.

This colliery is situated south of Shenandoah City, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a shaft and drift opening. The shaft has two cage ways, and is sunk 100 yards deep on the South dip of the E seam. The mine is divided east and west. The eastern panel is 900 yards long, with an air-course running along its whole distance for ventilating the working places. There are 9 breasts working in this panel with schutes, headings, &c. Some of these breasts are pierced into the counter level as substitutes for air-holes. A self-acting plane 300 feet long conveys the coal from the counter works to the main gangway. The western counter gangway coal is run into a counter schute to the main west gangway. The main west gangway is 800 yards long, and its counter gangway 450 yards, and 8 breasts are working in this panel. Here a second outlet is in use running into the counter, thence to the old water level, and out east of the shaft.

Ventilation is effected by the action of a fan and outlets in the old levels. From the shaft the air circulates through 4 panels of workings in regular spits. 25,215 cubic feet of air had been supplied by the ordinary running of the fan. 80 miners, 60 laborers and 14 mules are inside; 6 steam engines, of 275 horse-power, with 8 good boilers, are in use. The shaft ropes, cages and tackle are in good order, and the character of the work done reflects credit upon those in charge.

No. 39.—ST. NICHOLAS.—*Francis Donaldson & Co., Operators.*

This colliery is situated at St. Nicholas Station, 2 miles west of Mahanoy City, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a double track slope, sunk 120 yards deep on the south dip of the E seam, on a 45° dip, and divided into east and west panels. The east panel is 1,500 yards long, and 8 breasts are working, with headings, etc., each 12 yards wide, supported by 8 yard pillars, with mining runs of 110 yards; 20 yards of a chain pillar is left to sustain the old level gangway; the west gangway was driven to the boundary line some 100 yards, and is finished. A tunnel run north opened the D seam, and gangways have been open; its east gangway is 800 yards long, with 8 breasts working, supported by 8 yard pillars; its west gangway is 350 yards, with some breasts working in it; the Reading railroad crosses over this panel, and consequently mining is suspended on that account; gangways are opened on the F seam, *Holmes*, one of which is 350 yards long, with 6 breasts working in it; air courses are connected from all these panels to the old level, and thence communicated with the fan outcast, where a 20-horse power engine is used for this purpose. I find the condition of the mines and its workings good; had 10,675 cubic feet of air in circulation per minute for 100 miners, 40 laborers, their lights, and 18 head of mules; amount of air necessary for this force was 20,262 cubic feet per minute; there are 3 outlets independent of the slope in the mine.

Engines.—Two 60-horse power are used in the hoisting slope; one 80-horse power pumping engine and a 20-horse power fan; and a 60-horse power engine runs the breaker and saw mill; 12 good boilers are used for steam power, the whole of which, with all their machinery, slope, slope ropes and tackle, I find in good ordinary condition. Shipments=300 tons per day.

 No. 40.—CAMBRIAN.—*Atkins & Co., Operators.*

This colliery is situated west of the borough of Ashland, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a double track slope, sunk 123 yards deep on a 20° north dip of the E seam, and opened two mining departments. The east panel is 450 yards long, with 9 breasts working from 8 to 10 yards wide, supported by 8 yard pillars, and have mining runs of 100 yards up the pitch; the west gangway is in 80 yards and meets an east dip, and 3 breasts are working in it; these panels are ventilated by a 20-horse power fan; the coal is from 30 to 50 feet thick; 45 miners, 20 laborers and 4 mules are inside, and 9 men and 24 boys are employed outside; 7 engines are used of 150-horse power, with 8 boilers in use, the condition of which is not reported; the mine generates some fire-damp and other gases; 1 No. 8 Blake pump does all the drainage; the general condition of the colliery is favorable. Mr. William Thomas is in charge.

 No. 41.—BARRY.—*Stickney & Co., Operators.*

This colliery is situated 3 miles east of Shenandoah City, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a double track slope, sunk 95 yards deep on the G seam; a substantial stairway is located in the slope for traveling when necessary; the mine is

open in two divisions east and west; eastward the seam rose gradually until the inclination rose to form a west dip or water shed, and gradually flattened out and gave place for opening two gangways; the north gangway was run some distance and some breasts were open and an air-hole cut through; the south dip was worked in a similar manner, but at present mining is confined to robbing back pillars; a north tunnel was driven to the E seam on the old level of the M'Neal colliery, the gangway of which is over a mile long; the tunnel has been extended to the 10-foot seam, and gangways opened; its east gangway is 175 yards long, and 5 breasts are working in it, and has opened an air-hole on it; the tunnel has been extended still further to the D seam, and opened gangways on it some 750 yards, with 12 breasts working in this seam, and opened an air-hole on it; here a fan is erected for ventilating these panels; the tunnel is extended still further to the 7 feet vein; the aggregate thickness of coal is 40 feet; 66 miners; 20 laborers; 6 mules are inside; 3 engines in use=120-horse power; 6 boilers in good order.

Improvements.—The slope and breaker will be discontinued; the coal will be prepared at the M'Neal colliery and hauled by a locomotive in the old level; a new slope is in course of sinking near the M'Neal breaker; this is to enlarge, and the coal of these collieries prepared there; this will be a decided improvement on the former plans in convenience and expenditure.

No. 42.—NORTON.—*Norton & Gorrell, Operators.*

This colliery is situated 3 miles north of Ashland and $\frac{3}{4}$ of a mile east of Centralia, in Columbia county, on the estate of the Philadelphia City tract. It consists of a tunnel driven 340 yards to the B seam, and opened the mine into 2 departments; the east gangways were driven some distance on the north dip and changed round an anticlinal to the west and changed to the south dip, forming a saddle, and sloped back west, and 900 yards of gangway opened, and have 7 breasts working in it, the dip of which is 22° ; a furnace ventilates this panel of work; 24 hands are inside and 50 hands are outside; 2 engines in use of 55 horse-power, with 2 boilers; the character of the work done I consider safe.

No. 43.—ELLEN GOWEN.—*Philadelphia and Reading Coal and Iron Company, Operators.*

This colliery is situated at Maple Dale, north-west of Mahanoy City, on the estate of the said corporation. It consists of 4 drifts, all run nearly west. The north vein gangway is 1,450 yards long, with a counter gangway run near its face, and opened gangways and breasts. The Black Heath vein gangway is 450 yards long, a tunnel north to the E seam and opened gangways in it, and are working 14 breasts. Its west gangway is in 250 yards, with 8 working breasts in it, and have opened a counter carryway east and west—12 breasts are working on the east side and 8 on the west. An outlet is here opened to the surface, and a furnace erected on it. The Orchard or drift workings are all finished. The 7 feet vein gangway is 600 yards long, in 8 feet of coal, with 3 breasts working in it; a slant gangway is up half pitch, and here breasts are turned off. A furnace ventilates these panels. One hundred and ten hands are employed inside and 75 outside;

30 mules and 100 wagons are used; 3 engines are used=70-horse power, with 6 boilers; all of which, with their machinery, etc., are good.

Two 30-horse double engines are in use at the shaft, with 6 boilers. The shaft is driven through three viens.

I find the mines in good condition under the superintendence of Mr. Frank Daniels—David Morgan in charge of the inside and Charles Beach in charge outside; men who know and do their duty.

No. 44.—GIRARD.—*Messrs. Beatty & Garretson, Operators.*

This colliery is situated one mile east of Girardsville, on the Philadelphia City tract. It consists of a double track slope, sunk 110 yards deep on the north dip of the 7 feet vien on a 75° dip, with east and west divisions open. The west panel is 200 yards long, and idle at present. A tunnel has been driven south to the north dip of the E seam, and opened a west panel. A gangway has also been opened by a tunnel on the 7 feet seam, 160 yards east of the slope, and drove a tunnel south to its north dip and opened gangways eastward. The upcast for ventilating the E seam workings is located on the 7 feet seam, and a tunnel driven from north to the south dip of the E seam, and opened gangways thereon. An air-hole has been driven in to the old shaft level, and that opening is used for air and a second outlet. Airways of sufficient size have been opened along all these different gangways for ventilating the sundry working places. Ventilation is produced by the co-operative action of 2 fans, which is found fully adequate for that purpose. Eighty hands are employed inside; 26 mules are used in the colliery; 2 steam pumps are used for drainage; 7 engines=240-horse power, with 12 boilers, are in use.

Remarks.—I cannot consent to any system of mining that endangers the stability of the mines by leaving them slight pillars, which is sure to be detrimental in time. This is evidently the cause of the crushes or sits that prevailed here this season.

No. 45.—BIG MINE RUN.—*Taylor & Lindsey, Operators.*

This colliery is situated at Big Mine Run, one mile east of Ashland, on the estate of the Locust Mountain Coal and Iron Company. It consists of 4 water level drifts, one above the other on the B seam, at intervals of one hundred yard distances or lifts, &c. The gangways are open in west 825 yards on their south dip, on an angle of 25°. The coal is 14 feet thick. The lower level is opened by a tunnel driven in northward from the E level. This tunnel is 248 yards long, with east and west openings. The east gangway is in 15 yards; the west gangway is in 34 yards; an air-hole opens into No. 2 drift, which operates favorably.

No. 2 drift is 1,200 yards long, with 8 breasts working, having a mining run of 100 yards, and supported by 7 yard pillars.

No. 3 drift is 1,050 yards long, with some breasts working, the pillars having been pierced with jugular manways and headings.

No. 4 drift is 800 yards long, with 7 breasts working. From this gangway to the saddle is 600 yards to the outlet; the seams do not come to the surface at this point. 56 miners and 14 laborers are inside, and outside 50 hands=120 hands. There are 4 available outlets for traveling roads. 7 engines are used of 200-horse power, with 19 good boilers. The ventilation is but partial, although the mines are worked by a practical system.

No. 46.—WEST LEHIGH.—*M Neal & Co., Operators.*

The colliery is situated north of Mahanoy City, on the estate of the Jersey Central Railroad Company. It consists of 2 double track slopes, 1 on the E and the other on the D seam. The E seam slope is sunk 160 yards deep in two lifts on a 30° south dip, and east and west gangways open. The east panel is 300 yards long, having 9 breasts open, and stands idle. The west panel is 250 yards, and has 2 breasts working, with jugular air-ways in the breasts for ventilation. An outcast driven across the slope in the east panel from the west side, which communicates with the upcast air-hole. Gangways have been opened on the counter lift, but are now idle.

Ventilation is produced by a 20-horse power fan. There are 3 safety roads out of the mines. 3 engines are in use=120-horse power, with 4 boilers, well conditioned. The D slope is sunk 150 yards deep on its south dip, with east and west gangways opened, and have opened 400 yards, and 8 breasts. The coal is not quite profitable here. These panels are ventilated by a 20-horse power fan. There are 3 engines=85-horse power, with 7 good boilers in use. The coal, though soft, is 12 feet thick; 80 hands inside, 75 outside=155 hands.

No. 47.—KOH-I-NOOR SHAFT.—*Richard Heckscher & Co., Operators.*

The colliery is situated west of Shenandoah City, on the Gilbert estate. It consists of a double cageway shaft, sunk 140 yards deep on the south dip of the E seam, and the mines are divided into east and west panels. The east is opened 1,111 yards, and an inlet air-course has been opened in its length to ventilate the workings. 70 breasts are opened in this panel, with mining runs of 100 yards each. Here an incline plane is opened to a counter-level, with 2 panels open, in which breasts 100 yards long will be worked under the works of the Thomas Coal Company's mines. A second outlet is opened east of the shaft, for egress and ingress, and the outlet air-course is opened on the Thomas Coal Company's tract. 140 hands are employed in the mine, and 18 mules are used; 11 engines are in use, with an aggregate of 470-horse power, with 11 good boilers. Their machinery and appurtenances are kept in good order. I find the shaft machinery, ropes and tackle are receiving proper attention. Drainage is effected by water tank. A slope is sunk 200 yards in the back gangway.

The G seam workings are idle. In a general inspection of the colliery I find it superior in point of practical management and regularity to any other in the district. All of which is under the immediate direction of Messrs. Richard Heckscher and Jacob Glover.

No. 48.—TUNNEL RIDGE.—*George W. Cole, Operator.*

The colliery is situated in the western suburbs of Mahanoy City, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a double track slope, sunk — yards deep on the north dip of the — seam, and opened in panels. The east gangway is 1,250 yards long, and the west gangway is 1,560 yards long. 15 breasts are working in this panel in coal 16 feet thick, having 3 safety roads for traveling into and out of the mine. The ventilating outcast is west of the slope, on which is erected a 20-horse power fan. In connection with this a furnace will be erected in the west workings. Mining in the E seam is chiefly confined to robbing back pillar coal.

Forty miners and 40 laborers inside, and 70 hands outside=150 hands, with 23 mules and 54 wagons in use; 7 engines in use=197-horse power, with 14 boilers.

A slope on the D seam is 120 yards deep below the water level, and 45 yards to the surface=165 yards, with east and west openings. From these gangways the E seam is opened by cross-cuts through the rock strata, and opened gangways east and west in it, with 14 breasts working, one of which has been driven out to the surface upon which a fan has been erected, and a furnace is also located in the west panel. By this system the ventilation is kept in circulation through the entire mines to satisfaction. 80 hands are employed in this panel.

No. 49.—HONEY BROOK, (3 SLOPES.)—*Lehigh and New Jersey Railroad Company, Operators.*

These collieries are situated at New Pottsville, in Schuylkill county, 3 miles west of Audenreid, on the estate of the said corporation. It consists of 3 slope openings, viz: Nos. 1, 2 and 3.

No. 4 slope is sunk 275 yards deep on the south dip of the Big vein and to the basin, on an angle of 32°.

No. 1 slope is sunk in two lifts, 60 and 125 yards=185 yards deep on the Big vein; average dip, 32½°.

No. 3 slope is sunk 240 yards deep on the south dip of the Big vein; average dip, 30°.

No. 5 slope is sunk 130 yards deep on the south dip of the Big vein; average dip, 50°.

Gangways driven in slope No. 1 are 7½ miles in length; slope No. 3, 1¼ miles; slope No. 4, 1½ miles; slope No. 5, 500 feet; total length of track laid in use is 8¼ miles; Nos. 1, 3 and 5 are under the superintendance of Mr. Thomas D. Reese, and No. 4 under Mr. Evans; general superintendent, E. B. Leisenring.

Four collieries situated in Schuylkill county in 1873.

Shipments.—Total tonnage to the close of the year, 318,658 tons; consumed for colliery purposes, (estimated,) 30,000 tons.

Number of slopes, 4—all working; number of shafts and drifts, none; no noxious gases of any kind generated; number of seams worked, 2; the Mammoth, 25 feet of coal; the Wharton seam, 8 feet of coal.

Ventilation of all the panels is effected by furnaces and natural air-currents.

Number of inside employees, 446 hands; inside boys, 62; outside men, 174; outside boys, 107=789; 76 mules are used in these collieries; 306 dwellings belong to the collieries.

Accidents during the year.—April 2, James Gaughan, miner, killed in No. 4 slope by coal; May 6, James M'Garvey, killed in No. 1 by a shot through the pillar by a miner in an opposite breast; September 6, William Jones, boy, died of lockjaw, from the effects of a wound in the head and taking cold; November 20, Wm. M. Jones, laborer, injured in No. 4 by the premature discharge of a blast; skull fractured and leg broken; died from these injuries; December 6, Alexander Brown, John S. Richards, laborers, and Patrick Dolan, boy, killed in No. 3 by the breaking of a hitching chain while attempting to ride down the slope.

Remarks.—As the following statement will show, December 6, thirteen persons got on an empty car to descend the slope at 7¼ o'clock, A. M., in

direct disobedience of written orders posted at the slope head, prohibiting any person or persons either to ride up or down in any of said slopes, yet these men entered the fated car and rode down the slope 90 yards when by some accident the car shunted the track, the sudden check of which broke the coupling ring, precipitating the car to the bottom of the slope, and in its descent killed the above named persons and injuring six others. The jury in this case in rendering their verdict exonerated the officers of the company from all blame.

Engines in use.—Nine hoisting engines of 660-horse power; 11 pumping engines of 1,100-horse power; 3 breaker engines of 160-horse power; total, 23 engines of 1,920-horse power, with 60 good steam boilers, all of which, engines, machinery and slope tackle, I find in good order.

One death to each 49,808 tons mined.

No. 50.—SUFFOLK.—*John and Frank Donaldson, Operators.*

The colliery is situated near St. Nicholas station, on the estate of Gilbert & Sheafer. It consists of 2 drifts opened on the G or Primrose seam. The west gangway of No. — drift is $1\frac{1}{4}$ miles long, and worked out; a tunnel from this opens the E seam. Its west gangway is also worked out, but changed to the east side and find some difficulty in the seam, not being very regular. A slope is now sinking on the G seam, which, when completed, will add much to the prosperity of the colliery.

Ventilation is produced by a 20-horse power fan. 44 hands are employed inside; 3 engines in use of 70-horse power, with 5 good boilers, all of which are in good condition.

No. 51.—HAZLE DELL.—*R. Gorrell & Norton, Operators.*

The colliery is situated at Centralia, Columbia county, on the estate of the Locust Mountain Coal and Iron Company. It consists of a double track slope, sunk 2 lifts of 224 feet under water level, on a 35° dip north on the E seam. The colliery is open into east and west panels. The east panel is 668 yards, and an air-course is opened along its length to effect available ventilation. The west panel is opened 833 yards to the foot of an inclined plane, which has an east dip of 13° . The plane is 75 yards long, having a double track by which the coal from this panel is lowered to the main gangway. This being an extensive colliery and has been a large producing mine from its commencement.

Ventilation is produced by the exhaust steam into the slope. The colliery is under practical management, and the system of mining adopted is safe and of a permanent character. 6,993 yards of track are in use in and about the colliery.

One hundred and ninety-five hands are employed; 14 mules and 40 wagons are in use; 4 engines are in use=300-horse power, with 10 boilers; one 13-inch steam pump used for drainage and ventilation. Very little gases of any sort is generated. The extensive openings are such that it requires good care to keep up the circulation.

No. 52.—CENTRALIA.— ———, *Operators.*

The colliery is situated east of Centralia, in Columbia county, on the estate of the Locust Mountain Coal and Iron Company. It consists of a double track slope, sunk 2 lifts, and ——— yards in the south dip of the E seam, with east and west gangways opened. The east gangway is 800 yards in width.

No. 53.—COAL MOUNTAIN, NEW.—*Barton & Bro., Operators.*

The colliery is situated 3 miles east of Mount Carmel. It consists of a double track slope, sunk 174 yards deep on the south dip of the E seam, on a 65° dip. Both east and west gangways are opened to the first turn-outs, in 11 feet of coal. An outlet is driven in the slope pillar; and also it is used for a pump slope. One hoisting engine of 120-horse power, with 6 boilers. The steam pump engine is located at the bottom of the slope outlet of 200-horse power, with 18-inch columns. The coal is prepared at the Coal Ridge breaker, and shipped with the coal of that colliery, over the Lehigh Valley railroad to market.

Ventilation at present is by natural means.

No. 54.—PLANK RIDGE.—*Philadelphia and Reading Coal and Iron Company, Operators.*

The colliery is situated in Shenandoah City, on its eastern limits, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a double track cageway shaft, sunk 100 feet deep on the E seam, and gangways opened south-west and west some 350 yards; a new slope 70 yards from the shaft on a 23° north dip. The slope is 280 yards deep in 3 lifts; 2 of these lifts are worked at the same time, one above the other, in mining runs of 80 yards each. The east gangway is in 350 yards, and is opened in two panels, 150 yards apart, upon which breasts have been opened, with mining runs of 51 yards each. The west panel is opened 150 yards, with 6 breasts working. All these breastings are 10 yards wide, flanked by 10 yard thick pillars. 300 yards of gangway are open on the bottom pannel, and communicates with the Indian Ridge west gangway, on its south dip, with mining runs of 60 yards, supported by 15 yards of chain pillars.

Ventilation is effected by natural currents, charged from the shaft in spits passing through the working panels on its downward course to the connection made for it with the Indian Ridge workings, which I find to be practical and effective.

Three hundred hands are employed in and about the colliery; 1,400 yards of track are used; 28 head of mules are used in the colliery; 9 engines are in use—455-horse power, with 14 boilers. A steam pump is used for drainage, of two 14-inch columns. The shaft and slope machinery and tackle are in apparent good order.

The east slope is 120 yards deep in 2 lifts; its east gangway is 800 yards long, the breastings of which are driven into Shenandoah City colliery workings. Its lower lift gangway is 950 yards long, with breast working and some pillar robbing. I consider the whole of these working panels in

good ordinary working condition, having adequate supply of fresh air in circulation. Here the lamented Wm. Grant, and his superintendent, came to their death, April 17, by a fall of top slate, when making an examination of the place at the foot of this slope.

No. 55.—SHENANDOAH CITY.—*James Neill, in trust, Operator.*

This colliery is situated in Shenandoah City, on its south-eastern limits, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a double track slope, sunk on the south dip of the E seam, on an angle of 18° dip. The bottom lift is worked in panels 50 yards apart. The east gangway is 800 yards long, and are now robbing back the pillars; the pillars are standing in its western panel. A second outlet is opened west of the slope.

The bottom lift is subject to a robbing process, but a slant single track is now sinking at the face of the west gangway, intending to sink it 100 yards deep, and open east and west panels. No. 2 gangway lies over the E seam, in 9 feet of coal, and has been driven 500 yards; communications are opened between these workings by means of cross-cuts through the rock parting, which is 150 yards thick. Eighty-five yards of a slope have been sunk on the E seam, 250 yards from the bottom lift of the first old slope, and driven on its south dip on an 18° angle, with east and west panels open, from which air-holes are opened in to the upper levels. The coal is 40 feet thick in this seam. A tunnel has been driven to the leader vein south, and a tunnel has been opened on its east gangway—air-holes from here communicate with the upper levels or lifts.

Ventilation.—The slope is used for a down-cast, and the air being split at its bottom it is caused to pass in and down to the lower panels, and there circulates through the working places by means of chucks and brattice, and thence pass up and out to the old outcast, on the Plank Ridge workings.

One hundred and eighty-six hands are employed; 32 mules are worked in the colliery, and 125 wagons. The E seam is 55 feet thick. Eight engines are in service—420-horse power, with 12 boilers. Drainage is effected by compress air-pumps. Fifty cars of prepared coal are shipped from the colliery per day.

No. 4 drift south is 1,700 yards long, in the 7 feet vein. Its counter is 800 yards in from the drift, and is 80 yards up the slope, with 2 panels open in it, with air-holes and outlets to ventilate the place—slant gangways are open in it. Here 28 hands are employed and 8 mules worked. The drift is used as an air inlet, and ventilation is fair.

No. 56.—THOMAS.—*Thomas Coal Company, Operators.*

This colliery is situated in Shenandoah City, in its northern limits, on the estate of Girard. It consists of a double track slope, sunk 100 yards deep, on a 47° south dip of the E seam, in 45 feet of coal, with east and west panels. The east gangway is 1,000 yards long, when 50 yards of a self-acting plane is driven up to a counter lift; its east panel is 200 yards, and its west panel is driven through old breasts for ventilation, etc. The air-current passes down into and through these working places and ventilates these panels on its outward course to the fan. Sixty-nine breasts are

open on the west gangway, with working runs of 90 yards to each. Some of these breasts are pierced into the upper levels for air-holes and outlets. Seventy-five breasts are full of coal, with 1,000 tons of mined coal in each. Seventy-five yards of a tunnel will open the D seam, of which 55 yards are already made. A new slope is in progress of sinking 75 yards west of the old slope, which will be sunk a lift under the old slope level. The western panels are ventilated by natural currents.

One hundred and fifty-five hands are employed; 15 mules are worked; the haulage is done by 2 small locomotives; 5,100 yards of track are used; 7 engines are in use=420-horse power, working a 12-inch column of water; 100 cars of prepared coal are shipped daily; 12 boilers are used, with all the machinery and slope tackle. I am pleased to say the colliery is well managed throughout.

No. 57.—LEHIGH, No. 3.—*Philadelphia Coal Company, Operators; Col. Daniel P. Brown, General Manager.*

It consists of a double track slope sunk 110 yards deep, on the south dip of the E seam, on an angle of 42° , with east and west panels opened. The east panel is 650 yards long, working 3 breasts, each 12 yards wide, flanked by 6 yard pillars, and a mining run of 75 yards to each breast. Here No. 13 breast is opened as a second outlet for traveling. 775 yards of a west panel are opened, with 9 breasts working, and opened 6 panel schutes, each 9x12 feet section area, and separated 150 yards apart. This system of mining in this thick and high dripping seam has been adopted by Col. Brown, he being one of the most practical, if not the most practical and conversant miner and mine manager in the anthracite regions, thoroughly educated in the school of the mine in every phase and department. These panels are driven horizontal and open into each other.

I found the ventilation fully adequate to supply a sufficiency of air for any purpose required. 60 hands are employed inside and 80 outside; 9 mules are worked inside, and 38 wagons; 5 steam engines are in use=164-horse power; 10 good steam boilers in use; 1 16-inch pole pump for drainage; 2 cages are used for hoisting coal wagons in slope. Mathew Shaw in charge of the mining department, and William Tickins in charge of the outside department, under whose management I find the colliery in an excellent condition.

No. 58.—BEAVER RUN.—*Peter Bowman, Operator.*

The colliery is situated north-east of Mahanoy City, on the estate of the Lehigh Valley Railroad Company. It consists of a rock tunnel 295 yards driven south and opening 4 coal seams. Here the 7 feet seam is worked, with 200 yards of a gangway opened, and working 5 breasts each, 10 yards wide, supported by 4 yard pillars. 18 hands are employed inside and 14 outside=32 hands; 4 mules are worked and 26 wagons used; 800 tons of coal are shipped per month; 30-horse power engine runs the breaker and hoists coal; 2 good steam boilers are in use; 2,000 yards of track are laid in the colliery.

Ventilation is effected by natural air-currents; 2 safe outlets are available for men to travel in.

No. 59.—LAWRENCE SLOPE.—*Lawrence & Co., Operators.*

The colliery is situated at the foot of Mahanoy planes, on the estate of ———. It consists of 2 double track slopes, one sunk 95 yards deep on a 56° dip north on the E seam in 40 feet of coal, with mining panels open east and west. The west gangway is to the boundary line, a large pillar of coal is left standing to support the railroad inclined plane, which inclined plane diagonally crosses over said west gangway. Mining is generally confined to robbing out the pillar coal in the west panel. The east gangway is open ——— yards, with 64 breasts open. This gangway is still continued.

Ventilation is produced by a 15-horse power fan, which is found adequate for that purpose.

No. 2 slope is sunk 75 yards lower than the old slope lift, and intended to drive it to a depth of 110 yards. This slope is large enough for 2 tracks. 23 miners are engaged in it. This slope, when once in operation, will constitute the Lawrence colliery, one of the best in the region.

Old slope.—40 inside hands and 50 outside=90 hands; 12 mules are worked, with 40 drift wagons; 4,000 yards of track are laid inside; 750 yards of track are laid outside; 1 large double breaker to prepare coal in; 60-horse power hoisting engine at the slope; 10 good steam boilers in use; 15-horse steam fan for ventilation; 2 16-inch pumps used for drainage; 64,000 tons of coal is the annual shipment.

New slope.—Two 90-horse power engines are used at the slope; two 2-inch wire rope and a 14 feet drum; 2 large coal cages are used to hoist out the coal; 1 second outlet—traveling road for miners; and in examination of the colliery I find it in good condition. Matthew Beddow is in charge of the mines.

 No. 60.—DIAMOND.—*Philip Brenzle, Operator.*

This is a small colliery situated in Ashland, on its eastern limits, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a drift opened on the Little Mine Run east, in the 6 feet seam. The gangways are 626 yards long, with 6 breasts opened on a 48° south dip, having 2 outlets in it for a safe traveling road.

Ten hands are employed in it; 2 mules are worked in and about the colliery; 826 yards of track are laid, shipping some 20 tons of coal per day.

 No. 61.—BEAR RUN.—*Messrs. Wiggan & Treibles, Operators.*

The colliery is situated near and west of St. Nicholas Station, west of Mahanoy City, on the Philadelphia and Reading Coal and Iron Company's estate. It consists of 2 slopes, double tracks, sunk ——— yards deep on the E seam. The old slope is 208 yards deep in two lifts on the south dip 38° . Its east gangway is 600 yards long, with 16 breasts working in it, each 10 yards wide, supported by 8 yard pillars, with jugular manways in each for ventilation. The west gangway is 600 yards long, and 15 breasts are working in it, same as above. The character of the work doing I consider safe.

Ventilation is effected by the action of a 15-horse power fan.

Eighty hands are employed inside in the mines, and 40 hands are employed outside at the breaker; 12 mules are worked in the mine with 30 wagons; 3,256 yards of track are in use; 5 engines are in use—207-horse power, with 14 boilers; one 9-inch steam pump is used for drainage.

No. 62.—COPLEY.—*Lentz & Bowman, Operators.*

The colliery is situated one mile north-east of Mahanoy City, on the estate of the Lehigh Valley railroad. It consists of 3 drift openings, all of which are driven eastward, and change to south and west with the anti-clinal dip of the seams. All of these drifts were driven through rock for some distance before striking the seams. The B seam is worked on both dips, and are ventilated by means of natural currents. The 7 feet seam is opened 750 feet, with 8 breasts working on slants; the wagons are brought into these breasts, all of which are 8 yards wide, flanked by 8 yard pillars, with mining run of 110 yards, ventilated by holes opened into the upper levels. The character of the work is considered good and safe. 110 hands are employed inside, and 60 hands are employed outside; 18 mules are worked, and 63 wagons are in use; 2 engines are in use—70-horse power, at the breaker; 6 good steam boilers are in use, the condition of which is good. The colliery being all worked above water level, the drainage is of course a natural flow out of the drifts.

No. 63.—NORTH MAHANOEY.—*Philadelphia and Reading Coal and Iron Company, Operators.*

This colliery is situated north of Mahanoy City, on said company's estate. It consists of a double track slope, sunk 100 yards deep on the south dip of the 7 feet seam, on a 23° angle, with all its working panels running west; its main gangway is 1,000 yards long, having 18 breasts working, flanked by 8 yard pillars; air-holes are driven from this main gangway through three upper levels that were originally drift levels, all of which have 90 yards of mining runs; chain pillars of 10 yards in thickness supports these drift gangways to secure drainage and ventilation; 138 yards of a tunnel have been driven north to the 16-foot seam, a distance of 100 yards west of the slope, and 600 yards of gangway opened in it, and air-holes pierced into the upper lift, where a fan is erected for its ventilation; 9 breasts are working in this panel; an outlet road is opened for safe traveling for men and animals; 23 yards south the 6-foot seam is also opened by a tunnel; its west gangway is 600 yards long and have an up-cast opened into the upper level, where a fan is erected for ventilating this panel; 100 miners, 20 laborers and 7 boys are employed inside; 50 hands outside—a force of 177 men and boys; 13 mules are worked in the colliery; 2,600 yards of track are in use; 4 engines are in use—110-horse power, with 6 boilers; steam pump—horse power, in use for slope drainage; the shipments monthly are — tons; I find the colliery and its appointment in good order.

No. 64.—PIONEER SOUTH.—*Jones & Co., Operators.*

The colliery is situated south of Ashland, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a small outcrop, working as a land sale operation, used for supplying families in the neighborhood, giving employment to some 10 hands. The work is in a safe condition.

No. 65.—MYERS.—*Myers, Operator.*

This colliery is opened on the west outcrop of the Pioneer vein, on the estate of the Philadelphia and Reading Coal and Iron Company, west of Ashland. It consists of a small land sale colliery for supplying families, giving employment to some 10 hands in winter season.

In concluding my report on these collieries, I am pleased to say they are all in a much better condition for health and safety than was the case in previous years; but I deeply regret the large increase of my death rolls and serious injuries that have occurred during the year; in mitigation of which complaint it is proper to refer to the verdicts rendered by coroners' inquests, based upon evidence adduced by witnesses, going to show that many of these injuries were occasioned by the sufferers, and not the fault of the employers. But there is some excuse for the sufferers, so far as it is true, that many persons are permitted to work in the mines, such as are common in the anthracite regions, that ought not to be employed in the capacity of mining, driving or laboring, but who have little practical experience in mines at all. But the relation existing, and indeed will exist between the parties who need employment and those who have the employment to let, are of such a nature that often the unskilled will occupy the place of the practical person; hence it is evident the impractical man is the least incompetent to take proper care of himself, or use such due diligence as is necessary in his avocation. Ignorance, rashness, misjudgment and kindred instances involves him in difficulties by which he loses his life or receives serious injuries. Instances have occasioned many deaths and serious injuries to parties that have taken monetary advantages contrary to law and to the public regulations of the colliery, in riding on loaded wagons, crowding on slope and shaft cages, entering places with naked lights, mining under bad roofs without propings, and doing such acts that often result in death.

STATISTICS OF COLLIERIES IN ASHLAND DISTRICT—CONTINUED.

No. of collieries,	NAMES OF COLLIERIES.	LOCATION OF COLLIERIES.	NAMES OF THE OPERATORS.	Kind of collieries worked	Years in operat'n	Number of coal seams worked...	DIP OF C. SEAMS.		Aggregate thick-ness in feet	STEAM POWER.		BOILER POWER.		MINES.		
							Deg. north,	Deg. south,		Number of engines...	H. P. of en-gines	No. of st'm boilers	Condit'n of boilers	Slopes	Shafts	Drifts
44	Big Mine Run	Ashland	Taylor & Co.	Slope	1	1	25	14	7	120	19	Good..	1	1	4	
45	West Lehigh	Shenandoah	M'Neal & Co.	Do	1	1	30	12	3	85	17	..	2	1	..	
46	Koh-i-noor	Shenandoah	R. Weckscher, ..	Shaft	2	2	26	15	1	197	11	..	1	1	..	
47	Tunnel Ridge	Mahanoy City	G. W. Goble	Slope	2	2	32	33	23	1,420	60	..	3	1	..	
48	Conkey Brook	N. Nichols	T. and N. J. G. R. R.	Do	2	2	36	16	3	470	5	..	3	..	..
49	St. Nicholas	St. Nicholas	F. Donaldson ..	Drifts	2	2	15	35	3	300	10	..	1	..	2	
50	Hazle Dell	Centralia	R. Gornell	Slope	2	2	35	30	4	300	10	..	1	..	..
51	Centralia	Centralia	Do	Do	1	1	35	11	3	320	6	..	1	..	..
52	Coal Mountain	Mt. Carmel	Barton & Bro. ..	Do	1	1	65	11	3	425	14	..	1	..	..
53	Plank Ridge	Shenandoah	P. and R. C. and I. Co.	Shaft	2	2	23	49	8	437	12	..	1	1	..	
54	Shenandoah City	Shenandoah	Jas. Neill & Co. ..	Slope	2	2	18	49	1	120	12	..	1	..	..
55	Thomas	Shenandoah	Thomas Coal Co. ..	Do	2	2	47	35	7	420	12	..	2	..	..
56	Lehigh, No. 3	Shenandoah	Philadelphia Coal Co.	Do	2	2	42	35	5	164	10	..	1	..	..
57	Beaver Run	Mahanoy City	P. Bowman	Drift	1	1	30	7	1	30	2	..	1	..	..
58	Lawrence	Mahanoy Planes	Lawrence	Slope	1	1	45	40	1	255	10	..	2	..	..
59	Diamond	Ashland	P. Brenzle	Drift	1	1	38	6	1	275	12	..	1	..	..
60	Bear Run	St. Nicholas	Wiggan & Co.	Drifts	2	2	25	14	5	276	14	..	2	..	3	
61	Copely Mahanoy	Mahanoy City	Do	Do	2	2	35	18	4	110	6	..	1	..	..
62	Conkey Mahanoy	Mahanoy City	P. and R. C. and I. Co.	Slope	2	2	23	18	2	110	6	..	1	..	..
63	South Pioneer	Ashland	Jones & Co.	Drift	1	1	25	8	1	..	..	..	1	..	..
64	Myers	Ashland	Mr. Myers	Do	1	1	25	20	1	..	..	..	1	..	..

REPORT

OF

WILLIAM HEMINGRAY, INSPECTOR OF MINES OF SHAMOKIN DISTRICT, FOR THE YEAR A. D. 1873.

To His Excellency, JOHN F. HARTRANFT,

Governor of the Commonwealth of Pennsylvania :

SIR:—In compliance with the requirements of an act of General Assembly of the Commonwealth, approved the 3d day of March, 1870, entitled "An Act providing for the health and safety of persons employed in coal mines," I have the honor to herewith submit my report of the condition and character of the collieries of the district since the 28th day of April last, being the date of my commission, showing that 56 collieries are in active operation, and have shipped 1,234,070 tons of coal; to this amount we add one-tenth that sum for home consumption, or 123,407 tons=1,357,477 tons. That 44 persons came to their death, and 101 were maimed by injuries they sustained in and about the collieries of this district; the character of such injuries in tabulated forms are hereto annexed. The increase in deaths this year is 12 over last year's report. But an accident at the Henry Clay colliery on June 10, occasioned the death of 10 persons, a statement of which will be found in my report on that colliery.

Two hundred and ten visits have been made inspecting mines, and in attendance on inquests, &c., making 4,568 miles of travel. I am pleased to report the condition of many of the collieries to be favorable.

Twenty-nine deaths occurred in Northumberland county, where 1,357,477 tons of coal had been mined, making one death for each 46,809 tons mined. 48 persons were maimed, and for each 28,281 tons mined one person had been injured. The above statement shows the average tons mined in Northumberland county to each death and injury.

In entering upon our duty on the 28th of April, we found considerable difficulty in many of the collieries to inaugurate improvements, but soon this trouble gave way to better judgment, and in a short time our councils and instructions prevailed, resulting in better understanding and making our labors much easier for which our operators merits our thanks.

The dangers incidental to miners is very great, even the most practical and prudent often meet serious accidents when, in their judgment, they least expect it, and only those who are well skilled in the art of mining can anticipate danger rightly, while others whose pretensions exceed their capabilities are obviously the persons who augment the lists of casualties, while inexperience and carelessness go hand in hand to the same end.

I have the honor to be, with great respect,

Your Excellency's obedient servant,

WILLIAM HEMINGRAY,

Inspector of Mines.

Numbers and names of Collieries in Shamokin District for the year ending December 31, A. D. 1873.

27. Alaska.	A.	8. Henry Clay.	H.	35. Pyae.
		10. Hickory Ridge.		
	B.	21. Hickory Swamp.		5. Reliance.
6. Brady.		46. Helfenstine.		18. Royal Oak.
11. Buck Ridge.			K.	
20. Burnside.		40. Kemble.		3. Stuartsville.
25. Bear Valley.		54. Kalmia.		22. Shamokin.
26. Bear Valley Shaft.			L.	45. Short Mountain.
33. Brookside.		12. Luke Fidler.		
36. Big Mountain.		13. Lambert.		24. Tower City,
44. Big Lick.		15. Locust Spring.		42. Treavorton.
50. Ben Franklin.		16. Lancaster.		
52. Big Run Gap.		31. Lower Rauch Creek.		W.
	C.	53. Lincoln.		39. West End.
4. Caledonia.			M.	43. Williamstown.
17. Cameron.		1. Monitor.		ABANDONED.
37. Colket.		2. Mariam.		55. A. S. Wolf.
	D.	7. Morton.		55. Black Diamond.
30. Diamond.		24. Marshall.		55. Coal Mountain.
	E.	47. Middle Creek.		55. Clinton.
9. Enterprise.			N.	55. Dundas.
32. East Franklin.		19. New Locust Gay.		55. Frank Gowen.
38. Eureka.		51. North Side.		55. Green Ridge.
48. Emory.			O.	55. Mount Franklin.
49. Excelsior.		41. Otto, Nos. 1, 2, 3.		55. Margia Franklin.
	F.		P.	55. New Town.
14. Franklin.		28. Phoenix, No. 2.		55. Otto, No. 1.
	G.	29. Phoenix, No. 3.		55. Shamokin.
24. George Fales.				55. Tremont Drift.

SHAMOKIN, OR THIRD, DISTRICT.

The following are the number and character of the disasters in and about the mines which resulted in death in the Third, or Shamokin, district during the year ending December 31, A. D. 1873.

DATE.	NAME OF PERSONS KILLED.	NAMES OF COLLIERIES.	Widows.....	Orphans....	GENERAL REMARKS.
Jan'y 28..	John Huth	Middle Creek shaft.....	1	7	} Killed by a large mass of rocks falling upon them while at work in the shaft.
28..	John Spinker..... 2 persons.	Middle Creek shaft.....	1	7	
Feb. 9..	Henry Zimmerman	Burnside	1	5	} Killed; the plane rope broke; the dirt wagon crushing him. Killed by an explosion of fire-damp gas.
27..	John Carney..... 2 persons.	Daniel Webster.....	1	5	
March 19..	John Conners.....	Williamstown.....	1	5	} Died; crushed by wagons in getting on them. Killed in the mine by a fall of rocks.
April 26..	Adam Campbell.....	Big Mountain.....	1	6	
June 8..	William Herb.....	Brookside	1	5	} Died; injured May 18th by a fall of coal. Killed.
10..	John S. Hay, Boss.....	Henry Clay	1	5	
10..	Michael Mench.....	Henry Clay.....	1	3	} This disaster was the result of incaution on the part of Conrad Drumhiser, Inside Mine Boss. While exploring old workings ignited the fire-damp, which killed him, while the after-damp, brought down into the lower workings by the down-cast system of ventilation used, suffocated nine other persons who were at work in the lower level.
10..	Lawrence Logolski.....	Henry Clay.....	1	1	
10..	Anthony Harris.....	Henry Clay.....	1	2	} Killed.
10..	Wm. Drumhiser.....	Henry Clay.....	1	2	
10..	Daniel Paul.....	Henry Clay.....	1	1	} Killed.
10..	Nicholas Paul.....	Henry Clay.....	1	1	
10..	Conrad Drumhiser, In. Boss.....	Henry Clay.....	1	6	} Killed.
10..	Michael Deia.....	Henry Clay.....	1	8	
24..	— Davis.....	Big Lick.....	1	1	} Killed by an explosion of fire-damp gas. Killed by an explosion of fire-damp gas.
24..	— Thomas..... 15 persons.	Big Lick.....	1	1	
July 7..	Jacob Hengle.....	Montilius.....	1	1	} Killed by a fall of coal. Killed by a fall of coal.
9..	Thomas Rescole.....	Lincoln.....	1	1	
12..	Michael O'Neill.....	East Franklin.....	1	1	} Died from injuries received in the mines. Died; mortally injured by falling down a chute on 1st inst.
3..	Alfred Price.....	Diamond, No. 1.....	1	5	
14..	Thomas Corcoran.....	Reliance.....	1	5	} Killed by a fall of coal while at work. Killed in the gangway by a discharge of a blast.
15..	Emanuel Powell.....	East Franklin.....	1	2	
21..	Dan Hollenback.....	Luke Fidler.....	1	4	} Died; injured by a fall of coal. Killed by a fall of gangway coal.
Sept. 8..	Jacob Dresler.....	Burnside.....	1	1	

SHAMOKIN, OR THIRD, DISTRICT.—CONTINUED.

DATE.	NAME OF PERSONS KILLED.	NAMES OF COLLIERIES.	GENERAL REMARKS.		
			Widows,....	Orphans....	
Sept. 11.	Benjamin Bird.....	Bear Valley.....	1	2	Killed by a fall of coal.
13.	Joseph Burk.....	Franklin.....	.....	.....	Killed; run over by wagons.
18.	Wm. Paul.....	Montilus.....	.....	.....	Killed; crushed by dirt wagons.
18.	David Montilus.....	Cameron.....	.....	.....	Killed in the act of coupling wagons.
20.	Larry Burns.....	Otto Red Ash.....	1	6	Killed by an explosion of a blast.
20.	Wm. Morgan.....	Burnside.....	.....	.....	Killed by a large fall of coal.
20.	Henry Trego.....	Bear Valley.....	.....	.....	Died; legs crushed by wagons.
9.	Wm. Becker.....	Montilus.....	1	4	Died; burned by powder explosion.
15.	John Kenny, Boss.....	Lower Rauch Creek.....	1	4	Died by a kick from a mule.
15.	George Stephenson.....	Hickory Swamp.....	.....	.....	Killed; crushed by a fall of coal.
29.	John Chuzeman.....	Reliance.....	1	4	Killed by a fall of coal.
18.	John Williams.....	Bear Valley.....	1	5	Killed by a premature blast.
13.	James Graham.....	Otto Red Ash.....	1	5	Killed by a fall of coal.
16.	Wm. Williams.....	Brookside.....	1	1	Killed by a fall of coal.
27.	Wm. Jones.....	Burnside.....	1	4	Killed by falling in of a slope.
28.	Hy Gotshall.....	Burnside.....	1	.....	Killed by falling in of a slope.

Forty-four deaths occurred during the year; of these 7 died subsequently of their injuries. The 10 deaths that occurred at the Henry Clay colliery greatly augmented this list; but I am not without strong hope accidents from negligence and imprudence is on the decline, as satisfactory efforts are making by all to be more cautious in the future.

SHAMOKIN, OR THIRD, DISTRICT.

Names of persons who were maimed and injured in the year ending December, A. D. 1873.

DATE.	NAMES.	COLLIERIES.	REMARKS.
Jan'y 17.	John Shearer.....	Marian.....	Fell 40 feet off a trestle; seriously injured.]
29.	Michael Snyder.....	Middle Creek.....	Leg injured by a fall of rocks.
29.	William Kelley.....	Middle Creek.....	Leg broken by a fall of rocks.
29.	William Simmons.....	Middle Creek.....	Leg broken by a fall of rocks.
29.	A boy.....	Lincolln.....	Leg cut off by a dump wagon.
Feb'y 27.	Patrick Quinn.....	Daniel Webster.....	Severely burned by fire-damp.
March 12.	Dan Anspach.....	Kalmia.....	Shoulder broken by a fall of slate.
14.	Stephen Monaghan.....	Marian.....	Leg broken by a fall of coal.
14.	Jacob Auman.....	Cameron.....	Arm and jaw broken; fell off breaker.
19.	A. H. Reed.....	Tower City.....	Arm broken and fingers cut off.
27.	Philip Daily.....	Phoenix, No. 2.....	Severely burned by powder.
28.	Michael Hauffman.....	Short Mountain.....	Head crushed between bumpers.
April 14.	Theodore Gonder.....	Locust Gap.....	Ribs broken by wagon.
14.	A miner.....	Locust Gap.....	Legs broken by a fall of coal.
22.	David Rupp.....	Coal Run.....	Severely injured by a fall of coal.
22.	William Lawler.....	Rauch Creek.....	Head burned by fire-damp.
3.	Four miners.....	Diamond, No. 1.....	Severely burned by fire-damp.
5.	John Campbell.....	Big Mountain.....	Back injured by a fall of slate.
5.	James Stewart.....	Otto Red Ash.....	Leg and arm broken by a blast.
18.	Frank Clark.....	Bear Valley.....	Body crushed by a fall of coal.
18.	William Herb.....	Brookside.....	Crushed between the screens.
21.	James Maguire, (boy,)	Collett.....	Dangerously crushed by coal.
June 10.	Leonard Deppinger.....	Lower Rauch Creek.....	Dangerously and injured; fell in the slope.
10.	William Brown.....	Daniel Webster.....	Injured; slope rope broke.
14.	Six men.....	Luke Fidler.....	Leg broken by a fall of coal.
14.	Dan Hohenbach.....	Luke Fidler.....	Body crushed by a wagon.
14.	Frank Deibler.....	Big Mountain.....	Dangerously burned by fire-damp gas.
20.	William Davis.....	Big Lick.....	Dangerously burned by fire-damp gas.
20.	John Thomas.....	Big Lick.....	Foot crushed by a fall of coal.
20.	Ebenzar Davis.....	Brookside.....	Severely burned by fire-damp.
20.	James Lankin.....	Franklin.....	Severely burned by fire-damp.
20.	A miner.....	Franklin.....	Severely burned by fire-damp.
20.	A miner.....	Franklin.....	Severely burned by fire-damp.
20.	William Pitkets.....	Trenton.....	Foot injured by a fall of coal.
20.	A miner.....	Lower Rauch Creek.....	Badly burned by fire-damp.

SHAMOKIN, OR THIRD, DISTRICT—CONTINUED.

DATE.	NAMES.	COLLIERIES.	REMARKS.
June	20. A miner.....	Lower Rauch Creek.....	Badly burned by fire-damp.
	20. A laborer.....	Lower Rauch Creek.....	Badly burned by fire-damp.
July	14. Bartly Murphy.....	East Franklin.....	Arm broken.
	18. Robert Thomas.....	Brookside.....	Severely burned by a blast.
	18. William Shadel.....	Brookside.....	Severely burned by a blast.
Aug.	28. John Young.....	Williamstown.....	Head severely cut by a fall of coal.
	2. William Price.....	Diamond, No. 1.....	Mortally injured; fell 50 yards in a breast; died.
	6. Silvester Melacus.....	Reliance.....	Severely injured by a fall of coal.
	7. Josiah Strausser.....	Greenback.....	Leg broken by a fall of coal.
	11. Henry Miller.....	Diamond, No. 2.....	Burned by an explosion of powder.
	14. John Churchill.....	Reliance.....	Severely injured by a fall of coal.
	14. Alfred Price.....	Diamond, No. 2.....	Severely injured; fell down a schute.
	21. A miner.....	Otto Red Ash.....	Severely injured by a blast.
	21. Frank Williams.....	East Franklin.....	Toes cut off by the screen.
	22. Lloyd Roth.....	East Franklin.....	Ankle broken by a fall of coal.
	22. William Shimmons.....	Cameron.....	Foot crushed by wagons.
	22. Oliver Kreeger.....	Cameron.....	Knee broken by a fall of rocks.
	25. Dan O'Neil.....	Hickory Swamp.....	Severely burned by fire-damp.
	25. Thomas Brosser.....	East Franklin.....	Severely burned by fire-damp.
	28. Charles Walsh.....	Burnside.....	Knees hurt; fell into a schute.
	30. John Wagner.....	Lower Rauch Creek.....	Severely burned by fire-damp.
Sept.	30. Thomas Jones.....	Carbon Run.....	Arm broken.
	17. William Adams.....	Upper Rauch Creek.....	Slightly crushed by wagons.
	22. Theobald Meigsberger.....	Brady.....	Severely hurt by a fall of coal.
	22. A Polawder.....	Brady.....	Dangerously injured by a fall of coal.
	22. Ludwig Sobeski.....	Montilus.....	Arm broken; crushed by a wagon.
	22. William Rose.....	Lower Rauch Creek.....	Severely burned by powder.
	22. Henry Trego.....	Bear Valley.....	Frightfully injured by wagons.
Oct.	5. Hiram Focht.....	Lower Rauch Creek.....	Severely hurt by fall of top slate.
	10. Charles Adams.....	Brookside.....	Foot crushed by a fall of slate.
	10. Adam Bendigo.....	Brookside.....	Arm broken by an accident.
	14. John Kenny.....	Lower Rauch Creek.....	Dangerously kicked by a mule.
	20. Peter Skewirton.....	Caledonia.....	Foot crushed by wagons.
	28. James Campbell.....	Big Mountain.....	Crushed in the cog wheels.
	28. William Gable.....	Buck Ridge.....	Crushed by a fall of top rocks.
Nov.	6. Jacob Kreise.....	Lower Rauch Creek.....	Hip fractured by a fall of coal.

7.	Thomas Thomas.....	Otto.....	Severely burned by fire-damp while introducing an extinguisher to clear out the gas.
7.	Patrick Bienny.....	Otto.....	
7.	William Braman.....	Otto.....	
7.	William Miming.....	Otto.....	
13.	Henry Cavaugh.....	Otto.....	
13.	Edward Gottshall.....	Otto.....	
13.	Benjamin Cox.....	Otto.....	9 persons were burned by an explosion of fire-damp, as follows: A shot removed 5 tons of coal, blocking up the air-heating, allowing the gas to accumulate in an inside breast; ventilation being restored, a shot fired in another breast which ignited the gas.
13.	Benjamin Davis.....	Otto.....	
13.	Alexander Frazer.....	Otto.....	
13.	Robert Moore.....	Otto.....	
13.	Martin Doran.....	Otto.....	
13.	Frank Thomas.....	Otto.....	
13.	Frank Sherman.....	Bear Valley.....	Arm shot off by a drill discharged by a shot.
15.	John Haime.....	Buck Ridge.....	Severely injured by props falling on him.
20.	George Sharp.....	Locust Gap.....	Arm broken by a fall.
20.	Benjamin Meyer.....	Brady.....	Severely burned by powder.
5.	A Polander.....	Brady.....	Severely burned by a cartridge.
5.	John Hagerty.....	Luke Fidler.....	Leg amputated by falling of a cage in shaft.
15.	Robert Anderson.....	Luke Fidler.....	Severely injured; a slope chain broke.
15.	Frederick Bixler.....	Buck Ridge.....	Mortally injured; falling in of slope; died.
27.	Henry Gattshall.....	Buck Ridge.....	Severely injured; falling in of slope.
27.	Simon Wetzel.....	Buck Ridge.....	Skull fractured by fall of coal.
27.	William Holshoe.....	Buck Ridge.....	Skull fractured by fall of coal.
27.	John G. Williams.....	Montithus.....	Leg broken by a fall of coal.
30.	Joseph Clark.....	Montithus.....	

One hundred and one cases of injuries occurred during the year, which is equal to that of last year. Of these, 8 persons were injured by falls of rock; 4 persons were injured by explosions of blasts; 5 persons were injured by explosions of powder; 33 persons were injured by explosions of fire-damp; 17 persons were injured by falls of coal; 6 persons were injured by falling in slopes, schutes, &c.; 9 persons were injured, run over by wagons; 3 persons were injured by falling into screens; 1 person was injured by the breaking of a chain; 15 persons were injured by sundry accidents; total, 101 cases of injuries as shown above. But it is hoped, from the evident desire manifested by all to exercise more care than was the case, in the absence of the retired inspector, to avoid so large a number of casualties in the future.

SHAMOKIN DISTRICT.

No. 1.—MONITOR COLLIERY.—*George W. John & Bro., Operators.*

This colliery is situated one mile west of Locust Dale, on the Philadelphia and Reading Coal and Iron Company's coal estates, in Northumberland county. It consists of a double track slope operation, sunk 110 yards deep on the south dip of the E or Mammoth coal seam, on an angle of 35°. The vein is 25 feet in thickness. The west gangway on this lift has been driven 380 yards, the coal of which has been extracted and operation in this district abandoned. The east gangway on the same lift has been driven 1,300 yards in, and courses around the point of an anticlinal or saddle, and forming a north dip as it advances. 41 breasts have been worked on its southern dip, while 25 breasts have been worked on its north dip. There are 4 breasts now working; all these breasts are opened 9 yards in width, and the pillars are 6 yards in thickness, with a running range of 60 yards of breastings. From the bottom of this lift the slope is continued south 50 yards, and nearly horizontal to where another slope is sunk 60 yards deeper, on an angle of 10°. The coal in this new lift has been hoisted by rope attachments applied to the safety trucks of the upper lift, which application results satisfactorily. They are also sinking another lift from the bottom of this level. A gangway has been driven on the flat coal at bottom of first lift in the center of the flat 130 yards in length, and are making 3 breasts, giving employment to 6 men in said district.

The west gangway on the lower level has been driven 600 yards in on its present course, and into the workings of another colliery, operated by S. A. Wolf. 25 breasts have been opened on this gangway, and 7 new ones are working. The coal seam is 20 feet in thickness at this point; the breasts average 8 yards in width. Here I proposed the breast to be driven forward to the end of the run, of 4 yards in width, and mine back at 8 yards in width, which would add greatly to the safety of miners, and I believe it to be a judicial system of mining in this thick seam.

A slant gangway has been turned off from the main west gangway at a distance of 300 yards, and driven in 130 yards, where 6 breasts are working, giving employment to 12 men.

A second slant gangway is open in 500 yards west from the slope, and is 100 yards in length, with 3 breasts and gangways working, employing 9 men.

The east gangway on the lower level has been driven in 150 yards, where 8 breasts had been opened and worked out, and is now abandoned.

The character of the work done in the several departments of these mines is considered safe and satisfactory.

Ventilation.—September 30, I found by instrumental measurements the quantum of air supplied to be 5,320 cubic feet at the east gangway inlet, where 27 men were employed, and 7,782 cubic feet at the face of the west gangway. The slope is used for an intake on the east side, while the A. S. Wolf workings are used for an inlet on the west side, giving satisfactory results, the entire mine being well ventilated. A good road for egress and ingress, for miners' use and safety, is opened east of the slope, and runs out to the surface.

Engine and Power.—The slope engine is of a 60-horse power; 2 coal breaker engines for preparing coal, each of 25-horse power; a 20-horse power steam fan for mine ventilation is used; a No. 8 Cameron pump and a 14 inch column is used for drainage, and operated by the slope engine. There are 12 steam boilers in use, each 30 feet long by 36 inches diameter, which are apparently in good condition. All these engines, with their machinery and fixtures, are in good order. There is no apprehension of danger from noxious gases in any quantity in the mine, and an apparent desire evince d by the managers to comply with the requirements of the law, rendering every facility necessary in my examinations of the colliery. The breaker had been visited on each occasion, and found the dangerous places secured and good rules and regulations practically governing the same. 140 men and 40 boys are employed in and about the colliery, and 24 head of stock; 3,830 yards of track are in use, with monthly shipments of 8,000 tons.

No. 2.—*MARIAM COLLIERY.*—*Philadelphia and Reading Coal and Iron Company, Operators.*—*C. S. Harris, Superintendent at Mines.*

This colliery is situated two miles west of Locust Dale, on the Philadelphia and Reading Coal and Iron Company's coal estates, in Northumberland county. The colliery consists of a double track slope, sunk 311 yards deep on the south dip of the E or Mammoth coal seam, on an angle of 60°. The old lift is 133 yards, while the new lift is 178 yards in depth; the angle of dip in this lift will average 30°; the area of the old lift is 260, while that of the new lift is 2,162 square feet; the coal seam is 25 feet in thickness. The west gangway is driven 20 yards, and the east gangway 10 yards; no breasts are yet opened. Extensive improvements are being made at the colliery, with a view to make it one of the best in Northumberland county, when completed. There is a vast deposit of excellent coal on the tract.

A pump slope of a section area of 78 square feet is sunk to the head of the second lift, located some 60 yards east of the main slope. There are 4 steam pumps, each 12 inches in diameter, used in this slope for draining both lifts; and is also used for men, and material for mining, &c. October 13, there were only 16 hands at work getting things in order for business at an early day.

Ventilation is produced by a 25-horse power steam fan, and its operation renders satisfactory results.

Engines and Power.—The colliery has been thoroughly put in order and machinery and fixtures of very powerful capacity have been substituted for future purposes, which consists of two new hoisting engines of 250-horse power, and a 60-horse engine at the pump slope; a 50-horse power is used to run the breaker, thus 4 engines=380-horse power. 20 steam boilers are used, each 30 feet long and 30 inches in diameter, all of which are reported to me to be in good condition. The pumps used are of the best Allison & Bannan pattern.

The present company having made such extensive improvements on the premises that the future of the colliery gives promise of it to become one of the leading collieries in the county, and no doubt will amply reward the expenditure, as no doubt would be the case with other collieries in a like condition.

No. 3.—STUARTSVILLE COLLIERY.—*William Montilius, Operator.*

This colliery is situated at Mount Carmel, in Northumberland county, on the coal estate of the Locust Mountain Coal and Iron Company. It consists of a double track slope, sunk 55 yards deep on the south dip of the E vein, on an angle of 25° , and is sunk at this depth to the basin of the seam. A tunnel has been driven south 200 yards through the upper benches of the seam and rock; the main portion of the seam laying underneath where the E seam is cut on its north dip. Its east gangway is driven in 500 yards. All the coal has been extracted and the gangway abandoned.

The West Mammoth gangway has been driven 1,000 yards, reaching its boundary line, where further excavations cease, and a resort is had to robbing out the breast and chain pillars, employing 4 men in this operation.

The West Counter gangway on the E seam has been driven in 1,000 yards to its boundary line, and robbing out pillars is resorted to, giving employment to 8 men.

A self acting plane of 75 yards in length is open, over which the coal is conveyed to the main gangway; the haulage on this plane is done by 1-inch wire ropes; the working of the plane is safe.

A tunnel has been opened 50 yards further south, which opens the D seam, (Skidmore,) on its north dip, the coal of which is 7 feet thick, on an angle of 40° . An east gangway has been driven 800 yards, and 40 breasts have been opened. The present mining carried on is driving a gangway and 2 breasts, employing 6 men.

Four hundred yards east of the Skidmore tunnel a branch gangway has been turned off, the main gangway running in 400 yards and diverging north, upon which 12 breasts were opened, 8 of which are now working; the vein taking a westerly course at present, but on the south dip of the seam. 20 men are employed here.

Another branch gangway has been turned south from the main east gangway, running 100 yards in; there are 4 breasts and the gangway still working, employing 10 men.

The West D gangway has been driven in 400 yards to a rock pinch, where the coal seam is lost, and the place is now abandoned. Three other gangways are open on the D seam, where the robbing process is in operation, employing 12 men.

A slope has been sunk in 2 lifts 110 yards deep, on the south western course of the E seam, on an angle of 10° dip, in anticipation of recovering a large deposit of coal lying west of the upper working in the bottom of this coal basin. The gangways are being turned off from the bottom of this slope. No further particulars at present.

Ventilation is produced by the operation of a double furnace in the Skidmore or D seam, using the slope and tunnel as intakes; the air traverses these workings and returns back to the furnace outcast; by this system good ventilation is produced, and the character of the workings and its condition is remarkably good.

Engines and Power.—A 50-horse power is used for hoisting and drainage, and is also used to run the breaker, the machinery of which is connected by a train of cone gear. The inside slope is worked by a 20-horse engine, and the drainage of the same is effected by a steam pump. 4 steam boilers, each 30 feet long by 30 inches, supply sufficient steam-power for all purposes. There are 77 men and 52 boys employed at this colliery; 13 head of mules, 60 wagons and 4 miles of inside and outside track are in use. The monthly shipments will average 6,500 tons.

No. 4.—CALEDONIA (BLACK DIAMOND) COLLIERY.—*M. Schwink & Co., Operators.*

This colliery is situated one mile west of Mount Carmel, on the estate of Henry Saylor, *et al.* It consists of two water level drifts open on the Twins of the E seam, or in other words on the partings of the E seam—one on each dip of the intervening saddles.

No. 1 drift is open on the south dip and is driven in the upper bench of No. 9 coal seam, (conventional name of seam,) exceeding 700 yards in length to the boundary line. The coal seam is 8 feet thick and good in quality. The angle of dip is 48° . 8 breasts are working, each 8 yards wide. The pillars are 4 yards thick.

No. 8 on the lower bench of the seam is open by a cross-cut at 350 yards from drift opening. 80 yards of this gangway are now driven and 3 breasts are working. No. 2 drift upon the north dip of No. 9 seam is also driven 700 yards, with 5 breasts working. A cross-cut has been driven on the lower bench of vein No. 8; and a gangway 125 yards is open, with 4 breasts working. The coal seam is $7\frac{1}{2}$ feet thick.

Ventilation is produced by atmospheric action producing no satisfactory result. Measures are in progress to remedy this complaint. In No. 2 drift an air-hole is open into vein No. 9, upper bench, and open out to the surface, which, when in proper condition, a furnace will be used. The ventilation in No. 1 drift is sufficient and the character of the work is safe.

Engine Power.—A 40-horse power engine operates the hoisting plane and breaker by cone gear connection. 2 new steam boilers, each 30 feet by 34 inch supplies sufficient steam, all of which are apparently in good condition.

Remarks.—The breaker was destroyed by fire in March, and a new one had been erected and shipments resumed in September. 70 men and boys are employed; 6 mules and 23 wagons are used, with 3,000 yards of track. Monthly shipments average 3,300 tons.

No. 5.—RELIANCE COLLIERY.—*Baumgardner & Co., Operators.*

Description.—The colliery is situated near Mount Carmel, on the coal estates of the Philadelphia and Reading Coal and Iron Company; has been six years in operation. It consists of a drift and slope opening; the slope is sunk 250 yards deep, with double tracks, on the north dip of the E seam, on an angle of 19° , and first lift under water level. The main west water level has been driven 1,640 yards. The only mining resorted to is robbing back pillars. No east gangway driven. The slope west gangway is now driven 1,400 yards. A slant gangway has been turned off from the main gangway. There are 12 breasts working here, and gangway extensions. The main east gangway has been driven 900 yards, working 4 breasts and robbing out the pillars.

Ventilation.—A 12-foot steam fan produces ventilation with a 30-horse power engine, the result of which is ample for all purposes, supplying a main of 14,994 cubic feet of air per minute under ordinary running, while at the outlet the discharge was 26,000 cubic feet per minute.

Engines and Power.—An 80-horse power is used in hoisting at the slope and running a 14 inch pole pump; a 30-horse power engine is used to hoist coal on a 250 yard inclined plane from water level drift; a 40-horse power engine is used at the breaker and the saw mill, which, with the fan engine will equal 180-horse power; with 8 good steam boilers, each 30 feet long by 38

inches diameter. These boilers are mounted with steam gauges. The drum has not been supplied with a proper brake. I mentioned this defect to the operator. 188 hands are employed inside and out; 22 mules and 80 mine wagons are in use. The monthly shipments are about 8,000 tons; the yardage of track in use is 4 miles long.

No. 6.—BRADY COLLIERY.—*A. Guiterman & Co., Operators.*

Description.—This colliery is situated 2 miles east of Shamokin, on the coal estate of the Philadelphia and Reading Coal and Iron Company. It has been 8 years in operation. It consists of three water level drifts, viz: 2 drifts on the Twin seams of the E seam, and the third one on the B seam, or Buck Mountain seam, commonly known as the Iron seam. The coal seam is 5 feet thick, and the quality good, with 6 breasts working. 400 yards from the drift opening a tunnel opens into vein No. 9, upper bench, with 60 yards of gangway opened and 3 breasts working, each 10 yards wide. A counter drift is also opened on the lower bench of vein No. 8, with 2,300 yards of gangways driven in it, with excavation in progress and 5 breasts working.

Ventilation is influenced by the operation of a furnace, located in an upcast that is open out to the surface, which accommodates both drift workings. The lower drift is used as an inlet; air passes into the counter drift; the outcast is surmounted with a stack 40 feet high. This system produces a good supply of air.

No. 3 drift on the B seam, its gangway, is driven on a counter level 250 yards long, where 9 breasts are opened, 4 of which are working. 75 yards of an air-hole have been driven out to the surface in No. 5 breast, by which means a sufficient supply of air is furnished.

Remarks.—On the 17th of March the breaker had been destroyed by fire, since which time the coal has been prepared at the Green Back breaker. 89 hands are employed; 18 head of stock are used; the monthly shipments are 2,500 tons; there are 47 family houses upon the premises.

No. 7.—MORTON COLLIERY.—*Morton & Co., Operators.*

This colliery is situated near Mount Carmel, in Northumberland county. It consists of 2 drift openings on the estate of the Northern Central Railroad Company. A drift is opened on the north dip, and one on the south dip, on an intervening saddle or anticlinals. The lower drift on the north dip is 45°, and is opened in 250 yards, where 5 breasts are working, each 8 yards wide, with support pillars 3 yards thick. A slant gangway is driven up to the saddle. The coal is 9 feet thick; employing 14 hands, upper drift on the south dip. Its gangway is opened 600 yards in and partly through the old workings of the Rhoades colliery, affording 20 yards of breast range. Robbing out coal is here resorted to.

Ventilation.—This is effected by natural means, and produces a sufficient supply for present wants. The general character of the work is considered safe. I deem no further remarks necessary.

Engine Power.—A 10-horse breaker supplies all the necessary power. 49 hands are employed; 4 mules and 16 wagons are in use; the monthly shipments will average 2,200 tons.

No. 8.—HENRY CLAY.—*R. Langdon & Co., Operators.*

This colliery is situated south of and near Shamokin, in Northumberland county, on the estate of Belle's heirs tract and Philadelphia and Reading Coal and Iron Company. It consists of a main drift opened on the No. 9 vein, or the upper seam of the Mammoth Twin seams, and a double track slope sunk 90 yards deep from the water level of the No. 8 vein, or the lower bench of the Mammoth Twin seams, on an angle of 45°. Mining and all excavations are confined to the west of the slope. The slope gangway is now 1,500 yards long, and mining suspended at this point. 700 yards from this slope a tunnel is driven to No. 9 seam, and that gangway is driven back east 266 yards, ending in a fault, and consequently abandoned. Its west gangway is 900 yards long, and here a second tunnel is driven into the No. 8 vein. Now the west gangway in No. 9 vein is continued 200 yards to its face, giving a total yardage of 1,366 in the No. 9 gangway. 3 inclined planes are in operation in each vein, with 13 breasts working, employing 40 hands.

October 18, 23 hands were employed in the upper No. 9 counter level drift, working 9 breasts, in coal 5 feet thick; the No. 8 seam is 6 feet thick.

Ventilation is produced by the operation of a 20-horse power steam fan, located near the drift opening. The slope is used as an intake air-course, and the current traversing inwards through the No. 8 or slope workings and passing thence into No. 9 workings, and thence out to the outcast at the fan. In No. 9 workings the current traverses through the abandoned water level, thence into the counter level and out at the fan. October 18 I found 6,000 cubic feet of air at No. 8 inlet, and only 4,300 cubic feet at its return into No. 9. There were 40 hands employed.

Outside temperature was 66°, while inside it was 68°, Fahrenheit; outside barometer, index, 29½; while inside it was 29.6 inches; result favorable.

Engines and Power.—A 40-horse power engine is used for hoisting at the slope, and also to run a 14-inch pole pump. A 40-horse power engine is used at the breaker; also to hoist coal on the inclined plane and the fan engine—3 engines of 100-horse power. 7 steam boilers are used, each 28 feet long by 30 inches. All these engines, boilers and machinery are in good order. 139 hands are employed inside and out; 30 mules and 70 wagons are used. Monthly shipments average 7,000 tons.

ACCIDENT JUNE 10.

In connection with this report I deem it proper to state the cause of the disaster that had taken place on the 10th of June, which resulted in the death of John S. Hays, outside foreman; Michael Mench, Enoch Megenski, Lawrence Rogolskie, Anthony Harris, William Drumheiser, Daniel Paull, Nicholas Paulus, Michael Deia, miners, and Conrad Drumheiser, inside mine boss, who had been killed and burnt by an explosion of fire-damp gas, while the others were suffocated by choke-damp or carbonic oxide, leaving seven widows and 20 orphans, by facts elicited at the inquest held on those bodies on the 11th and 12th inst.

In company with Mr. M'Andrews, clerk of the district of Schuylkill, I assisted Coroner Hezzard in this case. The cause which led to the explosion, and from the testimony of seven competent witnesses, together with examinations made by John Williams, Jabes Payne, and myself, on the night of the 11th, assisted by John Eltringham, inspector for Ashland district, we do agree in our conclusions that the explosion by the imprudent act of Conrad Drumheiser, mine boss, thus: The recent accumulation of

carburetted hydrogen gas in the old workings of the upper abandoned level of the No. 9 vein, the gangway of which had been used as an outlet on the upcast for ventilating the slope workings on both the Nos. 8 and 9 veins, the inlet or down cast being the slope on the No. 8 vein.

It appearing from evidence adduced that the said Drumheiser, some time about the 2d of June, ordered the course of the suction fan to be changed so as to force the air in and down from the upper level into the slope workings into both the Nos. 8 and 9 lower workings, instead of acting as a suction in exhausting the air out of these workings of the slope. It appearing from evidence adduced at the inquest that Conrad Drumheiser decided that during the warm summer weather the natural direction of the air-current would be downward from the fan to the slope workings, and that the operation of the fan would be more effective if worked in the same direction, hence he made the change noted above.

The accumulation of fire-damp in the old level workings may probably be due to the downward action of the air-current in checking it back by its friction in its downward course, as it was known no gas in any quantity existed in that locality a few days before the accident, and we do believe this change facilitated the accumulation of the explosive element there. For while the operation of the suction fan was in the opposite direction, and in its natural draft, the noxious airs and impurities were cast out by its suction movement, the very object for which this fan was constructed and patented by Mr. Loudon Beaddle. When the operation of the fan was suspended, as it did for three or four hours out of twenty-four, from one o'clock to five A. M. when no men were at work, the air-current became less constant or fresh at that time in the morning than at any other period of the day; would likely be more sluggish in its action while changing direction. On Saturday, the fan, in the direction of the current, would tend to relieve the old workings of any accumulation of gases, while with the fan forcing the air in an opposite direction, the current would tend to force back the gases thus accumulated into the old workings, and would resist its escape. The operation of the fan was immediately changed after the accident, for the purpose of clearing the slope workings of the after-damp, which had been forced there by the action of the fan, and caused the suffocation of the mine men that encountered its influence in their efforts to escape. Since then the fan is continued as an exhaust, making the slope and slope gangways the inlet air-course, and the upper level on which the fan was located the outcast, with satisfactory results.

The finding of the jury in this case was, that Conrad Drumheiser, did ignorantly and rashly, go into said old workings with a naked lamp, and exploded the fire-damp gas there accumulated, by which he met his own death, and causing the death of the nine men before named by the choak-damp that had been forced into their working places by the reversed operation of the said fan, leaving 7 widows and 20 orphans to mourn their untimely fate.

In review.—It is surprising to see with what persistence some people will cling to delusive opinions, and how stubborn they will resist practical advice and correct views even when their personal interests are at issue. That the case of Mr. Drumheiser should stand as a menace to others in a like position where not only their own lives but the lives of thousands of men may be endangered by such acts. Any reference to this sad case only evokes our sympathy and commiseration for such imprudence in hazarding the lives of so many very valuable citizens, and precipitating a direful calamity upon so many unfortunate families.

No. 9.—ENTERPRISE COLLIERY.—*R. Baumgardner & Co., Operators.*

This colliery is situated east of Shamokin, in Northumberland county, on the estate of the Philadelphia and Reading Coal and Iron Company, (late the Fulton Coal Company.) It consists of a double track slope, sunk 250 yards deep on the north dip of the E Twin seams, on an angle of 38° . These seams are the Mammoth seam, but split by a parting slate, averaging from a few inches to several yards according to locality and situation. They are known in the Shamokin region as Nos. 8 and 9 veins. No. 8 being the lower seam and No. 9 the upper one. The hoisting slope is on No. 8 seam and reaches the basin. There are 3 gangways open in the slope. The west gangway is on the north dip 280 yards long. There are 18 breasts open, 9 of which are working, each 10 yards wide, with yard pillars. The east gangway on the north dip is open — yards, and two slant breasts are working, with a working range of 66 yards. West gangway on the south dip is open 120 yards, and 2 breasts are working.

Ventilation.—June 26 the supply of air was inadequate for the force then employed. There being no perceptible air-current in circulation in mine. I noticed this fact to the superintendent by a communication of said date, who took immediate measures for restoring ventilation. A 20-horse power fan was to be put in position 200 yards east of the main slope, shortly after a heavy sit or crush occurred in the slope, and contiguous workings which caused a suspension of operators hence forward, except the work of re-opening and repairing which has been carried on vigorously, and will be completed in time for opening of the trade in 1874.

Engines and Power.—A 100-horse power engine is used at the slope, which works the pumps also. A 50-horse power is used for pumping at the old slope, and an 80-horse power Blake steam pump and four 14 and one 16-inch pole pumps are used for drainage, and a 20-horse power Baldwin locomotive, for haulage is used, and a 30-horse breaker engine, in all 6 engines=300-horse power, with 13 steam boilers are in use. Further remarks are unnecessary at present.

No. 10.—HICKORY RIDGE COLLIERY.—*The Mineral Railroad and Mining Company, Operators.*

The colliery is situated 4 miles east of Shamokin, in Northumberland county, on the estate of the Mineral Railroad and Mining Company. It has been 4 years in operation. It consists of a tunnel opened in a southern line 300 yards long, cutting the Twin seams of the E in 180 yards on the north dip, cutting the D or Skidmore seam 67 yards further south. The vein is 5 feet thick. This tunnel was continued 53 yards further south, and the enterprise abandoned.

The east gangway on the E seam is opened 100 yards, and a west monkey gangway has been opened 50 yards, and finding the coal faulty decreasing to $2\frac{1}{2}$ feet in thickness at this point.

The west D seam gangway is 450 yards long, and its east gangway is 340 yards long, with 10 breasts working west, and 5 breasts east=15 breasts, with irregular variations in the vein from 3 to 10 feet thick. The only work doing at the time of my visit, August 27, was extending gangways, employing 16 hands.

Engines and Power.—A plane engine, of 60-horse power, and 1 breaker engine, of 30-horse power, with 4 steam boilers, are in good condition. There are 12 colliery horses, 1 mule and 12 mine wagons in use. Extended remarks at present are unnecessary.

No. 11.—BUCK RIDGE COLLIERY.—*May, Anderson & Co., Operators.*

The colliery is situated near Shamokin, on the estates of Renshaw & Johnson. It has been 10 years in operation. It consists of 8 water level drift openings on the E Twin veins, which are separated by a partition slate; the under seam or bench is 8 feet thick, while the coal of the upper or No. 9 seam is 5 feet thick.

Drifts Nos. 1, 2 and 5 are open on the No. 8, and driven to the eastern boundary line, the distance of 1,600 yards. An air-shaft from 5th drift to the surface is opened. There were 14 men employed in robbing out the coal in these drifts October 31. In No. 9 there are 5 drifts, with 2,100 yards of gangways opened, with 20 breasts working and extending gangways, employing 64 men. The rock strata overlying these seams is of the very best sort, rendering mining a safe operation. All these gangways are communicated by tunnel connections throughout, affording ample means of egress and ingress for safe traveling, &c.

Ventilation is produced by natural means; the air-currents circulate freely through the mines, affording an ample supply of air for all purposes; no complaint being made by the miners on this head.

Engines and Power.—A 40-horse engine runs the breaker, and a 20-horse engine hoists the coal in the incline plane to the breaker. The surprising length of $7\frac{3}{4}$ miles of track are used inside and out. 171 men and 31 boys are employed in and about the colliery. 26 mules and 90 mine wagons are used. Monthly average shipments are 7,600 tons.

A double track slope is now in progress of sinking, on the north dip of the No. 8 seam, 700 yards east of the present openings, intending it to penetrate 200 yards under the present water levels, on its first lift, and thence open the No. 9 seam by a tunnel driven north, making it one of the most extensive, and no doubt productive collieries in the region. The slope engine is a 40-horse power. But 8 steam boilers are in position, each 26 feet long by 34 inches in diameter. I anticipate a prosperous future for this colliery, owing to its good government and its extensive facilities for producing coal.

No. 12.—LUKE FIDLER COLLIERY.—*Mineral Railroad and Mining Company, Owners and Operators.*

This colliery is situated one mile east of Shamokin, in Northumberland county, now the estate of the Mineral Railroad and Mining Company, but formerly the estate of E. M. Eastwick. It consists of a slope sunk through 60 feet of rock measures, on an angle of 33° north; thence by a rock tunnel 750 yards north, cutting through coal seams Nos. 12, 11, 10, 9 and 8 of the Mammoth Twin seams; all the drainage passes off by No. 12 opening.

The seams at present worked are Nos. 10, 9 and 8. In No. 10 work is chiefly confined to robbing back pillars in its counter gangway, employing 6 men. The east gangway in No. 9 is open 650 yards, at which point the seam is reduced to nothing. At this point a cross-cut is driven to No. 8, and a gangway driven east 300 yards further to where a second cross-cut is driven again into No. 9 to test the existence of the coal seam, and opened a gangway on the west backward 40 yards, while the east gangway is open 100 yards, with a slant gangway open in each, some 20 yards in length, to prove the seams.

A slant gangway is driven up over the first cross-cut in No. 9 seam, running east 200 yards, when 3 breasts are working, employing 16 men. No.

8 east lower level between the cross-cut, a slant gangway is open 60 yards, with 5 breasts and the main gangway working, where 10 men are employed.

First Counter.—A self-acting plane in No. 8, 110 yards long, on an angle of 18° , over which the coal is conveyed to the lower level. There are 2 gangways open on this first counter level of 70 yards each and extending it, employing 6 men in it. On this level the gangways communicate by cross-cuts into No. 9, east and west, employing 10 men. No. 9 is open in like manner, with counter schute and 800 yards of gangways, employing 18 men. 12 men are employed in the workings of the second counter gangway on the No. 8 seam, with a total breasting of 27, and 6 gangways employing 100 hands besides 60 outside hands=160 men and boys. The general character of work done is considered safe.

Ventilation.—This is produced by the operation of a 30-horse steam fan, located in No 12 seam near the bottom of the slope. The intake is open as an air-hole on the mountain in No. 9 seam, and through No. 9 workings into and through the workings of No. 8; thence to fan outcast at the foot of the slope. Ventilation is retarded in many places by fallen slate, while the fan is located at the legitimate inlet end. I brought this matter to the manager's notice, who stated it was a compulsory measure, as evil disposed persons destroyed the fan machinery when it was located in the air-hole on the mountain, hence the change. November 17, the mines were supplied with air by natural means; the fan being idle, the air current had been reversed on that account. The outside temperature was 50° , while inside it was 70° , showing a difference in favor of natural ventilation of 20° , this appearing satisfactory for present supply.

Engines and Power.—A 60-horse power hoisting engine, a 30-horse power breaker engine, and a 30-horse power fan engine, with 8 steam boilers 30 feet by 30-inch diameters; their condition is considered good.

Remarks.—November 7, a long distance of No. 9 lower level gangway had not been timbered, while the top rock appeared dangerous. I counceled the proper timbering of the place so as to insure the safety of the miners. There are 160 hands employed in the mine; 28 mules and 100 wagons are used; 6,900 yards of track are laid at the colliery; monthly shipments will average 6,000 tons.

No. 13.—LAMBERT COLLIERY.—*William Brown, Operator.*

This colliery is situated near Shamokin, on the estate of the Mineral Railroad and Mining Company. It consists of a double track slope sunk 163 yards deep, on the south dip of No. 11 seam, on an angle of 31° on its second lift. The eastern district has been worked out and is idle; the western district is open 600 yards, with 5 breasts in a working condition, the coal of which seam is $5\frac{1}{2}$ feet in thickness. This gangway opens into the Daniel Webster mine, and is adopted by both collieries for their ventilation, which is sufficiently adequate for all present purposes.

June 27 I notified the operator to protect the slope drum by a proper brake, to supply the boilers with safety gauges, and called his attention to the legal requirements on this subject.

Steam Engines and Power.—A hoisting engine of 45-horse power, a breaker engine of 20-horse power, and a 20-horse power steam fan, with 6 boilers, each 30 feet by 30 inches diameter; drainage is effected by one 12 inch and a 10 inch pole pump; 35 hands are employed; 4 mules and 31 wagons are use; there are 1,226 yards of track laid; the monthly shipments will average 2,000 tons.

No. 14.—FRANKLIN COLLIERY, (KANGAROO).—*William Brown, Operator.*

The colliery is situated a quarter of a mile south of Shamokin, on the estate of the Philadelphia and Reading Coal and Iron Company. It has been in operation 5 years. It consists of two water level drift openings on the south dip of the Furnace seam, on an angle of 60°. No. 1 drift, Red Ash, is open 300 yards. All the coal has been worked out and abandoned, but a counter level of 40 yards lift is worked at present. This counter opens into a south and north dip which forms a basin. The principal supply comes from the south dip, though there are many breasts open on the north dip. Its coal is 5 feet thick. Ventilation is here produced by natural means by air-shaft system.

The Kissinger drift is open on No. 13 Red Ash seam 560 yards to a fault, worked out and idle. One 15-horse engine and one steam boiler furnishes the necessary power. 31 hands are employed; 4 mules and 12 wagons are used. Monthly shipments average 800 tons.

No. 15.—LOCUST SPRING COLLIERY.—*Philadelphia and Reading Coal and Iron Company, Operators.*

This colliery is situated at Locust Gap, in Northumberland county, on the company's estate. It has been 10 years in operation. It consists of a double track slope, sunk 395 yards deep on the south dip of the Mammoth seam, on an angle of 27°. The slope was sunk in three successive lifts. The seam is 18 feet thick. The lower gangways are new. The east and west gangways are each 100 yards long, and the character of work done is safe and satisfactory.

Ventilation.—This is produced by the operation of a 20-horse power steam fan, of 12 feet veins. I proposed to have an outlet road open 100 yards west of the slope for miners use and safety. Ventilation appeared sufficient. The drainage was produced by a 16-inch pole pump.

Engines and Power consists of a 60-horse hoisting engine, a 60-horse pumping engine, a 30-horse breaker engine, and a 20-horse fan=170-horse power; 11 steam boilers, each 30 feet by 34 inches in diameter, whose condition and appointments are satisfactory. 42 hands are employed, with 8 head of stock and 8 wagons in use; 1,200 yards of track are in use. The present appearance of the colliery warrants it to become a first-class colliery when fully developed.

No. 16.—LANCASTER COLLIERY, No. 2.—*William R. Smith, Operator.*

The colliery is situated at Coal Run, in the vicinity of Shamokin, on the estate of the Mineral Ridge and Mining Company. It consists of three water level drifts open on the north and south dips of the Mammoth Twin seams. The No. 1 drift is in 300 yards, and is progressing forward, where 8 men are working 5 slant breasts, the coal is 5 feet thick. No. 2 drift is open 700 yards, and working a switchback gangway. No. 3 an upper dip south, is 300 yards long, working 5 breasts, with 8 men. All the work done is safe.

Ventilation is produced by drift connections, and the supply is fully adequate for all purposes.

Engines and Power.—One 15-horse power engine is only necessary here, with one 19 feet by 48 inch flue boiler, is sufficient. There are 29 hands employed; 4 head of mules and 11 wagons are used. Average monthly shipment 1,100 tons. The coal is of remarkable good quality.

No. 17.—CAMERON COLLIERY.—*Mineral Railroad and Mining Company, Operators.*

This colliery is situated a mile west of Shamokin, on the said company's estate, and consists of 5 drift openings, and a new double track slope which is just sinking. Its present depth is 72 yards under the water level; located on the south dip of No. 10 seam, at an angle of 25°. This slope is east of Shamokin gap, and east of the creek. No. 10 west drift is 1,400 yards long, and ends in a rock pinch. A counter schute 35 yards long opens into the upper lift, with 300 yards of gangway open, which forms the base of the present workings in that district. The coal is 7 feet thick. There are 7 breasts working, and the robbing of the pillars is resorted to, employing 20 hands.

West Twin seam drift, No. 9 gangway, is 2,200 yards long, and excavated to the boundary line, and the process of pillar robbing resorted to; but on its counter lift 7 breasts are working. No. 8 seam, on the same drift, the gangway is 2,100 yards long; 18 men are employed, working 8 breasts and some pillars. Its counter gangway is 1,100 yards in west, employing 32 hands, working 12 breasts and 2 pillars.

Ventilation.—These drifts are ventilated through each tenth breast, air being driven into each over-lying lift and out to the surface, and using these air-holes in warm weather as intakes, and *vice versa*. The supply of air was tolerably good. I measured 6,944 cubic feet of air at the inlet to supply 60 men with.

East No. 7 drift, on the third split on the E seam gangway, is 1,500 yards long. The coal is 5½ feet thick; the angle of dip is 60°. Here 30 men are employed in mining 10 breasts and some pillars. This district has been ventilated through a cross-cut driven into No. 8 seam, and proper measures have been taken to provide a sufficient supply of pure air in this district. Three men were employed in the Tape drift robbing out pillars. 259 hands are employed in this mine, with 92 men and 99 boys outside, making a total force of 450 hands.

Machinery consists of 4 stationary engines=160-horse power, with 12 good boilers in use. There are 46 mules and 114 wagons in use; there are at present 12,972 yards of track laid in and about the colliery; its monthly shipments will average 12,700 tons.

No. 18.—ROYAL OAK COLLIERY.—*Tillet & Co., Operators.*

This colliery is in Shamokin, on the lands of the Philadelphia and Reading Coal and Iron Company, and consists of a drift on the Diamond seam, the coal of which is 3½ feet thick, dipping 40° south, the seam being a small land sale colliery employing 5 hands. There are 350 yards of gangway open, but only 1 breast working. The shipments are meagre and only worked for supplying the residents in its vicinity.

No. 19.—NEW LOCUST GAP.—*Messrs. Graber & Kemble, Operators.*

This colliery is situated at Locust Gap, in Northumberland county, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a double track slope on the E seam, on a 40° south dip in coal 20 feet thick, and under water level. The hoisting slope is 150 yards deep. The east gangway is open 40 yards, and its west gangway 100 yards. There are no breasts yet open. A pumping slope is sunk 50 yards east of it, and an inlet traveling road is now driving in a central location between these slopes for use of men. Work was principally confined to making turnouts and enlarging the slope bottom, employing 23 men.

Engines and Power.—A double engine of 120-horse power is used at the slope, and a 90-horse power is used for drainage, and a breaker engine of 40-horse power is used to prepare the coal=250-horse power, with 12 steam boilers, each 30 feet long and 34 inches in diameter.

As the colliery is a new one, and all the improvements are of first-class character, the opinion is it will become one of the first in the county. It will go into operation early in 1874.

No. 20.—BURNSIDE.—*Isaac May & Co., Operators.*

This colliery is situated in Coal Town, near Shamokin, Northumberland county, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of two slopes, sunk on the Twin seams of the E or Mammoth seam, on each dip north and south. The west slope is 110 yards deep and opens the basin; and the east slope is 50 yards deep; the angles are 33° dip. A gangway is driven across the basin in No. 9 seam in the new slope, some 416 yards long, with 7 breasts working on its south dip, in coal 8 feet thick, and a switch-back gangway is open eastward on the south dip with 7 breasts working in it. A cross-cut opens No. 8 and an east gangway driven 80 yards, but mining is suspended at present; and 211 yards of a west gangway is also open, with 4 breasts opened, and stands idle. The coal is 5 feet thick and dip 55°. The east gangway on the short slope in No. 9 seam is 1,460 yards long, with 15 breasts working. The east counter on No. 8 is open to the boundary line on an 18° dip, with 7 feet of coal and 2 breasts working. A slope of single track has been sunk 83 yards deep on No. 9 seam, on a 40° dip. Its west gangway is open 400 yards; its extension is suspended, but 3 breasts are worked.

Ventilation is effected by the action of a 20-horse power fan, the slope being used for an intake, and continued into the deep slope level, there it ventilates No. 9, returns by the cross-cuts into No. 8 seam, ventilating all that district, thence passes out to the fan.

The top rock in No. 8 appeared unsafe, and a large force had been employed re-timbering the gangway, to put it in a safe condition.

Engine power consists of a 40-horse power engine on the north slope, a 40-horse power breaker engine, which also runs a saw-mill, a 20-horse fan engine, and a 60-horse pumping engine, working a 14-inch pole pump, and hoisting at the south slope. 11 steam boilers supply the necessary steam, which are reported to me to be in good condition.

One hundred and sixty hands are employed at the colliery; there are 23 mules and 85 wagons in use; 14,120 yards of track are laid in and about the colliery; 672 yards of a tunnel is being driven in expectation to open the Mammoth Twin seams. This piece of work is directed by the Philadelphia and Reading Coal and Iron Company, which reflects greatly to their credit for such expensive enterprise.

No. 21.—HICKORY SWAMP.—*Mineral Railroad and Mining Company, Operators.*

This colliery is situated 3 miles east of Shamokin, on the estate of the Mineral Railroad and Mining Company, and consists of 2 water level drift openings on the north and south dip of the E Twin seams; also a double track slope is sunk 200 yards deep on the south dip of the South seam, on an angle of 15° dip. Its west gangway is 750 yards, with 9 breasts working. The west gangway on No. 9 is also 750 yards long and idle. There are 12 breasts working in 6 feet of coal 12° dip. No. 9 seam, east gangway, is open 600 yards, with 11 breasts working; 300 yards west of this slope a self-acting plane, 90 yards in length, is used, and a gangway 200 yards long, with two breasts, are open. Its west counter gangway is also 200 yards long, with 5 breasts working in coal 6 feet thick. The angle is 40° dip, cross-cuts are now opening, each 600 yards from the slope. No. 12 drift, or straight vein on the north dip of No. 9, is 1,300 yards long, but only are robbing back the pillars. The south dip is also open in this drift. A tunnel 330 yards long through the basin, opens the Nos. 8 and 9 Twin seams, in 6 feet of coal. The dip of the angle is 80°. The gangways on these seams are open in 1,300 yards each, only 2 breasts are at present working and opening an air-hole. On the east side only three breasts are working in No. 9 seam. An open cut drift is open on the south dip of No. 9 seam, in 5½ feet of coal, on a dip of 9° south. The only work doing was extending gangways.

Ventilation is produced by a 20-horse fan, which supplies a sufficiency of air for the number of hands employed.

Engines.—A 60-horse power engine is used to hoist coal, and runs a 12-inch column pump; a 40-horse power runs the breaker and two small feed pumps, making an aggregate of 128-horse power, with 7 good boilers, each 30 feet long by 30 inches in diameter, all of which appears to be in proper condition. 211 hands are employed; 32 mules and 108 wagons are used. There are some 4 miles of track used. The monthly shipments will average 7,500 tons.

No. 22.—SHAMOKIN.—*Messrs. Martin & Weaver, Operators.*

This colliery is situated a mile west of Shamokin, on the estate of Hays & Keller. It consists of a water level drift open the Diamond seam; 1,800 yards of gangway have been opened, extending to the boundary line of the track. The coal is 5 feet in thickness, the seam dip 50° south. There are 6 breasts working and the robbing of pillars. Operation had been suspended since the 10th of November, when in operation 40 hands are employed in and about the colliery.

Engines.—A 20-horse power engine is used to run the breaker, with two good steam boilers, which are apparently in good condition. 2,000 yards of track are in use. The monthly shipments average 2,800 tons. The character of the work done and the condition of the mine generally are satisfactory.

No. 23.—GORGEE FALES.—*Messrs. Hime & Goodwell, Operators.*

This colliery is situated south of Shamokin, on the estate of the Philadelphia and Reading Coal and Iron Company, late the estate of the Bear Valley Coal Company. It has been 2 years in operation. It consists of a double track slope, sunk 210 yards deep on the No. 10 coal seam, on an angle of 18° north. Its east gangway is 575 yards long. An incline plane and 3 breasts are working; the coal seam is 6 feet in thickness, and dipping to an angle of 15° .

No. 11 seam, Red Ash, is opened by a tunnel 300 yards west of the slope, 95 yards of which are horizontal, and rise in 20 yards further to a dip of 30° , cutting No. 11 seam in 9 feet of excellent coal on its north dip in 10° . The gangways are newly opened. The west being 150 yards, and the east gangway is opened 120 yards, and 4 breasts just opened.

Ventilation is produced by natural means, and found adequate to the general wants of the workings.

Engines consist of one 40-horse power hoisting engine, one 30-horse power breaker engine, with 6 boilers, each 30 inches diameter by 30 feet long. Their condition as per inspectors report it satisfactory. 62 hands are employed inside and outside; 8 mules and 25 wagons are in use; 2 miles of track are used; monthly shipments will average 2,700 tons.

 No. 24.—MARSHALL.—*Messrs. Reese & Bros., Operators.*

This colliery is situated in Shamokin, on the estate of William H. Marshall, and has been 5 years in operation. The improvements consist of a single track slope sunk 66 yards deep, on a 14° west dip, and reaches the basin of the north and south dips. Both gangways are open in 6 feet thick of coal, (Diamond vein.) The south dip gangway is opened 80 yards west, with 3 breasts working. 100 yards of a north dip gangway is open, and 2 breasts are working, with working runs of 25 yards.

Engines.—An 8-horse power engine is used for hoisting and running the breaker, with two 20 feet boilers, and a small steam pump used for drainage.

Ventilation is adequate, and is supplied by natural means. 20 hands are employed; the monthly shipments will average 400 tons; 300 yards of track are laid about the colliery. At present I deem it unnecessary to extend my remarks.

 No. 25.—BEAR VALLEY.—*Messrs. Hime & Goodwell, Operators.*

This colliery is situated 3 miles south-west of Shamokin, on the estate of the Philadelphia and Reading Coal and Iron Company, late the Bear Valley Coal Company. It consists of a tunnel driven 250 yards south, cutting the Twin seams of the E coal seam. Two gangways are open on the north dip, east and west. The east gangway reaches the boundary line at two miles distance, on its main lower level in Nos. 8 and 9 seams, where 10 breasts are open. The 124th breast is used for a self-acting plane, which is 80 yards in length on the No. 9 seam. 200 yards are open in 8 and 140 yards in 9 seam. In this district operations are suspended for the present; the principle work done was extending gangways and increasing facilities for spring work.

No. 9 west gangway is open 2,500 yards in coal 11 feet thick, and dip 75° north. The breasts are each 8 yards wide, with 6 yard pillars. At this point the seam is separated into three veins by parting slate; the upper and middle seams are simultaneous; the lower vein is opened by three cross-cuts through the parting; the working here is but 20 yards run. Its character is safe.

Ventilation.—A furnace produces ventilation, and its result is satisfactory on both sides of the works, but in summer time this system is not adequate to supply a sufficiency of air. I recommended the use of a fan, which is the only way a proper supply of air can be obtained. In other respects the mines are well managed.

One hundred and thirty hands are employed; 24 mules and 72 wagons are used; 5 to 6 miles of track are laid in and out of the mines.

NO. 26.—BEAR VALLEY SHAFT.—*Philadelphia Coal and Iron Company, Operators.*

This shaft is situated contiguous to the Bear Valley colliery. It consists of a double cageway. Its square section is $12 \times 21\frac{2}{10}$ feet = 254 square feet. Its section is made into two coal compartments, each 7×12 feet. 1 pump-way $5\frac{1}{2} \times 6$ square feet, and air-way of 53 square feet. The sinking of the shaft is a work of some note, already 250 feet of it is completed successfully, and the work progressing rapidly.

No. 10 seam was reached 45 feet from the surface, dipping 68° north, and will be continued still further until the Twin seam of the E or Mammoth seam is reached, at an estimated distance of 265 feet. The timbering of the shaft is well executed by 10-inch square timber laid to joints.

Engines in Use.—A 40-horse power hoisting engine, with four 34 feet boilers are in use, and a No. 6 Cameron steam pump.

There are 33 men employed at the shaft. The whole of this enterprise is under the superintendence of Gen. H. Pleasants, Chief Engineer of Staff. The shaft, when completed, will be a model of its kind in every particular.

NO. 27.—MOUNT CARMEL SHAFT, (ALASKA).—*Philadelphia and Reading Coal and Iron Company, Operators.*

This shaft is situated centrally between Mount Carmel and Locust Gap, in Northumberland county. It consists of a shaft with a double cageway, a pump way and an air-way. Their dimensions are 7×12 feet for coal way, $5\frac{1}{2} \times 6$ feet for pump way, and 53 square feet for an air-way. The upper portion of the shaft is strongly secured by a heavy wall of dressed masonry, laid in cement, and forming a base for machinery. The work is but recently commenced, and gives promise of its speedy completion.

At the depth of 274 feet the coal seam has been reached by a steam drill. The work of sinking the shaft is decidedly rapid. A number of holes are bored by these steam (Diamond) drills to the depth of some two or three hundred feet. The drills are then removed, and the operation of blasting is then proceeded with until the bottom of the holes are reached, when the drills are again resorted to, and the work continued in this manner until the proper depth has been obtained.

Engines and Power.—An excellent engine is used at the shaft of 150-horse power, and a 30-horse power engine is used at the saw-mill, with 10 good steam boilers. There are 50 men employed. Everything connected with the improvements is in an excellent condition.

No. 28.—PHENIX PARK, No. 2.—*Philadelphia and Reading Coal and Iron Company, Operators.*

This colliery is situated at Phoenix Park, in Schuylkill county, on the estate of the Philadelphia and Reading Coal and Iron Company, and has been in operation 22 years. It consists of a double track slope in two lifts, sunk 206 yards deep. The coal in these lifts has been mined out. A new slope has been sunk from the lower level gangway one hundred yards deep, on a dip of 27° south, in coal 12 feet thick. Its east gangway is open 750 yards, while the west gangway is only 250 yards long, 10 breasts are working on the east section and only 1 breast open on the west side. These breasts are 9 yards wide and the pillars are 7 yards thick. The breasts have brattice on the inside schutes on each breast.

Ventilation.—Here ventilation is produced by the operation of a 10-horse fan, located near the slope, opening on the surface. The slope is used as an inlet, the air is split at the bottom of the new lower lift, and passes through the gangway to its face working, thence returns through the workings on its return to the fan out-cast. A small quantity of fire-damp is generated in the western district, which requires but very little change to get it under control. I found by actual measurements in the west intake 7,440 cubic feet of air supplied where eleven men were at work, and in the inside return air-way I found 5,520 cubic feet supplied, this gave evidence of a fair supply. But a much larger supply of air could be obtained, if required, by slightly increasing the velocity of the fan. 6,720 cubic feet of air was found circulating in the east gangway, 2,418 cubic feet was found at the inside return breast. Here the temperature was found to be 60°, while outside it was only 54°, and the barometer indicated an atmospheric pressure of 29°, whilst outside it indicated 29 $\frac{1}{10}$ inches. This indication exhibited some mixture of fire-damp, but with reasonable vigilance and care no serious danger from fire-damp need be apprehended.

Engines and Power.—It consists of a 90-horse hoisting and pumping engine in the first slope lift, a 25-horse power breaker engine, a 10-horse power fan engine, double engines, 24-horse power, each located on the surface used as air compressors; a 40-horse power hoisting in the lower slope lift inside, and this engine is run by compress air, and a pump worked by the same power. This exhaust air is utilized for ventilation. 13 steam boilers are in use and their condition has been reported to me to be satisfactory. 58 inside hands and 53 outside hands are employed. There are 8 mules and 36 wagons in use. There are 2,450 yards of track laid. The monthly shipments will average 2,500 tons.

No complaint has been reported to me concerning dangers or unsafe management of the colliery, and such work as has been gone through is considered safe and satisfactory.

No. 29.—PHOENIX PARK, No. 3.—*Messrs. Lloyd & Glover, Operators.*

This colliery is situated at Phoenix Park, in Schuylkill county, and west of the West Branch of the Schuylkill river, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a double track slope, sunk 180 feet deep on the south dip of the Diamond seam, Red Ash, on an angle of 26°. The coal seam is 6 feet thick on its second lift. The operators were then, October 21, engaged in completing outside improvements, and inside were extending gangways, &c., and improving its shipping capacity for the trade.

Engines newly placed in position.—A pair of hoisting engines of 30-horse power each. The capacity of the colliery when completed will average 300 tons per day. Everything concerning these improvements are of a substantial character. There are 10 new boilers in position for use. One of Allison & Bannan's best steam pumps is used for drainage.

Five mules and 66 wagons are used. The future prospects of this colliery are flattering. There is an evident disposition evinced by these operators to peaceably submit to the requirements of the act of Assembly, and afforded me every needed facility in my examinations. No complaints came to my notice so far. At present there are 22 men employed in and about the colliery. No casualties worthy of record had occurred at the place during the year.

 No. 30.—DIAMOND COLLIERY, SCHUYLKILL COUNTY.—*John Wadlinger, Operator.*

This colliery is situated at Forrestville, Schuylkill county, on the Lytle track, and has been in operation 4 years. It consists of one double track slope, sunk 280 yards deep, on south dip of Diamond vein, Red Ash, on an angle of 60°, second lift to basin. The vein is 7 feet thick; area of slope 140 feet. The east gangway on south dip has been operated 400 yards; 24 breasts have been opened, and 1 now working. West gangway on south dip is opened 300 feet. The only work doing in this gangway is robbing pillars. The coal has been mined on both dips by this gangway, which are now in fault. East gangway, No. 1 north dip, is driven 200 yards into fault; 3 breasts and 1 pillar are working. The vein in this gangway is 8 feet thick. East gangway, No. 2 north dip, is driven 200 yards into a fault, the vein being irregular; 4 feet of coal, and working 1 breast. Cross headings are driven through the pillars at face of each breast, where finished, removing any gas which might accumulate, and keeping a free circulation of air through the old workings.

A self-acting plane, located 165 yards west of slope and 133 yards long, on north dip, where an east and west gangway are working. East gangway is driven 200 yards; 11 breasts have been opened. This section east is now idle.

West counter gangway is driven 330 yards, and 22 breasts have been opened; 8 breasts, gangway and schutes are now working. The vein is 7 feet thick on north dip, angle 27°.

The upper lift on this north dip has been mined out by Miller's workings, and is abandoned, and is now standing full of water. A water level drift has been driven into Miller's slope by Mr. Wadlinger, letting off the upper part of water, and measures are being taken to get pumping machinery down to the bottom of Miller's slope to drain the entire workings, while bore holes are kept ahead of the face of trial breasts in the workings un-

derneath. From the most reliable information to be had there is still 150 feet of strata remaining between the face of Wadlinger's workings and Miller's gangways.

Ventilation is effected by one 9 feet fan. The slope is made inlet or downcast, the air traveling up into counter workings on north dip, returning down through lower workings of north dip, and traversing the gangways east and west in south dip, returning through the working breasts and old workings, to fan upcast. This slope working generates fire-damp freely, but is well ventilated. Found December 17, by measurement, 21,844 cubic feet of air supplied at bottom of slope, and at return in north dip counter gangway west 5,005 cubic feet for 36 men and boys employed, and 10,320 cubic feet supplied in main east gangway, south dip. Thermometer indicating 68° inside and 60° outside. Barometer outside, 29 $\frac{5}{10}$; inside, 29 $\frac{7}{10}$. This mine is in good condition and well managed by its present superintendent, Stephen Jones.

Machinery consists of 4 steam engines of 112-horse power; one small steam and one 14-inch pole pump effect the drainage; 9 boilers, 32 feet, by 27 inches are in use, and reported in good condition. Monthly shipments, 4,500 tons. Yards of track laid —. 9 mules, 30 wagons and 20 horses. 60 miners, 13 laborers and 13 boys are employed inside; 16 laborers and 30 boys outside, giving a total of 60 miners, 29 laborers and 43 boys=133.

No. 31.—LOWER RAUCH CREEK.—*Messrs. Miller, Graff & Co., Operators.*

The colliery is located on the estate of the Philadelphia and Reading Coal and Iron Company, two miles west of Tremont, in Schuylkill county. Its improvements consist of two slopes, (each double tracks.) The old slope is used for drainage. The west or second slope is sunk 387 yards deep on a 33° angle of the E seam, on its south dip, in 15 feet of White Ash coal. There are three slope lifts in the mine; the present lift is 180 feet deep. Its west gangway is 1,550 yards long. 100 breasts have been opened on this gangway. At present only 20 breasts are worked. All the breasts and pillars are 10 yards wide. The air is circulated through these breasts by brattice arrangements, which conveys the fresh air around the face of each breast, passing through on its outward course.

Three hundred yards west of the slope the E seam separates by a slate parting, forming two distinct seams. 800 yards further west the seams again unite into one seam as in its original form; this splitting of the E or Mammoth seam is characteristic of it in several localities. 42 breasts are working on this gangway, giving employment to 82 hands. Its west counter gangway is 2,100 yards long, and 132 breasts are opened and the gangway continued, giving employment to 16 hands. The east main gangway is open 980 yards and continued onward, employing 27 hands. The management of the colliery is under the direction of Thomas Moore.

Ventilation.—The mine is ventilated by the operation of a fan, worked by a 20 and 15-horse power engines, located 30 yards west of the new slope, the slope being used for an intake, the air traversing the gangways to their terminus, thence passing up into the face of the breast workings, and returning by the air pillar headings to the fan outcast. 15,130 cubic feet of air had been measured at the west inlet, where 82 men had been working, which by law required 6,500 cubic feet of air per minute, showing that the supply of air was adequate for all purposes. In the east section 10,206 cubic feet was supplied for 27 hands, and at the outlet I found 36,700 cubic feet of air; nearly all this air could be utilized if required.

November 10, log of temperature outside, 50° ; inside, 75° ; difference, 25° ; favorable; log atmospheric pressure outside, 29 inches; inside, $29\frac{1}{2}$ inches; difference, $\frac{1}{2}$ inch; favorable. This exhibit gives satisfactory results, and reflects credit on the manager. The excavations are extensive, and quite a quantity of fire-damp gas is generated in the mines, but the precautionary measures taken to insure safety are ample in any case.

Engines.—The power consists of a pair of hoisting engines=120-horse power, and two pumping engines=120-horse power, a 40-horse breaker engine, the two fan engines=315-horse power. There are 6 pumps used for drainage, with 29 boilers to supply the necessary power.

The pumping (old) slope located 200 yards east, where two 16 and one 14-inch pumps are used. Two pole pumps and a steam pump are used in the new slope. 260 hands are employed, with 50 mules and 80 wagons in service. There are 4 miles of track used. Monthly shipments average 12,000 tons. This is one of our first-class collieries.

No. 32.—EAST FRANKLIN.—*Philadelphia and Reading Coal and Iron Company, Operators.*

The colliery is situated at Upper Rauch Creek, 2 miles west of Tremont, in Schuylkill county, on the present estate of the Philadelphia and Reading Coal and Iron Company, (but formerly on that of Mr. Henry Heil.) It has been in operation seventeen years. It consists of two adjoining slopes, one for pumping and one for hoisting coal, &c., and are sunk to a depth of 388 yards in three lifts, on the north dip of the E seam, on a 35° angle.

Gangways east 1,500 yards open and faulty coal, with breast runs of 90 yards, each 8 yards wide and 6 yard pillars. The east counter gangway is 1,250 yards long, but at present this section of the mine is idle; also the main west gangway is at present idle. 80 yards long of a tunnel has been open west of the slope, which opens the E seam in 50 feet of coal of best quality of white ash, dip 40° and 60° .

Ventilation is produced by the action of a 20-horse power steam fan. The slope is used for an intake. The air is conducted to the working districts in "Monkey" or small gangways, and through headings from breast to breast to face of workings and returns to the outlet air-course. Ventilation was found ample. 29,900 cubic feet of air per minute had been supplied to 76 men.

The mine Log, November 4, 1873, was: Outside temperature, 56° ; inside, 72° ; difference, 16° ; favorable; outside barometer, $28\frac{8}{10}$; inside, $29\frac{3}{10}$; difference, $\frac{1}{2}$ inch; favorable. Fire-damp is generated in limited quantities, but the system of ventilation is fully effective, that under ordinary care there need be but little apprehension of accident.

Engines.—There are 7 engines in use=350-horse power; 5 pumps are used for drainage; these pumps are placed in a pumping slope; there are 17 boilers, 36 feet long by 30 inches diameter; all in use and in good order; a detailed description at present is unnecessary. 126 men are employed in and about the colliery; 22 mules and 50 wagons are in use; there are 4,800 yards of track used; the monthly shipments will average 5,500 tons.

Remarks.—The tunnel herein referred to is a new enterprise, which developed the Mammoth seam north of the saddle sometime late in November, which when fully opened will develop a vast area of coal, and will constitute this one of the best collieries in the county. J. P. Wetherill, C. E. for the estate.

No. 33.—BROOKSIDE.—*Messrs. Repplier, Gordon & Co., Operators.*

This colliery is situated at Tower City, in the western limits of Schuylkill county, on the new coal estate of the Philadelphia and Reading Coal and Iron Company, late the estate of Monson & Williams, contiguous to the dividing line of Schuylkill and Dauphin counties. 1,400 yards of a main west gangway are open and continued forward, on a course running due north. 7 breasts of 15 yards wide are working. The pillars are 6 yards thick. The measures on this level crosses on an angle of 48° .

The colliery consists of a double track slope, sunk 150 yards deep, on the Lykens Valley seam; its angle of dip 33° north. The condition of the slope and fixtures is safe and satisfactory. 325 yards west of the slope a self-acting plane 78 yards long is used to convey the coal to the mine gangway. 5 horizontal gangways have been opened on this level counter, with 24 breasts working. 600 yards west of the slope a counter gangway is now opened. The working runs here are 80 yards long. 600 yards of gangway are opened on this level, with 12 breasts working in 10 feet of coal. A large field of undeveloped coal is still remaining on the tract. It is intended to open this field by sinking a new slope west of the present one; that will also open a basin that overlies the present workings in an upper strata.

Ventilation is produced by a 20-horse power fan, making an inlet through the lower gangway level, ventilating these workings and returning and ventilating the first counter levels; thence it passes into the slant workings, through which it passes out to the fan. Under such circumstances ventilation is only tolerable, but prompt measures have been taken to increase the supply. So far the condition and character of the work done is good and safe.

Engines and Power.—A pair of hoisting engines are used at the slope, each equal to 40-horse power; a 40-horse power breaker engine, and a 25-horse power fan engine—145-horse power, with 10 good boilers and two 6 inch steam pumps used for drainage, which are fully adequate for that purpose. There are employed inside 90 miners and 40 laborers, and outside 15 men and 20 boys, making an aggregate of 165 hands, together with 26 mules and 70 wagons in use; there are 6,200 yards of track laid in and about the colliery; monthly shipments will average 9,000 tons. There are no complaints on our records against this colliery.

 No. 34.—TOWER CITY.—*Messrs. Pupplier, Gordon & Co., Operators.*

This colliery is situated at Tower City, in the western limits of Schuylkill county, on the estate of the Philadelphia and Reading Coal and Iron Company, (late the Monson & Williams estate.) It has been 4 years in operation under Col. Savidge. It consists of one double track slope, in Big Lick mountain, sunk 83 yards deep on a 67° north dip, with two gangways. The east gangway is open 1,084 yards, the west gangway 1,263 yards. There are 50 breasts open eastward and 44 breasts open westward. Operations were suspended in April until the 9th of October, when preparations were made for resuming work again.

Four engines of 145-horse power, with 10 good boilers, are in use, the condition of which is apparently good. There are one 12 and one 6-inch steam pump used for drainage. 23 men are employed; 10 mules and 32 wagons are on the premises. 3,000 yards of track are used. All the improvements and their equipments are in a remarkably good condition.

No. 35.—PYNE.—*J. C. White, Operator.*

The colliery is situated at Swatara, 4 miles east of the town of Tremont, in Schuylkill county, on the estate of the Philadelphia and Reading Coal and Iron Company. It has been in operation 21 years, most of this time it has been under the direct management of Col. Claud White, resident superintendent. It consists of three different slope workings, some of which are sunk on their third lift with exceeding extensive excavations, and a few years ago had been one of the leading collieries in the county. The present working slope is on the Primrose vein on a 47° south dip. The vein is a Red Ash. The lower lift east gangway is 110 yards, with 4 breasts open; the west gangway is 56 yards long, with one breast working. The Fisher Basin drift is producing some coal by robbing out the pillars.

Ventilation is produced by a 20-horse fan. The mine is well ventilated and the workings in safe and good order throughout, notwithstanding the time and work done for over 21 years.

Engines.—A pair of hoisting engines—to 80-horse power, is used at the slope, an 80-horse power engine is used for drainage, 2 breaker engines—80-horse power, and a 5-horse feed pump—7 engines—265-horse power, with 15 boilers, all of which are inspected and reported to be in good condition. 3 pole pumps of 12, 16 and 18-inch columns are used for drainage.

Ninety-nine hands are employed; 15 mules and 83 wagons are used. There are two miles of inside and outside track laid. Average monthly ships 4,000 tons. There are no complaints on record against this colliery or its management.

No. 36.—BIG MOUNTAIN.—*Messrs. Patterson, Llewellyn & Co., Operators.*

This colliery is situated south of Shamokin, in Northumberland county, on the estate of the Philadelphia and Reading Coal and Iron Company. It has been 28 years in operation. It consists of 4 drift openings on the Twin E seams, viz: *Kirkham, Harper, Lawton* and *Mahanoy* drifts. There are 3 men working in the Lawton drift; 6 hands are working in the Harper drift, in 2 breasts; 28 hands are working in the Kirkham drift, in 11 breasts, the gangway of which is 700 yards long. The Mahanoy drift is 1,000 yards long, with 3 cross-cuts open to No. 9 seam; these cross-cuts are used for ventilation; Nos. 8 and 9 gangways are driving forward with 11 breasts working; in No. 8 a counter-schute is open and 60 yards of a gangway open in west, with 1 breast open. Planes Nos. 1 and 3 have an aggregate length of 750 yards, and 2 planes, in No. 8 seam, whose length is 300 yards; there are 2 breasts working in this and 5 in the other.

Ventilation is produced by the action of a 20-horse power fan, which is located in the Mahanoy drift; all the other drifts being connected thereto, and the air circulating throughout the entire workings, which system supplies adequate ventilation for all purposes, the fan being located on an air hole on the mountain, giving it full effect.

One hundred and forty-three hands are employed; there are 28 mules and 76 wagons used; $5\frac{1}{8}$ miles of track are laid. One 35-horse power engine runs both the breaker and saw mill, with 2 steam boilers, which have been examined and pronounced to be in good condition. There is little or no complaint on record against this colliery or its management.

No. 37.—COLKET.—*Messrs. Owen, Eckel, Colket & Co., Operators.*

This colliery is situated at Donaldson, in Schuylkill county, near the town of Tremont, on the estate of the Philadelphia and Reading Coal and Iron Company, and has been in operation some 6 years. It consists of a double track slope, sunk 275 yards deep on the Black Heath seam, in two lifts, on a 52° south dip, and in 9 feet of coal. Four hundred yards of west gangway have been open, with 33 breasts open, 4 of which are now working, employing 19 men; 400 yards of east gangway have been open, exhausted and abandoned; its counter-gangway is 500 yards long and idle; its west counter has been open 1,100 yards, and still going forward, and working 3 breasts, employing 17 men; 130 yards west of the slope 102 yards of a tunnel have been driven northward, opening the E seam in 20 feet of coal: 750 yards of gangway have been open east, and are now robbing out the pillar coal, employing 14 men; 900 yards of west gangway have been open, and still extending the gangway, working 5 breasts, employing 36 hands.

Ventilation is produced by the action of a 20-horse power fan, on the E seam workings, and a 15-horse power fan on the Black Heath seam. By this system, though expensive, ventilation is made so perfect that each department in the mine has been amply supplied. Great credit is due to Mr. Athy for his excellent management of the works. I found no cause of complaint of the establishment.

Colliery Log.—September 26, temperature outside, 72° ; inside, 75° ; difference, 3° ; favorable; barometer outside, $29\frac{1}{10}$; inside, $29\frac{3}{10}$ inches; difference, $\frac{2}{10}$ inches; favorable.

Engines and Power.—There are 7 steam engines in use, their aggregate power is equal to 418 horse, with 21 boilers reported to be in good condition.

Force of Hands.—100 men inside; 78 men and 69 boys outside, equal to 247 hands, with 22 mules and 65 wagons in use. 5,000 yards of track are used, with an average monthly shipment of 7,500 tons.

No. 38.—EUREKA.—*Owen, Eckel & Colket, Operators.*

The colliery is situated near Donaldson, in Schuylkill county, on the estate of the Philadelphia and Reading Coal and Iron Company. It consists of a tunnel driven 72 yards north, opening the Lykens Valley seam, in its south dip, in 3 feet of coal. East and west gangways are open 700 yards. Work was confined to extending gangways only, employing 9 hands. The coal mined at this colliery is prepared at the Colket colliery breaker, which dispenses with an establishment of that sort on the premises.

No. 39.—WEST END.—*Owen, Colket & Co., Operators.*

This colliery is situated west of Donaldson, on the estate of the Philadelphia and Reading Coal and Iron Company, in Schuylkill county. It consists of a drift opening, the coal of which has been extracted and idle at present. But the lessees or landowners are about to erect the necessary machinery for sinking a new slope on its first lift. From the water level there is a fine field of coal on the tract, and but comparatively very little has been mined from the surface.

No. 40.—KEMBLE COLLIERY.—*Thomas H. Kemble, Operator.*

This colliery is situated on Red Mountain, one mile south-east of Tremont, in Schuylkill county, on the estate of the Philadelphia and Reading Coal and Iron Company. It has been 2 years in operation. It consists of a single track slope, sunk 131 yards direct through the measures dip 38° south; the strata being 70° at right angles, on what is known as the Greenwalt vein, in 4 feet of good coal. 500 yards of an east gangway have been opened, with 25 breasts worked out, and 60 yards of west gangway, with 4 breasts opened, the condition of which is safe. 2 engines are in use=115-horse power. 700 feet of a self-acting plane is used, over which the coal is passed from the slope to the breaker. On the 8th of October the work had been idle, and apparently would be until spring. Further remarks unnecessary.

No. 41.—OTTO, No. 2.—*Philadelphia and Reading Coal and Iron Company, Operators.*

The colliery is situated at Branch Dale, in Schuylkill county, on the said company's estate, and has been 35 years in operation. It consists of 3 slopes, 2 of which are idle. The one in use is sunk 332 yards deep, in 3 lifts, on the Primrose or G seam, dipping 35° south in 12 feet of coal. The upper lifts are nearly exhausted.

New lift west gangway is 650 yards long, with 17 breasts working; all of which are 9 yard breasts, with 7 pillars. The extension of the gangway is continued, employing 48 hands and 4 boys in this district. The east gangway is also 650 yards long, with 10 working breasts, and extension of gangway continued, employing 27 men and 3 boys in this section.

The mine generates fire-damp gas largely, requiring the most vigilant exertion in its safe management throughout the year. It has been, previous to this year, the scene of many serious disasters, resulting in death and several injuries; but since its recent management, under George Scott, these dreadful scenes have been abated, and life and property better secured.

Ventilation is produced by a 30-horse power fan. The slope being used for an intake, the air is proportionally divided in the lower lift, and made to circulate up and through the workings, and through them to the fan out-cast; all of which system of ventilation is quite satisfactory. I found 28,000 cubic feet of air in the eastern district, where 52 hands were employed, and 15,000 cubic feet on the west side, where 30 hands were employed.

The colliery log indicated temperature outside, 73° ; inside, 71° ; difference, 2° ; unfavorable. Barometer, outside, $28\frac{9}{16}$; inside, $29\frac{3}{16}$; difference, $\frac{4}{16}$ inches; favorable. 181 hands are employed; 23 mules and 140 wagons are used; monthly shipments, 9,009 tons.

Remarks.—150 yards west of the slope, on the lower lift, a new tunnel is in progress of completion. Its present length is 195 yards north, to develop the White Ash seam, the coal of which is 6 feet thick. Its total length will be 220 yards. The dirt vein was cut through in 160 feet, having 8 feet of coal, and dipping 33° south. The Black Heath vein was cut at 113 yards in 10 feet of coal. The White Ash seam was cut at 198 yards in $7\frac{1}{4}$ feet of coal, and dipping 32° . The Small White Ash seam was cut at 221 yards in $7\frac{1}{2}$ feet of coal. An air-shaft has been sunk 290 feet through the same measures as the tunnel cut through. Taking it all in all, we have not many better collieries in the region.

No. 42.—TREVORTON.—*Philadelphia and Reading Coal and Iron Company, Operators.*

This colliery is situated at Trevorton, in Northumberland county, on the estate of the said corporation. It consists of 2 slopes and 3 drift openings. No. 1 slope is sunk 95 yards deep on its first lift on the south dip of the Lykens Valley Red Ash seam, south 64° ; its east gangway is open 900 yards in 9 feet of coal; mining is chiefly confined to robbing out pillars; the east gangway is driven 900 yards in 9 feet of coal and mining chiefly confined to removing pillars. No. 3 slope is sunk 83 yards deep of *double track proportions* on a 62° dip south on the Lykens Valley seam; cages are used in hoisting out the coal, but as the slope is a new one mining is confined to extending gangways and chambering, etc. A drift is open on No. 9 Branch of the White Ash seam of the E; its east gangway is 250 and its west 107 yards long, with 3 breasts working west; 7 breasts are worked on the west side by 2 slant gangways; a No. 9 seam is opened on its north dip by a tunnel 17 yards long with east and west gangways open, but operations are here suspended. First vein drift on Nos. 8 and 9; a counter on the north dip of No. 9; its gangway is 185 yards long; the west gangway is open 183 yards in 7 feet of coal. No. 8 south drift, with 753 yards of west gangway, is open, with 2 slantings of 700 yards, and working 7 breasts, with switch-back workings and slantings.

Ventilation is produced by a 20-horse power fan, located on Runny drift, with satisfactory results; the other drift workings are well ventilated by atmospheric action.

Engine power.—One hoisting engine, No. 1 slope, 65-horse power; 1 breaker engine, 30-horse power; 1 saw mill engine, 20-horse power=115-horse power. No. 2 slope, 1 dirt plane engine, 30-horse power; 1 coal plane engine, 30-horse power; 1 breaker engine, 30-horse power; 1 fan engine, 15-horse power=105-horse power. Slope No. 3, one pair hoisting engines of 100-horse power; total power, 320-horse, with 25 steam boilers, 30-inch by 30 feet, all of which are reported to be in good condition. The drainage in No. 3 slope is effected by a 6-inch steam pump, and in No. 1 slope by a 16-inch pole pump.

Remarks.—Three hundred and twenty-five hands are employed; 39 mules and 158 wagons are used; some 7 miles of track are laid in and about the colliery; its monthly shipments will average 8,000 tons.

No. 43.—WILLIAMSTOWN.—*Summit Branch Railroad Company, Operators.*

This colliery is situated in Williams Valley, 4 miles east of Lykenstown, in Dauphin county, on the estate of the said company, and has been seven years in operation. It consists of a tunnel 346 yards, driven in Big Lick mountain, and cuts the Lykens Valley seam on its water level; 2 double track slopes are sunk in the tunnel, 1 of 225 yards deep on the west and another sunk 140 yards deep on the east side of the tunnel, each in 8 feet of coal, dipping 25° north; 1,500 yards of gangways have been open in the west slope; 1,600 yards of gangways, with 15 breasts, are open on the east slope; 1,300 yards of counter-gangways and 23 breasts are open in the west workings; the coal is brought down to the main gangway by a self-acting plane 100 yards in length. Eight hundred yards east of the bottom of the east slope a self-acting plane is used for a like purpose to bring the counter working coal to the main gangway; the plane is 120 yards long and of double track; 500 yards east of the tunnel a cross-cut

at water level opens the Lykens Valley small coal seam; a tunnel is now driving in a northern course, being an extension of the Summit Branch tunnel; in this the 4-foot White's vein has been cut 100 yards north of the Lykens Valley vein; the tunnel is driven 410 yards north of the Lykens Valley vein; 450 yards of another tunnel is driven south from Bear Valley to connect with the north tunnel; by these tunnels communication will be open with Bear and Williams Valleys; this means will develop the south dipping seams in Bear Valley; on the 10th of December, this year, these tunnels had been completed and connections effected by rail, accomplishing one of the heaviest undertakings of the kind in the country.

Ventilation is produced by two 20-horse power fans, located within the tunnel to accommodate each slope workings, the air traversing the slopes and gangways and returning through the breasts to the out-casts. The ventilation of these mines has no superior in the region, and is managed with signal ability and care. The safety of men in this colliery is the first object to receive attention. Major Joseph Anthony is general superintendent, and a strict disciplinarian in this important position, and really understands the responsibilities of this trust, hence his great success in the vast shipments of these collieries under his management, that this year there has been shipped per scale weight 301,500 tons from one breaker alone. This being the largest shipment on record from any one colliery in this country or in Europe, so far as has been known.

West I found, by actual measurement, 36,452 cubic feet of air produced per minute, and in the east, by actual measurement, 14,440 cubic feet. Ventilation is established on correct principles throughout the entire mine; and when we consider the large amount of powder used and other impurities that are generated in such extensive excavations, that I am obliged to express a desire that all the collieries of my district would follow this worthy example, *i. e.* for safety and health to life and property. 471 men and 90 boys are employed—560 hands, with 106 mules, and 220 wagons and 13,122 yards of track.

No. 44.—BIG LICK.—*Summit Branch Railroad Company, Operators.*

This colliery is situated 2 miles east of Wiconisco, in Dauphin county, on the estate of the Lykens Valley Coal Company. It has been 5 years in operation. It consists of 2 double track slopes, both sunk on the north dip of the L. V. vein, on the Big Lick Mountain in 8 feet of coal, on a 38° dip. East slope is 230 yards deep; the west is 400 yards deep. The deep slope gangway is driven east 1,600 yards, with 11 breasts working, employing 73 hands. Its counter is 1,500 yards long, with 10 working breasts, employing 45 hands. The short slope workings on main gangway are 1,500 yards long, with 8 breasts working, employing 55 men. Its counter is 1,400 yards, with 10 working breasts, employing 57 hands. Its second counter is 1,500 yards, robbing pillars with 25 men. These works are on the east of the slope. The coal on the west of the slope has been mined by the L. V. colliery at Wiconisco, where the drainage of all the collieries is concentrated, *viz*: the Short Mountain, L. V. and Big Lick collieries. There are 6 miles of gangway opened on these collieries. This colliery receives more than ordinary attention to preserve the drainage intact.

December 10 operations had been suspended, except opening an air-hole and making the necessary preparation for sinking a third lift.

Ventilation is produced by a 20-horse fan, using the deep slope for an intake, and traversing the works to the face of the working breasts, and through to the outlet. By measurement I found 30,000 cubic feet supplied.

Colliery Log.—Temperature outside, 71° ; inside, 71° ; difference, 0. Barometer, outside, $28\frac{9}{10}$; inside, $29\frac{8}{10}$; (difference, $\frac{9}{10}$ inches; results satisfactory and ventilation good.

Engines in Use.—One pair hoisting engines at deep slope, 120-horse power; 1 single engine at short slope, 60-horse power; a breaker engine of 35-horse power, and a 20-horse power fan and 3 feed pumps=44-horse power; aggregate=279-horse, with 16 boilers, the condition of which is reputed to me to be good. 243 men and 80 boys are employed=323 hands, with 57 mules and 153 wagons in use; 6 miles of track are used; monthly shipments=14,000.

No. 45.—SHORT MOUNTAIN.—*Lykens Valley Coal Company, Operators.*

The colliery is situated at Wiconisco, in Dauphin county, on the estate of Lykens Valley Coal Company and Summit Branch Railroad Company. It consists of one double track slope, sunk 500 yards deep on a 37° north dip on its first lift, and 70° on its lower lift. It has been 30 years in operation, and has been a very productive colliery. Its west gangway is 545 yards long, and extensions continued, with 16 working breasts, with working run of 45 yards. 620 yards of a counter, with 26 breasts are open in this gangway. 633 yards of a west counter, and 28 breasts have been open, with 6 breasts of a like working run. Another gangway is open over the second counter, which gangway is 584 yards, and used as an air-course; mining here is prohibited. East gangway is 527 yards long, and driven underneath the Lykens Valley slope workings, and will intersect with the Short Mountain workings, 200 yards east of the slope. A tunnel is now in course of driving on a level with the bottom of the old slope to the Whites vein, 100 yards distant, 30 yards of which have been already completed, to be used for drainage and ventilation. In the old Bear Valley (Gap) tunnel some mining has been carried on in Pat Martin and Etting veins, in 10 feet of coal, but a resort is had to robbing pillars, the dip of which is 64° . 115 yards of the Lykens Valley (new) slope is sunk, and will be continued to the level of the bottom of the Short Mountain slope, which is intended to be used in connection with that colliery for a material and miners traveling slope.

Ventilation is effected by heated air, derived from furnaces of the boilers in the lower level, which system is found to be successful. A fan will shortly be substituted for this purpose. I found the character of these collieries as to ventilation and management very good.

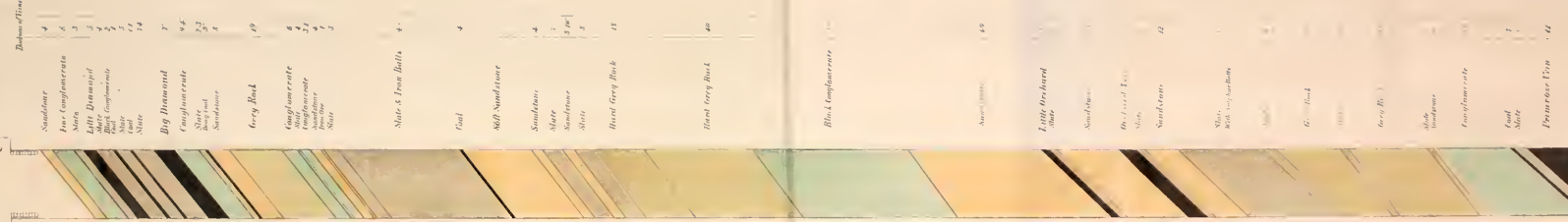
Engines.—One pair of hoisting engines at Short Mountain slope, 300-horse power; 1 breaker engine at Short Mountain slope, 40-horse power; 1 plane engine at Short Mountain slope, 25-horse power; 1 hoisting engine, Lykens Valley slope, 60-horse power; 1 plane engine, Lykens Valley slope, 90-horse power; 1 breaker engine, Lykens Valley slope, 30-horse power; and 3 feed-pump engines, Lykens Valley slope, 18-horse power; aggregate horse-power 563, with 1 Cornish pump, 250-horse power; 4 Allison & Bannan steam pumps, 1,100-horse power; aggregate, 1,913-horse power, with 39 boilers. Two small locomotive engines are used for haulage to and from the breaker, all of which are reported to be in good condition.

Four hundred and fifty men and 58 boys are employed; 80 mules and 200 wagons are used, and some 9 miles of track are laid in and about the colliery. This whole force is employed at present in extending gangways, opening schutes, headings and breasts.

SECTION OF THE MIDDLE CREEK SHAFT

Scale 100 ft per inch
 Per Politeness of
 Genl Henry Pleasants
 Genl Engr & Supt
 P R C & I Co

Miner's Walk



Thickness of Foot	Number	Description
4	1	Sandstone
8	2	Fine Conglomerate
3	3	Slate
3	4	Little Diamond
2	5	Black Conglomerate
5	6	Slate
11	7	Coal
14	8	Slate
7	9	Big Diamond
9 1/2	10	Conglomerate
2 3/4	11	Slate
2 3/4	12	Big Coal
8	13	Sandstone
19	14	Grey Rock
6	15	Conglomerate
4	16	Slate
3 1/2	17	Conglomerate
4	18	Sandstone
7	19	Slate
3 1/2	20	Sandstone
3	21	Slate
15	22	Hard Grey Rock
40	23	Hard Grey Rock
100	24	Blin. & Conglomerate
40	25	Sandstone
12	26	Little Orchard Slate
12	27	Sandstone
12	28	G. Rock
12	29	Sandstone
12	30	Iron Ore
12	31	Sandstone
12	32	Slate
12	33	Conglomerate
12	34	Coal
12	35	Slate
12	36	Iron Ore
12	37	Sandstone
12	38	Slate
12	39	Conglomerate
12	40	Coal
12	41	Slate

No. 46.—HELFFENSTONE.—*Philadelphia and Reading Coal and Iron Company, Operators.*

This colliery is situated at Helffenstone, in Northumberland county, on the said company's estate. It consists of a tunnel open 175 yards north, cutting the Lykens Valley vein, the coal of which has been extracted and the works idle. A slope is sunk 160 feet under water level, the coal of which has also been extracted, while a second lift is in progress of sinking, with 105 yards of it completed, in coal 10 feet thick, and dip 16° north. To all appearances the colliery will, when completed, be one of the best in the district.

Engines.—A 50-horse power is used in the slope sinking and pumping, and a 40-horse power is used at the breaker. 25 hands are employed in and about the colliery. The character and condition of the work done is safe and satisfactory.

No. 47.—MIDDLE CREEK, (NEW SHAFT.)—*Philadelphia and Reading Coal and Iron Company, Operators,*

This is a new enterprise of this company to open the underlying seams on this track, the upper seams having been exhausted a few years ago. The shaft is located at Middle Creek, in Schuylkill county, on the south flank of the Mine Hill, some 2 miles east of Tremont. It consists of a double cage-way in compartments for coal-ways, each 7x12 feet, and a pump-way 6x12 feet. The lining timbers are 12x12 inches square. The work is under the superintendence of General H. Pleasants, Chief Mining and Civil Engineer of the company. The depth of the shaft to the G or Primrose vein is 599 feet, which contains 11 feet of coal and dip at 40° south. The Orchard or H seam was struck at 493 feet, which contains 7 feet of coal on a 33° dip. The character of this improvement reflects great credit on the gentlemen in charge.

Engines.—A 40-horse engine is used in sinking the shaft, and three steam pumps used for drainage, viz: A No. 5 and No. 7 Cameron, and a No. 7 Blake pump, with 4 steam boilers, used for supplying the necessary power. There are 40 men employed at the shaft works. Two persons were killed and three injured, who were engaged in working in the shaft.

No. 48.—EMORY.—*Philadelphia and Reading Coal and Iron Company, Operators.*

This is a drift colliery, situated $\frac{1}{4}$ mile south of Enterprise colliery, near Shamokin, in Northumberland county, as a water level on No. 2 Red Ash. The gangway is 598 yards long, and continuing its extension, still going forward; the south seam is 2 feet thick, and dip 35° south; 7 hands are employed in and about the place; at present it is not necessary to extend further remarks.

No. 49.—EXCELSIOR.—*C. W. Kingsley, Operator.*

This colliery is situated east of Shamokin, some 3 miles, on the estate of the Philadelphia and Reading Coal and Iron Company, late Fulton Coal Company, and has been 9 years in operation. It consists of 6 water level drift openings on the south dip of the branches of the E seam, viz: Drifts A, C and D, on No. 9, or upper bench, and R drift on No. 8 branch, and 2 drifts on the N and S dips, termed Nos. 1 and 2; D drift on No. 8, on its north and south dip is 1,100 yards open to its boundary limits, with 4 working breasts, employing 14 hands; C drift is 900 yards long and 300 yards of a slant, with 3 working breasts open, employing 12 men; B drift gangway is 850 yards long, and a slant=500 yards long, and 4 breasts working, employing 17 men; A drift, on No. 9, is 900 yards long, with 3 slants, with 8 breasts working, employing 27 men, all in this panel of the mine; No. 1 drift gangway, on north and south dip, is 200 yards and in faulty coal, with 300 yards of a slant on the north dip, but veers to south dip; the coal here is 14 feet thick, with 3 working breasts open; No. 2 slant is open 150 yards on south dip, with 2 breasts working and are robbing back pillars, with 18 hands employed; its south main gangway is 400 yards, with one slant and 4 breasts working in 14 feet of coal, having 14 men employed; 4,350 yards of main and 1,750 yards of slant gangways are open and working 32 breasts; I approve of the system and do consider the place safe.

Ventilation is effected by the action of the atmosphere. Drifts A, B, C and D have communication with each other with an air shaft open on C drift, which constitutes the principal outlet, and reverses the current in summer. The quantum of air I found to be sufficient had it been properly utilized. When the new air-hole is completed it will remedy the deficiency.

Engines.—A 50-horse power engine is used in a double capacity, *i. e.* to run the breaker and hoist the coal on the plane, which plane is 280 feet in length; 6 boilers are used and are reported to be in good condition.

One hundred and forty-nine men and 85 boys are employed; 21 mules and 143 wagons are used; 6,500 yards of track are used; the monthly shipments will average 8,000 tons; I am pleased to state the management of these works give me satisfaction.

 No. 50.—BEN FRANKLIN.—*Douty & Baumgardner, Operators.*

This colliery is situated at Helfenstein, on the estate of the Philadelphia and Reading Coal and Iron Company, and has been in operation 6 years. It consists of 2 tunnels. The lower level tunnel cuts the Lykens Valley vein in 100 yards, in 10 feet of coal. Its east gangway is open 100 yards, and stands in a fault. 700 yards of a west gangway is open, in 4 to 10 feet of coal, on a 28° dip north, with 4 working breasts open. 475 yards of a counter with 1 breast is working. 75 yards of a tunnel opens the upper level, of which the west gangway is 700 yards long, with a slant 160 yards, and having 15 breasts open on the main and 2 breasts on the slant, but the lower and upper levels are connected, and the plan is safe and the work reliable.

Ventilation is effected by natural means, and has been found adequate. A strong rock upper strata covers the seam in this locality, making mining under ordinary care a safe operation.

Sixty yards of a self-acting plane, over which the coal is hoisted, from which it is delivered into a schute 40 yards in length, which conveys it to

the breaker. One engine of 25-horse power runs the breaker, with 3 good boilers, with all the machinery in proper condition. 64 men and 25 boys are employed; 17 mules, 38 wagons and 2,755 yards of track are used. Monthly shipments will average 5,000 tons.

No. 51.—NORTH SIDE COLLIERY.—*Edward Miller, Operator.*

This colliery is located on north side of Short Mountain, in Lykens Valley, 3 miles west of Gratztown, on lands of Summit Branch Railroad and Lykens Valley Coal Companies, and is a small operation on the Lykens Valley vein. Its sales are made to farmers principally, giving employment to 13 men in the winter months. Shipments yearly, about 1,500 tons; drift 700 yards long.

No. 52.—BIG RUN GAP COLLIERY.—*James Fennell, Operator.*

This colliery is situated in Williams Valley, in Short Mountain, on lands of Summit Branch Railroad Company and Lykens Valley Coal Company, 2 miles west of Wiconisco. 2 drift openings on Lykens Valley vein 10 feet thick; is a land sale operation, giving employment to 12 men. Yearly amount of coal mined, 1,000 tons; 700 yards of gangway opened.

No. 53.—LINCOLN COLLIERY.—*Levi Miller & Co., Operators.*

This colliery is situated on the south side of Broad Mountain, 4 miles west of Tremont, on the lands of the Philadelphia and Reading Coal and Iron Company. It consists of one tunnel driven north 387 yards, cutting Lykens Valley vein No. 2, south dip, 5 feet thick. An east gangway 25° has been opened 1,100 yards, 72 breasts have been opened and 16 now working. A west 35° gangway opened 1,100 yards, 74 breasts have been opened and 16 working, with a strong rock top, making it one of the safest collieries in this district.

Ventilation.—An air-hole is open on each gangway, with a furnace in, each producing ample ventilation through the entire mine.

One 40-horse power engine runs the breaker; 3 boilers of 30 inches by 30 feet long, and in good condition, furnish steam for the above engine, which is all the machinery used. Monthly shipments 7,000 tons. 45 wagons, 20 mules and 16 horses. 3,200 yards of track laid. 117 men and 15 boys employed in the colliery.

No. 54.—KALMIA COLLIERY.—*Phillips & Sheaffer, Operators.*

This colliery is situated in Schuylkill county, on the lands of the Philadelphia and Reading Coal and Iron Company, (late Fishing Creek estate,) and 8 miles west of Tremont, in Williams Valley. It consists of one tunnel opening 175 yards, cutting Lykens Valley vein 9 feet thick on south dip, angle 66°.

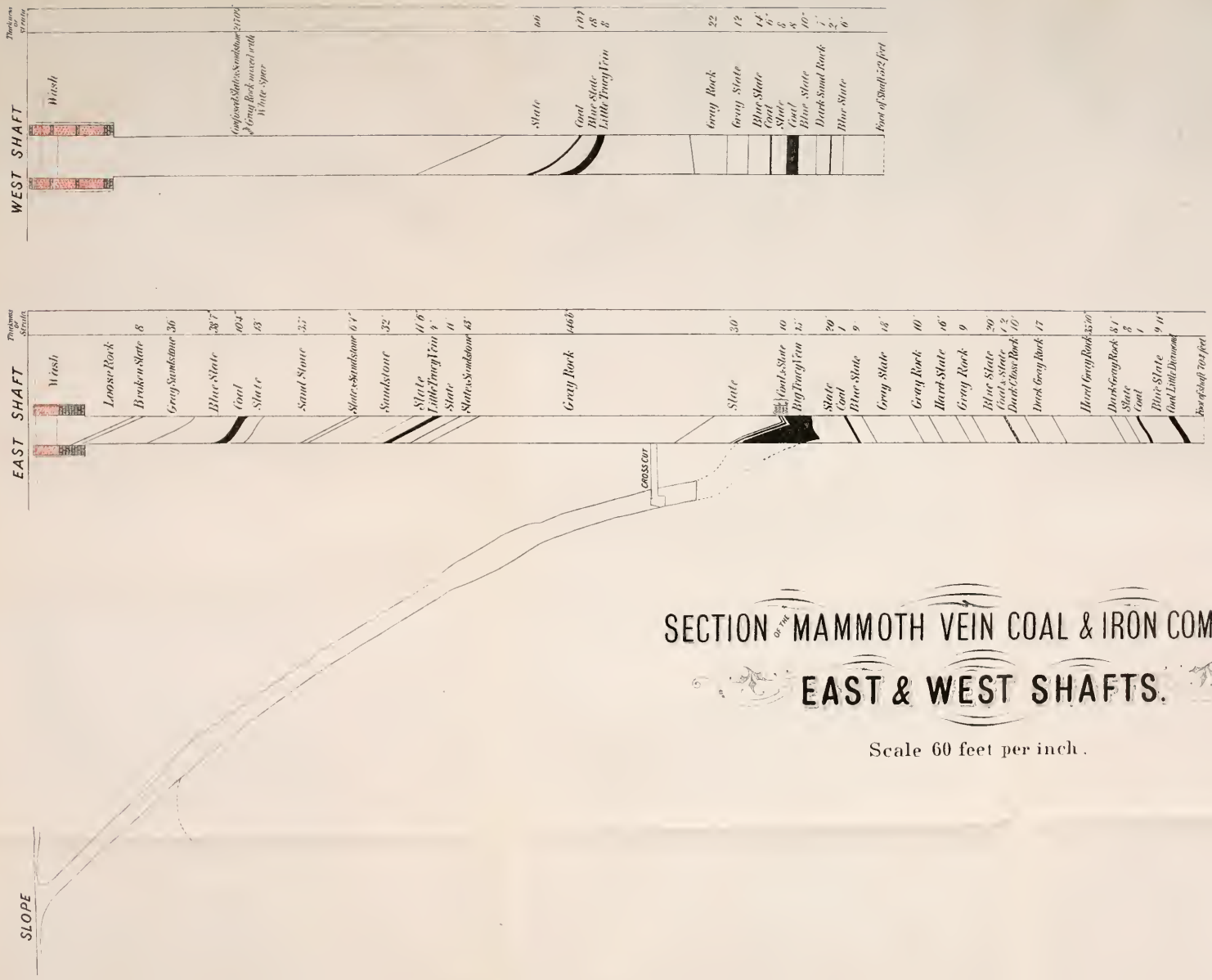
East gangway has been driven 1,316 yards, and west gangway 1,593 yards. Over 1,400 yards of these gangways have been driven in rock and faulty ground, but the perseverance of the lessees has overcome all the difficulties in their way and are now rewarded by cutting the vein in the gangways at 10 feet thick of fine coal. 10 breasts are in working condition, with breast range of 40 yards. The work and machinery are in good condition. One 10 feet fan, Bailey's patent, furnishes ample ventilation. The machinery consists of one engine, 40-horse power at breaker, and one 10-horse power at fan, 4 boilers, 34 inches by 26 feet, are in use and reported in good condition. Monthly shipments 6,000 tons. 110 hands are employed; 10 mules and 30 wagons. 3,360 yards of track are used. The colliery I find is properly managed.

STATISTICS OF COLLIERIES IN SHAMOKIN DISTRICT.

No. of collieries	NAMES OF COLLIERIES.	LOCATION OF COLLIERIES.	NAMES OF THE OPERATORS.	KIND OF COLLIERIES WORKED.	Years in operation	Number of coal seams worked	DIP OF C. SEAMS.		Aggregate thickness of coal in feet	STEAM POWER.		BOILER POWER.		MINES.		
							Degrees north ..	Degrees south ..		Number of engines.....	Horse-power of engines.....	Number of steam boilers.....	Condition of the boilers.....	Slopes.....	Shafts.....	Drifts.....
1.	Monter	Locust Dale.	G. W. John, Agent.	Slope.	.....	1	50	.....	25	4	130	1	.....	.....	.....
2.	Mariam	Locust Dale.	W. S. Johnson.	Do.	.....	2	60	.....	25	4	360	.....	.....	.....	.....
3.	Shewardville.	Do.	Wm. Montlins.	Do.	.....	2	25	40	17	2	70	.....	.....	.....	.....
4.	St. Carmel	Do.	Schwenk	Drifts & s/c	.....	1	48	48	15	1	40	.....	.....	.....	.....
5.	Railance	Do.	Baumgardner	Drifts	.....	1	19	18	16	4	180	.....	.....	.....	.....
6.	Brady	Shamokin.	Gutierrez	Do.	.....	1	15	.....	18	.....	.....	.....	.....	.....	.....
7.	Monton	Shamokin.	Morton & Co.	Drifts & s/c	.....	1	40	.....	15	3	100	.....	.....	.....	.....
8.	Henry Clay	Shamokin	R. Langdon.	Drift	.....	1	38	.....	15	6	300	.....	.....	.....	.....
9.	Enterprise	Shamokin	Langdon, M. R.	Drift	.....	1	30	.....	14	2	90	.....	.....	.....	.....
10.	Hickory Ridge.	Shamokin	May & Co.	Do.	.....	1	.....	.....	13	2	80	.....	.....	.....	.....
11.	Duck Forge	Shamokin	Do.	Slope.	.....	1	33	.....	22	3	125	.....	.....	.....	.....
12.	Franklin	Shamokin	M. R. R. Co.	Do.	.....	4	.....	.....	5 1/2	.....	.....	.....	.....	.....	.....
13.	Lambert	Shamokin	Wm. Brown	Drift	.....	1	60	.....	18	1	15	.....	.....	.....	.....
14.	Franklin	Shamokin	Wm. Brown	Slope.	.....	1	27	.....	18	4	170	.....	.....	.....	.....
15.	Locust Spring	Shamokin	P. and R. C. and I. Co.	Drift	.....	3	.....	.....	18	1	15	.....	.....	.....	.....
16.	Lancaster	Shamokin	W. P. Smith	Do.	.....	1	25	.....	5 3/8	4	160	.....	.....	.....	.....
17.	Cameron	Shamokin	P. and R. C. and I. Co.	Do.	.....	1	40	.....	6	4	100	.....	.....	.....	.....
18.	Royal Oak	Shamokin	Thibet & Co. M. Co.	Drifts	.....	1	40	.....	20	4	250	.....	.....	.....	.....
19.	Enterprise	Shamokin	Grabner & Co.	Slope.	.....	1	33	.....	8	4	120	.....	.....	.....	.....
20.	Hickory Swamp	Shamokin	May and others	Drifts	.....	2	50	.....	15	1	20	.....	.....	.....	.....
21.	Shamokin	Shamokin	M. R. R. and M. Co.	Do.	.....	1	14	.....	6	2	20	.....	.....	.....	.....
22.	George Fales	Shamokin	Goodwin & Co.	Do.	.....	1	14	.....	6	1	1	.....	.....	.....	.....
23.	Marshall	Shamokin	Marlin & Co.	Slope	.....	2	.....	.....	11	6	1	.....	.....	.....	.....
24.	Bear Valley	Shamokin	Reese & Co.	Do.	.....	1	.....	.....	60	.....	.....	.....	.....	.....	.....
25.	Mount Cayuga	Shamokin	P. and R. C. and I. Co.	Drift	.....	1	.....	.....	180	.....	.....	.....	.....	.....	.....
26.	Phenix No. 1.	Shamokin	P. and R. C. and I. Co.	Shaft, new	.....	1	.....	.....	13	.....	.....	.....	.....	.....	.....
27.	Phenix No. 2.	Phenix Park	P. and R. C. and I. Co.	Slope.	.....	1	.....	.....	12	.....	.....	.....	.....	.....	.....
28.	Diamond	Phenix Park	Lloyd & Glover.	Do.	.....	1	.....	.....	7	4	112	.....	.....	.....	.....
29.	Lower Rauch Creek	Phenix Park	John Wadhiger.	Do.	.....	1	33	.....	12	7	315	.....	.....	.....	.....
30.	Upper Rauch Creek	Phenix Park	Graff & Miller.	Do.	.....	1	.....	.....	10	4	140	.....	.....	.....	.....
31.	Brookside	Phenix Park	Kepler & Co.	Do.	.....	1	.....	.....	48	10	140	.....	.....	.....	.....
32.	Phenix No. 3.	Phenix Park	Kepler & Co.	Do.	.....	1	.....	.....	67	7	265	.....	.....	.....	.....
33.	Phenix No. 4.	Phenix Park	Kepler & Co.	Do.	.....	1	.....	.....	21	7	265	.....	.....	.....	.....
34.	Phenix No. 5.	Phenix Park	Kepler & Co.	Do.	.....	1	.....	.....	47	7	480	.....	.....	.....	.....
35.	Phenix No. 6.	Phenix Park	Kepler & Co.	Do.	.....	1	.....	.....	45	.....	.....	.....	.....	.....	.....
36.	Phenix No. 7.	Phenix Park	Kepler & Co.	Do.	.....	1	.....	.....	45	.....	.....	.....	.....	.....	.....
37.	Phenix No. 8.	Phenix Park	Kepler & Co.	Do.	.....	1	.....	.....	6	1	40	.....	.....	.....	.....
38.	Phenix No. 9.	Phenix Park	Kepler & Co.	Do.	.....	1	.....	.....	6	1	40	.....	.....	.....	.....
39.	Phenix No. 10.	Phenix Park	Kepler & Co.	Do.	.....	1	.....	.....	38	.....	.....	.....	.....	.....	.....
40.	Phenix No. 11.	Phenix Park	Kepler & Co.	Do.	.....	1	.....	.....	4	2	115	.....	.....	.....	.....
41.	Phenix No. 12.	Phenix Park	Kepler & Co.	Do.	.....	1	.....	.....	12	9	320	.....	.....	.....	.....
42.	Phenix No. 13.	Phenix Park	Kepler & Co.	Slope & drift	.....	2	.....	.....	25	.....	.....	.....	.....	.....	.....

STATISTICS OF COLLIERIES IN SHAMOKIN DISTRICT—CONTINUED.

No. of collieries.....	NAMES OF COLLIERIES.	LOCATION OF COLLIERIES.	NAMES OF THE OPERATORS.	KIND OF COLLIERIES WORKED.	Years in operation.....	Number of coal seams worked	DIP OF C. SEAMS.		Aggregate thickness of coal in feet	STEAM POWER.		BOILER POWER.		MINES.		
							Degrees north ..	Degrees south ..		Horse-power of engines	Number of engines.....	Condition of the boilers	Number of steam boilers	Slopes.....	Shafts	Drifts
43....	Williamstown	Williamstown	Summit Branch R. R.	Slope & drift	.....	1	25	38	8	8	16	Good..	2	.....	1
44....	Big Lick	Williamstown	Summit Branch R. R.	Slope.....	.....	1	.....	.....	.....	4	39	"	2	.....	.....
45....	Short Mountain.....	Williamstown	Summit Branch R. R.	Do.....	.....	1	.....	.....	.....	4	563	"	1	.....	.....
46....	Helfenshine	Helfenshine	P. and R. C. and L. Co.	Drift .....	.....	1	.....	.....	.....	10	90	"	1	.....	.....
47....	Middle Creek shaft	Middle Creek	P. and R. C. and L. Co.	Drift new .....	.....	1	.....	.....	.....	10	40	"	1	.....	.....
48....	Henry	Shamokin	P. and R. C. and L. Co.	Do.....	.....	1	.....	.....	.....	10	1	"	1	.....	.....
49....	Excelsior	Shamokin	C. W. Kingsley	Do.....	.....	3	.....	.....	.....	25	55	Good..	.....	.....	.....
50....	Ben Franklin	Helfenshine	Baumgardner	Do.....	.....	2	.....	.....	.....	20	1	8	.....	.....	.....
51....	North Side	Helfenshine	Ed. Miller	Do.....	.....	1	.....	.....	.....	6	.....	.....	.....	.....	.....
52....	Big Tom	Williams Valley	Jas. Pennell	Do.....	.....	1	.....	.....	.....	6	.....	.....	.....	.....	.....
53....	Littleton	Williams Valley	Jas. Pennell	Do.....	.....	1	.....	.....	.....	10	.....	.....	.....	.....	.....
54....	Kalmali	Williams Valley	T. Miller	Do.....	.....	1	.....	.....	.....	5	.....	Good..	.....	.....	.....
55....	A small colliery in Primor 083.....	Paul Valley	Phillips & Shearer.....	Do.....	.....	1	.....	.....	.....	60	.....	"	.....	.....	.....



SECTION OF THE MAMMOTH VEIN COAL & IRON COMPANY'S
EAST & WEST SHAFTS.

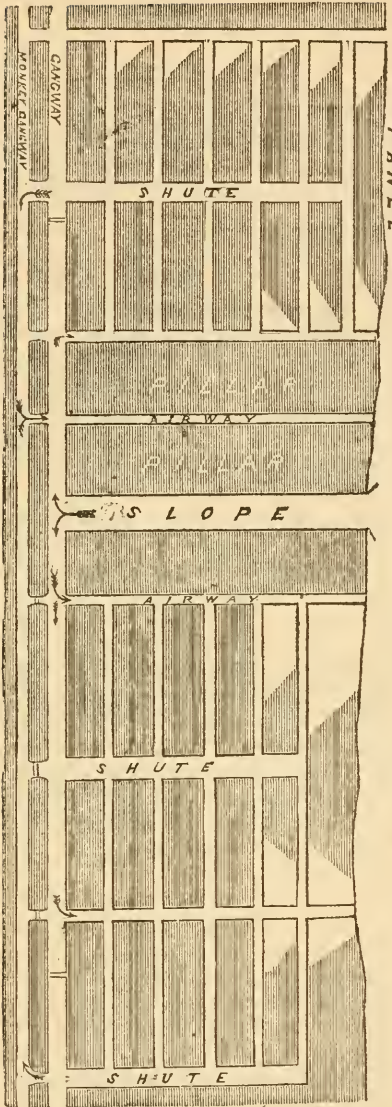
Scale 60 feet per inch.

PROPOSED PLAN OF MINING THE MAMMOTH COAL SEAM.

BY COL. DAVID P. BROWN, POTTSVILLE.

Numerous articles have been published in this and other counties on the economy of mining coal, and especially so on the working of large seams. Many able engineers estimate that fully one-third is lost by the present system, at least is this so in reference to mining in Schuylkill county. Here the breast and pillar system is adopted, but in exceptional cases is profitable, and for many reasons is the worse plan. In Schuylkill the Mammoth seam is found to measure from 15 to 60 feet thick; where the dip of the seam is sufficiently acute for the coal to run by its own gravity, the breasts are opened on right angles with the main and counter gangways, where their average width is 12 yards, leaving 8 to 10 yards of flanking pillars to support the superincumbent pressure; where the coal proves soft the breasts are made narrower and the supports thicker, so as to uniformly support the roof, &c. Apparently this coal could be drawn upon when needed, but it is at a risk of bringing down the roof and a permanent injury to the colliery, besides leaving chain pillars for supporting these gangways of from 20 to 40 yards thick. This vast body of coal cannot be touched, fearing bringing on a crush or sit of the mine; and when such is the case, the whole mass of coal crushed is totally covered by rock and debris, often involving a greater expenditure in handling than the coal is actually worth, besides deranging the system of drainage. The plan hereto appended are ideas suggested by the study of the reports of skillful mining engineers of England, France and Prussia, and from personal observation during the last thirty years in Schuylkill county.

To work the Mammoth vein where it is of its usual thickness, and pitching at an angle of from 15° to 45° , after sinking the slope or shaft to the vein, open out the gangways and air-courses on the plan at present adopted; but instead of opening out a schute every eight or ten yards along the course of the gangway, I would recommend the driving up a manway say at the proper thickness of pillar, from slope or shaft, (thickness to be according to solidity of coal,) and at a distance of say fifty yards from this manway drive up at right angles to the gangway, if the pitch be under 45° , a schute of from six to ten feet wide, to the upper level or surface of the mine, and make this schute the centre of a panel of work, and at the distance of another fifty yards drive up another manway, completing the panel. The centre schute to be made to run coal freely, so as to load coal from it with the smallest possible labor. This schute should have a traveling way alongside, so that the workmen can have easy access to their work, up and down by the schute. At right angles to this centre schute, right and left, small headings in the bottom bench of coal should be driven to the manway, beginning at the desired thickness of pillar between the gangway and the coal to be mined, say seven yards, and at every ten yards up this centre schute, drive similar headings parallel to the first, connecting them with the manway. [See diagram.] When all the headings are driven the panel is ready to commence mining from, and if skillful miners are employed no



coal need be lost, excepting very small stumps of pillar next the schute. To bring this coal out of these headings it would be advisable to lay a light road in them, and use a buggy wagon holding about 1,500 pounds of coal; this size of wagon could be easily handled by one man. To begin mining, the miner would first open out at the end of his heading in breast fashion up to the surface or the level above; and open wide enough so that when the coal was taken out, the next fall by skip off the solid, would bring down the top, thus forming a sort of natural slope or schute for the next fall of coal to slide down to where the laborer could load it in safety, into his buggy. The miners would always have a safe retreat into the heading when a fall of coal or rock was about to take place. The labor of mining coal from a loose end would be very light, while the labor of loading the coal into the buggy and tipping it into the schute would be fully compensated by the saving of expense in loading the coal from the main schute in the gangway, instead of the usual plan now adopted of loading by hand. The distance of ten yards between the parallel headings might vary according to circumstances, where the coal was strong and roof good, and the pitch enough for coal to slide on the bottom rock, twenty yards might be wrought to an advantage; this point would be settled by a skillful mining boss. This rough sketch will convey to a mining boss an idea of the plan.

The foregoing sketch conveys but an imperfect idea of the general plan. But as the writer is no draftsman, he will leave the drawing and printing of a

more complete map to abler hands.

Referring again to the subject in hand, where the pitch of the vein exceeds 45° , it would be advisable to incline the schute to one side or other, so that the pitch of the schute would not at most exceed 45° ; less, rather than more, would be preferable, so that the schute might not choke up with coal stopping the package, &c.

In my next I will refer to the working of the Mammoth on the run principle, and suggest a plan for adoption instead. The principle, however, would be nearly the same as the above. If the plan of mining as suggested above could be generally adopted, the loss of life by falls of coal would be very much reduced. At least sixty per cent. more coal could be mined from the same area, besides the rock and slate forming those im-

mense heaps now to be seen everywhere, would be left in the mine in the future. The gangways would be more secure, having a good substantial pillar of coal unbroken by schutes for 25 to 50 yards in length. There would be no such thing as a *squeeze*, from the fact that the roof would be allowed to settle down gradually as the coal was extracted from the loose end next the fallen rock, until all the coal was taken down to the gangway pillar, where the fallen rock and slate would close in and settle, so that any future time the gangway pillar comprising about one-tenth of the available coal of the lift could be mined out before the lift was abandoned, thus securing from 80 to 90 per cent. of the coal, instead of from 20 to 30 per cent. by the present mode of mining the Mammoth vein.

ANTHRACITE COAL TRADE OF THE UNITED STATES.

The following table exhibits the Anthracite Coal sent to market from the different regions in Pennsylvania, from the commencement of the trade in 1820 to 1872, inclusive, to which is appended the Bituminous trade moved towards the seaboard, together with the importations of foreign coal, and the exportation of domestic coal.

Years.....	SCHUYLKILL.			Sold on line of Schuylkill canal.....	LEHIGH.			WYOMING REGION.										
	Canal.....	Railroad.....	Total.....		Canal.....	Lehigh Valley railroad.....	Lehigh & Susquehanna railroad.....	Total.....	By Lehigh R. R.	Delaware and Hudson coal company.....	Pennsylvania coal Co.....	By canals.....	Great Western railroad.....	L. and B. railroad.....	Total.....	Shamokin via Northern Central railroad division.....	Northumberland Co. coal trade.....	Lykens Valley and Short Mountain.....
1820.....	1,488	1,169	2,657	365	1,073	885	1,958	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000
1821.....	1,488	1,169	2,657	2,429	2,429	1,438	3,867	43,000	43,000	43,000	43,000	43,000	43,000	43,000	43,000	43,000	43,000	43,000
1822.....	1,567	1,567	3,134	9,541	9,541	9,541	19,082	111,777	111,777	111,777	111,777	111,777	111,777	111,777	111,777	111,777	111,777	111,777
1823.....	6,500	6,500	13,000	28,893	28,893	28,893	57,786	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000
1824.....	16,767	16,767	33,534	31,289	31,289	31,289	62,578	103,861	103,861	103,861	103,861	103,861	103,861	103,861	103,861	103,861	103,861	103,861
1825.....	31,380	31,380	62,760	32,074	32,074	32,074	64,148	115,387	115,387	115,387	115,387	115,387	115,387	115,387	115,387	115,387	115,387	115,387
1826.....	47,284	47,284	94,568	30,232	30,232	30,232	60,464	78,217	78,217	78,217	78,217	78,217	78,217	78,217	78,217	78,217	78,217	78,217
1827.....	79,973	79,973	159,946	25,110	25,110	25,110	50,220	122,300	122,300	122,300	122,300	122,300	122,300	122,300	122,300	122,300	122,300	122,300
1828.....	183,059	183,059	366,118	168,131	168,131	168,131	336,262	213,615	213,615	213,615	213,615	213,615	213,615	213,615	213,615	213,615	213,615	213,615
1829.....	80,984	80,984	161,968	41,750	41,750	41,750	83,500	103,861	103,861	103,861	103,861	103,861	103,861	103,861	103,861	103,861	103,861	103,861
1830.....	81,854	81,854	163,708	40,968	40,968	40,968	81,936	103,861	103,861	103,861	103,861	103,861	103,861	103,861	103,861	103,861	103,861	103,861
1831.....	208,271	208,271	416,542	70,000	70,000	70,000	140,000	183,059	183,059	183,059	183,059	183,059	183,059	183,059	183,059	183,059	183,059	183,059
1832.....	252,371	252,371	504,742	123,000	123,000	123,000	246,000	309,000	309,000	309,000	309,000	309,000	309,000	309,000	309,000	309,000	309,000	309,000
1833.....	228,602	228,602	457,204	106,254	106,254	106,254	212,508	265,635	265,635	265,635	265,635	265,635	265,635	265,635	265,635	265,635	265,635	265,635
1834.....	483,045	483,045	966,090	148,211	148,211	148,211	296,422	370,528	370,528	370,528	370,528	370,528	370,528	370,528	370,528	370,528	370,528	370,528
1835.....	523,152	523,152	1,046,304	214,749	214,749	214,749	429,498	538,117	538,117	538,117	538,117	538,117	538,117	538,117	538,117	538,117	538,117	538,117
1836.....	433,875	433,875	867,750	218,775	218,775	218,775	437,550	546,938	546,938	546,938	546,938	546,938	546,938	546,938	546,938	546,938	546,938	546,938
1837.....	442,608	442,608	885,216	30,330	30,330	30,330	60,660	76,842	76,842	76,842	76,842	76,842	76,842	76,842	76,842	76,842	76,842	76,842
1838.....	533,619	533,619	1,067,238	171,225	171,225	171,225	342,450	427,063	427,063	427,063	427,063	427,063	427,063	427,063	427,063	427,063	427,063	427,063
1839.....	582,624	582,624	1,165,248	41,224	41,224	41,224	82,448	103,861	103,861	103,861	103,861	103,861	103,861	103,861	103,861	103,861	103,861	103,861
1840.....	550	550	1,100	148,032	148,032	148,032	296,064	370,528	370,528	370,528	370,528	370,528	370,528	370,528	370,528	370,528	370,528	370,528
1841.....	40,902	40,902	81,804	34,019	34,019	34,019	68,038	85,648	85,648	85,648	85,648	85,648	85,648	85,648	85,648	85,648	85,648	85,648
1842.....	417,058	417,058	834,116	60,000	60,000	60,000	120,000	151,317	151,317	151,317	151,317	151,317	151,317	151,317	151,317	151,317	151,317	151,317
1843.....	840,378	840,378	1,680,756	377,602	377,602	377,602	755,204	944,015	944,015	944,015	944,015	944,015	944,015	944,015	944,015	944,015	944,015	944,015
1844.....	263,887	263,887	527,774	429,453	429,453	429,453	858,906	1,073,633	1,073,633	1,073,633	1,073,633	1,073,633	1,073,633	1,073,633	1,073,633	1,073,633	1,073,633	1,073,633
1845.....	3,440	3,440	6,880	517,116	517,116	517,116	1,034,232	1,292,791	1,292,791	1,292,791	1,292,791	1,292,791	1,292,791	1,292,791	1,292,791	1,292,791	1,292,791	1,292,791
1846.....	422,693	422,693	845,386	674,241	674,241	674,241	1,348,482	1,685,103	1,685,103	1,685,103	1,685,103	1,685,103	1,685,103	1,685,103	1,685,103	1,685,103	1,685,103	1,685,103
1847.....	1,211,233	1,211,233	2,422,466	781,656	781,656	781,656	1,563,312	1,954,140	1,954,140	1,954,140	1,954,140	1,954,140	1,954,140	1,954,140	1,954,140	1,954,140	1,954,140	1,954,140
1848.....	489,218	489,218	978,436	290,290	290,290	290,290	580,580	726,225	726,225	726,225	726,225	726,225	726,225	726,225	726,225	726,225	726,225	726,225
1849.....	3,790,390	3,790,390	7,580,780	1,169,547	1,169,547	1,169,547	2,339,094	2,924,688	2,924,688	2,924,688	2,924,688	2,924,688	2,924,688	2,924,688	2,924,688	2,924,688	2,924,688	2,924,688
1850.....	6,468,708	6,468,708	12,937,416	4,317,749	4,317,749	4,317,749	8,635,498	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647
1851.....	10,258,740	10,258,740	20,517,480	4,317,749	4,317,749	4,317,749	8,635,498	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647
1852.....	10,258,740	10,258,740	20,517,480	4,317,749	4,317,749	4,317,749	8,635,498	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647
1853.....	10,258,740	10,258,740	20,517,480	4,317,749	4,317,749	4,317,749	8,635,498	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647
1854.....	10,258,740	10,258,740	20,517,480	4,317,749	4,317,749	4,317,749	8,635,498	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647
1855.....	10,258,740	10,258,740	20,517,480	4,317,749	4,317,749	4,317,749	8,635,498	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647
1856.....	10,258,740	10,258,740	20,517,480	4,317,749	4,317,749	4,317,749	8,635,498	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647
1857.....	10,258,740	10,258,740	20,517,480	4,317,749	4,317,749	4,317,749	8,635,498	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647
1858.....	10,258,740	10,258,740	20,517,480	4,317,749	4,317,749	4,317,749	8,635,498	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647
1859.....	10,258,740	10,258,740	20,517,480	4,317,749	4,317,749	4,317,749	8,635,498	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647
1860.....	10,258,740	10,258,740	20,517,480	4,317,749	4,317,749	4,317,749	8,635,498	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647
1861.....	10,258,740	10,258,740	20,517,480	4,317,749	4,317,749	4,317,749	8,635,498	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647
1862.....	10,258,740	10,258,740	20,517,480	4,317,749	4,317,749	4,317,749	8,635,498	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647	10,800,647
1863.....	10,258,740	10,258,740	20,517,480	4,317,749	4,317,749	4,317,749	8,635,498	10,800,647	1									

1850	288,030	1,429,877	1,712,067	917,853	690,456	321,556	441,403	111,014	243,250	827,823	19,921	37,763	
1851	503,193	2,220,429	3,122,317	961,224	694,224	25,072	470,078	316,017	338,000	1,156,107	21,889	54,200	
1852	790,820	3,450,950	4,922,211	1,072,130	1,072,130	1,072,136	497,105	426,161	310,311	1,284,500	25,846	59,857	
1853	888,095	3,852,218	5,404,078	1,054,309	26,252	494,327	512,659	496,648	442,511	1,478,782	15,500	69,007	
1854	1,007,351	4,856,544	6,856,248	1,217,186	90,989	39,252	440,941	504,803	492,689	1,408,478	68,301	117,920	
1855	1,104,203	5,214,202	7,318,553	1,275,050	9,063	1,284,113	565,109	514,803	451,039	1,752,581	121,467	162,428	
1856	1,169,453	5,298,993	7,408,556	1,386,250	163,749	1,550,000	620,488	570,000	490,000	1,852,003	296,517	402,429	
1857	1,273,989	5,983,541	8,111,977	1,511,977	311,977	1,200,000	480,689	430,689	407,914	1,952,003	338,893	422,579	
1858	1,323,801	6,342,962	8,471,639	1,628,311	1,380,030	69,644	348,789	330,059	346,430	2,186,094	422,579	472,815	
1859	1,372,921	6,694,653	8,777,652	1,628,311	71,319	591,009	591,009	588,854	453,548	2,231,236	305,043	338,712	
1860	9,769,803	17,482,585	27,192,888	4,181,156	10,399,564	488,086	4,888,455	4,851,723	4,016,353	16,001,725	1,801,040	496,770	
1861	1,359,688	1,873,158	3,270,516	698,877	1,691,082	1,821,674	499,598	701,523	335,396	1,081,237	20,148	50,148	
1862	981,270	1,460,822	2,637,489	433,820	984,465	1,238,377	637,643	611,017	530,243	1,053,140	290,828	172,880	
1863	888,942	3,063,216	4,815,546	386,557	25,725	25,725	828,150	692,904	682,721	3,145,700	241,451	364,865	
1864	1,029,740	3,098,814	4,835,802	574,448	758,087	1,804,713	852,136	692,904	682,721	3,750,610	271,030	337,136	
1865	1,029,740	3,098,814	4,835,802	574,448	758,087	1,804,713	852,136	692,904	682,721	3,750,610	271,030	337,136	
1866	1,297,947	3,714,644	4,634,487	1,010,925	1,066,203	1,790,475	1,372,894	555,585	568,491	3,600,838	389,779	481,237	
1867	1,030,295	3,440,828	4,334,820	1,107,826	1,006,601	1,107,826	1,948,385	1,422,229	861,739	3,258,322	180,801	232,884	
1868	988,628	3,574,874	4,414,568	1,037,053	883,947	2,618,103	1,611,113	953,853	429,042	3,258,322	180,801	232,884	
1869	698,879	4,239,457	4,748,969	730,913	695,149	2,310,170	1,297,825	1,066,319	459,014	4,068,369	471,925	183,731	
1870	441,358	39,832,002	57,801,521	7,618,476	8,495,301	14,841,871	2,355,879	19,311,410	4,838,175	42,243,031	4,807,391	1,647,523	
1871	1,010,171	4,584,450	5,424,780	1,293,636	740,636	3,608,587	2,990,878	2,017,735	3,500,567	7,554,979	486,174	1,256,515	
1872	1,838,101	4,866,224	5,207,451	1,471,431	767,691	2,889,074	1,933,587	1,593,723	338,766	6,719,787	628,866	94,183	
						3,877,179	2,927,069	2,517,565	321,311	9,191,171	569,080	1,221,367	
29,638,201	60,405,394	92,709,360	17,053,022	26,806,640	29,853,431	8,170,587	45,917,467	35,782,072	24,755,022	15,185,108	11,237,017	23,074,024	2,822,612

TABULAR STATEMENT

Of Coal Mines in Schuylkill, Columbia, Northumberland and Dauphin counties, together with the names of proprietors, land-owners and locations, with the number of veins worked, designating according to the nomenclature we have adopted, so as to secure their identification here and throughout the country:

NAMES OF OPERATORS.	NAMES OF COLLIERIES.	LAND OWNER.	LOCATION.	Drifts..	Slopes..	Shafts..	VEINS WORKED.
SOUTHERN DISTRICT, (South or Broad St.)							
E. R. Bolkley, Trustee	Robertson	Mammoth Vein C. and I. Co.	Port Carbon, North	1	2	1	Primrose G.
Bethelger, G., & Co.	Norwegian Coal Co.	P. and R. C. and I. Co.	Mt. Lefee.	1	1	1	Mammoth E.
Cole & Irvin	White Oak	York Land Company	Sharp Mountain				Mammoth E.
P. and R. C. and I. Co.	Ohio, Red Ash	do.	Muddy Branch	1	1	1	Primrose G.
Dillman, Burns & Co.	Eureka	Dillman, Selzer & Co.	Wadesville, West				Primrose G.
Roland, William, & Co.	Monitor	P. & R. C. & I. Co. and others	Valley Furnace	3			North and South Dip Primrose G., Mammoth E.
Fisher, Allen & I. Co.	East	Fisher	Tremont	1			
Feeder Dam Coal Co.	Feeder Dam	William H. Kemble	Port Carbon, North	1	1	1	Diamond J.
Alton & Parkin	Manchester	Mammoth Vein C. and I. Co.	Wadesville	2	2	2	Primrose G., Orchard H.
P. and R. C. and I. Co.	Franklin	P. & R. C. & I. C. and others	Rausch Creek, West	1	1	1	Seven foot E. and two splits Mammoth E.
Hickory Coal Co.	Forestville	P. & R. C. & I. Co. and others	Forestville	1	1	1	Splits of Mammoth E.
Hickory Colliery	Hickory Shaft	P. & R. C. & I. Co. and others	St. Clair				Holmes F.
Helm & Glassmire	Ledge Vein	Valley Furnace Estate	Silver Creek	1	1	1	Seven foot E., Mammoth E.
Jackson, Adam	New Philadelphia Gate	do.	New Philadelphia	1	1	1	Gate on Patch Orchard M.
John, G. W. & Bro.	Eagle	P. & R. C. & I. Co. and others	St. Clair	1	2	2	Seven foot E., Mammoth E. and Skidmore D.
P. and R. C. and I. Co.	Mine Hill Gap	P. and R. C. and I. Co.	Mine Hill Gap	1	2	2	Seven foot E. and Mammoth E.
Oakdale Coal and M. Co.	St. Clair Shaft	do.	St. Clairorough	1	1	1	Splits of Mammoth E.
Lucas, John, & Co.	Parkdale	do.	Gr. Carbon, North	2	2	2	Two splits of Mammoth E.
Millett, Graef & Co.	Spence Forest	Belknapson & Co.	New Castle, East	1	1	1	Mammoth E., 7 foot E. and Skidmore D.
Do.	Black Heath	P. and R. C. and I. Co.	Lower Rausch Creek	2	2	2	Seven foot E. and Mammoth E.
Milner, Levi, & Co. (diall)	Lorberry Tunnel	do.	Lorberry Mines	1	1	1	Buck Mountain E. or Lykens Valley.
Murray, Winlack & Ran-	Lincou	Helfenstein & Co.	South Williams Valley	1	1	1	Buck Mountain E. or Lykens Valley.
Morgan, S., & Co.	Newtown	do.	Newtown				Split of Mammoth E.
Munthorpe, Lewis & Co.	Falmer Vein Colliery	P. and R. C. and I. Co.	Donaldson, West				Splits of Mammoth E.
Owens, Deak, Cochet & Co.	Gokert	P. & R. C. & I. Co. and others	do.				Primrose G., Skidmore D.
Do.	Bureka	do.	do.				Buck Mountain E. or Lykens Valley.
Do.	West End Colliery	do.	do.				Mammoth E. and S. dip E. and 7 foot E.
Oliver, J. C. & Co.	Eagle Hill	P. and R. C. and I. Co.	Eagle Hill	1	2	2	Number of Mammoth E. in Lykens Valley.
Phillips, Dolan, & Co.	White Oak	do.	Coal Castle	1	1	1	Seven foot E. and S. dip E. and 7 foot E.
Phillips & Sheaffer	Kahiba	do.	Williams Valley, So. H.				do.
P. and R. C. and I. Co.	West Mine Knot	do.	Coal Castle, East	2	2	2	do.
Do.	West Mine Knot	do.	do.				do.
Do.	Live Oak	do.	Mine Hill Gap				do.
Ryan & Wren	Diamond Coal Co.	P. and R. C. and I. Co.	Centworth	1	1	1	Primrose G., Holmes F.
Reed, Emswiler & Co.	Dundas, No. 6	Estate of James Dundas	Sharp Mountain	1	1	1	Mammoth E.
Rowbottom, B.	Peach Orchard	do.	Tuscarora, South	1	1	1	Each of M. E.
Rich, Job	Yorkville	York Land Company	West, West	1	1	1	do.
Schollenberger, T. H., & Co.	Paytonville	P. and R. C. and I. Co.	Paytonville	1	1	1	Splits of Mammoth E.

P. and R. C. and I. Co.	P. and R. C. and I. Co.	Glendower.	Glendower.	2	1	Two splits of Mammoth E and Primrose G.
Do.	do.	Thomaston.	Coal Castle, East.	1	1	Mammoth E and splits.
Sanmer, Hodges & Co.	Wharton and others.	Coal Castle, West.	Williams Valley.	1	1	Buck Mountain B. or Lykens Valley.
Savage & Kaufman.	P. and R. C. and I. Co.	Lebanon.	Williams Valley.	1	1	Primrose G., seven foot E and Mammoth E.
P. and R. C. and I. Co.	P. and R. C. and I. Co.	Lebanon.	Williams Valley.	1	1	Mammoth E.
Schall & Donalco.	P. and R. C. and I. Co.	Lebanon.	Williams Valley.	1	1	Two splits of Mammoth E.
Scotton, I. & Co.	Schuyfflin & Susquehanna C. Co.	Lebanon.	Williams Valley.	1	1	Mammoth E., 7 foot E and Skidmore D.
P. and R. C. and I. Co.	P. & R. C. & I. Co. and others.	Lebanon.	Williams Valley.	1	1	do.
J. Claude White.	P. and R. C. and I. Co.	Lebanon.	Williams Valley.	1	1	do.
Do.	do.	Lebanon.	Williams Valley.	1	1	Splits of Mammoth E.
Hopkins, Wm. H.	East and others.	Lebanon.	Williams Valley.	1	1	do.
Replinger, Geo. S. & Co.	P. and R. C. and I. Co.	Lebanon.	Williams Valley.	1	1	do.
Wadlinger, John.	P. & R. C. & I. Co. and others.	Lebanon.	Williams Valley.	1	1	do.
Whitaker & Co.	do.	Lebanon.	Williams Valley.	1	1	do.
P. and R. C. and I. Co.	do.	Lebanon.	Williams Valley.	1	1	do.
Do.	do.	Lebanon.	Williams Valley.	1	1	do.
Phenix, No. 3.	do.	Lebanon.	Williams Valley.	1	1	do.
Ravensdale.	do.	Lebanon.	Williams Valley.	1	1	do.
Sharp Mountain.	York Land Company.	Lebanon.	Williams Valley.	1	1	do.
Alaska Collieries.	P. and R. C. and I. Co.	Tamaqua, East.	Tamaqua, East.	2	1	Skidmore D., Buck Mountain B.
Greenwood, No. 1.	Leigh and Shuler, R. Co.	do.	do.	1	1	Primrose G., Mammoth E and splits.
Wabash, No. 2.	P. and R. C. and I. Co.	do.	do.	1	1	do.
Reevesdale, Coal Co.	P. and R. C. and I. Co.	do.	do.	1	1	do.
High Mines.	do.	do.	do.	1	1	do.
Lehigh Coal and Nav. Co.	Lehigh Coal and Nav. Co.	do.	do.	1	1	do.
Tunnel, No. 10.	P. and R. C. and I. Co.	do.	do.	1	1	do.
Buckville.	Lehigh and Shuler, R. Co.	do.	do.	1	1	do.
P. and R. C. and I. Co.	P. and R. C. and I. Co.	do.	do.	1	1	do.
Ormsrod, George.	do.	do.	do.	1	1	do.
Wry & Shoemaker.	do.	do.	do.	1	1	do.
Lewin.	do.	do.	do.	1	1	do.
Walker & Markley.	do.	do.	do.	1	1	do.
Sharp Mt. Colliery.	do.	do.	do.	1	1	do.
TAMAQUA DISTRICT.						
Alaska Coal Co.	Alaska Coal Co.	Tamaqua, East.	Tamaqua, East.	2	1	Skidmore D., Buck Mountain B.
Borda, E. Ketter, & Nutt.	Leigh and Shuler, R. Co.	do.	do.	1	1	Primrose G., Mammoth E and splits.
Greenwood, No. 3.	P. and R. C. and I. Co.	do.	do.	1	1	do.
P. and R. C. and I. Co.	P. and R. C. and I. Co.	do.	do.	1	1	do.
Reevesdale, Coal Co.	do.	do.	do.	1	1	do.
Krull, J. W.	do.	do.	do.	1	1	do.
Lehigh Coal and Nav. Co.	Lehigh Coal and Nav. Co.	do.	do.	1	1	do.
P. and R. C. and I. Co.	P. and R. C. and I. Co.	do.	do.	1	1	do.
Ormsrod, George.	do.	do.	do.	1	1	do.
Wry & Shoemaker.	do.	do.	do.	1	1	do.
Walker & Markley.	do.	do.	do.	1	1	do.
Sharp Mt. Colliery.	do.	do.	do.	1	1	do.
MAHANAY DISTRICT.						
(North of Broad Mt.)						
Atkins Bros.	J. Gilbert and others.	Mahanay Valley.	Mahanay Valley.	2	1	Mammoth E. and split.
Agard, Moodie & Co.	Girard Estate.	do.	do.	6	1	Mammoth E. and Skidmore D.
Do.	do.	do.	do.	1	1	do.
Bowling & Co. do.	Lehigh Valley R. R. Co.	do.	do.	1	1	do.
Bear Run.	Girard Estate.	do.	do.	1	1	do.
Beulah & Coal Co.	Girard Estate.	do.	do.	2	1	do.
P. and R. C. and I. Co.	P. and R. C. and I. Co.	do.	do.	1	1	do.
Boylan, J. B.	Lehigh Valley R. R. Co.	do.	do.	2	1	do.
Bedford, Cox & Co.	do.	do.	do.	1	1	do.
Jabez Woolley, Agent	do.	do.	do.	1	1	do.
Cleaver, J. R.	do.	do.	do.	1	1	do.
Cole, George W.	do.	do.	do.	1	1	do.
Dr. Yocum.	do.	do.	do.	1	1	do.
P. and R. C. and I. Co.	do.	do.	do.	1	1	do.
Focht, Whitaker & Co.	do.	do.	do.	1	1	do.
Gilberton Coal Co.	do.	do.	do.	1	1	do.
Girard Mammoth Coal Co.	do.	do.	do.	1	1	do.
Garrison & Co.	do.	do.	do.	1	1	do.
Gorman, S. E. & Co.	do.	do.	do.	1	1	do.
Heaton, S. M. & Co.	do.	do.	do.	1	1	do.
Hickory Coal Co.	do.	do.	do.	1	1	do.
Hill & Harris.	do.	do.	do.	1	1	do.
Honey Brook.	do.	do.	do.	1	1	do.
Humphrey & Martin.	do.	do.	do.	1	1	do.

TABULAR STATEMENT—CONTINUED.

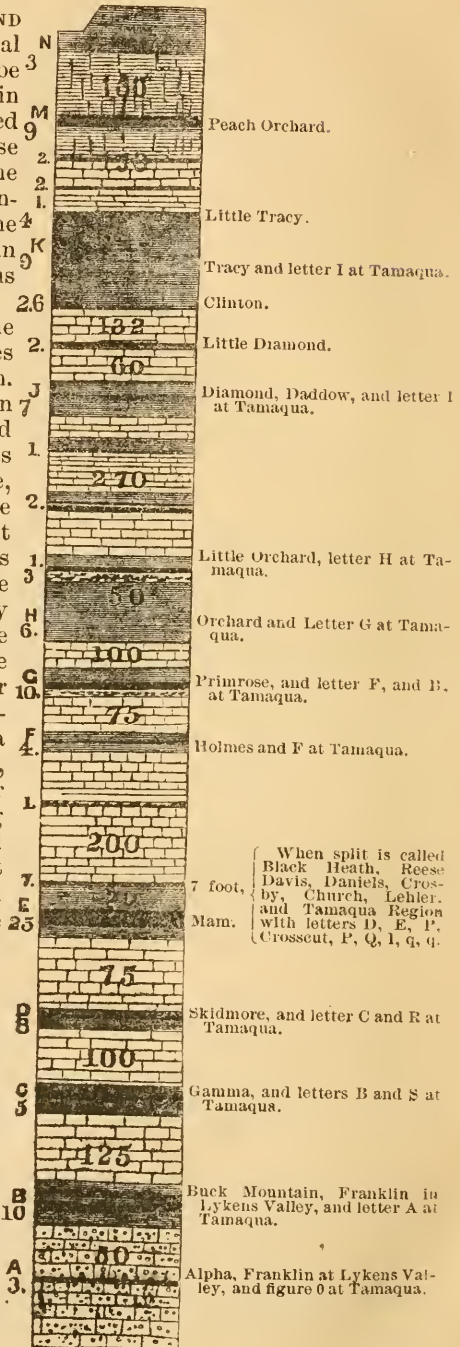
NAMES OF OPERATORS.	NAMES OF COLLIERIES.	LAND OWNER.	LOCATION.	Drifts.	Slopes.	Shafts.	VEINS WORKED.
Hockscher & Co.	Kohl-moon Shaft	John Gilbert and others	Shenandoah, West			1	Seven foot E, Mammoth E, Primrose G.
Hildebrandt & Co.	Turner Brook	Catawissa Railroad Co.	Summit, Silver Brook			1	Mammoth E, Skidmore D,
Hogan Brothers & Co.	Turner Brook	John Gilbert and others	Shenandoah, East	1			Mammoth E, overlying veins,
P. and R. C. and I. Co.	Indian Ridge Shaft	P. and R. C. and I. Co.	Shenandoah, East			1	Seven foot E, Mammoth E, Primrose G.
Do.	Keystone	do.	Ashtand				Primrose G, Mammoth E, Skidmore D.
Do.	Katkerbocker	do.	Wastehouse Run	1			Buck Mountain B, Gamma C.
Lenz & Bowman	Coplay	Lehigh Valley R. Co.	Mahanoy, N. East	1			Primrose G, Mammoth E.
Lee & Wren	Elinwood	P. and R. C. and I. Co.	Mahanoy City			1	Mammoth E.
Lawrence, Verkle & Co.	Lawrence	John Gilbert and others	Mahanoy Plains	1			Seven foot E, Mammoth E, Skidmore D,
Leitch	Barry Storage	P. and R. C. and I. Co.	Shenandoah City			1	Primrose G, Mammoth E.
Mac Neal Coal and Iron Co.	M'Neal, No. 2	do.	Yatesville	1			Primrose G, Mammoth E.
Do.	West Lehigh	do.	Coal Run	1			Mammoth E, Skidmore D,
P. and R. C. and I. Co.	Eliangowan	do.	Maple Dale	1			Mammoth E, Primrose G, Orchard H, Diamond J,
Milner, Matze & Co.	Milner, Matze & Co	John Gilbert and others	Near Mahanoy Plains	1			Primrose G, Mammoth E, Skidmore D, Gamma C.
P. and R. C. and I. Co.	Preston, No. 1	P. and R. C. and I. Co.	Guardville, North	1			Mammoth E.
Do.	Preston, No. 2	do.	do.			1	Seven foot E, Mammoth E,
Do.	Preston, No. 3	do.	do.			1	Seven foot E, Mammoth E, Skidmore D,
Do.	Preston, No. 4	do.	do.	1		2	Mammoth E, do.
Malza & Lewis,	West Shenandoah	J. Gilbert and others,	Shenandoah, West			1	Mammoth E, do.
N. Boston Coal Company,	New Boston	New Boston Coal Co.	Broad Mountain			2	Buck Mountain B.
Philadelphia Coal Co.	Colorado, No. 1	Grapel Estate	Lost Tock	2		1	Seven foot E, Mammoth E, Skidmore D,
Do.	Colorado, No. 2	do.	do.			2	Mammoth E.
Do.	Colorado, No. 3	P. and R. C. and I. Co.	Mahanoy, East			1	Primrose G, Seven foot E,
Pomeroy, Geo. W.	Hilgh Colliery	P. and R. C. and I. Co.	Mahanoy, East			1	Primrose G, Seven foot E,
Eshelman, B. F.	Hartford	do.	do.	1			Primrose G, Mammoth E,
Primrose Coal Company.	Primrose	Lehigh Valley R. Co.	do.	1			Primrose G, Mammoth E,
P. and R. C. and I. Co.	Tunmer	P. and R. C. and I. Co.	do.	1			Primrose G, Mammoth E,
Rommel, Hill & Harris.	North Mahanoy	do.	Ashtand	1			Mammoth E, Holmes F,
Sell, James, Trustee	Shenandoah City	do.	Mahanoy, N. East	1			Skidmore D, Gamma C, Buck Mountain B,
Shenandoah Coal Co.	St. Nicholas	do.	Shenandoah City	1			Skidmore D, Mammoth E,
Sturtevant	St. Nicholas	do.	St. Nicholas	1			Primrose G, Mammoth E,
Taylor, Labusey & Co.	Bir Mine Run	do.	Bir Mine Run	1			Mammoth E, and other veins,
Thomas Coal Company	Kebley Run	Locest Ml. Coal and Iron Co.	Shenandoah City	1			Seven foot E, Mammoth E, Skidmore D,
Wiegand & Trethels	Bear Run	P. and R. C. and I. Co.	Near Mahanoy City	1			Mammoth E, Seven foot E, Skidmore D.
COLUMBIA COUNTY.							
Anderson, J. & Co.	Union	Grapel Estate	Centralla, East	1			Mammoth M, Buck Mountain B.
Beck	Lehigh	P. and R. C. and I. Co.	do.				Skidmore D,
Locest Ml. Coal & Iron Co.	Centralla	P. and R. C. and I. Co.	do.				Mammoth E,
Andromed, Norton & Co.	Continental	Grapel Estate	do.	1			Mammoth E,
Gorrel, R. L. Co.	Hazle Dale	Locest Ml. Coal and Iron Co.	do.	1			Mammoth E, Skidmore D.
Lewis & Alkins	Cambrian	P. and R. C. and I. Co.	do.	1			Mammoth E,
P. and R. C. and I. Co.	Portis Colliery	do.	do.	2			do.
Reppeler, G. S. & Co.	Locest Colliery	Locest Ml. Coal and Iron Co.	do.	1			Mammoth E, Skidmore D,
Robinson & Co.	Locest Mountain	do.	do.	1			Mammoth E,
do.	Reco	Lehigh Valley Railroad Co.	do.	1			Mammoth E, Skidmore D.
NORTHUMBERLAND CO.							
P. and R. C. and I. Co.	Miriam	P. and R. C. and I. Co.	Centralla, East	1			Mammoth E,
Isaac May & Co.	Burnside	do.	South of Shamokin	1			Mammoth E,

NOMENCLATURE OF COAL VEINS.

In our work on COAL, IRON AND OIL we made a nomenclature of coal veins in order that they might be designated in different localities in all the coal regions in the United States. The character of these veins, and also the qualities of the coal in the anthracite regions, generally partake to some extent of the same characteristics and quality in the semi-bituminous and bituminous regions.

In Schuylkill county the same veins are called by different names in different sections of the region. For instance, the Mammoth vein has an accompanying vein called the 7-foot vein. This vein separates sometimes a considerable distance, and at other places it lies in close proximity to the Mammoth. West of Mine Hill Gap the Mammoth is split in two and sometimes three veins, and with the foot occasionally makes four veins. These splits are designated by different names. One is called the "Black Heath," another the "Crosby," the "Church," "Daniels," "Lehler," &c. At Tamaqua the Mammoth vein also separates, and there they are lettered. As far as we can ascertain, the following letters: D, E, Crosscut, P, Q, and q, represent the Mammoth, 7 feet and divisions, of the Mammoth. At the great Lehigh quarry all the white ash veins are thrown together, being only separated by the slates between the veins.

In the following column of strata, taken from COAL, IRON AND OIL, we give the names of the veins as called in the different regions, together with a nomenclature which we have adopted, and which, if accepted everywhere, would be much more intelligent than by calling the same veins by different names in different regions. Alpha and Gamma had not been named before. Alpha is the bottom seam of the coal regions. It is a very hard red ash coal, quite



as hard, if not harder than the Mammoth whith ash. It is opened at Nanticoke, in the Wyoming basin, at Brockville, and we believe several other places in Schuylkill county, and is one of the veins worked in Lykens Valley. Gamma is worked at several points in the region.

Above I and below M there are several little veins intervening which we have not designated. In some places they are worth working, in other places they will not pay. Also above Peach Orchard are the Black Mine, Tunnel, Faust, Salem, Lewis, Gate, Lawton, &c., many of which are the same veins called by different names. These are only found in a portion of the Southern Schuylkill Basin, and do not descend to any great depth as they all lie above the Peach Orchard Red Ash vein, which is the same as the Gate vein heretofore worked at Pottsville.

We have marked the veins in the Lykens Valley region as Buck Mountain B or Lykens Valley vein. It is claimed by some, and even by mining engineers that the Lykens Valley vein is a different vein from the Buck Mountain. We may be wrong—but we do not believe it—Professor Rodgers was wrong in stating that we had a Jugular vein, at the time he made his explorations. It was believed by some that we really had a Jugular vein, but we disputed it then and when we put the question to Professor Rodgers whether he believed that such a vein existed, before his work was published, he declined to answer further than to say, “that it was an open question.” The fact that conglomerate intervenes is no evidence, because that occurs in other places. The Buck Mountain B vein, like the Mammoth E and Gamma C, frequently split, and forms two and sometimes three veins. The Buck Mountain vein is a pink ash wherever found in the eastern section of the Anthracite region, and is a Red Ash at Lykens Valley. It may be split there and form two veins, but our impression is that it is but one vein, underlaid by Alpha A, and Gamma C above it. Those who think different from us, we should be pleased if they would put their views on record, and time will disclose who are right.

Tabular statement for the three districts, embracing Schuylkill, Columbia, Northumberland and Dauphin counties.

There were 190 collieries in operation during the year in these districts, and sums up as follows :

Collieries in the three districts, worked, about.....	190
Men and boys employed at collieries	28,077
Shafts	21
Slopes.....	162
Drifts	159
Steam engines.....	726
Aggregate horse-power	41,290
Steam Fans for ventilation.....	37
Furnaces.....	108

It is estimated that of the 6,321,933 tons of coal mined, prepared and sent to market, about one-sixth or 1,053,635 tons were wasted in its preparation for market, and had to be hauled from the collieries as waste and dirt. This is a great drawback in the Anthracite regions where the coal requires to be broken for use by machinery.

Number of deaths in the three districts in 1872.....	90
Number of maimed and injured in 1872.....	265
Number of widows left in 1872	49
Number of orphans left in 1872.....	169

Number of killed in same district in 1870 was.....	129
Number of maimed and injured	406
Number of widows left.....	66
Number of orphans left.....	<u>257</u>

Underground Railroads in Schuylkill county in 1872.

	<i>Miles.</i>
Railroad in drifts.....	56½
Railroad in slopes	29
Railroad in gangways	336½
Total number of miles underground.....	<u>423</u>

The rails used are generally 25 pounds to the yard, and have to be renewed about every four years. The mine water is terribly destructive to all kinds of mine machinery.

ANTHRACITE PRODUCT OF PENNSYLVANIA.

The coal product of the anthracite mines of Pennsylvania, from its inception in 1820 up to the close of the present year, as furnished for this report by the kindness of Professor P. W. Sheaffer, civil engineer and geologist, Pottsville, Pa., and illustrated by diagram annexed hereto, showing the annual shipments and bulk of coal mined in the several anthracite regions of the State, including Schuylkill, Shamokin, Lehigh and Wyoming, respectively, for the 53 years ending with A. D. 1873.

Schuylkill region with Shamokin :

	TONS.	TONS.
Shipped	107,409,827	
Consumed.....	10,740,982 $\frac{1}{10}$	= 118,150,809

Lehigh region, &c. :

Shipped	46,807,909	
Consumed	5,850,976 $\frac{1}{8}$	= 52,658,885

Wyoming region :

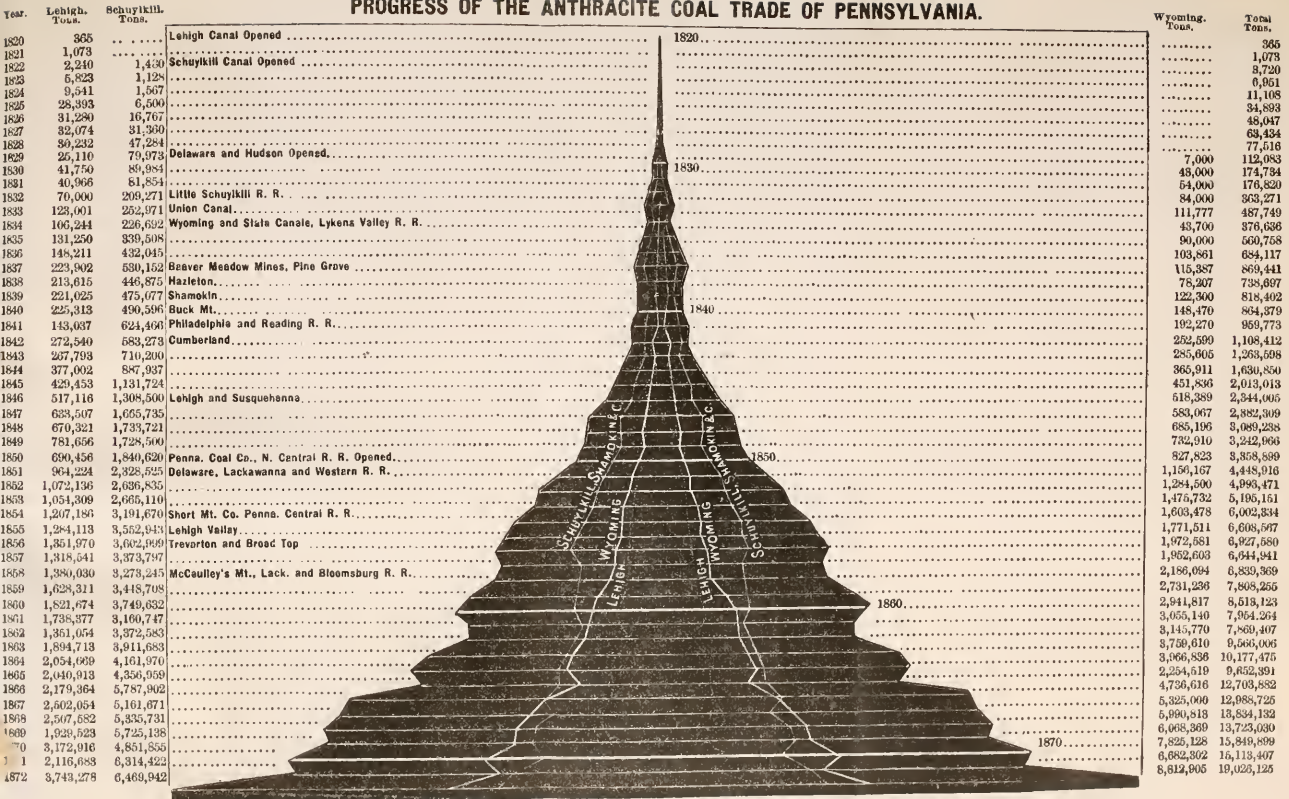
Shipped.....	87,590,035	
Consumed	8,759,003 $\frac{1}{10}$	= 96,349,038

Aggregate tons mined..... 267,158,732

Aggregate shipments.....	241,807,771
Aggregate home consumption	25,350,961
Add tonnage of 1873	22,500,000

Grand total mined..... 289,658,732

PROGRESS OF THE ANTHRACITE COAL TRADE OF PENNSYLVANIA.



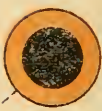
By P. W. SHEAFER, Engineer and Geologist, Pottsville, Pa.

*Constituents of
Carburetted Hydrogen Gas
and Atmospheric Air.*



Single Atoms of air and gas
 being the Compounds of the constituents
 as in the preceding column

1 Atom of gas



Mixture & chemical union
preparatory to Combustion
 on being heated.

1 Atom of air



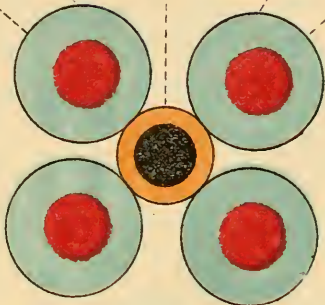
1 Atom of air



1 Atom of air



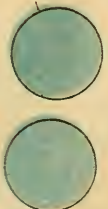
1 Atom of air



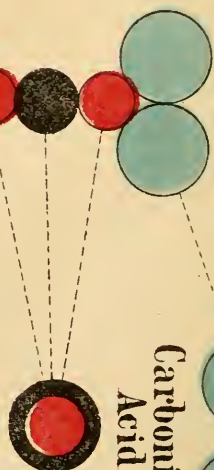
Each Atom of air being $2\frac{1}{2}$ times
 the Volume of an Atom of gas
 the 4 Atoms of air as above are
 consequently 10 times the Volume
 of the one Atom of the gas.

State of decomposition of Air & Gas
 preparatory to their chemical union
 of their constituents with their equivalents
 of Oxygen.

Nitrogen



**Carbonic
 Acid**



Nitrogen



Steam








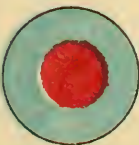


Nitrogen



Product of the
Combustion of
one Atom of Gas
 with its equivalent
 Atmospheric Air

By C. W. Williams, Liverpool, 1844

Oxygen	8.	
Carbon	6.	
Nitrogen	14.	
Hydrogen	1.	
Carburetted Hydrogen Gas	8.	
Carbonic Acid	22.	
Vapor or Steam	9.	
Atmospheric Air	36.	

SAFETY OF MINERS.

One of the cardinal safety points for a miner lies in his proper submission to the requirements of law and the rules laid down for the government of the mine which he works in. The next is to be careful and circumspect while at work, and study how he should do his work safely and understandingly, as there can be no fixed limit to do away with coal mine accidents. It should be the duty of those persons employed in coal mines to study their personal safety, and in all cases to be submissive and respectful to their officers; this especially in collieries that generate gas, (fire-damp.) As the experienced mariner dreads an old ship, so does a practical miner an old colliery. We may class these dangers as follows: Falls of the superstratum and coal, mishaps with powder, unnecessary haste, and above all, explosive gas, and, after, or choke-damp. To prevent which it should be the duty of the miner to carefully study the means and measures that would prevent injury in each case, and never for a moment permit any advantage to pass without he would use it to his profit, for the great spectacle is daily before his eyes in the number of casualties that occur. For this reason we here submit a diagram, explanatory of the symbols, weights and measures of the different forms assumed by the combination of the constituents of gases, and the object is to direct the attention of miners and bosses to this subject for their study and consideration.—*Combustion of coal, by J. C. Williams, of Liverpool.*

REPORT

OF THE

INSPECTOR OF COAL MINES FOR THE MIDDLE DISTRICT
OF LUZERNE AND CARBON COUNTIES, FOR THE YEAR
1873.

OFFICE OF INSPECTOR OF COAL MINES, }
Wilkes Barre, Pa., March 1, 1874. }

To His Excellency, JOHN F. HARTRANFT,

Governor of the Commonwealth of Pennsylvania :

SIR:—In compliance with the requirements of an act, entitled “An Act providing for the health and safety of persons employed in coal mines,” approved 3d day of March, 1870, I have the honor to submit herewith my annual (tabulated) report of casualties resulting in death or serious personal injuries; also, the number of widows and orphans caused by said casualties in this district, for the year ending December 31, 1873. The report will also contain the following items, each bearing on the matter of the safety of persons employed in and around coal mines, to wit:

A tabulated report showing the result of the testing of all the safety catches in use on hoisting carriages in shafts in this district; also plans of some of the best sort in use at present; also a list of the most important improvements that have been made during the year, and of those in progress at present; a statement of the coal production of the district, in the aggregate; a recapitulation of the casualties, showing the ratio of deaths and serious injuries to the quantity of coal produced; also to the number of persons employed in the district.

In my report for 1872 a brief report or description of each colliery was given. In my report for this year, (1873,) I have thought it unnecessary to repeat those descriptions, &c., but will give, under the head of improvements, a brief account of any material change that has taken place at either of them during the year, &c.

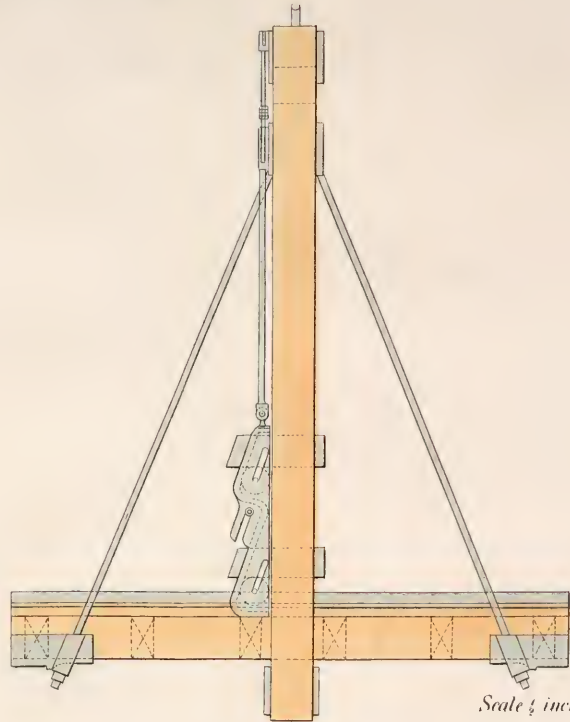
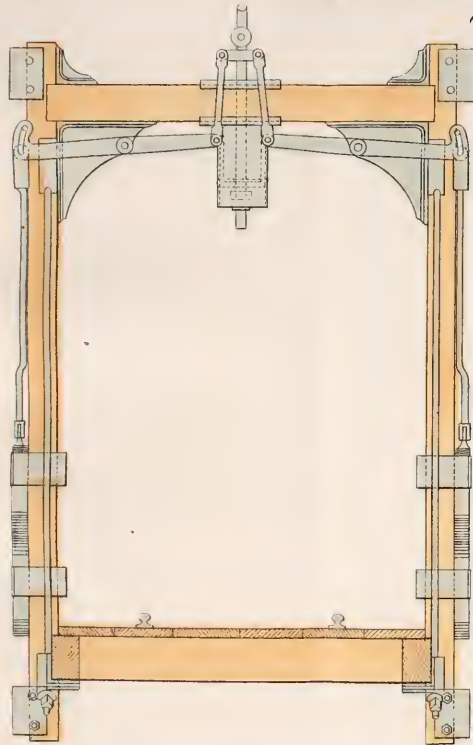
I have the honor to be

Your Excellency's obedient servant,

T. M. WILLIAMS,
Inspector.

W.B. GULYER'S
SAFETY HOISTING CARRIAGE

BUILT BY THE
Dickson Manufacturing Co., Scranton, Pa.



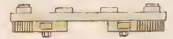
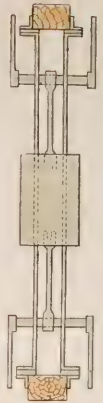
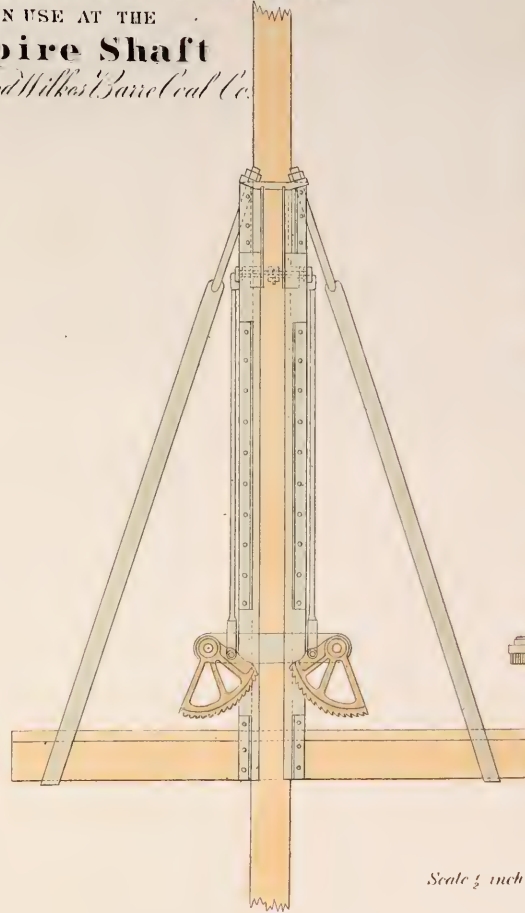
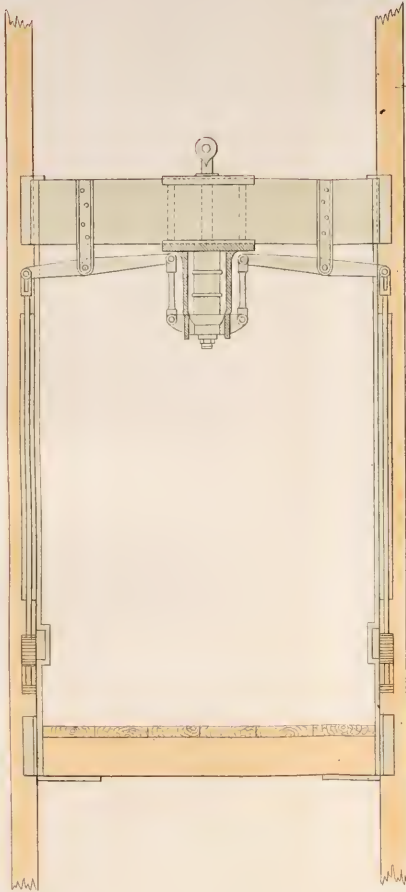
Scale $\frac{1}{4}$ inch = 1 ft

SAFETY HOISTING CARRIAGE

IN USE AT THE

Empire Shaft

Schuyler and Wilkes Barre Coal Co.



Scale $\frac{1}{2}$ inch = 4 ft

TABLE No. 1.
List of fatal accidents in the Middle District of Luzerne and Carbon Counties for the year 1873.

DATE.	NAMES OF COLLIERIES.	NAMES OF PERSONS KILLED.	Age.....	Widows,	Orphans,	CAUSE OF ACCIDENT.
Jan. 4...	Boston colliery.....	F. Spangleberg.....	16			Killed; crushed between mine cars at foot of inclined plane near breaker.
7...	Oakwood shaft.....	Anthony Casey.....		1	5	Killed; fell down new shaft, a distance of forty feet; slipped his foot on top.
17...	Warrior Run colliery.....	Ed. Rymer.....	19			Killed; crushed between mine cars near head of breaker by unhooking trip.
Feb. 1...	Exeter shaft.....	Patrick Crahan.....	45			Killed by falling into new shaft, which was down 168 feet. He was unloading rock on dump.
21...	Mill Creek slope.....	Owen Jones.....	27			Killed by being crushed between a trip of mine cars and the rib or side.
Mar. 7...	Empire, No. 7, slope.....	Thos. H. Thomas.....	32	1	2	Killed by being crushed between a mine car and face of slope.
18...	East Nanticoke, No. 2, tun'd	George Demerly.....	16			Killed by mine locomotive while attempting to turn switch.
21...	Pine Ridge shaft.....	Orvel Kennedy.....	23			Killed by railroad cars near breaker while attempting to unhook his mule from the same.
26...	Nanticoke, No. 1, breaker..	Jacob Young.....	13			Suffocated in a dirt chute in breaker. Had orders not to enter the same.
29...	No. 2 colliery N. J. C. Co....	James Finnan.....	10			Killed by falling under mine cars. Driver had prohibited his getting on the trip previous. He was a slate-picker boy.
April 1...	No. 1 slope, East Nanticoke,	Valentine Gotlaska,	27	1	2	Killed by trip on mine cars on slope. He should have taken traveling road.
4...	Maffet slope.....	Thomas Johnson.....	25			Killed by fall of slate; had just returned to face after blasting.
5...	Mill Creek colliery.....	Alex. McCollum.....	33			Killed by fall of coal in his own place; was working alone.
18...	Hollanback, No. 3, slope...	Thomas Kinney.....	25		2	Killed by blast in coal; had returned to re-light the match when blast exploded.
19...	Laurel Run slope.....	James Brady.....				Died from injuries received on the 11th while riding on loaded mine cars on said slope.
May 5...	Diamond shaft.....	Philip Greener.....	20			Killed by mine cars while endeavoring to unhitch his team.
13...	No. 1 slope, Nanticoke.....	John R. Jones.....	40			Killed by fall of top coal; just commencing to open chamber.
22...	No. 1 shaft N. C. and I. Co.,	Simon Ridley.....	23			Killed by falling down shaft. He fell about 85 feet. How he came to fall is not known, as his place of working was 40 or 50 feet from the shaft.
27...	Pine Ridge shaft.....	Patrick Callagan.....				Killed by explosion of fire-damp. He and his laborer were brushing out gas, which the law strictly prohibits the miners or laborers to do.

TABLE No. 1—CONTINUED.

DATE.	NAMES OF COLLIERIES.	NAMES OF PERSONS KILLED.	Age.....	Widows,	Orphans,	CAUSE OF ACCIDENT.
May 30..	Grand Tunnel colliery.....	Wm. Giles.....	.....	1	.....	Killed by mine locomotive. He was switching and by some means fell under. He was the engineer.
31..	Port Bowkley slope.....	Jas. McCormick.....	54	1	6	Killed by a premature discharge of a blast in coal; his skull was fractured.
June 1..	Pine Ridge shaft.....	John Curl.....	.....	1	2	Died from injuries received on the 27th ult. by explosion of fire-damp. Same time and place as Patrick Callagan.
2..	Warrior Run colliery.....	James Kildae.....	17	.....	.....	Killed by mine truck, which he was on, running back and down slope from the landing on surface.
4..	Empire shaft.....	Thomas Dirkin.....	25	.....	.....	Killed by blast in coal. He had ignited the match twice and was going back again when it exploded with the above result.
5..	Hartford breaker.....	M. M'Tighe.....	10	.....	.....	Killed by falling in breaker a distance of 16 feet while playing and climbing difficult places.
7..	Port Bowkley slope.....	Patrick M'Guire.....	28	.....	.....	Killed by fall of top coal. A short time previous his partner and him had tried to pry it down but failed.
23..	Boston shaft.....	Patrick Eagan.....	42	.....	5	Killed by being run over by a mine car in his own chamber.
Aug. 4..	Diamond shaft.....	John Flaherty.....	45	1	6	Messrs. Flaherty and Arich were both killed by an explosion of fire damp while brushing out gas from their chamber, in company with a fire-boss, who was also fatally burned; how gas ignited is not known.
4..	Diamond shaft.....	Frederick Arich.....	26	1	1	Killed by premature explosion of a blast in coal.
15..	Conyngnam shaft.....	John Hackaday.....	50	1	.....	Died from injuries received on the 4th inst. by explosion of fire-damp at the same time and place as John Flaherty and Fred'k Arich.
16..	Diamond shaft.....	Luke Foley.....	21	.....	.....	He was fire-boss and in charge of the party. Died from injuries received on the 22d, being crushed between mine cars while unhooking his mule.
23..	No. 2 colliery N. J. C. Co....	Michael Barret.....	15	.....	.....	Killed by being crushed between mine cars and the side.
25..	Diamond shaft.....	George Higgins.....	18	.....	.....	Killed by a fall of top coal.
30..	Franklin old slope.....	James M'Conlogue,	40	1	6	Killed by a fall of top coal. He was examining the seam to ascertain its condition as to safety, &c., when it fell upon him.
Sept. 19..	Washington colliery.....	Wm. Evans.....	15	.....	.....	Died from injuries received on the 5th inst., being crushed between mine cars and the side.
19..	Elliot colliery.....	Martin Ryan.....	35	1	6	Killed by a fall of top coal.
19..	No. 3 breaker, (Harvey's)...	Wm. M'Keon.....	35	1	1	Killed by getting entangled between wire rope and pulley on top of dirt plane outside.
20..	Franklin tunnel.....	Thomas Bradley.....	45	1	.....	Died from injuries received on 18th inst. from a fall of slate.
27..	Harvey slope.....	Michael Washburn,	43	1	3	Killed by fall of roof—bone coal—while working under same.
30..	No. 1 tun. Bathmore mines,	Joseph M'Cabe.....	10	.....	.....	Killed by falling under a mine locomotive while playing.

Nov. 4...	Boston colliery	Wm. Jones	32	.....	.....	Died from injuries received on the 1st inst. by falling under mine cars, which crushed his leg and resulted in his death.
6....	Empire shaft	Frank Gallagher	41	1	5	Killed by a fall of bone coal, usually kept up for a roof.
12....	Prospect shaft	James Hughes	40	1	4	Died from injuries received on the 8th inst. by a fall of roof—bone coal—while he and others were extinguishing a fire, caused by gas igniting.
17....	Empire shaft	James Mash	60	.....	.....	Killed by a fall of roof—bone coal—in a chamber.
Dec. 8....	Hartford colliery	Ed. Smith	40	1	4	Died from the effects of injuries received on the 22d inst. by explosion of fire-damp.
27....	Waterman & Beaver slope..	Ed. Carey	33	1	.....	Killed by mine cars while he was endeavoring to unhook or throw off the chain and rope from the loaded cars as they were being landed on top of said slope.

TABLE No. 2.

List of Accidents, not proving fatal, in the Middle District of Luzerne and Carbon counties, for the year 1873:

DATE.	NAME OF COLLIERY.	NAME OF PERSON INJURED.	CAUSE OF ACCIDENT.
Jan. 7.	Sweetland slope	Wm. Walker	Leg fractured by fall of slate.
16.	Laurel Run shaft	John A. Johns	Thigh broken by fall of rock.
22.	Henry shaft	James Jordan	Arm broken by falling off trestling.
22.	Mill Creek colliery	George Albert	Leg broken—crushed between mine cars.
Feb. 15.	Sweetland shaft	Oliver Roe	Leg fractured in three places by falling down shaft.
19.	No. 1 tunnel Balt. mines.	M. Morrison	Severely injured by mine cars.
4.	Baltimore shaft	J. Scanlon	Arm fractured by mine car—amputated.
7.	Baltimore, No. 3, slope	C. Umbernerst	Both legs broken by mine cars—one amputated.
10.	Empire shaft	Abraham H.	Leg broken by car on column dump, near breaker.
22.	No. 3 breaker S. C. Co.	Evan Jones	Leg injured—caught bet. hoisting carriage and side.
April 15.	Henry shaft	Alex. Curry	Severely injured between mine cars.
15.	.....do.....	Thos. Wright	Severely burned by fire-damp explosion.
25.	Sugar Notch, new slope	David Price	Severely injured by blast in coal.
29.	Pine Ridge shaft	James Rowe	Severely injured by going down slope—car upset.
May 7.	.....do.....	Daniel Donohoe	Severely injured by fall of coal.
7.	7 foot drift, Wanamie	Wm. Ryland	Slightly burned by fire-damp.
8.	Henry shaft	David Mangster	Small bone of leg fractured by fall of coal.
June 2.	.....do.....	John Hollevan	Severely injured by mine cars.
7.	Boston shaft	D. D. Davis	Seriously injured by blast in coal.
7.	Grand tunnel	John Ryne	Had three fingers cut off by mine cars.
9.	Henry shaft	Charles Virtue	Seriously injured by fall of coal.
13.	Enterprise shaft	Joseph Jervis	Seriously injured by fall of coal.
14.	Empire, No. 7, slope	Patrick Grady	Severely injured by hoisting carriage.
18.	Nanticoke, No. 2, slope	Thomas Evans	Seriously injured by fall of coal.
19.	Boston shaft	Geo. Mapstone	Injured by fall of slate.
21.	Gaylord slope	Joseph Blane	Injured by fall of coal.
25.	Sugar Notch, new slope	John Walker	Skull fractured by kick from mule.
27.	Henry shaft	John Hefferon	Severely injured by fall of slate.
July 3.	Honey Pot drift	Michael Barret	Severely injured by fire-damp.
9.	No. 1 tunnel Balt. mines {	Charles Brown	Severely injured by mine cars.
		John Simmons	
		A. Daugherty	
		O. M'Andrews	Severely burned by explosion of fire-damp.
11.	Pine Ridge shaft	Hugh M'Guire	Severely injured by blast in coal.
17.	Harvey mine	William Culp	Leg broken by railroad cars outside.
18.	Conyngham shaft	R. Bettenson	Severely injured by hoisting carriage.
21.	Mill Creek colliery	Thos. Rosser	Leg broken by prop falling upon him.
21.	Empire, No. 7, slope	John Heycock	Severely burned by fire-damp.
25.	No. 1 shaft N. C. & I. Co.	Rowland Hoss	Severely injured by mine cars.
25.	Nottingham shaft	Israel Rodgers	Injured by explosion of blast in coal.
25.	Empire shaft	J. J. Morgans	Severely injured by blast in coal.
25.	Mill Creek colliery	John Welch	Severely injured by blast in coal.
25.	Port Bowkley slope	Lewis Lewis	
29.	Diamond shaft	Wm. Hoekaday	Severely burned by explosion of fire-damp.
Aug. 4.	Honey Pot drift	J. Reese	Seriously injured by a kick from a mule.
4.	Baltimore, No. 3, slope	James Sobers	Severely injured by mine cars.
8.	Mineral Spring colliery	Joseph Early	Shoulder blade fractured by fall of coal.
12.	Brown slope	David Jones	Severely injured by mine cars.
21.	Henry shaft	Peter Rouk	Severely injured by mine cars.
27.	No. 3 slope, Wanamie	Thomas Tighe	Severely burned by fire-damp explosion.
27.	No. 3 slope, Hartford	Anthony Duffy	
28.	Nottingham shaft	W. Montgomery	Leg broken by fall of coal.
28.	Enterprise shaft	John Flynn	Leg broken by fall of coal.
Sept. 5.	No. 4 shaft N. C. & I. Co.	Frank Ronke	Shoulder blade broken by fall of coal.
5.	Hutchinson shaft	George Keller	Seriously burned by fire-damp.
6.	Franklin shaft	George Keller	Severely injured by fall of coal.
17.	Gaylord slope	Thomas Arnold	Leg broken by mine cars.
19.	Avondale shaft	Thos. Thomas	Injured seriously by mine cars—one leg amputated.
23.	No. 3 slope Balt. mines	W. J. Williams	Seriously injured by mine cars.
25.	Washington colliery	John Norton	Severely injured by mine cars.
25.	Waterman & Beavers shaft	Ed. M'Govern	Seriously injured by mine cars—one leg amputated.
25.	Henry shaft	David Reese	Seriously injured by mine cars.
Oct. 13.	No. 1 tunnel, Balt. mines	Charles Dond	Seriously injured by a fall of slate.
15.	Henry shaft	David Jones	Severely injured by a blast in coal.
20.	Empire, No. 4, slope	Andrew Smith	Severely injured by a mine car.
20.	Grand Tunnel	Barney Milroy	Severely burned by fire-damp.
20.	Henry shaft	Thomas Davis	Leg broken and breast bone fractured by fall of coal.
21.	No. 1 shaft N. C. & I. Co.	F. Schleiger	Leg broken by mine locomotive.
21.	Laurel Run slope	M. Wooley	Severely injured by fall of coal.
Nov. 7.	Mill Creek colliery	Thos. Becker	Severely burned by fire-damp.
8.	No. 1 tunnel Balt. mines	W. R. Warkins	Severely injured by gun powder.
8.	No. 3 slope Balt. mines	John Lyndt	Severely injured by mine cars.
10.	Laurel Run slope	Dennis M' Hale	Severely injured by blast in coal.
11.	No. 1 shaft N. C. & I. Co.	John Foy	Shoulder bone factured by mine cars.
11.	Hollanback shaft	Aug. Williams	Leg broken by a mule.
11.	Gaylord slope	Michael Duffy	Seriously injured by fall of roof—hand amputated.
15.	Pine Ridge shaft	T. Menherret	Arm broken by rock falling from hoisting bucket.
15.	Gaylord slope	Jas. W. Peirce	Leg broken by blast in coal.
15.	Boston shaft	Thos. Hughes	Arm broken by blast in coal.
15.	.....do.....	Miner Moyer	Severely injured by fall of roof.
18.	Enterprise shaft	Whiler Kating	Severely injured by mine car.
22.	Pine Ridge shaft	Har. Nesbit	Severely injured by hoisting carriage.
Dec. 5.	Germania slope	Ames Brislin	Shoulder blade fractured—struck by coal from blast.
10.	Hartford colliery	Thos. Price	Both severely injured—the latter had leg broken by blast in coal.
10.	Washington colliery	W. Harrington	Leg broken by fall of coal.
12.	Mill Creek colliery	Hugh Long	Seriously injured by mine cars.
13.	.....do.....	M. Donohy	Leg broken by mine car.
13.	Boston shaft	John Gilchrist	Leg broken by mine car.
15.	.....do.....	Thomas Evans	Severely injured by mine car.
15.	.....do.....	Jas. Daugherty	Leg fractured by mine car.
15.	.....do.....	Martin Downig	Leg broken in two places by mine cars.

SAFETY CATCHES.

The following is a copy of a notice sent each year to the company's officials using hoisting carriages to lower or hoist persons in their respective shafts; also, copies of their several reports returned to this office, giving the actual result of the tests in figures, to wit:

Mr.....

Outside Foreman,

..... Company.

SIR:—All coal operators, their agents, superintendents, or any persons in charge of coal mines in this Middle district of Luzerne and Carbon counties are respectfully requested to attend to the following:

All the safety catches and bridle chains on hoisting carriages, used for hoisting or lowering persons, that have not been tested within 3 months, and the result reported to this office, are required to be tested before the 15th day of July, ———, in the manner following: Detach the wire rope connections from the cross-head of carriage; hoist the usual load several times, leaving the weight entirely upon the bridle chain connections; keep a record of each trial. To test safety catches, each carriage should be dropped at least three times; keep a record of the result of each trial, the distance carriage falls, &c. These experiments or tests should be conducted by competent and responsible persons, and a detailed report furnished the Inspector immediately thereafter.

T. M. WILLIAMS, *Inspector.*

.....187..

To T. M. WILLIAMS, Esq.,

Inspector of Coal Mines:

SIR:—In compliance with the requirements of the mining law, I have had the bridle chains and safety catches tested, with the following result: Bridle chains used as directed, and held the load while being hoisted on the following carriages, each one three trials satisfactorily. Safety catches tested as per directions, with the following result:

WATERMAN & BEAVER'S SHAFTS, KINGSTON, PA.

No. 1 Shaft.—No. 1 carriage dropped, first trial, 6 inches; second trial, 6 inches; third trial, 6 inches. No. 2 carriage dropped, first trial, 6 inches; second trial, 6 inches; third trial, 6 inches.

No. 2 Shaft.—No. 1 carriage dropped, first trial, $1\frac{3}{4}$ inches; second trial, 1 inch; third trial, $1\frac{1}{8}$ inches. No. 2 carriage dropped, first trial, $1\frac{1}{4}$ inches; second trial, $1\frac{3}{8}$ inches; third trial, $1\frac{3}{8}$ inches.

CHARLES HUTCHISON & COMPANY'S SHAFT, KINGSTON, PA.

No. 1 Shaft.—No. 1 carriage dropped, first trial, 10 inches; second trial, 10 inches; third trial, 9 inches. No. 2 carriage not used for hoisting or lowering persons.

LEHIGH COAL AND NAVIGATION COMPANY'S SHAFT, PLYMOUTH, PA.

Nottingham Shaft.—No. 1 carriage dropped, first trial, 6 inches; second trial, 4 inches; third trial, 2 inches. No. 2 carriage dropped, first trial, 4 inches; second trial, 3 inches; third trial, 4 inches.

CONSUMER'S COAL COMPANY'S SHAFT, KINGSTON, PA.

East Boston Shaft.—No. 1 carriage dropped, first trial, $13\frac{3}{4}$ inches; second trial, 6 inches; third trial, $9\frac{1}{2}$ inches. No. 2 carriage not used for hoisting or lowering persons.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY'S SHAFTS.

Avondale Shaft.—No. 1 carriage dropped, first trial, 2 inches; second trial, $1\frac{3}{4}$ inches; third trial, $1\frac{3}{4}$ inches. No. 2 carriage dropped, first trial, $1\frac{1}{2}$ inches; second trial, $1\frac{1}{2}$ inches; third trial, $1\frac{1}{2}$ inches.

Boston Shaft.—No. 1 carriage dropped, first trial, $1\frac{1}{2}$ inches; second trial, $1\frac{1}{4}$ inches; third trial, $1\frac{1}{2}$ inches. No. 2 carriage dropped, first trial, $1\frac{1}{2}$ inches; second trial, $1\frac{1}{2}$ inches.

RIVERSIDE COAL COMPANY'S SHAFT, PLAINSVILLE, PA.

Enterprise Shaft.—No. 1 carriage dropped, first trial, 4 inches; second trial, $\frac{3}{4}$ inch. No. 2 carriage not used for hoisting or lowering persons.

LUZERNE COAL AND IRON COMPANY'S SHAFTS, PLAINSVILLE, PA.

Henry Shaft.—No. 1 carriage dropped, first trial, 2 inches; second trial, 2 inches. No. 2 carriage not used for hoisting or lowering persons.

Prospect Shaft.—No. 1 carriage dropped, first trial, 2 inches; second trial, 2 inches; third trial, 2 inches. No. 2 carriage not used for hoisting or lowering persons.

DELAWARE AND HUDSON CANAL COMPANY'S SHAFTS.

Pine Ridge Shaft.—No. 1 carriage dropped, first trial, 2 inches; second trial, 2 inches; third trial, 2 inches. No. 2 carriage dropped, first trial, 2 inches; second trial, 2 inches; third trial, 2 inches.

Conyngnam Shaft.—No. 1 carriage dropped, first trial, 12 inches; second trial, 14 inches; third trial, 8 inches. No. 2 carriage not used for lowering or hoisting persons.

NORTHERN COAL AND IRON COMPANY'S SHAFTS, PLYMOUTH, PA.

No. 1 Shaft.—No. 1 carriage dropped, first trial, 2 inches; second trial, 2 inches. No. 2 carriage dropped, first trial, 2 inches; second trial, 2 inches.

No. 2 Shaft.—No. 1 carriage dropped, first trial, 3 inches; second trial, 2 inches. No. 2 carriage dropped, first trial, 3 inches; second trial, 2 inches.

No. 3 Shaft.—No. 1 carriage dropped, first trial, 3 inches; second trial, 2 inches. No. 2 carriage not used for hoisting or lowering persons.

No. 4 Shaft.—No. 1 carriage dropped, first trial, 6 inches; second trial, $2\frac{1}{2}$ inches. No. 2 carriage dropped, first trial, 6 inches; second trial, $2\frac{1}{2}$ inches.

WILKES BARRE COAL AND IRON COMPANY'S SHAFTS.

Dodson Shaft.—No. 1 carriage dropped, first trial, 6 inches; second trial, 6 inches; third trial, 6 inches. No. 2 carriage dropped, first trial, 6 inches; second trial, 6 inches; third trial, 6 inches.

Lance Shaft.—No. 1 carriage dropped, first trial, 5 inches; second trial, 4 inches; third trial, 6 inches. No. 2 carriage dropped, first trial, 6 inches; second trial, 6 inches; third trial, 6 inches.

Sugar Notch Shaft.—No. 1 carriage dropped, first trial, 6 inches; second trial, 4 inches; third trial, 5 inches. No. 2 carriage dropped, first trial, 7 inches; second trial, 5 inches; third trial, $4\frac{1}{2}$ inches.

Empire Shaft.—No. 1 carriage dropped, first trial, $1\frac{1}{4}$ inches; second trial, $1\frac{1}{8}$ inches; third trial, $1\frac{1}{4}$ inches. No. 2 carriage dropped, first trial, $1\frac{1}{2}$ inches; second trial, $1\frac{1}{4}$ inches; third trial, $1\frac{1}{2}$ inches.

Diamond Shaft.—No. 1 carriage dropped, first trial, 1 inch; second trial, $1\frac{1}{4}$ inches; third trial, $1\frac{1}{2}$ inches. No. 2 carriage dropped, first trial, $1\frac{1}{4}$ inches; second trial, $1\frac{1}{4}$ inches; third trial, $1\frac{1}{2}$ inches.

IMPROVEMENTS.

Among other improvements of importance that have been made during the year, quite a number of ventilating fans have been built, all in the most suitable places, according to the views of the parties erecting the same. Some were erected on the surface, others were erected under ground.

The Delaware and Hudson Canal Company had one fan 20' 0'' dia, built at the Mill Creek colliery. This fan exhausts about 72,000 cubic feet of air per minute. Of this amount, 38,000 are from the Pine Ridge shaft workings, and 34,000 are being circulated through the Mill Creek slope workings, in addition to 106,000 cubic feet exhausted by another fan, making an aggregate quantity of 140,000 cubic feet of air per minute circulated through the workings of the Mill Creek slope. The current exhausted from the Pine Ridge shaft ventilates the workings north of a large fault lying between the workings of the two collieries. Besides the amount of 38,000 cubic feet of air caused to be circulated by the aforementioned new fan, there is another current circulated and exhausted by another fan 20' dia, located at the Pine Ridge shaft, averaging about 70,000 cubic feet, giving a total of 108,000 cubic feet of air per minute for the workings in the Pine Ridge shaft.

The Delaware, Lackawanna and Western Railroad Company had a fan erected at Jersey colliery, near Plymouth. This fan is similar in dimensions and construction to that at Avondale, being a short iron casing revolving disk, 12' 8'' dia, with open periphery. Much better ventilation is had in said mine since the fan has been started.

The Wilkes Barre Coal and Iron Company has had the following fans built during the year, to wit: At the Diamond shaft a fan 15' 0'' dia was built inside the shaft workings for the purpose of ventilating the workings in the new slope. This fan receives its fresh air from the hoisting shaft, which is some few hundred feet east of the point where the fan is located, and it discharges its foul air into a large air-way, conveying it to the main upcast leading to the surface. The main air-ways, both in the up-cast and intake, are of large areas. This fan, when being driven about 75 revolutions per minute, exhausts 40,000 cubic feet of air.

At the *Sugar Notch colliery* a fan 15' 0'' dia has been built inside the shaft workings to ventilate the workings of the new slope. It is built under similar circumstance to that at the Diamond shaft. Other things not being quite ready, the fan has not yet been started.

The Franklin Coal Company has had one fan 15' 0'' dia erected to ventilate their new tunnel workings on the Red Ash vein. This is comparatively a new mine, and the fan having but very recently been built, has not yet had much trial; but there can be no doubt of its being just what is required.

The New Jersey Coal Company has had a small fan 10' 0'' dia built to ventilate the workings on the Red Ash seam. It has greatly improved the ventilation of said mine.

The Lehigh Coal and Navigation Company has had a large fan 24' 0'' dia erected at the Washington colliery, near Plymouth. This fan ventilates the workings on the west side of the slope, two lifts, and the whole of the workings in the Nottingham shaft. I have not yet learned what amount of work this fan is able to do, as it has not yet been fully tested. There are about 35,000 or 40,000 cubic feet of air circulated through the shaft workings, and about 18,000 or 20,000 cubic feet for the slope west side.

The workings in the slope tunnel are being well ventilated by another fan 15' 0'' dia.

The Susquehanna Coal Company has had the following fans erected: At No. 3 slope, old Harvey mine, West Nanticoke, one fan 17' 0'' dia, which exhausts about 45,000 cubic feet of air per minute, and is capable of much more when required.

At No. 3 or Grand Tunnel one fan was taken from the old M'Farlane shaft, and placed upon the side of the mountain near the outcrop of the seam, to ventilate the workings of the back basin. This fan is 15' 0'' dia, and does very well when being run to an ordinary speed, say 75 revolutions; but there has been some difficulty in getting a sufficient quantity of water to make steam at times, hence the fan has not had a fair trial, although very much needed at times.

The Riverside Coal Company has had a double fan built at the Enterprise shaft. This fan is built different to any other in this district, being two distinct fans, each 15' 0'' dia, with the usual proportions, their shafts being so arranged as to allow of their being coupled or uncoupled at pleasure. Hence these fans can be run together, or either may be run independent of the other, allowing, if need, ample time to repair the one while the other keeps the mine clear of gas. When they were run together at 111 revolutions per minute, they discharged 69,600 cubic feet per minute, with a water gauge of 1.8 of an inch; a very heavy drag area, $48 \times \text{velocity } 1,450 = 69,600$, no allowance for friction of the instrument.

NEW SHAFTS COMPLETED SINCE MY LAST REPORT.

Waterman & Beaver's No. 2 shaft, located north-east of their old shaft, near Kingston, Pa. Coals have been hoisted from this shaft for several months past, which were sent through their new breaker.

Luzerne Coal and Iron Company's new shaft, near West Pittston.—This shaft has been completed, and coals are being hoisted from the opening. They are now driving so as to connect the new and the old shaft. The water having been taken out of the said old shaft, an opening between the two will be completed early in the next year, the driving being done at present from both sides.

Northern Coal and Iron Company's No. 3 shaft, near Plymouth.—It has been completed, but no coals have as yet been shipped therefrom. A new shaft is being sunk to form a second opening for the former at present.

D. and H. Cannal Company's Cunyngham shaft.—It has been completed to the Hillman seam, from which coals are now being hoisted from their gangway driven eastward. It is intended to drive for a second opening from the said gangway at some favorable point, yet to be decided upon, either to the surface or otherwise into Young's slope. One of the five separate compartments of this shaft is being occupied at present by a drilling apparatus for the purpose of testing the coal bearing strata below the present bottom of the shaft.

NEW SHAFTS NOT YET COMPLETED.

Wilkes Barre Coal and Iron Company's, No. 14, shaft near Gaylord slope, Plymouth, Pa. This is a large shaft and is intended to work the Red Ash seam, and to be connected to the Nottingham shaft where the seam is being worked.

Hollenback Shaft is located within Wilkes Barre city limits, a short distance east of Market street, near the P. R. R. This shaft will penetrate the Baltimore seam, in the early part of 1874.

South Wilkes Barre Shaft.—This shaft is intended to win the coal of the Baltimore seam, which is thought to lie at a depth of about 500 or 600 feet. It is also intended to commence a second shaft at a distance of 150 or 200 feet west of the present shaft for a second opening to the former.

Audenried Shaft.—This shaft, although the sinking has been completed, will not be ready to hoist coals for some time to come, as it needs timbering and lining beside, that there is no coal breaker yet ready. This shaft is the deepest in the Wyoming valley—the Dundee not excepted—the latter being 810 feet and the former being 892 feet. The plan of the proposed breaker indicates that the coal will be hoisted over one hundred feet above the pit mouth, making a total hoist of over 1,000 feet; the hoisting to be done with first motion engines.

Riverside Coal Company's New Shaft, near Port Bowkley slope, Plainsville.—This shaft was commenced in 1872, but operations since suspended have just been again resumed. It is now in contemplation to continue sinking until it reaches the Baltimore seam, which lies at a depth of several hundred feet below the surface at this point.

Susquehanna Coal Company's Shaft, at East Nanticoke.—Shaft No. 1 is located a short distance south of the village of Nanticoke, and alongside that branch of the Susquehanna railroad connecting Nanticoke, New Port and Wilkes Barre. The said shaft is 42 feet 4 inches by 13 feet 4 inches, to be divided into suitable compartments. It is calculated that this shaft will cut the Baltimore seam at the depth of about 700 feet, and then to continue one part of said shaft still downward until the Red Ash is reached, getting a second opening for the Baltimore seam by connecting with No. 2 slope, and for the lower seam by driving up to No. 1 tunnel workings.

No. 2 Shaft.—This shaft is located a few hundred yards north of the old mill, and close to the pond connecting with the water of the Nanticoke dam. Some dredging has been done, no doubt preparatory to bringing in their canal boats to this point. It is intended that this shaft also be sunk to the Red Ash seam, but it will not require so deep a shaft at the point where No. 2 is located as it will where No. 1 is located, as some of the overlying strata at the latter place is missing at the location of the former.

Luzerne Coal and Iron Company's Oakwood Shaft.—This shaft is intended to be a second opening for the Prospect shaft, and is down at present about 300 feet; will probably reach the Baltimore seam in 400 feet more, or a total depth of 700 feet.

Northern Coal and Iron Company's New Shaft, near No. 3 Shaft.—This shaft is intended to serve for a second opening for No. 3 shaft, and may be completed during 1874.

OLD SHAFTS BEING SUNK DEEPER.

Northern Coal Company's No. 4 Shaft, Sweetland—The company is having things prepared for the purpose of sinking this shaft from their Bennet or Baltimore lower bed to the Red Ash seam, a distance probably of about 300 feet or over.

Consumers' Coal Company's East Boston Shaft, Wm. G. Payne & Co., lessees.—This shaft also is being sunk from the top or cooped bed to the Bennet or lower bed of the Baltimore seam, a distance of about 80 feet; about 40 feet were sunk by night, while the shaft hoisted coal by day.

The following sketch and description of a dam built and tested may be of interest to many of our mine managers and others. Mr. J. H. Swoyer is entitled to much credit for the constant care he manifests for the safety of his employees, both in building this dam and often times preventing his men from working during high water on the flats for fear of danger.

WILKES BARRE, PA., *February 20, 1874.*

T. M. WILLIAMS, ESQ.:

DEAR SIR:—In compliance with your request, I have the pleasure of handing you a plan and description of the dam built in the Rock tunnel, leading from the Eight foot vein to the Five foot vein, in the Enterprise colliery, Plainsville, Pa. As you are no doubt aware, the Eight foot is the uppermost vein, and has been extensively worked, both in this and the adjoining colliery, called the Burroughs, the property of the Luzerne Coal and Iron Company; the workings of both collieries communicating. The Five foot is some 75 feet below the Eight foot, and is worked by a shaft from the surface, which shaft also cuts through the Eight foot; the only other communication with the Eight foot is by a tunnel cut through the solid measures of rock, and in this tunnel the dam is located. This tunnel communicating with the Eight foot, and to the surface through the mule way of the Eight foot, formed the second opening for the Five foot. Some 200 feet below the Five foot is the Baltimore vein, which is worked by an underground slope, cut through the solid rock from the Five foot to the Baltimore, the second opening to which vein it was (at the time of building dam) also another slope, through the rock from the Five foot.

The dam was built at the suggestion of Mr. J. H. Swoyer, for the safety of the men employed in, and to save the Baltimore slope and vein in the event of the Susquehanna river breaking through into any part of the Eight foot workings, for in the adjoining (and in communication) colliery, Burroughs, a cave of the roof, had twice already let into the mines the water of the canal, and as also during floods the Susquehanna often overflows its banks, so that a large portion of the workings in the Eight foot vein are under water. In such a case, a cave in the roof and extending to the surface would flood the Eight foot vein to the height of over 60 feet above the level of the tunnel, causing almost certain death to the miners, &c., employed in the Baltimore vein, 200 feet below the tunnel.

The dam as originally constructed consisted of a sill and cap of oak timber 12x12, marked on plan (a) and firmly set into the rock. Six upright posts of oak (b) 12x12, with spaces between each post. A larger space being left between the two centre posts for a man-way, 3-inch planking (c) in front of posts, and a brick and cement wall (d) in front of planking. The man-way door is a strong casting, with its attachments as per plan, and was kept in position for immediate use in case of emergency. Each post would resist with safety, a strain distributed over its surface of 20 tons, making a total resistance of 120 tons, not including the effect gained by the planking and brick wall. The tunnel being 8x7, or 56 square feet area, and the pressure on the dam, in the event of a break in by the river, being 30 pounds per square inch, the total pressure against the dam would be 108 tons. In the spring of last year, (1873,) during a flood, a cave in or fall of roof in the Burroughs colliery (then abandoned) let in the river, and in

an incredibly short time the Burrongh's mine and the Enterprise, Eight foot were flooded to full 60 feet above the level of the dam, which stood the test admirably. No one was working in the Eight foot but the full force of men were working the Baltimore, all of whom got out with no further inconvenience than having to grope their way out in the dark. The velocity imparted to the air by the sudden rush of water into the mine having extinguished the lights of the miners. After this occurred the Enterprise Eight foot vein was aboned, and the tunnel being now of no further use as a second opening, (the second slope having been driven out to the surface,) the dam received a further protection of a wall of rock and cement 17 feet thick (e.) A second dam was then constructed of oak timbers 12x18 (f) laid in cement, the ends being hitched into the rock on either side. The space between the wood work and wall being filled with concrete, and the whole structure made further secure by the braces (g) of 10x12 oak timber, and which toe into the solid rock on either side, as per plan.

Yours very respectfully,

WM. BAYNES HICK,
Mining Engineer.

COAL PRODUCTIONS OF THE DISTRICT.

The quantity sent to market in 1871 was 3,000,000 tons; in 1872, 3,250,000; in 1873, 4,232,092.

NUMBER OF PERSONS EMPLOYED IN THE DISTRICT.

Employed in the year 1871, 9,870; in the year 1872, 9,807; in the year 1873, 11,355. The employed for 1873 being divided as follows, to wit:

Inside men.....	6,526
Inside boys	1,092
Total number employed inside.....	<u>7,618</u>
Outside men	1,703
Outside boys	2,034
Total number employed outside	<u>3,737</u>
Total number of men employed.....	8,229
Total number of boys employed.....	3,126
Total number of both men and boys	<u>11,355</u>
Total number of actual miners employed	<u>2,894</u>

CASUALTIES.

There were forty-six (46) lives lost in this district during the year 1873. and ninety-one (91) seriously injured, leaving 19 widows and 60 orphans.

Recapitulation.

	Killed.	Injured.
By fire-damp explosions	6	14
By falls of rock	2	7
By falls of coal	9	14
By falling down shafts	3	1

	Killed.	Injured.
By gun-powder explosions	0	1
By explosion of blasts in coal	4	12
By mine cars, inside	13	27
By cars, outside	6	2
By miscellaneous, under ground	0	10
By miscellaneous, above ground	3	3
Total	<u>46</u>	<u>91</u>

Ratio of coals mined and shipped to each life lost in the year 1871 were 56,000 tons; in 1872 there were 81,560, and in the year 1873 there were 92,000 tons mined to each life lost, and 46,500 to each serious accident.

COAL BREAKERS.

Number of coal breakers in the district are 57, which includes 1 abandoned, 2 standing idle, and 5 new ones that have not yet been operated.

SURFACE OPENINGS

through which the coal is being hoisted from the mines to the surface, to wit: Hoisting shafts, 36, including one abandoned, 2 idle and 11 new ones now being sunk; slopes, 35, including 1 abandoned; drifts, 17; tunnels, 17; local openings, 10, (9 drifts and 1 slope;) 110 surface openings. In addition to the above there are 18 inside hoisting slopes and 33 self-acting planes.

MACHINERY.

Number of steam engines, 295, (195 single and 52 double,) with an estimated horse-power of 12,000; mine locomotives, 13; mules used inside, 729; outside, 216; fans built during the year, 10, (9 single and 1 double.)

In conclusion permit me to state that the mining law is being cheerfully complied with by the individual operators and companies; also by the workingmen; and here let me return my sincere thanks to all the parties with whom I had any business transactions for their courtesy and aid in helping to enforce the law.

REPORT

OF THE

INSPECTOR OF COAL MINES OF THE WYOMING COAL FIELD, LUZERNE COUNTY, LYING EAST OF, AND INCLUDING JENKINS TOWNSHIP, FOR 1873.

His Excellency, JOHN F. HARTRANFT,

Governor of the Commonwealth of Pennsylvania :

SIR:—In compliance with the requirements of an act of the General Assembly, approved the 3d day of March, A. D. 1870, providing for the health and safety of persons employed in coal mines, &c., I have the honor to herewith submit my report for the year ending the 31st day of December, A. D. 1873.

In comparing the list of casualties of 1873, and the year previous, and taking into consideration that there were over six hundred thousand (600,000) tons of coal mined more than the previous year; it is gratifying to me to report to your Excellency a decrease of 13 deaths and 18 accidents in the coal mines and collieries of this mining district.

I have arranged my report for 1873 in a tabulated form. By reference, it will be found that table No. 1 contains a list of the number of deaths, and the cause of each, and also the number of widows and orphans; in table No. 2 will be found a list of accidents which have not resulted fatally, and the cause of each; table No. 3 contains a list of, and the number of coal mines and collieries, and the general condition of each; in table No. 4 will be found the number of steam engines and boilers at each colliery, the date when last inspected, and their condition when inspected; table No. 5 contains a list of local coal sale mines, and also the number of abandoned mines.

The legal proceedings which I mentioned in my last report have terminated, and the parties against whom they were instituted have been found guilty.

I take this opportunity of urgently requesting all the mine managers to adopt a precautionary code of mine regulations, and compel any of their employees who are hasty, reckless and inexperienced to live up to them; if they do so, I am confident that the mine casualties would be reduced to half the number which occur the present time.

I am pleased to report to your Excellency a great improvement in the ventilation of a majority of the mines in this district, and I am inclined to believe from the universal courtesy and aid which I have received from the mine managers and their willingness to enforce the laws, that I will be able, when I make my next annual report, to show a marked improvement in the others. The proper mode of ventilating mines is attracting attention from the mining bosses and men, and it is very proper that persons

employed in coal mines should understand it. There is quite an improvement in the qualifications of the mining bosses in the last few years, which shows that we will have in a few years more an educated class of persons who will be competent to superintend the ventilation and management of mines.

There have not been as many persons seriously burned by carelessly handling powder, or by premature blasts, in 1873 as there were in the year previous. I am of the opinion that a more general use of Mr. H. M. Boies' safety powder cartridge and Messrs. Daddow and Beadle's safety squib would reduce the number of this class of accidents.

Respectfully submitted,

PATRICK BLEWITT,
Inspector of Coal Mines, &c.

SCRANTON, February 7, 1874.

COMMON PLEAS OF LUZERNE COUNTY, ELEVENTH JUDICIAL DISTRICT.

COMMONWEALTH, *ex relatione* vs. CONNELL & Co.

1st. Acts of Assembly are to be construed according to their *terms*, not according to their *titles*; particularly where the former point out the extent of their application on the one hand, and their limit on the other.

2d. A coal mine operated through a tunnel and having no second outlet connected with it, is not within the prohibition of the "Mine Ventilation Law."

3d. Casus, omissus in a statute, can never be supplied by the court.

Opinion by Harding, P. J.

Bill for an injunction, &c.

The parties to this bill have agreed to the following statement of facts for the opinion of the court, namely: The defendants are working the mine by a tunnel or drift, which runs from an opening in the side of a hill, at a grade to the mine so as to discharge the water by gravity. There is no second opening other than said tunnel, either by shaft, or slope or outlet, by which persons engaged in the mine have ingress or egress. If the court are of the opinion that a decree should be made in favor of the plaintiff an injunction to be granted; if the court, however, shall be of opinion that the defendants are not violating the law, then bill to be dismissed.

We have already passed upon several features of the act, known as the "Mine Ventilation Law." My brother Dana has also decided an important question arising under it; but the present bill raises a new phase altogether. It levels a blow at mining operations, which are carried on through a tunnel where no second outlet exists, affording a safe and convenient means of ingress and egress to the persons employed in the mine.

We can very readily conceive as great and appalling disasters might occur in operating a mine through a tunnel with which no second outlet was connected as have occurred already, where a mine has been worked through a shaft without a second outlet, or as might occur in working a slope without a second outlet.

If the mouth of a tunnel should become suddenly closed up by a fall of over-hanging slate, rock and earth, or still worse, if the mine itself should be, as it were hermetically sealed up by a fall extending from the mouth of the tunnel to the inner workings, resulting either from insufficient prop-

ping or supports, or from an explosion of gases within, the results to every operative inside would be fatal. Little difference indeed would it make to them *how* they entered, whether by an inclined plane as through a slope or by a perpendicular descent as down a shaft or by a horizontal passage-way, as along a tunnel. No matter by what sort of road they had come in, suffering and death would surely, if not swiftly ensue.

Now it is suggested that the "Mine Ventilation Law" was enacted for the specific object of rendering such a calamity impossible. Very true its title "An Act providing for the health and safety of persons employed in coal mines" imports that design, but the construction which courts give to acts of Assembly must always be predicted rather upon their terms than upon their titles, particularly when the former point out distinctly on the one hand, or limit on the other, the extent of their application. It may have been and probably was a legislative oversight that the prohibition against operating a coal mine, whether by shaft or slope, until a second outlet was provided, did not apply to a mine operated by a tunnel; but the act as it stands leaves no room for conjecture as to the scope of its application.

The interdicted mine is that "worked by or through a shaft or slope." Nothing whatever is said about a mine worked by or through a tunnel. Indeed the term "tunnel" occurs but once in the whole act, and then it has relation to the manner of making a second opening "through coal." Thus "if a tunnel or shaft will be required for the additional opening, work upon the same shall commence immediately after the passage of this act, and continue until its final completion, with not less than three shifts in each twenty-four hours; and as many hands may be employed as can be put to work to advantage, the Inspector to be judge as to the least number of hands to be engaged per shift."

So far, therefore, as operating a mine by a tunnel is concerned, the statutory prohibition does not apply, even though the Legislature may have designed that the prohibition should extend to all mining operations, whether carried on through a shaft, slope or tunnel, until a second outlet had been provided; yet not having done so, but on the contrary having specified, particularly in their interdict only such mines as were "through a shaft or slope," clearly we have power to grant the prayer contained in this bill. If a *casus omissus* has occurred in the statutes, we cannot supply it. Our province is to administer not to make the law. The bill is dismissed at the cost of the complainant. H. W. Palmer for complainant; Hand & Post, contra.

TABLE No. 1.

List of deaths reported to the Inspector of the Eastern District of the Wyoming Coal Fields, Luzerne County, State of Pennsylvania, and the cause as shown by his investigation for the year ending the 31st day of December, A. D. 1873.

DATE.	NAMES.	Age.....	Marr'd or single,	Wife.....	Children.....	COLLIERY WHERE ACCIDENT OCCURRED.	Date of investigation.....	NATURE OR CAUSE OF DEATH OR ACCIDENT.
Jan. 9....	James M. Andrew..	14	M.	W.	Eaton & Co.'s mine.....	Jan. 11..	Killed by a run-a-way car on one of outside planes. Killed by a fall of roof. Seriously injured by a fall of top coal. Died twenty-four hours afterwards. Seriously injured by a fall of roof. Died three days after.
14....	Joseph Alfred.....	52	M.	W.	.....	Hampton colliery.....	15..
18....	Martin Casey.....	36	M.	W.	3	Bellevue shaft colliery.....	20..	
30....	Michael Mulney.....	.....	.....	.....	.....	No. 6 shaft, Jenkins twp.....	31..
Feb. 2....	William Schimer..	18	S.	Marvin shaft.....	Feb. 5..	Killed by falling down the shaft from the surface. Seriously injured by a fall of roof. Died on 22d. Fell down the shaft and was drowned. (Seriously injured by an explosion of fire-damp. These boys went into the old workings of the mine close to the crop to get some coal for fire in their homes. They broke down some of the old brattices and got into some old workings which were worked out about seven years ago, and in which they had no expectation of having any fire-damp, as there was none there when worked. The boys set off the gas, which burned them.)
18....	Patrick Sullivan..	36	M.	W.	.....	Green Ridge colliery.....	19..
24....	Michael Murray..	33	S.	.....	.....	Pyne colliery shaft.....	25..
24....	James Gillon.....	16	.....	.....	.....	Oxford shaft, Hyde Park.....	26..
24....	Patrick Ward.....	8	Oxford shaft, Hyde Park.....	26..	Killed on main track to the breaker. He attempted to jump on the cars whilst in motion. He missed his step and was run over. I did not investigate this case, as it did not come under the mine ventilation laws of 1870. This man was running away from his blast, when he lost his light and he ran against a car in his chamber, bursting something inside, from which he died two days after ward.
Mar. 5....	Wm. Brough.....	8	.....	.....	.....	Green Ridge colliery.....	Mar. 5..
8....	John Loughlutz....	40	M.	W.	3	Elk Hill colliery.....	10..	

Mar. 10..	George Jones.....				Taylor colliery, (drift).....	Mar. 10..	Severely injured by being jammed between a car and the rib, from which he died shortly after.
10..	Patrick O'Boyle.....	24	S.		No. 4 slope, Jenkins twp.....	11..	Severely injured by a fall of roof, from which he died shortly after.
11..	August Mayford.....	45	M.	W.	Central colliery.....	12..	Committed suicide by jumping down the shaft. Died on the 23d from injuries received. He was riding on the forward bumper of the car, with his foot trailing on the rail, when his head caught in the latch, pulling him under the car.
20..	Mark Scull.....	17			Diamond mines.....	23..	Seriously injured by being kicked by a mule. He died on the morning of the 25th.
24..	James Farrell.....				Coal Brook mine.....	26..	Seriously injured by a fall of top coal. He died two hours after.
26..	Thos. Mulligan.....	48	M.	W.	White Oak colliery.....	27..	Seriously injured by a fall of roof. He died two hours after.
27..	Martin Kelly.....	42	M.	W.	Hyde Park shaft.....	28..	Killed by a fall of black rock from between the top and bottom coal.
April 2..	John Jones.....	50	S.		No. 2 Diamond shaft, G vein.....	April 3..	Inj'd inwardly by a fall of roof. Died shortly after.
15..	Patrick Ryan.....	30	M.	W.	Leggett's Creek shaft.....	16..	Injured seriously. Died shortly after.
16..	Thos. W. Williams.....	39	M.	W.	Continental shaft.....	18..	Killed instantly by a premature blast.
21..	John H. Williams.....	35	M.	W.	Sloan shaft.....	22..	Killed instantly by a fall of roof on night of 16th.
May	Michael M'Govern.....	30	M.	W.	Jermyn's shaft.....	16..	Killed by a fall of top coal.
14..	William Reese.....	33	S.		Diamond slope.....	24..	Killed instantly by a fall of roof.
23..	William Grter.....	38	M.	W.	Von Storch (14-feet vein).....	30..	Killed instantly by a fall of roof.
26..	Michael Walsh.....	62	M.	W.	Coal Brook tunnel.....	31..	Seriously injured by a fall of roof. Died five hours after.
June 10..	James Eiler.....	23	M.	W.	No. 10 shaft (7-feet vein).....	June 13..	Leg broken by a fall of roof. Died two days after.
12..	Henry Tully.....	37	M.	W.	Scranton Coal Co.'s drift.....	13..	Killed by a fall of rock roof.
17..	Alex. Kennedy.....	46	M.	W.	White Oak tunnel.....	12..	Killed by a fall of coal.
12..	James Johnston.....	46	M.	W.	Grand tunnel, Pittston.....	19..	Killed inst'y by a fall of black rock and rider coal.
20..	Michael Joyce.....	57	M.	W.	Grand tunnel, Pittston.....	21..	Killed instantly by a fall of rider coal.
22..	James Hart.....	25	S.		Elk Hill colliery (Dickson).....	26..	Seriously injured by a fall of bony coal. Died next morning.
July 2..	Patrick Connelly.....	25			Central shaft.....	July 2..	Killed instantly by a fall of top coal.
2..	John Reynolds.....	20	S.		Mount Pleasant slope.....	3..	Killed by a fall of roof.
8..	James Eagau.....	14			Oxford shaft.....	9..	Found dead on main road in the mines. Supposed to have been killed by a mule.
10..	John Walsh.....	32	M.	W.	Pine Brook shaft.....	11..	Killed by a fall of rider coal.
25..	Patrick M'Andrew.....	60	M.	W.	No. 1 mines, Olyphant.....	31..	Killed by being run over by a car in the mines.
30..	John Watkins.....	36	M.	W.	Marvin shaft.....	26..	Killed in the shaft by falling into the bucket.
Aug. 4..	Patrick Gallagher.....	29	S.		Scranton Coal Co.'s drift.....	Aug. 4..	Killed by a fall of blacksmith's coal.
4..	Kenneth Ferguson.....	23	S.		Brisbin breaker (new).....	5..	Fell down from frame of the breaker. Died next morning.
8..	William Merrick.....	31	M.	W.	Jermyn's shaft.....	8..	Seriously injured by a fall of top coal. Died same day.

TABLE No. 1.—CONTINUED.

DATE.	NAMES.	Age	Marr'd or single,	Wife	Children.....	COLLIERY WHERE ACCIDENT OCCURRED.	Date of investigation	NATURE OR CAUSE OF DEATH OR ACCIDENT.
Aug. 12..	Evan Pughe.....	22	S.	.....	.....	Central shaft	Aug. 14..	Seriously burned by an explosion of fire-damp. Died on the 14th.
12..	John Roberts.....	68	M.	W.	3	No. 4 slope, Pittston	15..	Killed by a fall of blacksmith coal.
22..	John Hopkins.....	22	M.	W.	1	Continental shaft.....	23..	Seriously injured by a fall of rock. Died next day.
27..	John Sweeny.....	45	M.	W.	3	Mount Pleasant colliery.....	30..	Seriously injured by a railroad car running over him. Died on the 29th.
Sept. 4..	John Granahan.....	12	.....	.....	.....	Ontario colliery	Sept. 4..	Killed by being run over by car outside at breaker.
10..	Henry Mummally ..	25	S.	.....	.....	Eaton & Co.'s colliery	10..	Killed by a premature discharge of a blast.
Oct. 6..	John Judge	48	M.	W.	6	White Bridge tunnel.....	Oct. 11..	Seriously injured by a fall of top coal. Died three days after.
16..	Pat. Brogan	22	S.	W.	2	Grassy Island shaft.....	18..	Killed by a fall of roof.
21..	Robert M'Donald ..	32	M.	.....	.....	Green Ridge colliery	22..	Seriously injured by a fall of black rock. Died two days after.
30..	Griffith Thomas ..	60	M.	.....	.....	Hampton shaft	31..	Killed by being caught between pillar and cars.
Nov. 5..	Samuel Davis	32	M.	W.	1	Mount Pleasant colliery.....	Nov. 6..	Killed by a fall of roof.
15..	Martin Hart	32	M.	W.	1	Roaring Brook colliery	19..	Killed; fell down the shaft.
Dec. 3..	John Moor	32	M.	W.	.....	Hyde Park shaft	Dec. 3..	Killed by a fall of roof.
3..	Morgan E. Thomas ..	52	M.	W.	.....	Pine Brook shaft	4..	Leg broken and seriously injured by a run-a-way car. He died a few days after.
18..	Frederick Muntzel,	62	S.	.....	.....	Hampton colliery	19..	Seriously injured; jammed between breaker-wall and large railroad cars. Died next day.

Total number of persons killed in Eastern district of Wyoming coal fields, 56; leaving 30 widows and 78 children.

The following is a recapitulation and classification of the 56 fatal accidents that occurred during the year:

Killed by falls of coal.....	14
Killed by falls of roof.....	18
Killed by cars	9
Killed by premature blasts.....	3
Killed by mules	2
Killed by falling down shafts.....	4
Killed by explosions of fire-damp.....	3
Killed by falling off frame of new breaker	1
Killed on main track to breaker whilst returning from work	1
Committed suicide by jumping down the shaft	1
	<hr/>
Total.....	56
Deduct those which were not mine accidents	2
	<hr/>
Total.....	<u>54</u>

TABLE No. 2.

List of accidents reported to the Inspector of the Eastern District of the Wyoming Coal Fields, Luzerne county, State of Pennsylvania, and the cause as shown by his investigation for the year ending the 31st day of December, A. D. 1873.

DATE.	NAMES.	Age.....	Marr'd or single,	Wife.....	Children.....	COLLIERY WHERE ACCIDENT OCCURRED.	Date of investigation	NATURE OR CAUSE OF DEATH OR ACCIDENT.
Jan. 4..	Michal Keegan.....	8				No. 1 breaker, Olyphant.....	Jan. 11..	Nose and jaw broken by being caught and rolled around the screens.
6..	John Keenan.....					Fair Lawn slope, Scranton...	7..	Severely injured by jumping off a run-away car in the slope.
8..	Michael Gilroy.....					Eaton & Co.'s mines, Arehbold	8..	Leg broken by a fall of rider coal while trying to pry it down.
11..	Thomas McNulty.....					Powderly slope, Carbondale..	8..	Slightly injured by a run-away car.
18..	Martin Gilligan.....					Enterprise colliery.....	20..	Leg broken; got his foot fast in the dump; he threw himself, and by so doing broke his leg.
Feb. 8..	James Grogan.....	14				Eaton & Co.'s mines, Arehbold	Feb. 1..	Collar-bone broken by a mule running off and dragging him along the ground.
17..	Richard Stear.....					White Bridge tunnel.....	.....	Seriously injured by a fall of top coal falling on him, throwing him through a hole in the rock to the bottom coal.
24..	Michael Gillon.....	14				Oxford mines, Hyde Park....	25..	Seriously injured by an explosion of fire-damp. Note.—These boys went into the old workings of the mine close to the crop to get some coal for fire. They broke down some of the old brattice and got into some of the old workings, which were worked out about seven years ago, and in which they had no expectation of having any fire-damp, as there was none there when last worked.
24..	Joseph Ward.....	14				Oxford mines, Hyde Park....	26..	The boys set off the gas which burned them all.
24..	James Ward.....	12				Oxford mines, Hyde Park....	26..	Injured by being jammed between two cars in the mine.
24..	Edward Ward.....	5				Oxford mines, Hyde Park....	26..	Injured by a fall of coal.
24..	William Williams..	30	S.			Continental colliery.....	25..	Seriously injured by a premature blast.
24..	Henry Reese.....					Leggett's Creek colliery.....	27..	Seriously injured by a fall of coal.
25..	Michael Judge.....					Meadow Brook colliery.....	27..	Seriously injured by a fall of coal.
27..	James Williams.....					No. 2 Diamond shaft, G vein..	28..	Seriously injured by a fall of coal.

Mar. 3.	Thomas Escott	35	M.	Belleuve shaft mine.	Mar. 3.	Seriously injured by a fall of roof.
10.	Thomas Manly	28	M.	Eaton & Co.'s mines, Archbald	13.	Both legs broken by a fall of roof.
11.	Thomas Parry	28	M.	Sloan colliery shaft.	13.	Severely injured by a fall of roof.
12.	Patrick M'Guire	23	S.	Cayuga colliery.	13.	Injured by being caught between cars in the mine.
13.	James Moran	23	S.	Seranton Coal Co.'s mines.	15.	Injured by a fall of rock; not serious.
20.	Martin Haggerty	19	S.	Oxford shaft mines.	24.	Seriously injured by a fall of roof.
20.	John Gehagan	19	S.	Oxford shaft mines.	24.	Slightly injured by a fall of roof.
21.	Thomas Eynon	14	..	Hampton shaft mines.	25.	Arm amputated; he was riding on the front part of the car, when he fell, the car passing over his arm and head.
31.	Michael Hoban	23	S.	Seranton Coal Co.'s mines.	April 1.	Seriously injured by a fall of roof.
April 3.	Richard Jones	14	..	No. 2 Diamond slope.	4.	Leg broken by being jammed between the cars.
5.	Mark Melvin	..	..	No. 1 slope, Olyphant.	5.	Foot crushed by being caught between cars in mine.
7.	Martin Geraghty	..	..	Pine Brook shaft.	8.	Slightly injured by an explosion of fire-damp.
8.	Edmund Carter	..	..	Taylor shaft mine.	8.	Slightly injured by an explosion of fire-damp; carelessness.
15.	John Raney	28	S.	Leggitt's Creek shaft.	16.	Leg broken by a fall of roof.
23.	Martin Loftus	23	S.	Pine Brook shaft.	23.	Seriously injured by a fall of bony roof.
25.	Martin Byrne	27	S.	Archbald shaft.	25.	Injured by a fall of top coal.
25.	George Austin	..	..	No. 6 shaft, Jenkins twp.	28.	Injured by a fall of slate at face of his chamber.
26.	Michael M'Donald	30	M.	No. 2 dip mines, Olyphant.	29.	Injured by a fall of roof and coal.
26.	James M'Heale	33	S.	No. 2 dip mines, Olyphant.	29.	Leg broken by a fall of roof and coal.
May 2.	Elisha Burge	17	S.	Taylor shaft.	May 3.	Seriously injured by being caught under the hoisting carriage.
5.	Michael Mitchell	12	..	Ontario breaker.	6.	Seriously injured by being caught in pony roll in breaker.
6.	Charles Talbot	26	M.	Twin shaft.	7.	Severely burned by an explosion of fire-damp.
7.	Thomas W. Morgan	45	M.	Twin shaft.	8.	Severely burned by an explosion of fire-damp.
7.	Edward Gallagher	24	S.	Twin shaft.	8.	Slightly burned by an explosion of fire-damp.
7.	David Watkins	..	..	Leggitt's Creek.	9.	Slightly burned by an explosion of fire-damp.
7.	John Mulrone	..	..	Von Storch slope.	9.	Severely injured by falling off his mule whilst riding outside.
9.	James Keegan	..	..	No. 3 drift, Meadow Brook.	12.	Leg broken by being run over by a car in the mine.
16.	James Richardson	17	..	Greenwood colliery, No. 5 drift.	20.	Leg broken by being caught between a car and rock along the heading.
19.	Patrick Ruan	..	..	No. 3 drift, Meadow Brook.	20.	Leg broken by a fall of top coal.
19.	James Price	15	..	Oxford shaft.	22.	Leg broken by being caught between a car and prop.
20.	Patrick Poo	14	..	Greenwood colliery, No. 5 drift.	20.	Slightly injured by being caught between the cars.
21.	John Walsh	..	..	Green Ridge slope.	22.	Legs broken; was riding up the slope on a loaded trip of cars.
22.	Patrick Quinn	..	..	Hyde Park shaft.	22.	Injured by a fall of roof.
22.	Matthew Phillips	..	..	Von Storch, (14 feet vein.)	22.	Slightly injured by being hit by a piece of coal from a blast.

TABLE No. 2.—CONTINUED.

DATE.	NAMES.	Age	Marr'd or single,	Wife	Children	COLLIERY WHERE ACCIDENT OCCURRED.	Date of investigation	NATURE OR CAUSE OF DEATH OR ACCIDENT.
May 27..	John Jones.					Central shaft	May 30..	Arm broken by a fall of top coal.
27..	Isaac Evans.					Coal Brook tunnel.	31..	Injured by a fall of roof.
27..	Henry Jenkins.					Seneca sl'e, "Checke'd vein,"	31..	Injured by a fall of slate.
31..	David Jones.	45	M.	W.	4	Cayuga shaft, Providence.	June 10..	Injured by a fall of rock.
June 3..	Patrick Hagerly.					Leggett's Creek shaft.	10..	Burned by an explosion of fire-damp; he hung his lamp on a prop and brushed fire-damp on to it.
4..	John James.	20	S.			Diamond shaft	11..	Injured by a fall of roof.
5..	Thomas Clarke					Von Storch, "Diamond"	11..	Injured by a fall of roof.
5..	Wm. Hughes.					Von Storch, "Diamond"	11..	Injured by a car running off the track in the mine.
5..	John Monaghan.					Coal Brook tunnel.	9..	Injured by a car running out of a chamber, injuring his head.
6..	Patrick Dougherty,	45	M.	W.	4	Seranton Coal Co.'s mines.	12..	Injured by a fall of rock.
7..	Lyshon Evans.					Twin shaft.	11..	Leg crushed by a car in the mines.
11..	Earnest Hallstone.					Mt. Pleasant slope.	12..	Injured in the back by a fall of roof.
11..	Charles Dicklenick,					Mt. Pleasant slope.	12..	Injured by being run over by a car in the mines.
12..	Wm. R. Hopkins.	27	M.	W.		Continental mine.	13..	Injured by a fall of top coal.
12..	Peter Foley.					Grassy Island shaft.		Leg broken by a run-away car in the mines.
13..	John McNally.					Stark colliery.		Hand jammed by being caught in the cog wheels of the machinery.
16..	W. G. Price.	56				Bellevue shaft.		Injured in shoulder and back by fall of rock roof.
16..	Patrick Noon	34	M.	W.	4	Central shaft	17..	Injured by explosion of fire-damp in his chamber.
16..	Job Thomas	32	M.	W.	2	Pine Brook shaft	17..	Arm broken by a fall of roof whilst trying to put out a "blower" which took fire from a blast; the fire heated the roof which caused it to fall.
17..	Patrick Carroll					Hyde Park shaft.		Injured by being run over by a car in the mines.
19..	William Johns					National Anthracite mines.		Injured by a fall of top coal.
21..	David Massey.	50	M.	W.	7	Continental shaft.	25..	Leg broken by a fall of roof.
24..	James Hall.	19	S.			Rough and Ready shaft	24..	Slightly injured from a blow of the brack handle at the head of plane.
24..	Dominick M'Gowen	15	M.	W.	8	Coal Brook tunnel.	July 2..	Slightly injured from a fall of roof in the heading.
28..	William Turner.	46	M.	W.		Haupton mine.		Severely injured from a fall of roof in the chamber.

July 1.	James Durkin.....	15		Meadow Brook colliery.....	July 7.	Severely injured from being run over by a car.
2.	Richard McDonald,	13		Grassy Island shaft.....	7.	Arm broken and badly bruised by a run-away car in the mines.
5.	William McDonald,	36	W. 4	No. 10 shaft colliery.....	5.	Leg broken by a fall of roof.
6.	John Hebron.....	40	M. W. 2	No. 5 shaft colliery.....	5.	Leg broken by a car in the mines.
7.	John Lloyd.....			Von Storch shaft.....		Slightly injured by being caught between the cars.
8.	John Ruan.....	25	S.	Green Ridge slope.....	8.	Injured by pieces of coal which hit him in the head from a premature blast.
9.	Charles Warner.....	14		Green Ridge slope.....	12.	Injured by cars running over him outside at the head of plane.
11.	Patrick Ryan.....			Rough and Ready shaft.....	11.	Slightly injured by being hit in the head by a piece of rock which fell out of the bucket.
14.	William Morgan.....	19	S.	Capouse shaft.....		Slightly injured by being caught between loaded car and coal.
18.	William Brady.....	37	S.	Archibald shaft.....	19.	Injured by a fall of bony coal.
23.	John Hoy.....			Butler colliery.....	25.	Hand badly injured by being caught in the cog wheel in breaker.
23.	Shadrick Pritchard,	21	S.	No. 1 breaker, Olyphant.....	25.	Injured by falling out the breaker window.
29.	Andrew Patten.....	22	S.	No. 1 slope, Olyphant.....	30.	Arm broken by a fall of coal.
29.	John Brogan.....	15	S.	No. 1 slope, Olyphant.....	30.	Injured by a fall of coal.
4.	Patrick Conboy.....	15		No. 5 drift, Greenw'd colliery,	Aug. 7.	Arm broken by falling under a car.
8.	Wm. Dunn.....	15	S.	No. 10 shaft, Pitston.....	9.	Arm broken by being kicked by a mule.
11.	Patrick Kearney.....	25	S.	Mt. Pleasant colliery.....	12.	Injured; kicked by a mule.
12.	William Bedow.....	30	S.	Central shaft colliery.....	12.	Injured; severely barred by an explosion of Bedow was severely barred by an explosion of fire-damp; Hennigan and Knelk were knocked down by concussion of the fire-damp explosion.
12.	Patrick Hennigan.....	30	S.	Central shaft colliery.....	14.	Severely injured by a fall of roof.
12.	Henry Knelk.....	35	M. W.	Grassy Island shaft.....	18.	Severely injured by a fall of roof.
13.	David Martin.....	50	M. W.	Leggitt's Creek shaft.....	16.	Injured by a car when running it out of his chamber.
14.	Patrick Hagerly.....	58	M. W.	National mines.....	19.	Injured by a car when running it out of his chamber.
19.	William Munroe.....	21	S.			
20.	Michael Banks.....			Gipsy Grove colliery.....	20.	Injured by a fall of rock.
21.	Edward Munly.....	35	M. W.	Grassy Island colliery.....		Injured by a fall of roof, (not serious.)
22.	Lyshon Evans.....	15		Ravine colliery.....		Injured by a mule jamming him against a car.
22.	Michael Pryor.....	24	M. W.	Continental colliery.....	23.	Several cuts (not serious) caused by a fall of rock.
25.	James Williams.....			Leggitt's Creek colliery.....	25.	Arm broken; fell off trestle work close to the breaker.
26.	James Sweeney.....	15	S.	Oxford shaft colliery.....	27.	Leg severely cut by a car running over it.
Sept. 1.	Michael Riley.....	31	M. W. 1	Continental colliery.....	Sept. 2.	Injured by a premature discharge of a blast.
6.	Thomas Jordan.....	30	S.	Diamond shaft colliery.....	6.	Injured by being jammed between the cars.
8.	Benjamin Phillips.....	33	M. W. 3	Coal Brook colliery.....	8.	Injured by a fall of roof.
15.	Thomas Lynch.....	45	M. W. 3	Hyde Park shaft.....	16.	Injured by a piece of coal jamming him against the face of his chamber.

TABLE No. 2—CONTINUED.

DATE.	NAMES.	Age	Marr'd or single,	Wife.....	Children.....	COLLIERY WHERE ACCIDENT OCCURRED.	Date of investigation.....	NATURE OR CAUSE OF DEATH OR ACCIDENT.
Sept. 16..	Luke Rowley.....	15	M.	W.	14	Von Storch, (14 feet vein.)	Sept. 17..	Injured by being kicked by a mule.
16..	Thomas Howell	43	S.	W.	14	Mount Pleasant colliery.....	18..	Injured by a fall of rock.
18..	Michael Curley	25	M.	W.	6	Dawson shaft, P. V.....	19..	Injured by a fall of soap stone.
19..	Martin Cuffe.....	40	M.	W.	6	Gipsy Grove colliery.....	19..	Injured by a premature blast.
19..	James McCune	13	M.	W.	6	Dawson shaft.....	20..	Arm broken by being run over by a car.
22..	Gabard Miller	39	M.	W.	6	Seranton Coal Co.'s mines.....	22..	Seriously injured by a run-away trip of cars.
23..	Chittie Whaling.....	.....	.....	.....	.....	Law shaft, (sinking,).....	24..	(Slightly injured whilst withdrawing a charge of powder that missed fire; it ignited and burned both of them.)
23..	Martin Goulding.....	.....	.....	.....	.....	Law shaft, (sinking,).....	24..	
25..	Thomas Millin.....	37	M.	W.	6	Cayuga shaft.....	26..	Leg broken; carriage hit the bottom harder than usual; he fell on it, breaking his leg.
27..	John Campbell.....	24	S.	.....	.....	Dawson shaft.....	Oct. 1..	Scalp wound on head, caused by a piece of coal falling on it from the surface; not considered serious.
30..	Patrick Judge.....	16	S.	.....	.....	Ravine shaft, Pitston.....	.....	Kicked by a mule; injured by a large piece of coal split and fell upon his foot.
30..	W. Jenkins.....	28	M.	.....	.....	Ravine shaft, Pitston.....	.....	Slightly injured; injured by a fall of top slate and bony coal.
Oct. 3..	John Carden.....	13	M.	.....	.....	Coal Brook tunnel.....	4..	Slightly injured; injured by a fall of top slate and bony coal.
4..	Anthony M. Andrews,	39	M.	.....	.....	Archbald colliery.....	8..	Injured in the face and eye by a piece of coal from a blast.
6..	Reese N. Reese.....	42	M.	W.	3	Sibley colliery, Old Forge.....	10..	Leg broken and hip dislocated by a fall of top coal.
15..	Ishmael Wilhaums.....	35	M.	W.	1	Rolling Mill tunnel.....	15..	
15..	John Evans.....	40	M.	W.	3	Pine Brook shaft.....	16, 17..	(These men were seriously burned by an explosion of fire-damp, caused by allowing the main air-way to get so full of water that there was not space enough left for air enough to pass through to dilute and render harmless the noxious gas evolved in the mine.)
15..	John Reese.....	29	S.	.....	.....	Pine Brook shaft.....	16, 17..	
15..	Anthony Scanlon.....	29	S.	.....	.....	Pine Brook shaft.....	16, 17..	
15..	John Caffrey.....	.....	M.	.....	.....	Pine Brook shaft.....	16, 17..	
15..	Michael Stone.....	.....	M.	.....	.....	No. 2 Diamond breaker.....	1, 18..	He was leaning on a cog wheel, when the machinery started, taking off his arm.

Oct. 16.	John Malia.....	28		Grassy Island shaft.....	Oct. 18.	Injured by a fall of roof.
17.	Theopiles Griffiths.....	15		Sloan colliery shaft.....	20.	Slightly injured by a kick from a mule.
21.	Michael Foy.....			Green Ridge colliery.....	22.	Injured by a fall of roof.
23.	John Kennedy.....	20	S.	Meadow Brook colliery.....	23.	Leg broken—he was running a car down a chamber when it jumped the track and caught his foot, breaking it.
23.	Michael M. Andrews.....	37	M.	Hyde Park shaft.....	24.	Seriously injured by a fall of roof. Both were caught under the same fall at the same time.
25.	Thomas Welsh.....		W.	Hyde Park shaft.....	24.	
25.	Brian Flaney.....	37	M.	Diamond shaft.....	25.	Injured by a fall of top coal.
25.	Patriek M'Hale.....	35	M.	Brown's colliery tunnel.....		Injured by a prop falling upon him—not serious.
28.	John Neary.....	48	M.	Cayuga shaft colliery.....	30.	Slightly injured by a piece of coal from a pillar.
28.	Edward Murphy.....			Eddy Creek shaft.....		Leg broken and hip dislocated by a blast.
31.	John Ryan.....	32	M.	Ravine colliery, Pitston.....	Nov. 4.	Injured by pieces of coal from a blast.
Nov. 1.	Daniel Sullivan.....	20	S.	Taylor shaft.....	3.	Injured by a fall of rock.
5.	Daniel Davis.....	18	S.	Taylor shaft.....	3.	Injured—kicked by a mule.
4.	Thomas Gorman.....			Tompkin's slope.....		Slightly injured by a premature blast.
5.	James Sherwood.....	28	M.	Mount Pleasant.....	6.	Jaw bone broken by a fall of roof.
8.	Patriek Dougherty.....	30	M.	Grassy Island shaft.....		Slightly injured by a fall of slate.
10.	W. O. Williams.....	30	M.	Bellevue slope.....		Slightly injured by a fall of slate.
10.	James Gallagher.....	35	M.	No. 7 shaft, Jenkims township.....		Seriously injured by a fall of rock—collar-bone broken and small bone of his leg broken above the ankle.
15.	James Conway.....	30	S.	Valley tunnel, Fell township.....	17.	Severely injured by a premature blast.
17.	Thomas Major.....	37	M.	Oxford shaft.....	20.	Slightly injured by a fall of roof.
17.	James Parry.....	23	S.	Oxford shaft.....	20.	Slightly injured by a fall of roof.
21.	Martin Neary.....	15	S.	Continental shaft.....	21.	Leg broken—fell down and a mule stepped on him.
24.	Christ. Haynes.....	23	S.	Meadow Brook colliery.....	24.	Leg broken by a fall of roof.
25.	J. C. Hobel.....	27	S.	Roaring Brook colliery.....	25.	Burned by an explosion of powder while making a cartridge.
26.	Morgan Jones.....	55	M.	Butler colliery.....	26.	Injured by a fall of bony coat.
29.	James Gelhooly.....	60	M.	Brown colliery tunnel.....	30.	Both legs broken by a fall of top coal.
29.	John Gelhooly.....	25	M.	Brown colliery tunnel.....	30.	Seriously injured by a fall of top coal.
29.	Patriek M'Hale.....			Brown colliery tunnel.....	30.	Leg broken in two places by a fall of top coal.
Dec. 1.	William Moran.....	18	S.	National mines.....	Dec. 2.	Slightly injured by a fall of roof.
2.	Dennis Slovan.....	40	M.	Seneca colliery.....	3.	Slightly injured by a fall of top coal.
2.	Andrew M. Meius.....	15		Diamond mines, No. 2.....	1.	Ankle broken by a car running over it.
8.	John Davis.....	16	M.	Dodge colliery.....	9.	Seriously injured—leg broken by a car running over him—leg amputated next day.
9.	Michael Judge.....	56	M.	Diamond, No. —, shaft.....	9.	Seriously injured by a fall of coal.
11.	John J. Morgan.....	30	M.	Cayuga colliery.....	12.	Leg broken by a fall of bony coal.
12.	Joseph F. Roberts.....			Chestnut Hill colliery.....	15.	Leg broken by a fall of rocks.
16.	Wm. Powell.....	15		Taylor colliery.....	16.	Slightly injured by a car running over his hand.
17.	John Harris.....	16		Taylor colliery.....	17.	Slightly injured by being kicked by a mule.

TABLE No. 2—CONTINUED.

DATE.	NAMES.	Age.....	Marr'd or single,	Wife	Children.....	COLLIERY WHERE ACCIDENT OCCURRED.	Date of investigation.....	NATURE OR CAUSE OF DEATH OR ACCIDENT.
Dec. 18.. 22....	John Kane	17	.....	.....	.....	No. 11 shaft, Jenkins twp.....	Dec. 18.. 23....	Slightly injured by a fall of roof. Seriously injured—being found under a car—can- not tell the cause.
26.... 29....	Morgan Thomas..... August Barber..... Austin Malia.....	15 57	..... M. .....	..... W. .....	..... ..... .....	Continental colliery..... Grassy Island colliery	26.. 29..	..... Injured by carelessly going to the face of his work- ing place before a blast went off.

Total number of accidents in the Eastern district of the Wyoming coal fields during the year, 1899.

The following is a recapitulation and classification of the accidents that occurred during the year:

Jaw broken by being caught and rolled in the screen.....	1
Jaw broken by falls of roof.....	1
Legs broken by falls of coal.....	5
Legs broken by cars.....	11
Leg broken by a mule stepping on it.....	1
Leg broken by a premature blast.....	1
Legs broken by falls of roof.....	6
Leg broken by the hoisting carriage.....	1
Legs broken by a fall of roof.....	1
Leg and collar-bone broken by a fall of roof.....	1
Legs broken by a fall of top coal.....	1
Arms broken by cars.....	4
Arms broken by falls of coal.....	2
Arm broken by fall of roof.....	1
Arm broken by a kick from a mule.....	1
Arm taken off by breaker machinery.....	1
Collar-bone broken by a mule dragging him.....	1
Injured by cars.....	22
Injured by fire-damp explosions.....	19
Injured by falls of coal.....	21
Injured by falls of roof.....	38
Injured by premature blasts.....	11
Injured by mules.....	9
Injured by being caught in breaker machinery.....	3
Injured by falling out of a breaker window.....	1
Injured by falling off a trestle.....	1
Injured by being caught under a hoisting carriage.....	1
Burned by an explosion of powder whilst making a cartridge.....	1
Injured by a brake handle in the mine.....	1
Injured by a prop falling.....	1
Total.....	<u>169</u>

TABLE No. 3.

A Tabulated Report of the condition of the coal mines in the Eastern District of the Wyoming Coal Fields, Luzerne county, lying east of and including Jenkins township, for the year ending the 31st day of December, A. D. 1873.

No. of colliery...	NAME OF COAL MINE OR COLLIERY.	NAME OF TOWNSHIP, CITY OR BOROUGH WHERE LOCATED.	BY WHOM OPERATED.	Size of intake....	MODE OF VENTILATION.	Condition of ventilation.....	NUMBER OF			No. of breakers,
							Shafts.....	Slopes.....	Tunnels...	
1	No. 2, Port Griffith.....	Jenkins township	Pennsylvania coal company..	140	Steam jet.....	Good.	1	1	1	
2	Everhart colliery.....	do. do.	Everhart & Co.	152	Furnace.....	Good.	1	1	1	
3	No. 6 shaft colliery.....	do. do.	Pennsylvania coal company..	110	Steam jet.....	do.	1	1	1	
4	No. 5.....do.	do. do.	do. do.	95	Natural.....	do.	1	1	1	
5	No. 11.....do.	do. do.	do. do.	152	do. do. [face.	do.	1	1	1	
6	No. 7.....do.	do. do.	do. do.	190	Fan 17 ft. dia. by 4' 3"	do.	1	1	1	
7	No. 4.....do.	Pittston borough	do. do.	54	Natural.....	do.	1	1	1	
8	No. 4 slope colliery.....	Jenkins township	do. do.	36	do. do.	do.	1	1	1	
9	No. 5 slope or Grand run.	Pittston township	do. do.	48	do. do.	do.	1	1	1	
10	Tompkins colliery.....	Pittston borough	Alva Tompkins.....	70	Furnace.....	do.	1	1	1	
11	do. do.	do. do.	do. do.	100	Steam jet.....	do.	1	1	1	
12	Maryland Nat. Anth. col.	Pittston township	Pennsylvania coal company..	100	Natural. [grate bars	do.	1	1	1	
13	No. 9 shaft colliery.....	Pittston borough	do. do.	100	Furnace, 8' by 5' size	do.	1	1	1	
14	No. 10.....do.	Pittston township	do. do.	100	1) Furnace and nat.	do.	1	1	1	
15	do. do.	do. do.	do. do.	100	do. do.	do.	1	1	1	
16	No. 8.....do.	do. do.	do. do.	100	Natural.....	do.	1	1	1	
17	No. 6 slope colliery.....	do. do.	do. do.	60	do. do.	do.	1	1	1	
18	Seneca colliery.....	Pittston borough	Pittston and Elmira coal co.	60	Furnace 8' by 5'	do.	1	1	1	
19	do. do.	do. do.	do. do.	160	Natural.....	do.	1	1	1	
20	Ravine colliery.....	do. do.	do. do.	30	Furnace 5½' by 4'	do.	1	1	1	
21	Beaver mines.....	do. do.	Beaver & Co.....	60	Natural.....	do.	1	1	1	
22	Rock Hill tunnel.....	do. do.	do. do.	192	do. do.	do.	2	1	1	
23	Twin colliery.....	do. do.	Pittstouley & Son.....	84	Steam exhaust.....	do.	1	1	1	
24	Rough and Ready colliery	Pittston township	Pittston and Elmira coal co.	235	Furnace 9' by 5'	do.	1	1	1	
25	Columbia tunnel.....	do. do.	Groove Bros. of Danville	84	Furnace 6' by 4'	do.	1	1	1	
26	Butler colliery.....	do. do.	Butler coal company.....	84	Fan 6' dia. by 4' face,	do.	1	1	1	
27	Ontario colliery.....	do. do.	Luzerne coal and iron co.	84	Natural.....	do.	1	1	1	
28	do. do.	Pleasant Valley bor.	do. do.	84	Steam jet.....	do.	1	1	1	

25	Hillside colliery.....	Pleasant Valley bor ..	Hillside coal and iron co	187	Pan	Good..	1	1
26	Do.....do	do.....do	do.....do	187	Furnace	do	1	1
27	Brown's colliery.....	do.....do	Pennsylvania coal company	38	Furnace 4' by 3'	do	1	1
28	Dawson shaft.....	do.....do	do.....do	60	Furnace 6' by 5'	do	1	1
29	Stark colliery.....	Lackawanna twp.....	do.....do	100	Natural.....do	do	1	1
30	Spring Brook colliery	do.....do	Glenwood coal company	112	2 furnace 6' by 6'	do	2	2
31	Oak Hill colliery.....	do.....do	do.....do	112	Steam jet.....do	do	3	3
32	Carbon Hill colliery	Old Forge township.	do.....do	2	Natural.....do	do	2	2
33	Do.....do	do.....do	do.....do	280	Fan 16' dia. by 6' face	do	1	1
34	Sibley colliery.....do	do.....do	Elliot, Koerner & Co.	56	Fan 12' dia. by 4' face	do	1	1
35	Pyne colliery.....do	Lackawanna twp.....	Del., Lack. and W. R. R. Co.	112	do.....do	do	1	1
36	Taylor colliery.....do	do.....do	do.....do	56	do.....do	do	1	1
37	Do.....do	do.....do	do.....do	48	Furnace 8' by 6'	do	1	1
38	Cory breaker colliery	do.....do	L. and S. coal and iron co	50	2 furnace 6' by 6'	do	2	2
39	Greenwood colliery	do.....do	do.....do	66	Furnace 6' by 6'	do	1	1
40	Stafford Brook colliery	do.....do	S. and W. Val. R. R. and C. Co.	63	do.....do	do	1	1
41	National Anth. colliery	City of Scranton	do.....do	63	Furnace 8' by 6'	do	2	2
42	Meadow Brook colliery	do.....do	Wm. Connell & Co	72	2 furnace 8' by 6'	do	2	2
43	Stafford Brook, No. 2	do.....do	B. F. Fillmore.....	48	Natural.....do	do	1	1
44	Scranton coal co.'s mines,	Lackawanna twp.....	Del., Lack. and W. R. R. Co.	42	Furnace 8' by 8'	do	1	1
45	Lodge colliery.....do	do.....do	do.....do	210	Double furn. 8' by 7'	do	1	1
46	Bellevue shaft.....do	do.....do	do.....do	210	do.....do	do	1	1
47	Bellevue slope.....do	do.....do	do.....do	180	Furnace 8' by 7'	do	1	1
48	Oxford shaft.....do	do.....do	do.....do	98	1 } do.....do	do	1	1
49	do.....do	do.....do	do.....do	98	do.....do	do	1	1
50	do.....do	City of Scranton	do.....do	220	1 } do.....do	do	1	1
51	do.....do	do.....do	do.....do	220	do.....do	do	1	1
52	Central colliery.....do	do.....do	do.....do	140	Fan 12' dia. by 4' face	do	1	1
53	Sloan colliery.....do	Lackawanna twp.....	do.....do	84	do.....do	do	1	1
54	Arehald colliery.....do	do.....do	do.....do	96	do.....do	do	1	1
55	Continental colliery	do.....do	do.....do	100	1 } do.....do	do	1	1
56	do.....do	do.....do	do.....do	100	do.....do	do	1	1
57	Hampton colliery.....	do.....do	do.....do	100	Furnace 8' by 7'	do	1	1
58	Hyde Park colliery.....	City of Scranton	do.....do	120	Fan 12' dia. by 4' face	do	1	1
59	Do.....do	do.....do	do.....do	120	do.....do	do	1	1
60	Capouse colliery.....do	do.....do	L. I. and coal company	140	2 } do. 9 1/2' dia. by 3 1/4'	do	1	1
61	Do.....do	do.....do	do.....do	140	do. 20' dia. by 4 1/4'	do	1	1
62	Do.....do	do.....do	do.....do	54	1 } Fur'te & steam jet	do	1	1
63	Do.....do	do.....do	Mt. Pleasant Coal company	54	do.....do	do	1	1
64	Fellows coal mine.....	do.....do	J. F. Fellows, Esq.	42	Natural.....do	do	1	1
65	No. 2 Diamond shaft.	do.....do	Del., Lack. and W. R. R. Co.	180	1 } Fan 12' dia. 4' face	do	1	1
66	Do.....do	do.....do	do.....do	123	do.....do	do	1	1
67	Do.....do	do.....do	do.....do	180	do.....do	do	1	1

TABLE No. 3.—CONTINUED.

No. of colliery...	NAME OF COAL MINE OR COLLIERY.	NAME OF TOWNSHIP, CITY OR BOROUGH WHERE LOCATED.	BY WHOM OPERATED.	Size of intake...	MODE OF VENTILATION.	Condition of ventilation.....	NUMBER OF			No. of breakers..
							Shafts....	Slopes....	Tunnels...	
58	No. 2 Diamond slope.....	City of Scranton.....	Del., Lackawanna & W. R. R. Co.,	160	Furnace 8' by 7'.....	Good.....	1		1	
59	Tripp's slope.....	do.....	do.....	50	Fan 12' dia. by 4' face	do.....	1		1	
60	Brislin shaft.....	do.....	do.....	do.....	Fan 14' dia. by 4' face	do.....	1		1	
61	Cayuga shaft.....	do.....	do.....	430	Fan 12' dia. by 4' face	do.....	1		1	
62	Von Storch colliery.....	do.....	Del. and Hudson canal co.,	112	F. 12' dia. by 4'-0"/4	do.....	1		1	
	do.....	do.....	do.....	112	do.....	do.....	1		1	
	do.....	do.....	do.....	200	do.....	do.....	1		1	
63	Leggitt's Creek colliery.....	do.....	do.....	240	do.....	do.....	1		1	
	do.....	do.....	do.....	240	do.....	do.....	1		1	
64	Marvin shaft.....	do.....	do.....	240	do.....	do.....	1		1	
65	Rolling Mill colliery.....	do.....	do.....	do.....	Sinking.....	do.....	1		1	
	do.....	do.....	Lackawanna iron and coal co.,	77	Steam exhaust.....	Good.....	1		1	
66	Pine Brook colliery.....	do.....	do.....	70	Furnace 7' by 6'.....	do.....	1		1	
67	Fairlawn slope.....	do.....	do.....	220	Double furnace 7' by 6'	do.....	1		1	
68	Green Ridge colliery.....	do.....	Hosie, Archibald & Hosie,	49	Furnace.....	do.....	1		1	
69	No. 2 shaft.....	Borough of Dunmore,	J. P. W. Riley, Esq.	84	do.....	do.....	1		1	
	do.....	do.....	Pennsylvania coal company..	66	Furnace 6' by 6'.....	do.....	1		1	
70	Roaring Brook colliery.....	do.....	do.....	160	Furnace 6' by 4'.....	do.....	1		2	
	do.....	do.....	Roaring Brook coal company,	160	do.....	do.....	1		1	
71	Gipsy Grove colliery.....	do.....	Pennsylvania coal company	216	Furnace.....	Tol'ble	1		1	
	do.....	do.....	do.....	44	do.....	do.....	2		1	
	do.....	do.....	do.....	44	do.....	do.....	3		1	
72	Elk Hill colliery.....	Blakely township	do.....	48	Furnace 8' by 7'.....	Good.....	1		1	
73	No. 2, or Dip mines.....	do.....	Elk Hill coal and iron co.	54	Furnace 8' by 6'.....	do.....	1		1	
74	Eddy's Creek mines.....	do.....	Del. and Hudson canal co.	50	Water fall.....	do.....	2		1	
75	No. 1 colliery.....	do.....	do.....	84	Furnace 8' by 6'.....	do.....	1		1	
76	No. 3 colliery.....	do.....	do.....	70	do.....	do.....	1		1	
77	Grassy Island shaft.....	do.....	do.....	140	Furnace 8' by 8'.....	do.....	1		1	
78	Eaton & Co.'s colliery.....	do.....	Eaton & Co.....	42	Natural.....	do.....	3		1	
79	White Oak colliery.....	do.....	Del. and Hudson canal co.	63	Furnace 8' by 8'.....	do.....	1		1	
	do.....	do.....	do.....	63	Furnace 6' by 8'.....	do.....	1		1	
80	No. 1 shaft.....	Gibsonburg borough..	John Jermy, Esq.	120	Furnace 8' by 8'.....	do.....	1		1	

81	Jennyn slope	Gilsonburg borough	John Jennyn, Esq.	96	Furnace 8' by 8'	Good	1	1	1		
82	Eric colliery	Carbondale township	Glenwood coal company	64	Idle for 1873	Good	1	1	1		
83	Powderly's slope	do	Del. and Hudson canal co	54	Natural	do	1	1	1		
84	Powderly's rock tunnel	do	do	54	do	do	1	1	1		
85	No. 1 slope	Carbondale City	do	54	do	do	1	1	1		
86	White Bridge tunnel	do	do	234	Furnace 8' by 6'	do	1	1	1		
87	No. 3 shaft	do	do	37	Nat. & fir. 8' by 6'	do	1	1	1		
88	Coat Brook tunnel	do	do	57	1 } Furnace 8' by 8'	Tol'ble	1	1	1		
89	Breaker tunnel	do	do	70	1 } do	do	1	1	1		
90	Lackawanna tunnel	do	do	54	1 } do	do	1	1	1		
91	Valley tunnel	do	do	70	1 } do	do	1	1	1		
92	Mill Ridge tunnel	Tell township	do	63	do	do	1	1	1		
93	Jefferson tunnel	do	do	63	Natural	do	1	1	1		
94	Midland tunnel	do	do	63	Two grates	do	1	1	1		
95	Chestnut Hill colliery	Carbondale City	E. B. Hendricks	45	Furnace 6' by 5'	do	1	1	1		
96	No. 1 shaft	Pittston township	Pennsylvania coal company		Natural	Good	1	1	1		
97	No. 12 shaft	Pleasant Valley bor.	do		do	do	1	1	1		
98	Law shaft	do	do		do	do	1	1	1		
99	New shaft and slope	Blakley township	Filler & Co.		do	do	1	1	1		
100	New shaft at No. 6 slope	Pittston township	Pennsylvania coal company		do	do	1	1	1		
101	Eagle shaft	Jenkins township	Waddell & Schooly	192	Furnace 7' by 4½'	do	1	1	1		
102	New No. 1 tunnel	Pittston township	Pennsylvania coal company		do	do	1	1	1		
103	Lloyd's tunnel	do	do		do	do	1	1	1		
	No. 2 breaker	Pittston borough	do		do	do	1	1	1		
	New breaker	Dunmore borough	do		do	do	1	1	1		
	Screens at Dunmore	do	do		do	do	1	1	1		
	Rackett's Brook breaker	Carbondale township	Del. and Hudson canal co	63	Furnace 6' by 6'	Good	1	1	1		
104	Forrest tunnel	Carbondale City	do		do	do	1	1	1		
Total								62	33	64	74

TABLE No. 3—CONTINUED.

No. of colliery.....	Number of screens and schutes.....	Is there a second opening?.....	Number persons employed in the mines,	Number persons employed outside.....	Number of tons of coal mined.....	Is the breaker-machinery fenced and boxed off?.....	Are the shaft-landings protected by safety-gates?.....	Is there a metal speaking-tube in shaft or slope?.....	Is there a safety-carriage with all modern improvements?.....	Is there any noxious or inflammable gas evolved in the mine?.....	How many splits of air in the mine?.....	How many persons working in each split?.....	Is the mine in a good and safe working condition?.....	How many kegs of powder used during the year?.....	NAME GENERAL MINE-SUP'T.	NAME OF MINING-BOSS.
1..	1	Yes.	75	18	53,304	.....	.....	Yes.	.....	Yes.	2	{ 40 } { 13 }	.....	William Law.....	Henry Jopling.
2..	Idle for the year 1873.	Yes.	97	31	58,775	Yes.	Yes.	Yes.	.....	.....	2	{ 36 } { 37 }	.....	William Law.....	Thomas Aubrey.
3..	.....	.....	160	29	74,211	.....	.....	.....	.....	No.	2	.....	.....	do.....	Benj. Harding.
4..	.....	.....	63	18	45,924	.....	.....	.....	.....	.....	1	.....	.....	Andrew Bryden.....	do.....
5..	.....	.....	128	24	89,824	.....	.....	.....	.....	Yes.	2	{ 16 } { 70 } { 44 } { 30 } { 28 }	.....	William Law.....	William Reid.
6..	1
7..	1	.....	132	11	97,943	.....	.....	.....	.....	.....	3	.....	.....	Andrew Bryden.....	Peter P. Daly.
8..	1	.....	110	21	89,946	.....	.....	.....	.....	No.	2	.....	.....	do.....	James Watson.
9..	1	.....	50	17	70,890	.....	.....	.....	.....	.....	5	.....	.....	do.....	William Reid.
10..	.....	.....	49	29	18,256	Yes.	Yes.	.....	.....	.....	2	.....	.....	Alva Tompkins.....	John Hughes.
11..	Idle for the year 1873.	.....	14	.....	.....	.....	.....	No.	.....	.....	1	14	.....	do.....	do.....
12..	.....	Yes.	73	15	57,642	Yes.	Yes.	Yes.	Yes.	Yes.	2	.....	.....	Andrew Bryden.....	Thos. Richardson.
13..	.....	.....	99	1	62,639	.....	.....	.....	.....	No.	2	.....	.....	do.....	William Abbott.
14..	.....	.....	140	111	109,238	Yes.	.....	.....	.....	.....	2	.....	.....	do.....	do.....
15..	.....	.....	117	50	103,513	.....	.....	.....	.....	.....	4	.....	.....	do.....	James Moffat.
16..	.....	.....	68	8	29,655	.....	.....	.....	.....	.....	2	.....	.....	do.....	do.....
17..	.....	.....	28	.....	77,137	Yes.	.....	.....	.....	.....	1	.....	.....	Joseph Coob.....	Israel Watkins.
18..	.....	.....	79	65	.....	.....	.....	.....	.....	.....	1	.....	.....	do.....	do.....
19..	.....	.....	104	64	55,410	Yes.	Yes.	.....	.....	.....	1	.....	.....	do.....	do.....
20..	29	9	15,120	1	No.	Daniel Edwards.....	Fred. Burkert.
.....	26	11	17,000	2	Yes.	Benj. Bowkley.....	Benj. Lloyd.
.....	101	54	39,140	Yes.	Yes.	Yes.	Yes.	2	{ 38 } { 28 }	Joseph Coob.....	Thomas Smiles.

21.	Yes.	55	9,343	Yes.	Yes.	Yes.	Yes.	Yes.	1	1	Yes.	Elijah Evans.
22.	"	25	25,062	"	"	"	"	"	1	1	"	Daniel Evans.
23.	No.	100	64,456	"	"	"	"	"	1	1	Tolerable.	Thomas Tidley.
24.	"	68	48,000	"	"	"	"	"	1	1	Yes.	E. D. Davis.
25.	Yes.	108	72,007	Yes.	Yes.	Yes.	Yes.	Yes.	1	1	930	do.
26.	"	52	47,377	"	"	"	"	"	1	1	William Law.	W. E. Colborne.
27.	"	80	74,674	Yes.	Yes.	Yes.	Yes.	Yes.	1	1	do.	John B. Law.
28.	"	97	102,165	"	"	"	"	"	1	1	do.	Thomas Wier.
29.	"	160	23,153	"	"	"	"	"	1	1	do.	Alex. Laird.
30.	"	111	Idle for the year 1873.	"	"	"	"	"	1	1	do.	J. D. Davis.
31.	No.	65	3,000	Yes.	Yes.	Yes.	Yes.	Yes.	2	2	315	No coal mined in shafts in 1873.
32.	Yes.	91	20,120	Yes.	Yes.	Yes.	Yes.	Yes.	1	1	do.	Charles Smith.
33.	"	43	159,433	"	"	"	"	"	1	1	do.	John S. Powell.
34.	No.	31	171,649	Yes.	"	"	"	"	1	1	60	B. Hughes—Davis.
35.	Yes.	175	117	"	"	"	"	"	2	2	56	John Ellershaw.
36.	"	40	117	"	"	"	"	"	1	1	40	Morgan J. Harris.
37.	"	139	121	"	"	"	"	"	1	1	40	do.
38.	"	102	68,055	"	"	"	"	"	1	1	40	do.
39.	"	102	95,784	Yes.	No.	No.	No.	No.	1	1	6,450	Gen. E. Phinny.
40.	"	135	192,886	"	"	"	"	"	4	4	2,062	W. Connell & Co.
41.	"	178	8,000	"	"	"	"	"	4	4	3,090	James Connell.
42.	"	13	121,643	"	"	"	"	"	1	1	6,440	John Humphreys.
43.	"	195	180,727	"	"	"	"	"	4	4	400	Thomas L. Jones.
44.	"	42	152,515	Yes.	Yes.	Yes.	Yes.	Yes.	2	2	46	Frederick Repp.
45.	"	144	121,084	"	"	"	"	"	4	4	44	do.
46.	"	104	70	"	"	"	"	"	2	2	12	do.
47.	"	49	77	"	"	"	"	"	4	4	20	B. Hughes, & T. D. Davis, Assistant.
48.	"	63	91	"	"	"	"	"	2	2	22	do.
49.	"	29	135	Yes.	"	"	"	"	4	4	33	B. Hughes, & T. D. Davis, Assistant.
50.	"	135	121,084	"	"	"	"	"	2	2	47	do.
51.	"	135	121,084	"	"	"	"	"	2	2	26	do.
52.	"	135	121,084	"	"	"	"	"	2	2	38	do.
53.	"	135	121,084	"	"	"	"	"	2	2	45	do.
54.	"	135	121,084	"	"	"	"	"	2	2	45	do.
55.	"	135	121,084	"	"	"	"	"	2	2	45	do.
56.	"	135	121,084	"	"	"	"	"	2	2	45	do.
57.	"	135	121,084	"	"	"	"	"	2	2	45	do.
58.	"	135	121,084	"	"	"	"	"	2	2	45	do.
59.	"	135	121,084	"	"	"	"	"	2	2	45	do.
60.	"	135	121,084	"	"	"	"	"	2	2	45	do.
61.	"	135	121,084	"	"	"	"	"	2	2	45	do.
62.	"	135	121,084	"	"	"	"	"	2	2	45	do.
63.	"	135	121,084	"	"	"	"	"	2	2	45	do.
64.	"	135	121,084	"	"	"	"	"	2	2	45	do.
65.	"	135	121,084	"	"	"	"	"	2	2	45	do.
66.	"	135	121,084	"	"	"	"	"	2	2	45	do.
67.	"	135	121,084	"	"	"	"	"	2	2	45	do.
68.	"	135	121,084	"	"	"	"	"	2	2	45	do.
69.	"	135	121,084	"	"	"	"	"	2	2	45	do.
70.	"	135	121,084	"	"	"	"	"	2	2	45	do.
71.	"	135	121,084	"	"	"	"	"	2	2	45	do.
72.	"	135	121,084	"	"	"	"	"	2	2	45	do.
73.	"	135	121,084	"	"	"	"	"	2	2	45	do.
74.	"	135	121,084	"	"	"	"	"	2	2	45	do.
75.	"	135	121,084	"	"	"	"	"	2	2	45	do.
76.	"	135	121,084	"	"	"	"	"	2	2	45	do.
77.	"	135	121,084	"	"	"	"	"	2	2	45	do.
78.	"	135	121,084	"	"	"	"	"	2	2	45	do.
79.	"	135	121,084	"	"	"	"	"	2	2	45	do.
80.	"	135	121,084	"	"	"	"	"	2	2	45	do.
81.	"	135	121,084	"	"	"	"	"	2	2	45	do.
82.	"	135	121,084	"	"	"	"	"	2	2	45	do.
83.	"	135	121,084	"	"	"	"	"	2	2	45	do.
84.	"	135	121,084	"	"	"	"	"	2	2	45	do.
85.	"	135	121,084	"	"	"	"	"	2	2	45	do.
86.	"	135	121,084	"	"	"	"	"	2	2	45	do.
87.	"	135	121,084	"	"	"	"	"	2	2	45	do.
88.	"	135	121,084	"	"	"	"	"	2	2	45	do.
89.	"	135	121,084	"	"	"	"	"	2	2	45	do.
90.	"	135	121,084	"	"	"	"	"	2	2	45	do.
91.	"	135	121,084	"	"	"	"	"	2	2	45	do.
92.	"	135	121,084	"	"	"	"	"	2	2	45	do.
93.	"	135	121,084	"	"	"	"	"	2	2	45	do.
94.	"	135	121,084	"	"	"	"	"	2	2	45	do.
95.	"	135	121,084	"	"	"	"	"	2	2	45	do.
96.	"	135	121,084	"	"	"	"	"	2	2	45	do.
97.	"	135	121,084	"	"	"	"	"	2	2	45	do.
98.	"	135	121,084	"	"	"	"	"	2	2	45	do.
99.	"	135	121,084	"	"	"	"	"	2	2	45	do.
100.	"	135	121,084	"	"	"	"	"	2	2	45	do.
101.	"	135	121,084	"	"	"	"	"	2	2	45	do.
102.	"	135	121,084	"	"	"	"	"	2	2	45	do.
103.	"	135	121,084	"	"	"	"	"	2	2	45	do.
104.	"	135	121,084	"	"	"	"	"	2	2	45	do.
105.	"	135	121,084	"	"	"	"	"	2	2	45	do.
106.	"	135	121,084	"	"	"	"	"	2	2	45	do.
107.	"	135	121,084	"	"	"	"	"	2	2	45	do.
108.	"	135	121,084	"	"	"	"	"	2	2	45	do.
109.	"	135	121,084	"	"	"	"	"	2	2	45	do.
110.	"	135	121,084	"	"	"	"	"	2	2	45	do.
111.	"	135	121,084	"	"	"	"	"	2	2	45	do.
112.	"	135	121,084	"	"	"	"	"	2	2	45	do.
113.	"	135	121,084	"	"	"	"	"	2	2	45	do.
114.	"	135	121,084	"	"	"	"	"	2	2	45	do.
115.	"	135	121,084	"	"	"	"	"	2	2	45	do.
116.	"	135	121,084	"	"	"	"	"	2	2	45	do.
117.	"	135	121,084	"	"	"	"	"	2	2	45	do.
118.	"	135	121,084	"	"	"	"	"	2	2	45	do.
119.	"	135	121,084	"	"	"	"	"	2	2	45	do.
120.	"	135	121,084	"	"	"	"	"	2	2	45	do.
121.	"	135	121,084	"	"	"	"	"	2	2	45	do.
122.	"	135	121,084	"	"	"	"	"	2	2	45	do.
123.	"	135	121,084	"	"	"	"	"	2	2	45	do.
124.	"	135	121,084	"	"	"	"	"	2	2	45	do.
125.	"	135	121,084	"	"	"	"	"	2	2	45	do.
126.	"	135	121,084	"	"	"	"	"	2	2	45	do.
127.	"	135	121,084	"	"	"	"	"	2	2	45	do.
128.	"	135	121,084	"	"	"	"	"	2	2	45	do.
129.	"	135	121,084	"	"	"	"	"	2	2	45	do.
130.	"	135	121,084	"	"	"	"	"	2	2	45	do.
131.	"	135	121,084	"	"	"	"	"	2	2	45	do.
132.	"	135	121,084	"	"	"	"	"	2	2	45	do.
133.	"	135	121,084	"	"	"	"	"	2	2	45	do.
134.	"	135	121,084	"	"	"	"	"	2	2	45	do.
135.	"	135	121,084	"	"	"	"	"	2	2	45	do.
136.	"	135	121,084	"	"	"	"	"	2	2	45	do.
137.	"	135	121,084	"	"	"	"	"	2	2	45	do.
138.	"	135	121,084	"	"	"	"	"	2	2	45	do.
139.	"	135	121,084	"	"	"	"	"	2	2	45	do.
140.</												

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57.	"	116	126	244,886	Yes.	Yes.	Yes.	Yes.	No.	2	Yes.	7,756	B. Hughes & T. D. Davis, Assistant.	Reese T. Evans.
	"	44			"	"	"	"	"		"		do.	do.
	"	131			"	"	"	"	Yes.	4	"		do.	do.
58.	"	140	106	113,646	"	"	"	"	"	3	"	4,000	Daniel Phillips.	
59.	"	77		22,743	"	"	"	"	No.	2	"		Thomas Houser.	
60.	No.	16	19	None	"	"	"	"			"		Frank Zimmerman.	
61.	Yes.	107	84	124,117	Yes.	Yes.	Yes.	Yes.	Yes.	3	Yes.	3,631	Thomas Watkins.	
62.	"	141	115	168,353	"	"	"	"	No.	2	"		Richard D. Roberts.	
	"	182			"	"	"	"	"	2	"		David Aubrey.	
	"	31			"	"	"	"	Yes.	2	"		Richard D. Roberts.	
63.	"	135	81	136,281	"	"	"	"	"	3	"		Thomas Bamford.	
	"	143			"	"	"	"	"	3	"		Matthew Mackie.	
64.	Yes.	24	10										do.	
65.	"	60	16	40,659	No.	No.	No.	No.	No.	2	Yes.	1,920	Charles F. Mattes.	Reese G. Brooks.
	"	71		53,222	"	"	"	"	"	2	"		do.	do.
66.	"	148	42	117,600	Yes.	Yes.	Yes.	Yes.	Yes.	3	"	3,710	do.	R. G. Brooks and R. [G. Griffiths.
67.	No.	29	24	5,376	"	No.	No.	No.	"	1	"	300	John Hosie.	Henry Klees.
68.	Yes.	187	100	133,701	"	Yes.	Yes.	Yes.	No.	2	"	5,010	J. P. W. Riley.	Timothy Parfrey.
69.	"	1	10	53,362	"	"	"	"	"	1	"		James Young.	Robert MacMillan.
70.	"	180	87	115,708	"	"	"	"	"	2	"	4,258	John R. Davis.	Patrick Moughan.
	"	65			"	"	"	"	"	1	"		do.	do.
71.	"	62	65	33,056	"	"	"	"	No.	2	"		James Young.	James M'Millan.
	"	59	65	47,829	"	"	"	"	"	1	"		do.	do.
	"	68		43,587	"	"	"	"	"	1	"		do.	do.
72.	"	142	64	83,176	Yes.	Yes.	Yes.	Yes.	"	1	"		L. E. Judd.	Benjamin Rees.
73.	"	54	52		"	"	"	"	"	1	"		A. B. Nicol, Asst.	Robert K. Laidler.
74.	"	112	5	117,916	"	Yes.	Yes.	Yes.	"	1	"		do.	do.

100.	21	5	Sinking out sid e.	Yes.	1	Yes.	Andrew Bryden.
101.	13	6	3,834	Yes.	1	Yes.	Hon. Th. Waddell.
102.	3	1	1,532	No.	1	"	Andrew Bryden.
103.	2	1	174	"	1	"	do.
		53	Yes.				
		12	31,183	"			
		70	155,968	"			
		57	154,271	"			
104.	12						Andrew B. Nicol.
		4,656	6,922,490				William M'Myne.
	10	11,137					

TABLE No. 3.—CONTINUED.

No. of colliery	NAME OF OUTSIDE FOREMAN.	Any boys working under 12 yrs. age,	Length of headings in feet.....	Length of air-ways in feet	Length of T-iron track laid in mines	Length of strap-iron track laid in mines	Length of iron track outside—T.....	Any standing gas or water in mines..	Chambers working	Size of outcast.....	AMOUNT OF VENTILATION PER MINUTE.			Is the air conducted systematically to face of workings,	Are doors hung on main roads so as to close of own acc'd	Are there double doors on main traveled roads.....
											At intake ...	At the face of workings..	At outcast ..			
1.		No.	13,750	13,750	3,900	4,000	200	No.	10	88	33,000	12,500	3,400	Yes,	Yes,	Yes,
2.		No.	21,500	21,500	3,100	1,500	1,200	No.	17	88	20,000	17,100	17,600	No.	Yes,	No.
3.	Lofuiss Campbell.....	No.	11,200	11,200	4,500	5,400	1,850	No.	20	95	17,000	15,700	14,000	Yes,	Yes,	Yes,
4.		"	5,600	5,600	5,300	3,000	1,445	"	13	95	14,000	12,700	12,900	"	"	"
5.		"	20,650	20,650	2,125	15,875		"	22	50	20,160	17,200	26,560	"	"	No.
6.		"	21,000	21,000	4,115	15,000	320	"	25	140	33,400	33,000	29,150	"	"	"
7.		"	20,528	20,528	4,115	1,800	5,280	"	22	72	16,200	10,500	30,000	"	"	"
8.	Samuel M'Dowell.....	"	10,000	10,000	2,000	7,600		"	8	200	13,500	15,500	15,500	"	"	"
9.		"	10,900	10,900	1,500	300		"	12	36	3,500	1,900	3,600	"	"	Yes,
10.	D. Davis.....	"	1,000	1,000	1,000	200		"	3	60	600	1,000	1,700	"	"	"
11.		"						"						"	"	"
12.		No.	5,750	5,750	3,200	2,000	4,300 } 3,000S }	No.	17	60	30,250	14,000	30,850	Yes,	Yes,	Yes,
13.	Henry Searle.....	"	10,750	10,750	1,900	6,800		"	19	104	20,400	16,600	22,000	"	"	"
14.	Do.....	"	16,050	16,050	2,913	10,283	4,054	"	22	100	21,000	15,000	20,300	"	"	"
15.	Hugh Ferguson.....	"	19,450	19,450	1,600	5,915	1,000	"	22	100	41,000	37,600	40,000	"	"	"
16.	Do.....	"	8,150	8,150	3,200	4,500	600	"	11	60	22,340	20,000	21,870	"	"	Yes,
17.		"	1,600	1,600	2,267	1,333	600	"	31		9,000	6,300	11,000	"	"	"
18.		"	1,000	1,000	300	300	4,725 } 7,04S }	"			15,000	12,500	16,800	"	"	"
19.	John Paul.....	"	3,000	3,000	2,267	1,333	1,523 }	"	31		14,500	9,500	13,500	"	"	"
20.	A. Price.....	"	2,400	2,400	600	3,600	120	"	10	48	4,500	2,500	4,650	"	"	"
21.	S. H. Huntington.....	"	1,400	1,400	500	1,500	400	"	7	10	4,300	2,100	4,500	Yes,	Yes,	"
22.	John R. Deim.....	"	4,500	4,500	1,500	3,000	70S }	"	31	49	13,000	7,000	14,800	"	"	Yes,
23.	E. J. Evans.....	"	900	900	900	900	409 }	"	10	36	33,000	12,500	25,000	"	"	"
24.	Robert Jaques.....	"	1,896	1,896	2,508	3,507	900S }	"	12	24	4,100	3,400	3,600	"	"	"
25.		"	1,000	1,000	800	500	7,920 }	"	30	30	16,000	15,000	14,000	"	"	Yes,

INSPECTORS OF MINES.

24	J. L. Cake.....	No. {	5,000	3,400	5,000	No.	68	36	9,333	7,020	6,720	Yes,	Yes,
	Do.....	"	1,050	7,800	7,800	"	48	40	12,000	6,240	16,000	"	"
25	W. E. Colborne.....	"	7,800	7,800	7,800	"	40	53	28,000	6,240	31,000	"	"
26	Do.....	"	1,200	1,000	2,000	"	19	48	8,000	8,250	8,250	"	"
27	Geo. M. Snyder.....	"	8,750	8,750	2,380	"	19	48	12,000	6,000	14,000	"	Yes,
28	Do.....	"	6,650	6,650	4,950	"	50	72	16,000	6,000	20,000	"	"
29	Frank Bone.....	"	10,350	10,350	7,850	"	50	100	22,200	10,000	15,000	"	"
30	J. A. Caryl.....	"	1,320	1,320	9,548	"	45	80	18,700	16,500	19,000	"	"
31	Do.....	"	6,050	4,200	3,500	"	55	2,000	2,000	8,000	22,200	No.	Yes,
32	Charles Smith.....	No. {	800	800	800	"	50	36	50,000	30,000	45,000	Yes,	Yes,
33	C. H. Dorr.....	"	1,300	1,000	3,750	"	40	121	50,000	20,000	20,000	Yes,	Yes,
34	Adam Rheinbart.....	"	310	310	1,660	"	4	90	70,000	59,000	72,000	Yes,	Yes,
35	J. P. Cooper.....	"	11,714	11,714	19,022	"	58	100	17,000	10,000	19,000	"	"
36	Do.....	"	3,174	3,174	7,350	"	12	144	17,000	10,000	19,000	"	"
37	M. L. Coyne.....	"	11,000	8,200	4,800	"	80	48	31,500	8,600	33,020	"	"
38	Do.....	"	12,100	12,100	4,600	"	70	64	19,550	6,000	20,000	"	"
39	Wm. Thomas.....	"	1,920	1,920	4,500	"	38	63	30,000	8,000	32,000	"	"
40	Robert Penman.....	"	13,000	13,000	16,300	"	50	60	32,000	15,000	33,000	"	"
41	Wm. Humphrey.....	"	1,500	250	500	"	60	72	53,000	25,000	54,000	"	"
42	Frederick Repp.....	"	6,520	6,520	8,988	"	6	56	9,900	8,000	10,100	No.	Yes,
43	John A. Mears.....	"	12,094	12,094	10,475	"	70	36	32,000	26,000	28,000	Yes,	Yes,
44	Ed. E. Thomas.....	"	12,400	12,400	3,800	water	18	120	17,300	16,800	18,000	"	"
45	Do.....	"	6,699	6,699	6,984	"	50	120	74,000	66,500	77,340	"	"
46	J. M. Aeker.....	"	15,798	15,798	12,288	No.	33	36	16,000	14,000	23,000	"	"
47	Do.....	"	7,462	7,462	9,000	"	16	36	23,000	17,000	28,000	"	"
48	Do.....	"	3,294	3,294	5,592	"	26	36	19,000	13,000	20,000	"	"
49	Wm. H. Carling.....	"	6,120	6,120	18,925	"	11	60	18,000	13,500	20,000	"	"
50	Do.....	"	14,650	14,650	4,050	"	42	60	16,750	12,500	24,000	"	"
51	S. N. Stetter.....	"	29,637	29,637	9,111	"	61	90	52,000	45,000	55,000	"	"
52	Do.....	"	800	800	3,200	"	47	100	35,000	34,000	35,500	"	"
	John Reese.....	"	800	800	800	"	39	120	35,000	34,750	38,600	"	"
	John Fern.....	"	4,050	4,050	112	"	26	100	26,000	24,000	26,500	"	"
	James F. Green.....	"	5,000	5,000	5,000	"	40	100	52,000	45,000	54,000	"	"
	Do.....	"	9,111	9,111	9,111	"	76	63	31,000	28,000	33,000	"	"

TABLE No. 3--CONTINUED.

No. of colliery.....	NAME OF OUTSIDE FOREMAN.	Any boys working under 12 yrs. of age	Length of headings in feet.....	Length of air-ways in feet.....	Length of T-iron track laid in mines.....	Length of strap-iron track laid in mines.	Length of iron track outside--T.....	Any standing gas or water in the mines.	Chambers working.	Size of outcast.....	AMOUNT OF VENTILATION PER MINUTE.			Is the air conducted systematically to the face of workings....	Are doors hung on main roads so as to close of own accord.	Are there double doors on main traveled roads.....
											At intake.....	At the face of workings....	At outcast.....			
53.....	Robert E. Ruthvin.....	No (	15,300	11,530	14,688	2,850	3,443 }	No..	12	100	10,000	8,000	11,000	Yes,	Yes,	Yes,
54.....	Do.....	"	7,300	5,000	.....	.....	{ 1,000S }	"	54	100	28,000	25,000	30,000	"	"	"
	David Brooks.....	"	7,800	4,350	21,200	15,000	{ 2,000 }	"	33	70	14,000	11,100	16,000	"	"	"
55.....	Do.....	"	8,410	4,750	1,000	8,400	{ 600S }	"	34	70	15,000	12,800	17,000	"	"	"
	Thomas D. Devan.....	"	4,595	1,900	.....	.....	{ 1,000S }	"	23	48	11,700	3,500	12,000	"	"	No..
56.....	Do.....	"	1,200	.....	.....	.....	{ 600S }	"	22	48	10,500	9,000	11,500	"	"	"
57.....	Daniel Langstaff.....	"	7,667	7,667	.....	1,875	{ 600 }	"	6	36	5,000	4,500	5,100	"	"	"
	Do.....	"	9,694	9,694	8,843	5,732	{ 7,958 }	"	42	170	52,000	21,000	53,000	"	"	"
58.....	Do.....	"	18,828	18,828	16,529	13,670	{ 4,788S }	"	14	48	10,000	9,000	10,500	"	"	"
59.....	Do.....	"	3,900	3,900	12,369	8,400	{ 200 }	"	58	144	38,000	40,728	42,000	"	"	"
60.....	Do.....	"	10,194	10,194	5,350	125	{ 1,100 }	"	30	170	23,000	15,000	24,000	"	"	"
61.....	J. C. Bowman.....	"	32,343	32,343	11,193	2,570	{ 1,200 }	No..	58	90	40,000	35,000	42,000	Yes,	Yes,	Yes,
62.....	Charles W. Ziegler.....	"	18,339	18,339	31,569	3,825	{ 1,170S }	"	41	100	13,000	6,000	13,500	"	"	"
	Do.....	"	5,535	5,535	19,364	6,118	{ 3,525 }	"	61	100	19,000	4,000	32,000	"	"	"
63.....	Do.....	"	11,650	11,650	9,270	1,740	{ 2,181S }	"	40	70	13,350	6,000	32,000	"	"	"
	J. L. Atherton.....	"	13,800	13,800	15,872	2,700	{ 3,689 }	"	30	83	38,110	36,020	43,200	Yes,	Yes,	Yes,
64.....	Do.....	"	9,000	9,000	12,633	7,731	{ 3,689 }	"	52	83	37,089	41,180	41,960	"	"	"
	Albert Ross Kelly.....	"	6,780	6,780	2,300	11,300	{ 56S }	No..	21	.....	7,000	4,600	8,100	Yes,	Yes,	Yes,
65.....	Do.....	"	14,800	14,800	4,600	11,300	{ 1,300 }	"	19	64	6,960	4,600	8,170	"	"	"
66.....	Henry Hess.....	"	800	800	14,600	9,090	{ 2,800 }	"	32	132	44,000	34,000	51,000	"	"	"
67.....	Henry Klees.....	"	15,620	15,620	1,000	600	{ 900 }	"	8	.....	1,930	1,920	2,500	"	"	"
68.....	W. S. Boyd.....	"	3,500	3,500	2,600	7,900	{ 2,000S }	"	62	64	18,040	9,280	18,280	"	"	"
	Do.....	"	.....	.....	.....	.....	{ 3,150 }	"	.....	.....	.....	.....	.....	"	"	"

TABLE No. 3—CONTINUED.

No. of colliery	67.	68.	69.	70.	71.	72.	73.	74.	75.	76.	77.	78.	79.	80.	81.	82.	83.	84.
Is there an extra door in case of an accident to any of the others..	Yes.	No.	Yes.	"	"	"	"	"	"	"	"	"	"	"	"	No.	Yes.	Yes.
Are there attendants at main doors	Yes.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	Yes.
Is the mine examined every morning before persons enter.	Yes.	"	"	"	"	Yes.	Yes.	"	"	"	"	"	"	"	"	"	"	"
Is the mine examined every evening that the main doors are closed.	Yes.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
Has the amount of ventilation been measur'd and reported.	Yes.	"	"	"	"	"	"	"	Yes.	"	"	"	Yes.	Yes.	"	"	"	Yes.
Is the mining boss a competent and practical man	Yes.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	Yes.
Is there an assistant or fire boss in the mines.	Yes.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
Depth of shaft, feet...	53	100	211	246	167	50	96	408	500	300	265	1,200	100	183				
Length of shaft, feet..	15	15	21	21	18	26	27	12	7	7	25	7	16	21				
Width of shaft, feet...	12	12	12	10	12	10	12	12	12	10	10	9	10	10	10			
Length of slope, feet..	335	318	280						500	300	250	1,200	250	700				
Width of shaft, feet...	10	12	10						12	10	10	9	12	10	10			
Height of slope, feet,	7½	7	6						7	7	8	7	8	7	8			
Angle of slope, degrees	24½	19	13						8	6½	4	4	25	9				
Length of tunnels in coal.....										500		400	600					
Angle of planes in the mines, degrees							6½			4		3	10					
Length of planes in the mines.....						450						825	600					
Length of slopes in the mines.....			400										1,200					
Angle of slopes in the mines, degrees			5¾										4½					
How wide are the headings, feet	12	14	12	12	12	12	11	10	10	10	10	10	1	12	12			
How wide are the airways, feet.....	15	12	15	12	12	12	14	14	14	14	14	14	14	12	12			
Width of the chambers, feet	30	28	30	26	26	26	30	30	30	30	30	30	30	30	30			
What is the width of the pillars	18	15	15	22	22	22	15	15	15	15	15	16	14	15	15			

TABLE No. 3—CONTINUED.

No. of colliery.....	WHAT IS THE NATURE OF THE ROOF?	WHAT IS THE NAME OF THE VEIN OF COAL WORKED?	What is the average thickness of each vein in feet.....	Have they furnished a map of the mines....	Do the parties having charge know their duty in case of death or serious accident...	Are the engineers experienced, competent and sober men.....	Are there more than 10 persons allo'd to ride on the safety-carriage at one time.....	Is there a house for men to wash and change in.....	Are persons allowed to ride on loaded cars in shafts, slopes or planes	Has the condition of boilers been reported according to law.....	Number of horses and mules.....
1.....	Bony coal and rock.....	Pittston, or 14-feet.....	10	Yes.....	Yes.....	Yes.....	No.....	No.....	Yes.....	9	
2.....	Slate.....	Pittston, or 14-feet.....	10	Yes.....	Yes.....	Yes.....	No.....	No.....	Yes.....	14	
3.....	Do.....	do.....	10	do.....	do.....	do.....	do.....	do.....	do.....	15	
4.....	Do.....	do.....	10	do.....	do.....	do.....	do.....	do.....	do.....	8	
5.....	Do.....	do.....	12	do.....	do.....	do.....	do.....	do.....	do.....	14	
6.....	Rock and slate.....	do.....	12	do.....	do.....	do.....	do.....	do.....	do.....	16	
7.....	Slate.....	do.....	11	do.....	do.....	do.....	do.....	do.....	do.....	20	
8.....	Do.....	do.....	12	do.....	do.....	do.....	do.....	do.....	do.....	12	
9.....	Do.....	do.....	12	do.....	do.....	do.....	No.....	do.....	do.....	6	
10.....	Slate and rock.....	Checked and Pittston.....	4 and 10	do.....	do.....	do.....	do.....	do.....	do.....	6	
11.....	Do.....	No. 3.....	6	do.....	do.....	do.....	do.....	do.....	do.....	13	
12.....	Slate.....	Pittston, or 14-feet.....	9	Yes.....	Yes.....	Yes.....	No.....	No.....	Yes.....	8	
13.....	Do.....	Checked, or 7-feet.....	6	do.....	do.....	do.....	do.....	do.....	do.....	15	
14.....	Do.....	Pittston, or 14-feet.....	8½	do.....	do.....	do.....	do.....	do.....	do.....	16	
15.....	Do.....	do.....	10	do.....	do.....	do.....	do.....	do.....	do.....	7	
16.....	Do.....	do.....	6½	do.....	do.....	do.....	do.....	do.....	do.....	5	
17.....	8 feet slate, then rock.....	Pittston, or 14-feet.....	10	do.....	do.....	do.....	do.....	do.....	do.....	22	
18.....	Do.....	Checked.....	6½	do.....	do.....	do.....	do.....	do.....	do.....	19	
19.....	Do.....	do.....	6½	do.....	do.....	do.....	No.....	do.....	do.....	16	
20.....	Do.....	do.....	6½	do.....	do.....	do.....	do.....	do.....	do.....	10	
21.....	Do.....	Checked and Pittston.....	6 and 10	do.....	do.....	do.....	No.....	No.....	do.....	20	
22.....	Do.....	do.....	6	do.....	do.....	do.....	do.....	do.....	do.....	8	
23.....	Do.....	Pittston.....	8	do.....	do.....	do.....	do.....	do.....	do.....	4	
24.....	Do.....	Pittston and Butler, No. 2.....	14 and 9	do.....	do.....	do.....	No.....	Yes.....	do.....	21	
25.....	Slate.....	Butler.....	10	do.....	do.....	do.....	do.....	do.....	do.....	30	
26.....	Do.....	do.....	10	do.....	do.....	do.....	do.....	No.....	do.....	30	

The following is a recapitulation of the statistics of the collieries of the Eastern District of the Wyoming Coal Fields of Luzerne county :

Number of tons of coal mined, prepared and shipped to market,	6, 922, 490
Do.....do.....and sold to 17,091 employées..	133, 092
Do.....do.....and used for fuel, for furnaces in mines and steam purposes.....	228, 020
Total.....	<u>7, 283, 602</u>

There were 54 deaths—one death to every 134,881 tons of coal mined.

There were 30 deaths—one widow to every 242,786.....do.

There were 78 deaths—one orphan to every 93,379.....do.

There were 169 accidents—one accident to every 43,098 tons of coal mined.

There are 20 mines ventilated by fans, 58 by furnaces, 8 by steam exhausts,
1 water-fall and 21 by natural means.

Length of 3 tunnels in the mines is 1,550 feet.

Length of 41 planes in the mines is 15,260 feet.

Length of 19 slopes in the mines is 10,610 feet.

Depth of 62 shafts from the surface is 11,093 feet.

Length of 33 slopes from the surface is 18,280 feet.

There was 7,814 miners and laborers working in the mines, this would give
932 tons for each, and there are 4,206 working places.

There are $171\frac{1}{7}$ miles of gangways or headings in this district.

There are $152\frac{3}{4}$ miles of airways.

There are $99\frac{1}{3}$ miles of T iron road in the mines.

There are $11\frac{3}{4}$ miles of strap iron road in the mines.

There are $42\frac{7}{8}$ miles of T iron road outside.

There are $11\frac{1}{3}$ miles of strap iron road outside.

There are 1,888 mules and horses working at the collieries.

There are 62 shafts, 33 slopes, 64 tunnels, 74 breakers and 10 schutes and
screens.

NOTE.—The letter S in the column of outside track stands for strap iron
and the letter T in the same column stands for T iron.

The Pennsylvania coal company have an extra gang of carpenters and
masons, numbering about 25 men, for building and repairing breakers, &c.

The Delaware, Lackawanna and Western railroad company have an extra
gang of carpenters and masons, numbering about 25 men, for building
and repairing breakers, &c.

The Delaware and Hudson canal company have an extra gang of carpen-
ters and masons, numbering about 25 men, for building and repairing
breakers, &c.

The names of the officers of the Pennsylvania coal company :—John B.
Smith, General Superintendent ; William Law and Andrew Bryden, Gen-
eral Mine Superintendents of Pittston division and James Young, Mine
Superintendent of the Dunmore division. Alexander Craig has charge of
machinery and boilers.

The names of the officers of the Delaware, Lackawanna and Western
railroad company :—Wm. R. Storrs, General Coal Agent ; Benj. Hughes,
General Mine Superintendent ; Thomas D. Davis, Assistant Mine Superin-
tendent ; E. R. Walter, General Outside Superintendent. Thomas Sayers
has charge of machinery and boilers.

The names of the officers of the Glenwood coal company and Hillside coal and iron company:—S. H. Daddow, General Manager, and Jesse Beadle, General Mine Superintendent.

The names of the officers of the Delaware and Hudson canal company:—E. W. Weston, General Superintendent; Andrew Nicol, General Mine Superintendent; A. B. Nicol and Finley Ross, Assistant Mine Superintendents; J. M. Chittenden, General Outside Superintendent. Alex. Simpson has charge of machinery and boilers.

TABLE No. 4.
Report of the Condition of Steam Boilers and Steam Engines in the Eastern District of the Wyoming Coal Fields for the year ending the 31st day of December, 1873.

No. of colliery.....	NAME OF COLLIERY.	DIMENSIONS.		Pressure.....	Steam gauge or safety valve.....	Date of boiler examination.....	Present condition.....	No. of holsting engines	How many horse power	How many pumping engines.....	No. of engines in mines	How many horse power	No. of breaker engines.	How many horse power	No. of fan engines.....	How many horse power	REMARKS.
		Length in feet...	Diam. in inches,														
1.	No. 2, or Port Griffith.....	3	30	80	Both.	Nov. 12	Good.	1	40		4	129					Not working in 1873.
2.	Do.....do.....	3	46	30		13											
3.	Face colliery.....	3	30	70	Both.	Oct. 31	Good.	1	40				1	25			
4.	No. 6 shaft breaker.....	3	36	30									1	25			
5.	No. 5 shaft.....	3	36	30				1	40								
6.	No. 11 shaft.....	3	36	30				1	40								
7.	No. 7 shaft.....	5	36	32				1	40	1		120					
8.	No. 4 shaft.....	4	36	30				2	80		4	80					
9.	No. 4 slope.....	2	36	30				1	20								
10.	No. 5 slope, or Grand tunnel.....	3	36	30				1	20								
11.	Tompkins colliery.....	3	30	30		Aug. 4		1	30				1	15			Not working in 1873. Not working in 1873.
12.	Maryland Nat. Anth. colliery.....	3	32	33				1	80								
13.	Do.....do.....	3	32	30	Both.	Oct. 31	Good.	1	40				1	15			
14.	No. 10 shaft colliery.....	3	36	30				1	40				1	30			
15.	No. 6 shaft colliery.....	5	36	34				1	40				1	30			
16.	No. 6 slope colliery.....	3	36	30		Sept. 17		2	40		2	50					
17.	Seneca colliery.....	2	36	30		Nov. 17		1	60				1	30			
18.	Do.....do.....	2	36	30		17		1	60				1	20			
19.	Ravine colliery.....	4	36	30		17		1	20				1	25			
20.	Rock Hill tunnel.....	4	36	30		Dec. 22		1	60				1	40			
21.	Two shafts.....	2	36	30		Nov. 17		1	10				1	15			
22.	Do.....do.....	3	36	32		30		1	40				1	15			
23.	Rough and Ready colliery.....	3	36	32		Aug. 18		1	40				1	40			
24.	Columbia tunnel.....	4	29	32		18		1	40				1	25			
25.	Butler colliery.....	3	36	30		19											
26.	Do.....do.....	3	36	30		19											
27.	No. 2 shaft, Pittston.....	3	36	30		Aug. 13											
28.	No. 8 shaft, Pittston.....	3	36	30		11											
29.	No. 2 breaker, Pittston.....	3	36	30		13											
30.	Ontario colliery.....	6	30	30				2	70				1	40			Idle for the last few mos.
31.	Enterprise colliery.....	3	30	30		Sept. 1		2	80				1	25			
32.	Do.....do.....	3	30	30		1		1	25				1	30			
33.	Do.....do.....	4	30	30		1		1	25				1	25			
34.	Dawson shaft.....	5	36	30		Nov. 3		1	40				1	40			

	4	26	30	40	60	Aug.	Good.	1	29	1	169	1	30				
67. Gipsy Grove colliery	2	50	34	50	30	Nov.	..	1	36	1	169	1	30				
68. Elk Hill colliery	3	36	34	50	30	Dec.	..	2	118	1	65	1	36				
69. No. 2, or Dip mines	3	36	34	80	30	Nov.	..	2	118	1	77	1	36				
70. Eddy Creek shaft	3	36	34	80	30	..	..	1	43	1	..	1	36		
71. No. 1 colliery, Oylidant	4	36	34	60	30	..	..	2	72	1	77	1	36		
72. No. 3, do	3	36	34	80	30	Aug.	Good.	2	72	1	77	1	36				
73. Grassy Island colliery	3	36	34	80	30	..	..	2	72	1	77	1	36		
Do, do	3	36	34	80	30	..	..	2	72	1	77	1	36		
Do, do	3	36	34	80	30	..	..	2	72	1	77	1	36		
Do, do	3	36	34	80	30	..	..	2	72	1	77	1	36		
74. Eagle & Co. mines colliery	3	40	34	80	30	Dec.	..	2	84	..	..	1	97		
75. Wilton Oak colliery	3	26	34	70	30	Oct.	..	1	54	2	38	1	62				
Do, do	3	26	34	70	30	..	..	2	85	1	25	1	25		
76. No. 1 shaft, Gibsonburg	3	36	34	70	30	Nov.	..	2	85	1	25	1	25				
Do, do	3	36	34	70	30	..	..	2	85	1	25	1	25		
77. Jeremy's slope	2	36	34	70	30	..	..	2	70	1	60	1	25		
78. Erie colliery	3	36	34	70	30	Dec.	..	2	70	1	60	1	25				
Do, do	3	36	34	70	30	..	..	2	70	1	60	1	25		
79. Powderly's slope	3	36	34	70	30	Oct.	..	2	118	2	35	1	25				
Do, do	3	36	34	70	30	..	..	2	118	2	35	1	25		
80. No. 1 Pumping shaft	3	36	34	70	30	Nov.	..	1	77	1	62	1	25				
81. No. 3 shaft	3	36	34	70	30	..	..	1	77	1	62	1	25		
Do, do	3	36	34	70	30	..	..	1	77	1	62	1	25		
82. Duck Creek breaker	5	50	34	70	30	Dec.	..	1	56	..	..	1	73		
83. Kackatt's Brook breaker	3	36	34	60	30	..	..	1	56	..	..	1	73
84. New breaker, Dunmore	3	36	34	60	30	..	..	1	56	..	..	1	73
85. Screams at Dunmore	3	36	34	60	30	..	..	1	56	..	..	1	73
86. No. 12 shaft	3	36	34	70	30	Nov.	..	1	40	1	10	1	50				
87. Law shaft	3	36	34	70	30	..	..	1	40	1	10	1	50		
88. No. 1 shaft	3	36	34	70	30	Nov.	..	1	40	1	10	1	50				
89. Eagle shaft	3	36	34	70	30	Dec.	..	1	40	1	10	1	50				
90. Chestnut Hill colliery	1	34	32	60	30	Nov.	..	1	40	1	40	1	15				
Total	54	118,142½	112	898	300			140	6,574	56	3,175	56	1,802	71	2,923	18	898

Abandoned.

The above includes all the boilers and machinery in the district, except one small locomotive, 29-horse power, at Hillsdale colliery, used to haul coal from the mines to the breaker. There are two locomotives, 20-horse power each, at Carey colliery. There is one locomotive, 15-horse power, at Grassy Island colliery. There is one locomotive, 20-horse power, at Chestnut Hill mine; and there is one locomotive, 20-horse power, used at Grassy Island colliery. One hoisting engine, of 20-horse power, is used at Eddy shaft colliery; for hoisting on phase, &c.

TABLE No. 5.
A List of Local Coal Sale Mines.

No. of mines.....	NAME OF MINES.	WHERE LOCATED.	BY WHOM OPERATED.	Ave'ge thickness of coal in feet	NAME OF THE VEIN OF COAL WORKED.	Number of tons of coal mined in 1873.....	Shafts.....	Slopes.....	Tunnels.....	Breakers.....	Schutes, &c.....	No. of men in the mines	No. of men outside
1..	Two local coal sale mines,	Pittston township,	Maryl'd Nat. Anth. C. Co.	10	Pittston, or 14-feet,			1	1		1		
2..	A local coal sale mine	Ransom township,	John Gibson & Co.....	4½	Rolling Mill.....			1	1		1		
3..	Do.....do.....	City of Scranton,	Tripp & Co.....	7	Diamond.....	3,500		1	1		1		
4..	Do.....do.....	do.....do.....	Hoy & Co.....	4½	Rolling Mill.....			1	1	1		4	3
5..	Do.....do.....	do.....do.....	Joseph Church.....	5½	Church.....	1,200		1	2		1	4	1
6..	Do.....do.....	do.....do.....	Michael Koek.....	7	Clark.....	825		1	1		1	4	1
7..	Do.....do.....	do.....do.....	Griffin & Leach.....	7	Clark.....	3,000		1	1		1	5	4
8..	Do.....do.....	do.....do.....	Hancock & Dean.....	7	Lower.....	3,000		1	1		1	6	3
9..	Do.....do.....	do.....do.....	Cartier & Moore.....	5	Dunmore.....	2,071		1	1		1	3	3
10..	Do.....do.....	do.....do.....	James Young.....	5	Dunmore.....	550		1	1		1	3	1
11..	Do.....do.....	Ber. of Dunmore,	Anthony Maloney.....	4	Dunmore.....	250		1	1		1	2	1
12..	Do.....do.....	do.....do.....	Martin Cuppen.....	5½	No. 2.....	2,650		1	2		1	5	4
13..	Do.....do.....	Blakeley towns p,	Luther Lyons.....	5½	No. 2.....			1	1		1		
14..	Do.....do.....	do.....do.....	Henry Bowen.....	5½	No. 2.....			1	1		1		
15..	Do.....do.....	do.....do.....	Thomas M'Loughlin.....	5½	No. 2.....			1	1		1		
16..	Do.....do.....	Gilsonburg bor.	Peter Dougherty.....		Top and Bottom.....			1	1		1		
17..	Do.....do.....	City of Carbondale	Thomas Brennan.....	7 & 5	Bottom.....			1	1	1	1		
18..	Do.....do.....	do.....do.....	S. S. Clarke.....	5	Bottom.....			1	1	1	1		
19..	Do.....do.....	do.....do.....	M'Garry & Brennan.....	5	Bottom.....			1	1	1	1		
20..	Do.....do.....	Frogtown, Fell tp.	C. H. Whitmans.....	5	Bottom.....	280		1	1		1		
21..	Do.....do.....	Fell township	J. C. & J. W. Williams.....					1	1		1		
22..	Do.....do.....	do.....do.....				2,500		1	1		1		

TABLE No. 6.

A List of Abandoned Mines.

NAME OF MINES.	WHERE LOCATED.	BY WHOM OPERATED.
No. 3 slope.....	Jenkin's twp.....	Pennsylvania canal co.
No. 1 mines.....	Pittston borough.....	do.....do.
No. 2 shaft.....	do.....	do.....do.
No. 3 shaft.....	do.....	do.....do.
No. 1 shaft, Carbon Hill.....	Old Forge twp.....	Glenwood coal company.
1 tunnel in Stafford Brook colliery,	Lackawanna twp.....	Sus. & Wyoming Val. R. R. co.
2 tunnels in National Anthracite		
colliery.....	City of Scranton..	do.....do.
1 tunnel in Meadow Brook colliery,	do.....	Wm. Connell & Co.
No. 1 shaft.....	Dunmore borough	Pennsylvania coal company. <i>Cur sale</i>
1 tunnel in Roaring Brook colliery,	do.....	Roaring Brook coal co.
Rockwell's mines.....	City of Scranton..	H. B. Rockwell.
Clark's mines.....	do.....	
Part of Elk Hill colliery.....	Blakley township,	Elk Hill coal company.
Top vein of No. 1 colliery.....	do.....	Del. and Hudson canal co.
Top vein of No. 3 colliery.....	do.....	do.....do.
Top vein of Grassy Island colliery,	do.....	do.....do.
Nos. 4 and 5 tunnels.....	do.....	Eaton & Co.
Nos. 1 and 2 tunnels White Oak col.	do.....	Del. and Hudson canal co.
No. 2 mines.....	Carbondale City..	do.....do.

REPORT

OF THE

INSPECTOR OF COAL MINES IN THE SOUTHERN DISTRICT
OF LUZERNE AND CARBON COUNTIES, FROM DECEMBER
31, 1872, TO DECEMBER 31, 1873.

To His Excellency, JOHN F. HARTRANFT,

Governor of the State of Pennsylvania :

HON. SIR:—Conformably with the requirements of the law, I have the honor of submitting to you my annual report. I regret to have to report an increase of accidents on that of my last report. The list of fatal accidents amount to 38—leaving to mourn their loss 20 widows and 48 orphans. The following table will give you an idea of the number and manner of death:

By falls of coal.....	17
By falls of slate.....	4
By explosion of gas.....	1
In slopes.....	2
In breaker.....	2
Premature blast.....	4
Cars.....	5
Kicked by a mule.....	1
Found dead.....	2
Total.....	<u>38</u>

There has been an increase also in the number of accidents not being fatal, the number for 1873 being 49, showing an increase of 11 over that of 1872. I am unable this year to make any comparison between the number of accidents and the tons of coal mined, and that because I have not a full list of coal shipped from different collieries. During the year there has been one explosion by gas, causing the death of one, and no damage to property. No boiler explosion. No rope or chain broke to cause any damage or injury. Ventilation is still improving throughout the district.

Damage to Property.—Breaker and two engine houses burned down at the same time at Tresekow. The fire still continues at No. 6 tunnel, Summit Hill. The dam has been raised and is filling with water.

Your obedient servant,

JOHN T. EVANS,

Inspector of Coal Mines.

REPORT GIVING A DESCRIPTION AND CONDITION OF COLLIERIES IN SOUTH DISTRICT OF LUZERNE AND CARBON COUNTIES.

COLLIERY No. 1, UPPER LEHIGH, *Luzerne county*.—*Landowners, Nescopee Coal Company*.—*Operators, Upper Lehigh Coal Company*.

Slopes Nos. 1 and 2 are on the north side of the basin, and on the estate of the Nescopee coal company.

Slope No. 3 is on the south side of the basin, and on the estate of Hon. Tench Coxe. The vein worked is the Buck Mountain. Average thickness 14 feet of good clear coal, a strong bottom slate and an excellent roof. These works and machinery are in excellent order. Good attention is paid to the ventilation of the mines by the mine agent, W. Powell, Sr., and W. Powell, Jr., assistant.

Slope No. 1, south dip, 320 feet in length and 150 feet vertical, with a pumping slope of the same length, and an inside slope in the west gangway, called No. 5 slope, with a hoisting engine and steam pump. The steam is carried through pipes from the surface boilers, and the exhaust is put into the upcast to assist the furnace to create ventilation for the use of the mines. The current of air traveling through the workings at present will average 18,000 cubic feet per minute. The slopes and workings are in good condition.

Slope No. 2, south dip, 330 feet in length, 191 vertical feet; also a pumping slope of the same length. A large and commodious breaker is built at the top of this slope, and the cars are taken out of No. 2 slope to top of breaker; also cars of No. 1 slope are taken up a breaker up lane on the opposite side from No. 2. This breaker prepares the coal of both slopes. There is also an outside slope in the east gangway of No. 2 slope, called No. 4 slope. There are extensive workings and well ventilated by a 12 foot fan on the east side and a furnace on the west side. The current of air on both sides will average 34,000 cubic feet per minute.

The directions of gangway in starting from all the slopes are east and west, but the west gangway is gone around the basin, and is now opposite No. 2 slope, on the opposite pitch. These workings formerly constituted the Upper Lehigh collieries, and coal is shipped at present only from these. The shipment for 1873 being 20,038 $\frac{8}{10}$ tons.

Powder used in blasting, 3,067 kegs; men and boys employed inside, 154; men and boys employed outside, 96; total, 250. Mules inside, 44; mules outside, 16; total, 60.

No. 3, north dip. This is a new slope—idle at present, waiting for a new breaker. It is on the estate of Tench Coxe.

Machinery of all the collieries consists of 6 hoisting engines, 4 pumping engines, 1 breaker engine and 1 fan engine—total, 12. Horse power, 415. There are 27 boilers in good condition.

D. Bertsch, superintendent; W. Powell, Sr., mine agent; W. Powell, Jr., assistant; S. M. Rigliter, outside foreman.

COLLIERY No. 2, CROSS CREEK, *Drifton, Luzerne county*.—*On the Estate of Tench Coxe*.—*Operators, Coxe, Bros. & Co.*

No. 1 slope is 360 feet in length, 103 feet vertical. This slope is sunk on the Buck Mountain vein; average thickness 14 feet. Also a slant is

driven half course to the pitch of the slope from the top, to take empty cars down to counter gangways, which are about 900 feet in length, on the west side of slope. Direction of gangways east and west from slope, which is pitching north. This is a fine colliery, well conducted and well ventilated by two furnaces, assisted on the west side by exhaust steam from steam pump. The present amount of air traveling on both sides is 25,000 cubic feet per minute. There is also on the east gangway a slope sunk to the basin for the purpose of opening another lift while working the present lift. There is also a new slope sinking to work the opposite pitch. The vein has a good slate bottom and an excellent roof of rock, a moderate pitch, good clean coal, a large breaker to prepare the coal, worked by a 30-horse power engine.

Machinery consists of 4 hoisting engines, 202-horse power; 2 pumping engines, 200-horse power.

A. McClellan, superintendent; E. L. Powell, mine agent.

COLLIERY No. 3, WOODSIDE, *Luzerne county*.—*Landowners, Jeddo Coal Company*.—*Operators, Jeddo Coal Company*.

Slope No. 1, south dip, 270 feet in length and 136 feet vertical. The vein worked is the Buck Mountain. Average thickness 14 feet. Directions of gangways is east and west from the slope. This is not a very extensive colliery, yet it is well conducted and well ventilated. The air passing through the mines amounts to 15,000 cubic feet per minute. The machinery and boilers are in good condition.

1 breaker worked by a 25-horse power engine; 2 hoisting engines of 60-horse power; 1 pumping engine of 60-horse power—total horse power of engines, 145; 6 boilers.

H. L. Fuller, superintendent; Wm. M'Donel, mine agent.

COLLIERY No. 4, JEDDO, *Luzerne county*.—*Landowners, Union Improving Company*.—*Operators, G. B. Markle & Co*.

Old and Red Ash slopes are now abandoned. Oakdale slope, No. 1, is 640 feet in length, 313 feet vertical. This slope is sunk in and works the Big vein; average thickness, 27 feet. Two gangways, one east and one west. The east gangway is a very long one, going around a point of the basin. A locomotive engine is used in this gangway to bring back the coal from a turn-out, where it is brought from the miners by mules. The air is let down through a down-cast, passing the miners or face of workings, going up east to near bottom of the slope, through the gangway in which the locomotive works. There is also a letting-down plane from a counter in west gangway. The mines are well ventilated. Average air is 25,000 cubic feet per minute.

Machinery consists of 1 hoisting engine, 80-horse power; 1 breaker engine, 30-horse power; 1 steam pump, 50-horse power; 1 locomotive, 15-horse power; total horse power, 170; 12 boilers in good order. Mine agent, Wm. Bradley; outside foreman, Robert Cawany.

Oakdale slope, No. 2, south dip, is a new slope in full operation, with a large new breaker attached, working a lift below Oakdale, No. 1.

Machinery consists of 1 hoisting engine, 80-horse power; 2 steam pumps and 8 boilers. Ventilation averages about 20,000 cubic feet per minute. Two gangways, east and west. Mine boss, Wm. H. Thomas; superintendent, John Turner.

COLLIERY No. 5, HIGHLAND MINES, *Luzerne county*.—*Landowners, Highland Coal Company*.—*Operators, G. B. Markle & Co.*

Slope No. 1 is in the Buck Mountain vein; average thickness 14 feet. Gangways are driven east and west. They have sunk a lift lower, making a third lift. These mines are well conducted. Ventilation good. Average air, 22,464 cubic feet per minute. Ventilated by exhaust steam from steam pump.

Machinery consists of 1 hoisting engine, 80-horse power; 1 breaker engine, 30-horse power; 2 steam pumps, 50-horse power each; total horse power, 210; 9 boilers, in good order. Mine boss, Peter Brown; mine agent, John Turner. All these works are operated by the same company, viz: G. B. Markle & Co.

They have three breakers working, one at Highland and two at Oakdale.

COLLIERY No. 6, ECKLEY, *Luzerne Co.*.—*Landowner, Hon. Tench Cox*.—*Operators, Sharp, Weiss & Co.*

This colliery has three hoisting slopes, two pumping slopes, two inside slopes, and two large breakers. Six hoisting engines and steam pumps are used to drain the works, with twenty-six boilers. These works are all on the Buck Mountain vein. Average thickness about 13 feet.

Slope No. 2, north dip, 630 feet in length, 300 feet vertical; well ventilated by exhaust from steam pump. Average air, 18,000 cubic feet per minute on both sides, east and west. An inside slope in the west gangway of this slope, with hoisting engine and two boilers.

Slope No. 3 is stopped for the present and kept for pumping.

Slope No. 4, north dip, 300 feet long, 160 feet vertical; well ventilated on both sides by a furnace on north-west and exhaust from steam pump on south-west side. The east gangway is driven around the point of basin, and has gone around from east to west on the north side of the basin, in which a slope is sunk, working the coal that underlies the south-west and north-west gangways. Average amount of air traveling through the mines is about 23,000 cubic feet per minute. Machinery and boilers in good order. Superintendents, Sharp & Weiss; mine agent, Samuel Bateman.

COLLIERY No. 7, BUCK MOUNTAIN, *Luzerne and Carbon counties*.—*Landowners and Operators, Buck Mountain Coal Company.*

The mines are in Luzerne and breaker in Carbon county. The coal worked is the Buck Mountain vein. The seam altogether will make 15 feet of coal, but there is a slate from two to six feet thick dividing the vein into two seams. This runs about six feet in the vein above bottom slate. The coal below is called six feet, and that which is above nine feet or top bench. This bench is an excellent coal, clean and good in quality. The six feet is rougher, but a good strong coal.

Slope No. 3 has re-started, but not much working in it yet.

Slope No. 2, south dip, 270 feet long, 160 feet vertical. Directions of gangways east and west. The work at present on the east side is an inside slope. The west side has several gangways and counter-gangways; also letting-down planes (balance plane) from a counter to main gangway. The work is nearly all on the top or nine-foot bench. There is also in this side a slope into one of these troughs that is so common in the Buck Mountain vein, and is working at present. Mine boss, Wm. Hendson.

Slope No. 4, north dip, 726 feet long, 125 feet vertical. This slope is situated about two miles south from breaker. The workings of this slope are nearly the same as those of No. 2, and working the same vein. Gangways east and west. Ventilation good. Working both benches. The roof is generally good. The coal is taken down a balance-plane to slope No. 3 and then drawn to the top of a hill, situated between slopes No. 3 and No. 2, by an engine. The cars have a grade to run here for a considerable distance to the top of a balance-plane that lets them down to slope No. 2. Then the coal from No. 2 and No. 4 slopes is let down a balance-plane to the breaker, which makes it a difficult place to work in the winter season. Mining boss, George Hendson.

Machinery consists of 4 hoisting engines, 280-horse power; 1 breaker engine, 30-horse power; 1 pumping engine, 60-horse power; 1 saw-mill engine, 20-horse power; total horse power of engines, 390. Three large steam pumps, with 38 boilers, in good condition. Men and boys employed inside, 195; outside, 100; total 295. Mules inside, 46; outside, 20; total, 66. Coal shipped in 1873, 103,483 tons. Powder used, 2,900 kegs. Superintendent, Wm. Spencer; outside foreman, George Hughes.

COLLIERY NO. 8, EBERVALE, *Luzerne county*.—*Landowners, Union Improving Company*.—*Operators, Ebervale Coal Company*.

Slope No. 1, south dip; slope No. 2, south dip. These slopes are sunk convenient to each other and into the same workings, and are working the Big vein coal only. Gangways lead east and west. A lift has been sunk to basin in both slopes and works both sides of basin. A new breaker is now in full operation at the top of No. 2 slope.

No. 3 slope, north dip, 742 feet long, 247 feet vertical. This is also sunk in the Big vein, and is connected by an air-way with No. 1 and No. 2 slopes, and has also a good traveling way. Another lift has to be sunk in the course of the year. These collieries are in good condition and well ventilated. Average amount of air traveling through the mines is about 35,000 cubic feet per minute.

Machinery consists of 3 hoisting engines, 180-horse power; 2 breaker engines, 50 horse-power; 5 pumping engines, 320-horse power; total, 10 engines of 550-horse power. Men and boys employed inside, 303; mules outside, 37. Superintendent, William J. Harris; mine agent, Archibald Nesbit.

COLLIERY NO. 9, MILNESVILLE, *Luzerne county*.—*Landowner, Porter's Estate*.—*Operators, Stout Coal Company*.

No. 5 slope, north dip, 280 feet long, 120 feet vertical. The coal worked is the Big vein; thickness 27 feet. This basin is very shallow; the slope

is sunk to the bottom of the basin, and works both pitches. The coal is good and strong, but that on the east and west side is faulty. This work is well ventilated by exhaust steam from pumps. Average air 12,000 cubic feet per minute. A new slope is being sunk, and the building of a new breaker, which is not in operation yet.

Machinery consists of 3 hoisting engines, 2 breaker engines, 1 pumping engine, 2 steam pumps and 13 boilers, in good order.

Wm. H. Harris, of Ebervale, superintendent; C. Kerbaugh, assistant; John Cleghour, outside foreman; Paul Winters, mine boss.

COLLIERY No. 10, HARLEIGH, *Luzerne county*.—*Landowners, Big Black Creek Improving Company*.—*Operators, Harleigh Coal Company*.

No. 1 slope, south dip, 461 feet long, 155 feet vertical. The coal worked is the Big vein; thickness 27 feet. The ventilation is good; the amount of air is about 7,000 cubic feet per minute. There is also in No. 1 slope an inside slope of about 80 yards in length, hoisting the coal to the bottom of No. 1. The hoisting engine and steam pumps are supplied with steam from the surface.

Slope No. 2. This is a pumping slope to drain the surface water off No. 1.

Slope No. 3, south dip, 609 feet long, 297 feet vertical. The coal worked is the Big vein; average thickness 27 feet. This slope works the coal below No. 1; is a lift deeper in the basin. In No. 3 there is also an inside slope to the bottom of the basin, about 100 yards in length. No gangways are going on at present, owing to their being to the boundary.

Machinery consists of 4 hoisting engines, 155-horse power; 2 breaker engines, 60-horse power; 1 pumping engine, 80-horse power; 6 steam pumps, 180-horse power; total engines, 13, of 475-horse power.

Morgan Silliman, superintendent; Daniel Reid, mine agent; Wm. Silver and Perry Fitzsimon, outside foremen.

COLLIERY No. 11, LATTIMER, *Luzerne county*.—*Landowners, Black Creek Improving Company*.—*Operators, Pardee Bros. & Co*.

Slope No. 1, north dip, 489 feet long, 297 feet vertical.

Slope No. 2, south dip, 360 feet long, 297 feet vertical. The coal worked is the Big vein; thickness 27 feet. Both slopes are down to basin and connected with each other by a gangway driven across the basin, yet the workings are separated, but much better ventilated. The air in both slopes is good. The amount of air passing through the mines is about 20,000 cubic feet per minute. In No. 1 counter is open to work the cross on No. 1 side of the basin, so that the bottom of the basin is worked by No. 2 alone.

Machinery consists of 2 hoisting engines, 2 breaker engines, several large pumps, and 22 boilers, in good order.

M. M. Cooper, superintendent; Wm. Martin, mining boss.

STOCKTON COLLIERY, *Luzerne county*.—*Landowners, Smith, Roberts & Packer*.—*Operators, Linderman, Skeer & Co*.

No. 2 slope, south dip, 1,490 feet long. The workings of this slope are on the Big vein or Mammoth vein. Direction of gangways east and west.

The present workings are new, as this long slope had been sunk a lift lower last spring. The workings are in excellent condition, and a splendid vein of coal to work. An airway has been driven down with the slope, so that the ventilation is good. The lift above connects with the workings of No. 1, and No. 1 connects by an inside with No. 5, which is on the opposite side of the coal basin. No. 2 is on the north side. Nos. 1 and 5 are on the south side. The air works down No. 2 and through the workings, then up the airway, thence to No. 1, old workings, to No. 5 slope. John James, mine boss.

Machinery consists of 1 hoisting engine, 80-horse power; 1 breaker engine, 20-horse power; 1 pumping engine, 60-horse power; total, 3 engines, 160-horse power; 15 boilers. Men and boys employed inside, 64; outside, 32; total, 96; mules inside, 4; outside 2; total, 6; coal shipped in 1873, 27,599 tons; powder used, 375 kegs.

No. 3 slope, north dip. Tench Coxe, landowner; Linderman, Skeer & Co., operators. Coal worked is the Big vein; average thickness 27 feet.—This place was abandoned in October, to go to work No. 5. Men and boys working at that time were 37 inside; 28 outside; total, 65; 6 mules inside and 2 outside; total, 8.

Machinery consists of 1 hoisting engine, 60-horse power; 1 breaker engine, 20-horse power; 1 pumping engine, 60-horse power; total, 3 engines, 140-horse power; 9 boilers. Coal shipped in 1873, up to October, 29,001 tons. Powder used, 562 kegs. Samuel Simmons, mine boss.

No. 4 slope, north dip. This was for a time kept for a pumping slope, also to hoist the men from No. 5 slope. At present a new work about half way down the slope has been opened to work coal that the company formerly had no lease to work, on the property of Tench Coxe. This work is new and well ventilated. The coal is delivered to No. 5 breaker.

Machinery consists of 1 hoisting engine, 60-horse power; 1 pumping engine, 60-horse power, and a large steam pump of 100-horse power; total, 3 engines, of 220-horse power; 15 boilers. Men and boys employed, 29; mules, 4. Mine boss, Edward Mordue.

No. 5 slope, north dip, length, 621 feet. Coal worked is the Big vein. Average thickness, 27 feet. Direction of gangways, east and west. This slope is driven to the basin. The workings in this slope are well ventilated, and on the east side works two ranges. The coal of the upper range is let down to the lower gangway by a balance-plane. There is also an inside slope to the workings of No. 1 slope. Coal is taken up to the bottom of this slope by an inside engine and a large steam pump to pump the water up to No. 5.

Machinery consists of 2 hoisting engines of 120-horse power; 1 breaker engine of 30-horse power; 3 engines of 150-horse power; 2 large steam pumps; 17 boilers. Men and boys employed inside, 141; outside, 74; total, 215. Mules inside, 24; outside, 5; total, 29. Coal shipped, 126,170 tons. Powder used, 2,159 kegs. Mine boss, John Airy; outside foreman, John Treven.

No. 7 slope is a new one, now sinking to take the place of No. 3 on the property of Tench Coxe. General superintendent, Wm. Carr; mine agent, John Beecroft.

HUMBOLDT COLLIERY, *Luzerne county*.—*Landowners, Lebanon Valley R. R. Co.*—*Operators, Linderman, Skeer & Co.*

No. 1 slope, north dip, length, 390 feet; vertical, 150 feet. The coal is the Wharton vein; average thickness, 9 feet. Direction of gangways, east and west. This slope is driven to a saddle in basin. The basin dips east and west from the slope, so that they have two gangways on west side, one on each pitch. These two have been stopped. The work is all on the east side, as the range has got too short on the west side. A new inside slope has been sunk to another saddle in basin. A new slope is in progress from surface in line between No. 1 slope and the inside slope, which we believe will fetch bottom of basin. This work is well ventilated, about 10,000 cubic feet of air per minute.

Machinery consists of 2 hoisting engines, 1 breaker engine, a large steam pump and 13 boilers. Mine agent, William Airy.

MOUNT PLEASANT COLLIERY, *Luzerne county*.—*Landowners, C. Koons & Co.*—*Operators, Taggart, Butler & Co.*

No. 1 slope, north dip, 420 feet long. Thickness of vein, 9 feet, being the Wharton. This work is well ventilated by two furnaces, one on each side. Amount of air is about 16,500 cubic feet per minute. The gangways at bottom are driven east and north-east. About midway in the slope there is a counter-gangway. It starts west and comes around over the north-east gangway, following the circumference of the basin. There are two breakers on the property; only one of them working.

Machinery consists of 2 hoisting engines, 1 at the slope and 1 at the breaker; a pumping engine and steam pump. Men and boys employed inside, 86; outside, 45; total, 131. Superintendent, Wm. Taggart; mine agent, David Javans.

BEAVER BROOK COLLIERY, FRENCHTOWN, *Luzerne county*.—*Landowners, French Coal Co.*—*Operators, Beaver Brook Coal Co.*

No. 1 slope, south dip, 420 feet long, 160 feet vertical. Coal worked is the Big vein. Average thickness, 25 feet of beautiful coal. Direction of gangways, east and west. East gangway is driven to the line. West gangway, after having been driven for a considerable distance in the basin, took rise to west, which shortened the range very much, and caused the company considerable trouble and expense. The pillars are now taken out. This work is well ventilated. Amount of air is about 12,000 cubic feet per minute.

Machinery for No. 1 and No. 3 consists of 2 hoisting engines, 120-horse power; 1 breaker engine, 30-horse power; 1 pumping engine, 40-horse power. Men and boys employed inside, 42; outside, 38; total, 80. Mules inside, 6; outside, 6; total 12. Coal shipped in 1873, 40,000 tons.

No. 2 slope. Not in the same basin as No. 1, but in the basin south of it. Coal worked is the Wharton. Average thickness, 8 feet; 759 feet long, 130 feet vertical. It has been driven down to the south line of Frenchtown property. Average pitch of vein is 13 degrees, so they commenced working from the bottom upward. Gangways are driven east and west from the slope, and the breasts are worked one-half course and the

cars are taken into them. Counter-gangways, driven off the slope at certain distances, are driven across the breasts. This slope is working with a single tract, for the purpose of hitching or coupling to cars on any part of the slope. The air is good. Amount supplied is about 10,000 cubic feet per minute, partly caused by the exhaust from a steam pump and by air going through an air-way to No. 1, Yorktown.

The whole machinery of this colliery consists of 10 engines of 380-horse power. The whole amount of coal shipped in 1873 was 100,000 tons. Powder used, 2,367 kegs. Men and boys employed inside, 72; outside, 32; total, 104. Mules inside, 9; outside, 1; total, 10. Boilers for all machinery, 22; in good order.

No. 3 slope is a slope now sinking on the Wharton vein. General superintendent, E. S. Bullock; mine agent, D. Reese; outside foreman, Thos. Davies.

HAZLETON COLLIERY, *Luzerne county*.—*Landowners, Diamond Coal Company*.—*Operators, A. Pardee & Co.*

Old Sugar Loaf slope, south dip, length 1,755 feet, vertical 979 feet. Sugar Loaf, No. 2, south dip, length 1,165 feet, vertical 639 feet. These slopes are sunk in the Big vein, the old one is sunk to the basin. The slopes are about 150 yards apart, and a breaker erected between them. The only workings at present is a gangway in the rock tunnel on the opposite pitch to prove the vein.

Machinery consists of 2 hoisting engines, one 40 and the other 80-horse power; 1 breaker engine, 40-horse power; 2 pumping engines, one 70 and the other 60-horse power; 23 boilers.

South Sugar Loaf, or No. 3, length 666 feet, vertical 382 feet, north dip. This colliery, through rolls and faults, will soon be worked out. Coal worked Big vein; average thickness 27 feet. There could be another lift sunk in the slope, but it would be necessary to have another slope, owing to roll or fault in bottom of slope. Well ventilated.

Machinery consists of 1 hoisting engine, 90-horse power; 1 breaker engine, 20-horse power; 2 steam pumps; 8 boilers. Wm. Fatkin, mine boss.

No. 1, old slope, south dip, length 2,271 feet, vertical 836 feet. Landowners, L. V. R. R. company. Operators, A. Pardee & Co. Coal worked is the Big vein; average thickness 27 feet. This slope has been sunk to basin, but the present workings are about 60 yards above the bottom of the slope. Direction of the gangway is east and west. The east gangway is driven to the line. The west gangway connects with the east gangway of No. 3 slope. The ventilation is good, caused by 2 furnaces. This work accumulates little fire-damp, but no one has been injured by it this year. The mine boss, Peter Watson, acts as fireman.

Machinery consists of 1 hoisting engine, 60-horse power; 1 breaker engine, 15-horse power; 1 pumping engine, 60-horse power; 11 boilers, in good condition. Air is passing through the mines at the rate of 7,000 cubic feet per minute. Peter Watson, mine boss.

No. 3 slope, south dip, length 1,062 feet, 555 feet vertical. Landowners, L. V. R. R. company. Operators, A. Pardee & Co. This slope is sunk in the Big vein, and is on a level with the present workings of No. 1 slope, and connected by their west gangway; well ventilated; about 6,000 cubic feet of air passes through the works per minute. The present workings will be left for No. 1 slope to work, and No. 3 will be sunk another lift.

Machinery consists of 1 hoisting engine, 80-horse power; 1 breaker engine, 15-horse power; 1 pumping engine, 100-horse power; 11 boilers. Issac Smith, mine boss.

LAUREL HILL COLLIERY, HAZLETON, *Luzerne Co.*—Length 543 feet; vertical 293 feet.—Landowners, *L. V. R. R. Co.*—Operators, *A. Pardee & Co.*

No. 4 slope, north dip. This slope is used for hoisting men in and out of the mines, and for pumping; also the lumber used in the workings of Nos. 4 and 5.

No. 5 slope, length 375 feet, vertical 293 feet. This slope is sunk through a rock to the place where the vein takes a rapid pitch, which accounts for it being shorter than No. 4. There are three tracks in this slope to the place where it strikes the vein, and two from there to the bottom. The third track takes the coal from the workings of No. 4 up into the breaker, which is a lift above the workings of No. 4. The workings of No. 4 are nearly all in the west gangway, and have many day falls and ample natural ventilation. No. 5 has one letting down plane in east gangway, owing to the line of the Diamond coal company being higher than their present line. Length of gangway and plane about a mile and a quarter. The west gangway is nearly a mile and a-half in length. The works are well ventilated by two furnaces, one on each side.

Machinery consists of 3 hoisting engines, 190-horse power; 1 breaker engine, 20-horse power; 1 pumping engine, 60-horse power; 2 large steam pumps; 20 boilers. Mine boss of No. 4 is Patrick Durkin, and mine boss of No. 5 is John Sleep.

CRANBERRY SLOPE, HAZLETON, *Luzerne county.*—Landowners, *A. L. & E. Roberts.*—Operators, *A. Pardee & Co.*

The coal worked is the Big vein; thickness 27 feet. There is not much work on the east side of the slope, only ripping pillars out. The west side gangway is driven in a considerable distance; in driving which great difficulties and obstacles were met with in the shape of rolls and faults, but they have been successful in getting into a fine field of coal. There are two gangways going on in it, one east and the other west. The east gangway met a roll in the basin, which turned it around to the south, and is at present going west. The west gangway proper keeps its course. Well ventilated. Amount of air 7,000 cubic feet per minute.

Machinery consists of 1 hoisting engine, 60-horse power; 1 breaker engine, 20-horse power; 1 pumping engine of 60-horse power; 15 boilers, in good order. Conrad Miller, mine boss.

Crystal Ridge slope. Length, 444 feet; vertical, 144 feet; north dip. Landowners, *A. L. & E. Roberts.* Operators, *A. Pardee & Co.* This slope is abandoned for the present.

Crystal Ridge, No. 2. This is a new slope, sunk to bottom of basin and coal brought up to old Crystal Ridge slope. This is a new work and not many working in it yet, as they are driving a slope on the Cranberry side to take the coal to Cranberry side instead of Crystal Ridge.

Machinery consists of 1 hoisting engine of 40-horse power and 2 steam pumps.

GOWEN COLLIERIES.

These collieries are situated about 12 miles west of Hazleton, and on the estate of Roberts coal company. Operators, Roberts Run coal company.

No. 1 drift is now abandoned and a new slope is sunk 80 yards below the old drift gangway, near mouth of drift. Average size of vein, 10 feet. The west gangway is in a considerable distance; tolerably ventilated.

No. 2 drift. This drift is on another vein lying over the vein in drift No. 1, of about ten feet in thickness and about two feet of slate and dirt running in it, making about eight feet of coal. This is of a good quality. No definite name is yet given to these veins, as they differ from all the other veins in the Lehigh region. They have a fine breaker built here, with an engine of 30-horse power and three boilers, and one hoisting engine of 60-horse power with two boilers. Superintendent, Lewis Rothermel; mine agent, R. B. Platt.

YORKTOWN COLLIERY, *Carbon county.*—*Landowners, New York and Lehigh Coal Company.*—*Operators, A. L. Mumper & Co.*

Slope No. 1, south dip. Length, 780 feet. There are two veins of coal worked in this slope, the local names of which are Big vein and Wharton. Thickness of Big vein averages 25 feet; that of the Wharton 8 feet. The slope is sunk on the Big vein and a tunnel driven through slate and rock 65 yards in length to the Wharton. The Big vein gangways east and west are to the line and nearly all worked out. The west side is entirely finished. A little slope has been driven in east gangway to work a piece of coal lift below the gangway, which will soon be worked out. There is also a letting-down plane in the Wharton. Air is rather weak in these works, except on the west side of the plane. Mine boss, David Thomas; outside foreman, Richard Morris.

Slope No. 2. This slope has been abandoned, owing to the coal being all worked out. Machinery has been removed. The works are now full of water.

Slope No. 4, north dip. Length, 330 feet. Coal worked is the Wharton. Average thickness, 8 feet. The coal from this slope is taken to No. 5 new breaker. The workings of this slope are connected with those of No. 5, which causes the air to be much better than usual. This slope will soon be abandoned, and the coal of the present working will be taken through No. 5. Mine boss, Morgan Moses.

Slope No. 5, south dip. Length, 390 feet. This slope is sunk in the Big vein, and a tunnel has been driven on the same side as the slope to the Wharton, and an air-way driven up to connect with the workings of No. 4 slope. Direction of gangways in both veins is east and west. This slope is down to the basin in Big vein, but the property of the Honey Brook coal company interferes with the working of the north pitch, which, without an amicable settlement, will cause the working this side of basin to be difficult to both companies, as about 20 yards of the bottom part of the north pitch belong to the New York and Lehigh coal company. The air is conducted in these collieries as I would wish to see it. Mine boss, Evan Reese; outside foreman, E. H. Thomas. Machinery consists of 3 hoisting engines of 140-horse power, 2 breaker engines of 70-horse power and 4 pumping engines of 450-horse power; total horse power, 660; 34 boilers. Men and boys employed inside, 222; outside, 162; total, 384. Mules inside, 18; outside, 15; total, 33. Coal shipped in 1873, 139,529 tons. Powder used, 2,940 kegs. General superintendent, Thomas John.

JEANSVILLE COLLIERY, *Luzerne and Carbon counties.*—*Landowners and operators, Spring Mountain Coal Company.*

These collieries consist of four slopes, one drift and three coal breakers.

Slope No. 1. Length, 880 feet; vertical, 304 feet. There are two veins worked in this slope, the Big vein and the Wharton. The former averages in thickness 25 feet; the latter 9 feet. This slope is sunk in the Big vein, and a tunnel is driven to the Wharton. No gangway going on in the Big vein owing to the east driven to line and west side to a rising out in the vein. The gangway in the Wharton starts from tunnel east and west. These gangways are driven on each side about 200 feet, and a few breastings started. The vein looks well and the coal is of the best quality. Air good, averaging about 15,000 cubic feet per minute. Machinery consists of 1 hoisting engine, 60-horse power; 1 breaker engine, 40-horse power; 2 pumping engines, 250-horse power; total horse power, 350; 16 boilers. Mine boss, A. Williams. Men and boys employed inside, 84; outside, 57; total, 141. Mules inside, 14; outside, 4; total, 18. Coal shipped in 1873, 42,000 tons. Powder used, 1,197 kegs.

Slope No. 3, south dip. Length, 420 feet; vertical, 144 feet. This slope is sunk in the Big vein, and a tunnel is driven to the Wharton, with a gangway driven considerable distance, but the Wharton proves better now than in my last report. Big vein is abandoned. Coal goes to No. 1 breaker. Air good. Machinery consists of one hoisting engine, one pumping engine and eight boilers.

Slope No. 4. This slope is a new one, sunk to the basin. Direction of gangways is east and west. I have had occasion to stop east side gangway, owing to water lying in old No. 4 workings, until it is pumped, which the the company is at present doing. Air good. Machinery consists of 2 hoisting engines, 80-horse power; 1 breaker engine, 40-horse power; 1 pumping engine, 80-horse power; total horse power, 200; 9 boilers. Men and boys employed inside, 49; outside, 27; total, 76. Mules inside, 3. Coal shipped in 1873, 10,000 tons. Powder used, 343 kegs. Mine boss, John Probert; outside foreman, F. Jones.

Slope No. 5, south dip. Length, 775 feet; vertical, 298 feet. Sunk in the Big vein and a tunnel driven to Wharton, which is ten feet thick. They have two gangways going east and west and several breastings. The coal is of excellent quality, with a range of 200 yards from this gangway to the Wharton drift gangway. But this is parted into two ranges by putting a slope down of 100 yards in the Wharton drift, taking one-half through the Wharton drift to breaker. No gangways in operation in the Big vein. Air good, averaging about 20,000 cubic feet per minute. Still the air is weak in some portions of the workings, owing to so many openings caused by fallings in and loss by brattices in the Wharton vein.

Machinery consists of 3 hoisting engines, 140-horse power; 2 breaker engines, 40-horse power; 1 pumping engine, 80-horse power; total, 6 engines, of 360-horse power; 1 large steam pump; 9 boilers. Men and boys employed inside, 90; outside, 39; total, 129. Mules inside, 24; outside, 2; total, 26. Coal shipped in 1873, 90,000 tons. Powder used 1,664 kegs. Mine boss, Wm. Morris.

Tunnel No. 1, or Wharton drift. The workings above water level are now abandoned, but a slope is sunk here in an air-way from No. 5 and an engine put on top to hoist the coal from one-half the range between these workings and those of No. 5 slope. Engine inside. Boilers at mouth of tunnel. Coal goes to No. 5 breaker. Air is good, except a little in east

gangway. This will be remedied by an air-way driving from No. 5 gangway to meet that of the drift slope. Four boilers are in use. Mine agent, Stuart M'Farling; superintendent, J. C. Heyden.

COLERAINE COLLIERY, NEAR BEAVER MEADOW, *Carbon county.*—*Land-owners and Operators, W. T. Carter & Co.*

No. 1 breaker takes the coal from three drifts, one in the Big vein and two on the Wharton, one of which has been abandoned. The Wharton here is about ten feet thick, with an excellent roof. The air is good.

Machinery consists of 1 hoisting engine, to hoist coal out of a valley to a level with the breaker, and 1 breaker engine, 30-horse power.

Men and boys employed inside, 82; outside, 31; total, 113. Mules inside, 22; outside, 3; total, 25. Coal shipped in 1873, 70,000 tons. Powder used, 1,462 kegs.

Slope No. 1, west dip. Length 1,080 feet; vertical 210 feet, with a pumping shaft of the same vertical. Coal worked is the Big vein. Average thickness 25 feet, but has been found in some parts to double the bottom slate of one seam to form a top for the other. This work is rather extensive and tolerably ventilated by a fan. This slope works the middle basin, but has been connected with the northern basin by a tunnel through a ridge in the vein, not coming to the surface at this point as it does at the top of the slope. It works a lift of that basin east and west of that tunnel, meeting east with the property of the old Beaver Meadow coal company, and west with the property of the Spring Mountain coal company. Jeansville, east side, is as near as can be allowed to the line, as the old workings on the east side are full of water, and there are no maps to show their extensions.

Slope No. 2, north dip. Length 400 feet; vertical 320 feet. This slope is started from the surface, near the top of No. 1. The workings are driven down to the bottom of the basin. This work is new and will work both the north and south pitches. A new airway is driven in south pitch to surface nearly opposite to the slope, with a large steam pump at the bottom. Ventilated by exhaust from steam pump, acting as steam jet. Air good.

Machinery consists of 2 hoisting engines, 100-horse power; 1 breaker engine, 30-horse power; 1 pumping engine, 70-horse power; 1 large steam pump.

Men and boys inside, 65; outside, 34; total 99. Mules inside, 11; outside, 2; total, 13. Coal shipped, 49,000 tons. Powder used, 609 kegs.

General superintendent, John Weir.

SOUTH SPRING MOUNTAIN COLLIERIES, TRESKOW, *Carbon county.*—*Land-owners and Operators, Honey Brook Coal Company.*

No. 2 slope, south dip. Length 450 feet. Wharton vein is the coal worked; average thickness 9 feet. Air is good. Amount of air face of gangway is about 6,000 feet per minute.

No. 4 slope. This slope has been abandoned in the course of the year. Big vein was the coal worked.

No. 5 slope, south dip, 260 feet in length. Coal worked is the Big vein; average thickness 25 feet. Gangways east and west from slope. The east side is nearly worked out. On the west side there are two gangways, one

on each side of the basin. Owing to the basin dipping west these gangways are a considerable distance from each other. Before reaching the line to work this coal another slope must be sunk. Air is good. An old breaker attached to this slope took fire and burned down, together with two engine houses, in the course of the year.

No. 6 slope, north dip. Length 440 feet. The coal worked in this slope is the Wharton, of 9 feet thickness. The workings are nearly all on the east side of the slope. There are two gangways, one going east, and the other curving around the basin to south dip. The coal looks well, and is of an excellent quality. This slope is ventilated by a furnace built in the out-take. Air is good, about 7,000 cubic feet per minute.

Machinery of all the collieries consists of 6 hoisting engines, 230-horse power; 2 breaker engines, 30-horse power; 2 pumping engines and 3 steam pumps, 400-horse power; total engines, 13, 660-horse power; 30 boilers.

Men and boys inside, 135; outside, 139; total, 274; mules inside, 19; outside, 21; total, 40. Coal shipped in 1873, 97,013 $\frac{1}{2}$ tons. Powder used, 2,041 kegs.

General superintendent, E. B. Leissenring; assistant superintendent, T. N. Patterson; mine agent, Owen Evans, outside foreman, Geo. Spencer.

BEAVER MEADOW COLLIERIES, *Carbon Co.—Landowners, Tench Cox.—Operators, Ely, Martin & Co.*

No. 1 slope, north dip, and No. 2, south dip. These are shallow slopes to basin. They commence on a ridge in the vein, but further west the ridge lowers down to a flat to bottom of basin, and the two basins join in a flat. A gangway was driven from each slope, and met in the bottom basin, causing all the workings to be in one. They have an excellent vein of coal, which is the Big vein, of about 25 feet in thickness. The air is good.

No. 3 slope. Wharton vein; thickness 9 feet. This is a new slope, and the work is not all together opened out yet.

Machinery of all the slopes consists of 3 hoisting engines, 90-horse power; 1 breaker engine, 20-horse power; total engines, 4, 110-horse power; 2 small steam pumps; 7 boilers.

Men and boys inside, 59; outside, 38; total, 97; mules inside, 4; outside, 7; total, 11. Coal shipped in 1873, 40,000 tons. Powder used, 1,000 kegs.

Superintendent, John Martin; mine boss, Richard Gilbert.

SUMMIT HILL COLLIERIES, *Carbon county.—Landowners and Operators, L. C. and N. Company.*

No. 4 slope, south dip. Length 450 feet. This slope is sunk in the Mammoth vein; average thickness 50 feet. This is a large and extensive work and well conducted. The gangways are very long on the east—about one mile in length, and on the west side 1,200 yards. The pillars on the west side have been taken out, reserving the gangway pillars to keep the gangway up as an air course for the next lift, which the company is preparing to open by sinking a small slope near the bottom of the main slope on the west side. Outside an engine has been erected to hoist from the sinkers to the bottom of the present slope. The east side will be cut off by a new slope sunk in No. 5 tunnel. The ventilation on the west side is

good; but is not so good on the east, because there are so many surface openings through which the air escapes. The works are ventilated by a fan 15 feet in diameter on the east; the west side is supplied with air by natural ventilation. Amount of air on both sides is about 20,000 cubic feet per minute.

Machinery consists of 2 pumping engines, one of 206-horse power and the other 520-horse power; 2 hoisting engines, one of 120-horse power and the other 100-horse power; 1 breaker engine, 30-horse power; 1 fan engine, 20-horse power; total power of engines, 1,010; 12 boilers, all in good order.

Men and boys inside, 105; outside, 105; total, 210. Coal shipped in 1873, 72,153 tons.

There is one locomotive engine, 14-horse power, used outside to take dirt to dirt bank.

Mine boss, David Lawson; outside foreman, Samuel Nevins.

Tunnel No. 5. Coal worked is the Big vein, about 40 feet thick. This tunnel has been driven through rock to the Big vein. It also crosses the Red Ash vein. The works at the end of the tunnel have been abandoned. No. 4 slope being a lift below these workings, and working under the gangways, the company have come back in the tunnel to the Red Ash vein, and have a gangway of nearly a mile in that vein, being tunneled from the face of the Red Ash gangway through about 100 yards of rock to the face of the Big vein gangway, which extended the workings from this point nearly three-sixths of a mile. A locomotive engine, of 40-horse power, takes the coal from this tunnel through the Red Ash gangway out to the breaker, which is about a mile and a quarter of road for the locomotive to work on. The coal is brought to a point to meet the locomotive by 23 mules. The work is well ventilated by a fan. There is one large breaker.

Machinery consists of two engines to work breaker and hoist the coal to the top of it, one of 30-horse power and one of 60-horse power; four boilers, in good condition. Men and boys inside, 104; outside, 92; total, 196. Coal shipped, 64,706 tons. Mine boss, George Davies; outside foreman, William Rateliff.

Tunnel No. 6. This tunnel is driven through rock and slate across the measures to the Red Ash and Big veins, into the mountain on the north side of Panther Creek valley. The work at the end of the tunnel is abandoned and a slope sunk down and worked a lift below the water level of this tunnel, and that also is abandoned. The present workings are opened from a gangway driven in the Red Ash for a considerable distance, about three-fourths of a mile. A tunnel is driven across the measures from the Red Ash to the Big vein, on the east side of No. 6. The present workings are an extension from the tunnel driven from the Red Ash. The Red Ash workings are abandoned. All the present workings are in the east gangway of the Big vein, which is about 30 feet thick. But this is not all of the Big vein. A large slate has come into the vein and caused it to be unworkable to the bottom slate. This will be worked in some future time, when the top part is worked over. These workings are connected with those of No. 3, Nesquehoning, which is a lift below the workings of No. 6, by an air-way driven from the latter to the former. A locomotive of 40-horse power takes the coal out of this work from a turn-out in the Big vein gangway to the breaker. Road about one mile and a-half in length.

Machinery consists of 1 hoisting engine of 30-horse power, 1 breaker engine of 20-horse power and 4 boilers; 716 kegs of powder used; coal shipped, 89,950 tons. Employees, 267. Mine boss, William H. Evans; outside foreman, Moses Meiger.

Tunnel No. 9. This tunnel is driven into the mountain on the south side of Panther Creek valley, cutting seven veins of coal. The last, and the one worked at present, is the Big or Mammoth vein. The Red Ash has been worked in this, but at present is abandoned for some purpose best known to the company. Average thickness of vein, 60 feet; Red Ash about 9 feet. Total length of tunnel is 215 feet. A new slope has been sunk in the Big vein to work a lift below the present workings. The slope is about 85 yards in length, at a pitch of about 45 degrees near where the tunnel cuts the Big vein. The present workings are on east side upon a plane, and cannot last very long. This work is very hot as it works the lower lift of the Big vein, the top lift having been worked for some years past and gaps closed and heated. Air good. The west side workings are nearly all comprised in taking pillars out. This side is connected with No. 10 tunnel by both gangways meeting at a level. Fire-damp is to be found, but there is a good ventilation of a keen strong current of air passing from one tunnel to the other. Amount of air passing is about 30,000 cubic feet per minute. Number of employees and shipments of coal not reported. Mine boss, Charles Powell; outside foreman, Thomas D. Jones.

Mt. tunnel. This tunnel is driven into the mountain above No. 6 tunnel to work the crop of the same vein. The coal was not worked to bottom slate in the old workings of No. 6. Two seams or benches were left, locally called 4-foot and yard veins. A slate parts them from the other part of the vein. This work is operated by contract. The contractors are Josiah Williams and John Davies. The coal is delivered to No. 6 breaker by a balance-plane from a level with the tunnel, and is prepared with the coal of No. 6 tunnel. General superintendent, W. D. Zehner; mine agent, John P. Jones.

ROOM RUN MINES, NESQUEHONING, *Carbon county.*—*Landowners and Operators, L. C. and N. C. Co.*

No. 1 shaft. Depth, 300 feet. This shaft has until late worked the Big vein. A tunnel has been driven to the Red Ash vein. At present the workings of Big vein are all on west side of shaft. The Red Ash on east side. The tunnel proved to go under the basin of Red Ash vein, so a plane was driven up to bottom of basin, through which the Red Ash coal is let down to the tunnel on east side of Big vein gangway, and through which it is taken to bottom of shaft. This work yields a great quantity of carbonated hydrogen gas, (fire-damp,) especially the Big vein. The west side or Big vein is worked with safety-lamps, owing to several of the breast pillars breaking and filling up the man-way that goes up into the breasts. There are no miners working breasts nor gangways at present; only loading the coal out of breasts. When this is done the gas will be drained into the return air-way. This accomplished it will be safe to work with naked lights. This side is ventilated by a 15-foot fan. About 8,000 cubic feet of air at face of gangway. The east or Red Ash side is ventilated by a furnace, as there is no explosive gas in it. Air tolerable, about 4,000 cubic feet per minute. A practical fire boss is at all times kept to watch the gas, especially in the west side.

Machinery consists of 1 hoisting engine of 100-horse power, 1 pumping engine of 387-horse power, 1 fan engine of 10-horse power and 8 boilers. Mine boss, Wm. Watkins.

Room Run slope No. 3.—This slope is sunk in the Red Ash vein; thickness 10 feet. A tunnel is driven from the Red Ash to Big vein. Red Ash

work is nearly all abandoned—the work being at present nearly all in the Big vein. The tunnel is driven south and the gangways east and west from it. All the work is on the west side of the slope. The workings produce a little fire-damp. The air is good, averaging about 18,000 cubic feet per minute. The Red Ash gangway is in faulty ground, and has been stopped for some time. The Big vein does not prove well, but the company are still progressing forward with gangways and breasts, in hopes of meeting with better success. The work is ventilated by a 15 foot fan. Amount of air circulating 10,000 cubic feet per minute. These workings are connected with the workings of tunnel No. 6, Summit Hill.

Machinery consists of 1 hoisting engine, 65-horse power; 1 pumping engine, 157-horse power; 1 fan engine, 15-horse power; 6 boilers.

Mine boss, William Smitham.

Room Run slope No. 4, south pitch.—This slope is driven down in the Big vein from the top of a saddle in the vein that comes to the surface at this point, near the shaft, but on a contrary pitch to the workings of the shaft. This slope is driven down to a fault in the vein, and two gangways are driven off it east and west. The east gangway struck the fault, and is stopped. The west gangway is in trouble, but is still carried on. The air is rather weak in this work, but there are only a few men working in this slope. If the vein proves well ample ventilation will be produced.

Machinery consists of 1 hoisting engine, 29-horse power; 1 pumping engine, 29-horse power; steam to work them is conveyed from shaft boilers.

Tunnel No. 2.—This tunnel is driven across the No. 4 basin to the north pitch of the Red Ash vein. This is also situated near No. 1 shaft, and passing it about 15 feet from the top of the gangways in the Red Ash, which are going east and west, and driven in some distance, with several breasts turned in them. This bids fair to be a good colliery. Ventilation is good on both sides. The breaker to prepare the coal from all the collieries is about three-fourths of a mile from the mines. A locomotive engine, 58-horse power, is used to take coal from the mines to the breaker. 1 breaker engine, 65-horse power, and 4 boilers at breaker.

General superintendent, W. D. Zehner; assistant, James Smitham; outside foreman, Richard Eustice. Coal shipped, 75,326 tons. Powder used, 922 kegs. Men and boys inside, 123; outside, 142; total, 265.

TABLE No. 1.
Condition of Mines in the Southern District of Luzerne and Carbon counties.

No.	NAME OF COLLIERY.	SITUATION.	LAND OWNERS.	OPERATORS.	SHIPMENTS OF COAL FOR 1872.	Tons. Cwt.
1.	No. 1 slope	Upper Lehigh	Nescopee coal company	Upper Lehigh coal company	.....	.....
2.	No. 2 slope	do	do	do	.....	.....
3.	No. 3 slope	do	do	Tench Cox	.....	200,038 08
4.	No. 4 slope	do	do	do	.....	.....
5.	No. 1 slope	Woodsides	Jeddo coal company	Jeddo coal company	.....	21,169 07
6.	No. 1 slope	Drifton	Tench Cox	Coxe, Bros. & Co.	.....	108,912 13
7.	Jeddo, old slope	Jeddo	Union improving company	do	.....	.....
8.	Oak Dale, No. 1	do	do	do	.....	220,782 19
9.	Oak Dale, No. 2	do	do	do	.....	60,397 19
10.	No. 1 slope	Highland	Highland coal company	do	.....	.....
11.	No. 2 slope	Eckley	Tench Cox	Sharp, Weiss & Co.	.....	.....
12.	No. 3 slope	do	do	do	.....	152,167 12
13.	No. 4 slope	do	do	do	.....	.....
14.	No. 2 slope	Buck Mountain	Buck Mountain coal company	Buck Mountain coal company	.....	.....
15.	No. 3 slope	do	do	do	.....	.....
16.	No. 4 slope	do	do	do	.....	103,483 14
17.	No. 1 slope	Ebervale	Union improving company	Evervale coal company	.....	.....
18.	No. 2 slope	do	do	do	.....	.....
19.	No. 3 slope	do	do	do	.....	242,064 03
20.	No. 5 slope	Melnesville	Porter's estate	Stout coal company	.....	.....
21.	No. 6 slope	do	Improving company	do	.....	63,895 14
22.	No. 1 slope	Harleigh	Big Black Creek I. company	Harleigh coal company	.....	.....
23.	No. 2 slope	do	do	do	.....	130,741 03
24.	No. 3 slope	do	do	do	.....	201,467 05
25.	No. 1 slope	Lathier	Black Creek I. company	Farlee, Bros. & Co.	.....	.....
26.	No. 2 slope	do	do	do	.....	.....
27.	No. 2 slope	Stockton	Smith, Roberts & Packer	Lindernum, Skeer & Co	.....	.....
28.	No. 4 slope	do	do	do	.....	.....
29.	No. 5 slope	do	do	do	.....	.....
30.	No. 3 slope	do	Tench Cox	do	.....	.....
31.	No. 6 slope	do	do	do	.....	187,962 18
32.	No. 1 drift	do	do	do	.....	.....
33.	No. 1 slope	Humboldt	L. V. E. R. company	do	.....	.....
34.	No. 2 slope	do	do	do	.....	42,520 01

TABLE No. 1—CONTINUED.

No.	NAME OF COLLIERY.	SITUATION.	LAND OWNERS.	OPERATORS.	SHIPMENTS OF COAL FOR 1873.
					Tons. Cwt. 35,231 11
35.	No. 1 slope.	Mt. Pleasant.	C. Koons & Co.	Taggert & Co.	
36.	No. 1 slope.	Beaver Brook.	French coal company.	B. Brook coal company.	
37.	No. 2 slope.	do.	do.	do.	
38.	No. 3 slope.	do.	do.	do.	
39.	No. 1 slope, Sugar Loaf.	Hazleton.	Diamond coal company.	A. Pardee & Co.	
40.	No. 2 slope.	do.	do.	do.	
41.	No. 3 slope.	do.	do.	do.	
42.	Old slope.	do.	L. V. R. R. company.	do.	
43.	No. 3 slope, Laurel Hill.	do.	do.	do.	
44.	No. 4 slope.	do.	do.	do.	
45.	No. 5 slope.	do.	do.	do.	
46.	Cranberry slope.	do.	E. Roberts & Bros.	do.	
47.	No. 1, Central Ridge.	do.	do.	do.	
48.	No. 2.	do.	do.	do.	
49.	No. 2 drift.	Gowen.	Roberts coal company.	Robert Run coal company.	471,701 15
50.	No. 1 slope.	do.	do.	do.	
51.	No. 1 slope.	Yorktown, Carbon eo.	N. Y. & L. coal company.	A. L. Mumper & Co.	
52.	No. 2 slope.	do.	do.	do.	
53.	No. 4 slope.	do.	do.	do.	
54.	No. 5 slope.	do.	do.	do.	
55.	No. 1 slope.	Jeanesville, Luzerne and Carbon counties.	Spring Mountain coal company.	Spring Mountain coal company.	
56.	No. 3 slope.	do.	do.	do.	
57.	No. 4 slope.	do.	do.	do.	
58.	No. 5 slope.	do.	do.	do.	
59.	No. 1 drift.	do.	do.	do.	144,000 00
60.	No. 6 slope.	do.	do.	do.	
61.	No. 1 drift.	Coleraine, Carbon eo.	William T. Carter & Co.	W. T. Carter & Co.	
62.	No. 2 drift.	do.	do.	do.	
63.	No. 3 drift.	do.	do.	do.	
64.	No. 1 slope.	do.	do.	do.	
65.	No. 2 slope.	do.	do.	do.	
66.	No. 1 slope.	B. Meadow, Carbon eo.	Tench Cox.	E. Martyn & Co.	
67.	No. 2 slope.	do.	do.	do.	
68.	No. 3 slope.	do.	do.	do.	

69.	No. 2 slope.....	Trescow, Carbon co.....	Honey Brook coal company.....	H. B. coal company.....	
70.	No. 4 slope.....	do.....	do.....	do.....	
71.	No. 5 slope.....	do.....	do.....	do.....	
72.	No. 6 slope.....	do.....	do.....	do.....	72,153 00
73.	No. 4 slope.....	Summit Hill, Carbon co.....	L. C. and N. company.....	L. C. and N. company.....	64,706 00
74.	No. 5 tunnel.....	do.....	do.....	do.....	89,950 00
75.	No. 6 tunnel.....	do.....	do.....	do.....	
76.	Mountain tunnel.....	do.....	do.....	do.....	72,925 00
77.	No. 9 tunnel.....	do.....	do.....	do.....	
78.	No. 1 shaft.....	Nesquehoning.....	do.....	do.....	
79.	No. 3 slope.....	do.....	do.....	do.....	
80.	No. 4 slope.....	do.....	do.....	do.....	
81.	No. 2 tunnel.....	do.....	do.....	do.....	75,326 00

TABLE No. 2.
List of Fatal Accidents in South District of Luzerne and Carbon Counties.

DATE.	LOCATION.	No. of slope....	No. of tunnel...	NAMES.	Married or single	Age	No. of children..	HOW KILLED.	REMARKS.
Jan. 10.	Buck Mountain.	2		Neil Brennen.	S.	19		Fell under cars.	Lived eight days.
14.	Stockton	5		Charles Colcher	S.	26		Fell down breast.	Lived four days.
Feb. 20.	Craberry slope			Henry M'Wegand	S.	49		Round dead in gangway.	Died from effects of a fit.
21.	Summit Hill	4		Hugh Gillespie	S.			Fell under car outside.	Instant death.
March 6.	Laurel Hill	5		Fredrick M'Gee	S.	12		Fell off a platform outside	Died in the evening.
13.	Jeansville	1		Patrick Dragan.	S.	42		Crushed by screen in breaker.	Cause of death heart dis.
13.	Yorktown	1		Francis Cannon	S.	13		Fell under car outside.	Lived ten days.
16.	Lafimer	1		Charles M'Guire	M.	40	5	Struck by coal rolling down slope.	Lived three hours.
April 15.	Jeansville	1		Barney M'Gee	M.	81	1	By a fall of coal	Instant death.
15.	Jeansville			Daniel Coyle	M.	28	1	By a fall of coal	Instant death.
22.	Yorktown	5		James M'Callerty	S.	17		Fell down slope	Instant death.
22.	Woodside	1		Conrad Rudolf	M.	38	6	Fall of coal	Instant death.
28.	Mt. Pleasant.	1		George Hill.	S.	13		Fell under car outside	Instant death.
May 5.	Melnesville.	5		Stephen Murphy	M.	56	3	By coal rolling on him	Instant death.
14.	Ebervale	21		Barney Gallagher	M.	5		By coal rolling against hip.	Instant death.
30.	Pink Ash, Jeddo			John Gallagher	M.	33	5	Burnt with gas	Instant death.
June 2.	Summit Hill.	4		Peter Callashay.	S.	18		Bumped between cars.	Lived seven hours.
10.	Hazleton	3		Babzer Killmers.	S.	14		By a mule outside.	Instant death.
16.	Drifton	1		Evan Pugh.	S.	32		By a fall of coal	Instant death.
19.	Humboldt	1		James Shorting	M.	30	1	By a premature blast	Instant death.
19.	Ebervale	2		John M'Gill	S.	30		By a fall of coal	Lived ten hours.
25.	Summit Hill.	5		Daniel Davies	M.	23	1	By a fall of slate.	Lived nine hours.
18.	Hartleigh.	1		William Patton	M.	28	1	By a fall of coal	Instant death.
18.	Jeansville	6	1	Andrew Baxter.	M.	35	6	By a premature blast.	Lived five days.
21.	Pekley	2		Henry Whyard	M.	51		By coal rolling on him	Instant death.
Aug. 2.	Dakdale	2		Hugh M'Arrith	M.	59	6	By a fall of coal	Lived eighteen hours.
18.	Tresckow	4		William Hengy	M.	35	3	By a fall of coal	Instant death.
20.	Colerain	1		Thomas Murray	M.	28	1	By a fall of slate.	Instant death.
29.	Colerain	1		Michael Riley	S.	19		By a fall of slate.	Instant death.
Sept. 6.	Drifton	1		William Jenkins.	M.	45		By a fall of slate.	Instant death.

Sept. 8..	Hazleton.....	3	Fred. Durch.....	S.	15	By cars outside.....	Lived eight hours.	
26..	Laurel Hill, Hazleton..	5	Edward M'Donald.....	M.	2	By a fall of coal.....	Instant death.	
29..	Summit Hill.....	6	George Thomas.....	M.		By a premature blast.....	Lived several days.	
3..	Ebervale.....	3	Patrick M'Gill.....	S.	18	By a fall of coal.....	Lived ten hours.	
24..	Cranberry slope.....	3	William Munselle.....	M.	23	By a fall of coal.....	Instant death.	
28..	Upper Lehigh.....	2	John Boyle.....	M.	35	By a fall of coal.....	Lived one day.	
29..	Tresckow.....	6	Patrick Gallagher.....	S.	25	By coal from a blast.....	Instant death.	
Nov. 26..	Eckley.....	4	John Ward.....	M.	27	By a fall of coal.....	Instant death.	
Total deaths, 38; widows, 20; orphans, 48.								
Number of persons killed by falls of coal.....				17	Number of persons killed by premature blasts.....			4
Number of persons killed by falls of slate.....				4	Number of persons killed by mules.....			1
Number of persons killed by gas.....				1	Number of persons killed by cars.....			5
Number of persons killed in slopes.....				2	Total.....			38
Number of persons found dead.....				2				
Number of persons killed in breaker.....				2				

TABLE No. 3.

List of Accidents in South District of Luzerne and Carbon Counties.

DATE.	NAMES.	Slope....	Tunnel..	LOCATION.	NATURE OF ACCIDENTS.
Jan. 10..	Hugh Boyle.....	.....	.....	Melnesville	Lost an eye.
Feb. 21..	Jno. D. Thomas...	2	.....	Upper Lehigh.....	Fracture of a leg.
21..	David D. Davies ..	2	.....	Beaver Brook.....	Badly bruised.
Mar. 11..	Patrick Boyle.....	2	.....	Beaver Brook.....	Fracture of a leg.
19..	Edm'd Gallagher,	1	.....	Woodside.....	Three fingers cut off.
21..	Michael Carrol....	2	.....	Coalrairie.....	Fracture of an arm.
April 4..	Dennis O'Donal... 1	.....	.....	Harleigh.....	Bruised badly.
4..	Thomas Williams,	.....	.....	Jeddo, old slope ..	Kicked by a mule.
14..	Robert Hillhouse,	3	.....	Sugarloaf.....	Severely injured.
16..	James Boyle.....	.....	6	Summit Hill.....	Slight injuries.
18..	Philip Smith.....	5	.....	Hazleton.....	Fracture of 3 ribs and cuts.
18..	John Brill.....	5	.....	Hazleton.....	Cuts and bruises.
19..	Thos. M'Donald... 3	.....	.....	Nesquehoning.....	Fracture of collar bone.
19..	John Brislin.....	5	.....	Yorktown.....	Badly bruised.
30..	Elijah Silke.....	1	.....	Upper Lehigh.....	Bruised and cuts.
May 9..	John Bradwell....	4	.....	Nesquehoning.....	Burned by gas.
9..	Patrick Durmitt... 4	.....	.....	Nesquehoning.....	Burned by gas.
12..	Edward L. Powell 1	.....	.....	Drifton.....	Lost half of his foot.
12..	Wm. Lewis.....	2	.....	Upper Lehigh.....	Back and hand bruised.
17..	Simon Surtorows.. 1	.....	.....	Highland.....	Back badly bruised.
20..	David Maxey.....	2	.....	Beaver Brook.....	Fracture of collar bone.
24..	Francis Rogers... 1	.....	.....	Highland.....	Hurt on back.
26..	Daniel Cleland... 1	.....	.....	Highland.....	Bad cut on back.
50..	Peter Mulhurn....	2	.....	Treskow.....	Fracture of thigh.
June 10..	Patrick Rogan.....	1	.....	Oakdale.....	Slightly injured.
10..	Wm. Branch.....	3	.....	Nesquehoning.....	Bruised badly.
16..	Jethro Williams.. 2	.....	.....	Ebervale.....	Bruised badly.
July 8..	Simon Smith.....	5	.....	Hazleton.....	Head and arm injured.
10..	Thomas Reese.....	.....	9	Summit Hill.....	Leg amputated.
11..	Adam Bargurp....	.....	.....	Cranberry slope ..	Fracture of skull and leg.
30..	Condy Gollyher... 2	.....	.....	Oakdale.....	Slightly injured.
Aug. 4..	Wm. Danrell.....	2	.....	Beaver Brook.....	Severe cut on the leg.
8..	Jno. M'Callaugh... 9	.....	.....	Summit Hill.....	Slightly burned.
19..	Wm. Shallis.....	4	.....	Hazleton.....	Fracture of arm & shoulder.
23..	Peter Snow.....	2	.....	Upper Lehigh.....	Hand injured.
25..	Harry M'Glinn... 1	.....	.....	Yorktown.....	Thigh bone fractured.
Sept. 5..	Ed. White.....	1	.....	Drifton.....	Cut on the hand.
5..	James Deivel.....	1	.....	Drifton.....	Badly bruised.
15..	Wm. Thomas.....	.....	9	Summit Hill.....	Slightly burned.
24..	Thos. Bedding....	3	.....	Sugarloaf.....	Severely hurt.
Oct. 3..	Richard Wenner... 3	.....	.....	Sugarloaf.....	Severely hurt.
3..	John Davey.....	4	.....	Treskow.....	Dislocation of hip & fracture of leg.
16..	Wm. Shaw.....	2	.....	Oakdale.....	Collar bone fractured.
31..	Michael Cadden... 1	.....	.....	Oakdale.....	Badly injured.
Nov. 1..	Evan J. Jones.....	1	.....	Drifton.....	Collar bone fractured.
20..	James Meredith... 1	.....	.....	Upper Lehigh.....	Leg fractured.
22..	Michael Campbell,	3	Harleigh.....	Eye injured.
29..	John Garvey.....	3	Nesquehoning.....	Fracture of leg.

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