REPORTS

OF THE

INSPECTORS OF MINES

OF THE

Anthracite and Bituminous Coal Regions of Pennsylvania,

FOR THE YEAR 1888.

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1889.

CONTENTS.

REPORTS

OF THE

INSPECTORS OF MINES.

COMMUNICATION.

DEPARTMENT OF INTERNAL AFFAIRS,
HARRISBURG, *May 16, 1889.*

To His Excellency JAMES A. BEAVER,
Governor of Pennsylvania:

SIR: In compliance with the requirements of the acts of June 30, 1885, relative to the Mine Inspectors' Reports of the Anthracite and Bituminous Coal Regions, and under the provisions of the act approved April 23, 1889, I have the honor to present you herewith, for transmission to the General Assembly, the Reports of the Inspectors of Mines for the Coal Regions of this Commonwealth for the year 1888.

Very respectfully yours,
THOS. J. STEWART,
Secretary of Internal Affairs.

ERRATA

Received from the Inspector of the First Anthracite District after the printing of his Report.

Page 5, note. Read in place "of the work of MacWilliam," *they work the Manville in.*

Page 8, seventh line from top. Read for "headways," *headings.*

Page 8, seventeenth line from top. Insert *put* before "in place."

Page 8, sixth line from bottom. Read for "Peakville," *Peckville.*

Page 9, thirteenth line from bottom. Read for "machinist," *merchant.*

Page 10, last line. Read for "Relay," *Riley.*

Page 12, fifteenth line from bottom. Read for "do.," *Minooka*, and for "Second mining district," *assistant at Pyne Mines.*

Page 13, third line from top. Read for "do. do. do.," *Miner, Bellevue Shaft.*

Page 13, sixth line from bottom. Read for "32," *31.*

Page 15, sixth line from bottom. Omit "Wm. P. Morse."

Page 16, sixteenth line from bottom. Read for "Hoosie," *Hosie.*

Page 17, in note. Read for "64," *54*, and for "20.2" days, *202.2.*

Page 17. The brackets should include the three first lines.

Page 17, ninth line, third column. Read for "1,006.00," *1,066.00.*

Page 17, ninth line, eleventh column. Read for "67," *61.*

Page 18. Add the following notes indicated by the signs in the text. *Commenced to open mines in December, 1888. †Returned on D., L. & W. sheet table No. 2. ‡Returned with No. 1 shaft Carbondale and Racket Brook Breaker. Miscellaneous employés, carpenters, masons, mechanics, surveyors and chainmen, 87.

Page 18, second line from top, first column. Read for "270,205.05," *270,208.05.*

Page 18, third line from top, fifth column. Read *250¼.*

Page 18, tenth line from top. Read for "Liggett's," *Leggett's.*

Page 18, last line, first column. Read for "2,567,020.56," *2,567,020.06.*

Page 18, second line from bottom, first column. Read for "135,550.01," *135,150.01.*

Page 19, first line from top, fifth column. Read for "282¼," *268¼.*

Page 19, third line from top, fifth column. Read for "294¼," *249¼.*

Page 19, eighth line from top, first column. Read for "280,639.08," *280,693.08.*

Page 19, thirteenth line from top, second column. Read for "1,426.00," *1,423.00.*

Page 20, twelfth line from top, first column. Read for "150,345.01," *150,345.06.*

Page 20, eighth line from bottom, third column. Read for "5,587.38," *5,587.18.*

Page 20, fifteenth line from top, eighth column. Read for "3," *8.*

Page 20, fifth line from bottom, ninth column. Read for "12.00," *1,200.*

Page 20, last line, fifth column. Read for "238.3," *253.3.*

Page 21. Bracket the figures in second and third lines from top in seventh column.

Page 21, ninth line from top, sixth column. Read for "17," *19.*

Page 22, fourth line from bottom, twelfth column. Read for "73," *78.*

Page 23, Second line from bottom, third column. Read for "1,437," *1,337;* same line, eighth column, for "29," *27;* ninth column, for "89," *86.*

Page 24, thirteenth line from bottom. Read for "Gaughan," *Gaughen.*

Page 25, eighteenth line from top. Read for "Mahoby," *Mahody.*

Page 26, fourteenth line from bottom. Read for "Gaughan," *Gaughen.*

FIRST ANTHRACITE DISTRICT.

OFFICE OF THE INSPECTOR OF MINES,
SCRANTON, PA., *March 15, 1889.*

Hon. THOMAS J. STEWART,
Secretary of Internal Affairs:

SIR: I have the honor of presenting herewith my annual report for the year ending 31st day of December, A. D. 1888, in accordance with article two (2), section seven (7) of an act of Assembly, approved June 30, A. D. 1885.

There was mined in the first district of the anthracite coal fields for the year 1888, 9,881,878.06 tons of coal, an increase of 1,354,110.01 tons over the production of 1887.

There were 74 fatal accidents, leaving 31 widows and 112 orphans, and 255 non-fatal accidents.

The deaths and accidents could be materially reduced if the mine laws were more strictly observed by the employés and enforced by the mine foremen. By reference to the fatal accident report, it will be seen that 62.2 per cent. were caused by falls of coal and roof, which could have been prevented, to a great extent, if the mine foremen enforced the laws for which they are responsible, as the law makes it their duty, or that of their assistants, to visit and examine each working place every working day in mines where explosive gases are evolved, and every alternate day in mines where gas is not evolved, and they shall direct that all places are properly secured, and that no persons be allowed to work in such places until secured. This they can readily enforce by not allowing any mining to be done, or preventing empty mine cars going into such places to be filled until their orders are complied with.

This report contains the usual tables showing the condition of the mines in this district.

Synopsis of Report for Year Ending December 31, 1888.

Number of mines in the district,	85
Average working time in days for 83 mines,	233
Number of persons employed inside of mines,	16,154
Number employed outside,	7,327
Total number employed,	23,481

Number of tons of coal mined for each employé, . .	421
Number of fatal accidents, ...	74
Number of tons of coal mined for each fatal accident,	133,539
Number of persons employed for each fatal accident,	316
Number of non-fatal accidents, ...	255
Number of tons of coal mined for each non-fatal accident, ...	38,752
Number of persons employed for each non-fatal accident, ...	92
Number of wives left widows from accidents at collieries, ...	31
Number of tons of coal mined for each widow, ...	318,770
Number of children made orphans, ...	112
Number of tons of coal mined for each orphan, . . .	88,231
Number of tons of coal mined in 1888, ...	9,881,878.06
Number of tons mined in 1887, ...	8,527,768.05
Increase in production for 1888, ...	1,354,110.01
Number of tons of coal shipped in 1888, ...	9,207,216.04
Number shipped in 1887, ...	8,007,908.04
Increase in shipments in 1888, ...	1,199,308.00
Number of tons consumed at mines in 1888, ...	467,048
Number consumed at mines in 1887.	279,378
Increase in consumption for 1888, ...	187,670
Number of tons sold for local consumption in 1888, .	205,308.02
Number sold for local consumption in 1887, ...	240,428.01
Decrease in local coal sales for 1888, ...	35,173.19

There were 307,781 kegs of powder used in mining 9,881,878.06 tons of coal, which would give $32\frac{11}{100}$ tons of coal for each keg of powder, or about $1\frac{3}{10}$ tons for each pound of powder used. There are in this district 2,849 horses and mules, and 30 small or mine locomotives for the transportation of coal both inside of mines and between mines and breakers. There are 828 steam boilers which supply steam for 248 pumping engines and steam pumps, with a horse power of 8,813. There are 395 hoisting engines, having 20,334 horse power. There are 65 breakers used in preparing coal for market; also, three chute buildings for loading and cleaning coal.

Respectfully submitted.

PATRICK BLEWITT,
Inspector of Mines.

Recapitulation of the Most Important Statistics Contained in Tables.

NAMES OF OPERATORS.	Total production (in tons) of coal.	Total shipment (in tons) of coal.	No. of tons of coal consumed at mines.	No. of tons of coal sold for local consumption.	No. of kegs of powder used.	No. of persons employed.	No. of days worked.	No. of fatal accidents.	No. of non-fatal accidents.	No. of widows.	No. of orphans.	No. of horses and mules.	No. of breakers.	Capacity per day of ten hours.	No. of mine openings from which coal is produced.	No. of pumping engines and pumps.	Horse-power of pumping engines and steam pumps.	No. of hoisting, fan and breaker engines.	Horse-power of hoisting, fan and breaker engines.	No. of steam boilers.	No. of locomotives used in mines and outside transportation.
Del., Lack. & W. R. R. Co.,	3 104 878 02	2 022 147 02	140 623	42 109	86 359	7 467	222 2	23	100	9	41	1,099	164	15 450	20	104	3 645	120	5 120	316	9
Del. & Hudson Canal Co.,	2,567 020 04	2 418 894 11	125 248	22 677 15	69 055	5 426	240 1	22	63	13	46	633	114	9 435	21	51	2,108	51	4 154	181	3
Pennsylvania Coal Co.,	511 011 00	303 580 00	7 422		15 502	765	264	2	3	1	4	63	3	1 275	5	3	425	14	925	29	1
Lack Iron & Coal Co.,	616 229 08	589 173 08	10 800	16 235	17 377	1,125	212 4	3	13	1	4	144	2	3 500	2	6	216	12	1 395	18	2
William Connell & Co.,	494 411 00	446 078 00	24 865	13 368	16 562	797	228 5	1	7			87	2	1 400	4	9	405	14	785	21	2
Hillside Coal & Iron Co.,	662 942 08	611 227 08	24 848	6 867	21 348	1 765	247	6	5	1	1	154	5	2 800	7	15	220	27	1,110	48	2
Miscellaneous coal co's.,	2,145,080 02	1,916,105.15	123,142	103 382.07	82,549	6,178	17	6	64	6	16	664	25	12,150	25	55	1,698	127	6 085	205	13
Totals, ...	9,881,878.06	9,427,216 04	467,048	205,808 02	307 731	23,481	733 3	74	255	31	112	2,849	65	47,060	84	243	8 813	365	20, 334	828	30

NOTE.—The half-breaker each marked for D., L. & W. R. R. Co., and D. & H. C. Co., is because of the work of MacWilliam partnership. The total coal mined does not agree with the amount shipped, used at mines and sold at mines, because the colliery reports are not correct. In the S. V. White colliery there is a difference of 2,000 tons.

COLLIERY IMPROVEMENTS FOR YEAR 1888.

Delaware, Lackawanna and Western Railroad Company.

Bellevue Shaft.—A new fan was erected close to the old one, size 16 feet diameter by 4½ feet width of face. A pair of new hoisting engines were put in place at head of inside slope 12"x30" to replace old ones removed.

Bellevue Slope.—A new tunnel was driven from Rock to Diamond vein, 150 feet long.

Cayuga Shaft.—A new shaft was sunk for second opening about one mile north from main shaft, size 10'x37½'; area of opening 375 square feet, and sunk to G or Big vein, a distance of 436 feet.

Central Shaft.—A new slope driven in G or Big Vein 500 feet long on a dip of 1' in 6'. Also a new pair of first motion hoisting engines 24"x60".

Hyde Park Shaft.—A new tunnel was driven from New County to Clark Vein.

Pyne Shaft.—A new fan 14 feet diameter by 4 feet face was put in to replace old fan which was not sufficient to ventilate the mine.

Tripp Shaft.—A new slope was driven in Clark vein about 500 feet in length. Dip is 1' in 6'. A new pair of engines, second motion, dimensions 10"x30", was placed outside at Diamond for hoisting culm.

Delaware and Hudson Canal Company.

Dickson Shaft.—Built new fan 20 feet diameter by 5 feet face, closed periphery, run by direct motion engines, one on each end of shaft to replace a fan of 12 feet diameter and 3 feet face, which was not of sufficient capacity to ventilate the mines. They sunk a slope in Clark vein 600 feet in length and placed in position a pair of hoisting engines 12"x16" at head of slope.

Leggetts' Creek Shaft.—Sunk main shaft 10x26 feet, 177 feet from 14 feet or G to Clark vein and made connection with Von Storch mine workings for second opening.

White Oak Mines.—Reopened old No. 5 drift near head of No. 27 plane on the Gravity railroad with a tunnel through hard pan 365 feet in length to coal. Sunk an air-shaft in rock 11 feet in diameter and 36 feet deep to coal. Built a furnace with a fire surface of 64 square feet. Built 3,900 feet of railroad track to head of plane which plane is 1,328 feet long, having a gauge of 2½ feet, to take coal to the breaker, for which a small locomotive is used.

Pennsylvania Coal Company.

Shaft No. 1.—A second opening has been made in "Top Vein" by making a connection with Shaft No. 3 or Gypsy Grove. An air-shaft was sunk from top to "Second Vein," giving a second opening to this

vein. Headings and air-ways have also been driven, but the greatest progress has been made in the top or first Dunmore seam. A new breaker has been built 1,160 feet east of Shaft No. 1, but there has been no coal run through it yet, owing to the dullness of the coal trade.

Shaft No. 4, "Gypsey Grove."—We are grading a new plane to cut off Hale's upper gangway. It is located about seven hundred feet from the D. & H. C. Co. line on the Horsefield tract, in bottom seam of coal.

Shaft No 5.—We have about completed a plane on the northeast side of shaft in No. 3 seam. It will be about 800 feet long and driven on a course of S. 50° E. We have also commenced grading another plane in No. 2 seam driven on the same course as the plane in No. 3 seam. It is located on the southwest side of shaft. An incline was driven through the anticlinal that exists between shafts Nos. 2 and 5 for the purpose of a second opening and drainage. This passage connects the bottom seam of No. 2 Shaft with the first Dunmore seam in Shaft No. 5. This does away with all pumps and other machinery at Shaft No. 2, which was abandoned September 1, 1888.

Hillside Coal and Iron Company.

Clifford Colliery, with a capacity of 1,000 tons of coal per day, was completed. This plant is made up of a breaker with the latest improvements, simplified as much as possible, keeping in view three essentials, sufficient height to pick out slate and rock before the product reaches the rolls, and to avoid putting through the rolls anything that had been broken in the process of mining; a shaft 12'x30' opening and 300 feet deep has been finished. It is operated by a pair of 22"x36" direct acting engines equipped with two Dickson safety carriages; a slope for second opening 360 feet long to hoist rock, of which, owing to the thinness of the seam, there is a great quantity, and for a manway. The breaker is located 700 feet from the shaft. The coal is hauled from the shaft to the breaker, and the empty cars hauled back by a wire rope haulage.

Erie Shaft.—A slope 250 feet long for a second opening and for a manway has been finished on the west side of the Lackawanna river.

Glenwood Shaft No. 2, to the Archbold vein was completed; the total depth from the head to the foot is 350 feet. A pair of direct acting engines, 22x48, with two Dickson safety carriages, is the motive power. A fan 18 feet in diameter by six feet face has been erected to ventilate Glenwood No. 1 Shaft, and it is run by an engine 16x36. Rope haulage is used at this colliery. At all the collieries of this company electric lights are in use in and around the breakers. They were first put in as an experiment at the Erie breaker and they were so complete a success that their general introduction soon followed. The arc light is used, and coal can be cleaned by its light even better than by daylight.

Buffalo Mines.—Built a three-foot gauge track railroad from mines to Jefferson branch of N. Y., L. E. & W. R. R., a distance of two and one-third miles. Coal is hauled by a small locomotive. A new hoisting engine, new main and pony rolls and screens were also put in, and the breaker and machinery given a thorough overhauling.

Belmont Mines.—A new water-level tunnel; was opened to coal headways, and airways were driven to cut off the distance in haulage.

Edgerton No. 2 was opened by a water-level tunnel. It is located about two miles northeast of breaker. Coal is hauled by a small locomotive on a three-foot gauge track.

Eaton Tunnel.—Drove a heading to surface for manway and ventilation; size of opening, 6′x9′=54 feet.

Eaton Shaft.—Sunk a shaft from surface to the present working or "Archbald" vein 162 feet deep; size of opening, 10′x20′=120 feet area.

Jermyn No. 3.—Sinking slope; it is down 700 feet; opening 14′x7′=98 feet area; driven on a grade of one in three feet; in place, six new boilers, one pair of hoisting engines, 10′x10′, one fan engine, 12″x12″, and one pump, and are also building new breaker.

Mount Pleasant Mines.—Sinking a second opening from G, or Big vein, to Clark.

Filer's Slope, now Mount Jessup.—Have driven slope in coal about 1,000 feet in length.

Lackawanna Shaft.—Have placed an endless wire rope about 2,000 feet long in main gangway for haulage; it works satisfactorily; it is cheaper and better than horses or mules.

Pancoast Shaft.—Have put in a new set of boilers; have put in Zeigler's patent slate-pickers; have graded slope to a uniform grade for about 1,000 feet; they are using the electric arc light at this colliery and it gives general satisfaction.

Rushbrook Shaft.—Have erected a new blacksmith shop, 20′x20′, a new powder house, 10′x10′, a new barn, 14′x20′; have placed in mine a No. 10 Knowles pump, sunk a second opening to top vein, and have driven headings in top vein going east 350 feet, and in the same vein going west 300 feet; the east heading in bottom vein has been driven 400 feet, and in the same vein going west 125 feet.

Spencer Shaft.—Are driving slope in coal northwest of shaft; in middle vein they are down about 800 feet.

Hon. Thomas Waddell is at present opening up a new mine in Winton borough.

Note.—The Peakville Coal Company's colliery was idle during the year and did not ship any coal.

The Rushbrook colliery did not ship any coal during 1888.

Bridge colliery was sold and abandoned August 16, 1888.

Shaft No. 2, Penn. Coal Company, located in Dunmore, was abandoned September 1, 1888.

NAMES OF PERSONS who received certificates of service to entitle them to act as mine foremen, in accordance with section VIII of anthracite mine laws, approved June 30, A. D. 1885, in the First Anthracite District of Pennsylvania, also giving age, nationality, length of practical experience, date of issue of certificates by Secretary of Internal Affairs, post-office and where employed at present.

Number.	Names.	Age.	Nationality.	Length of practical experience (years).	*Date of issue of certificate.	Post-office address.	Where employed at present.
1	Patrick Henry O'Hara,	45	Irish,	11			Somewhere in Honduras silver mines.
2	John Moffat,	51	Scotch,	9		Dunmore, Lackawanna county,	No. 5 shaft, Pennsylvania Coal Company.
3	Patrick Henry Mongan,	45	Irish,	14		do. do. do.	Spencer's shaft
4	Edward D. Jones,	43	Welsh,	11		Scranton, Lackawanna county,	Von Storch Clark vein.
5	David P. Birtley,	50	Scotch,	16		do. do. do.	Miner, Marvine shaft.
6	Alexander Frew,	45	do.	13		Olyphant, Lackawanna county,	Miner, Grassey Island, D. & H. C. Co.
7	Thomas S. Thomas,	42	Welsh,	17		Archbald, Lackawanna county,	Pierce mines.
8	Jonathan Vipond,	41	English,	22			
9	Samuel Baker,	53	do.	42		Minooka, Lackawanna county,	Dunn mines, Second Mining district.
10	Joseph V. Birtley,	40	Scotch,	12		Scranton, Lackawanna county,	Marvine shaft.
11	Finley Ross,	47	do.	20		do. do. do.	Leggitt's creek.
12	Martin Loftus,	34	Irish,	18		do. do. do.	Von Storch Diamond Rock and 14 foot veins.
13	Samuel T. Jones,	42	Welsh,	28		do. do. do.	Meadow Brook shaft.
14	Philip H. Bohner,	43	German,	15		Peckville, Lackawanna county,	Filer's slope.
15	James M. Eaton,	56	American,	39		Archbald, Lackawanna county,	"Retired;" not employed.
16	Thomas Carson,	58	Welsh,	40		Scranton, Lackawanna county,	Taylor.
17	Richard D. Roberts,	49	do.	19		Olyphant, Lackawanny county,	Miner, Grassey Island.
18	John Lovering,	34	do.	17		Scranton, Lackawanna county,	Capouse.
19	John Grady,	32	American,	20		Carbondale, Lackawanna county,	Erie.
20	Peter McElhenny,	37	do.	18		Pittston, Luzerne county,	Not in service as mine foreman; a machinist.
21	Thomas W. Phillips,	38	do.	24		Scranton, Lackawanna county,	Manville.
22	John J. Loftus,	31	Irish,	15		do. do. do.	Leggitt's creek.
23	Alexander Aikman,	44	Scotch,	25		do. do. do.	Dickson.
24	Thomas L. Jones,	48	Welsh,	35			Dead.
25	Richard Mason,	37	English,	16		Olyphant, Lackawanna county,	No 2 mines, Olyphant.
26	John W. Jones,	51	Welsh,	33		do. do. do.	Eddy creek.
27	James A. Evens,	46	do.	23		Scranton, Lackawanna county,	Diamond Tripp.
28	Henry P. Davis,	49	do.	22		do. do. do.	Sloan.
29	Elijah Tagger,	42	English,	32			Woodward, Third mining district.
30	John Von Bergen,	41	Swiss,	24		Scranton, Lackawanna county,	Mine superintendent for John Jermyn.
31	John H. Powell,	47	Welsh,	24		do. do. do.	Second mining district.
32	William McMyne,	58	Scotch,	33		Carbondale, Lackawanna county,	Coal Brook.

NAMES OF PERSONS, ETC.—*Continued.*

Number.	NAMES.	Age.	Nationality.	Length of practical experience (years).	*Date of issue of certificate.	Post-office address.	Where employed at present.
33	James Nicol,	59	Scotch,	20		Archbald, Lackawannna county,	White Oak slope.
34	William Dunstan,	41	English,	22		Carbondale, Lackawanna county,	Midland and Wilson Creek tunnels.
35	Andrew B. Nicol,	37	Scotch,	25		Scranton, Lackawanna county,	Mine superintendent, Del. and Hudson Canal Co.
36	David W. Mosier,	51	American,	26		do. do. do.	Hyde Park.
37	John J. Kearney,	37	do.	15		Archbald, Lackawanna county,	No. 3½ and 5 tunnels, White Oak.
38	Joseph Tennis,	43	German,	23		Jermyn, Lackawanna county,	Jermyn No. 1 shaft.
39	William F. Courtwright,	43	American,	23		Minooka, Lackawanna county,	Retired.
40	Frank Zimmerman,	43	do.	19		Scranton, Lackawanna county,	Briabin mines.
41	John L. Lewis,	70	Welsh,	55		do. do. do.	Retired.
42	Reese R. Griffiths,	47	do.	37		Peckville, Lackawanna county,	S. V. White mine.
43	Michael Grimes,	36	American,	24		Scranton, Lackawanna county,	Not employed at present.
44	Charles Aikman,	44	Scotch,	29			Old Forge mines, Second district.
45	Patrick McCabe,	50	Irish,	19		Carbondale, Lackawanna county,	Buffalo mines.
46	William Douse,	52	English,	28			Dead
47	Robert McMillan,	52	Scotch,	27			Second Mining district.
48	Thomas Wier,	59	do.	28			do. do. do.
49	Thomas Eynon,	65	Welsh,	35		Scranton,	Bellevue slope.
50	John Hale,	54	English,	35		do.	Bellevue shaft.
51	Edward James,	48	Welsh,	25		do.	Dodge.
52	Lewis Roberts,	50	do.	30		do.	Central.
53	Reese T. Evans,	61	do.	40			Dead
54	John Waterfield,	39	English,	23		Carbondale,	No. 1 and White Bridge tunnel.
55	John Hughes,	67	Welsh,	49			Dead.
56	Evan J. Evans,	41	do.	22		Minooka,	Holden.
57	Thomas E Peters,	37	do.	17			Killed at Oxford shaft.
58	Benjamin Maxey,	37	American,	22		Forest City, Susquehanna county,	Forest City shaft and slope.
59	Thomas Watkins,	57	Welsh,	36		Scranton, Lackawanna county,	Cayuga.
60	Andrew Patten,	71	English,	42		Olyphant, Lackawanna county,	Retired.
61	Andrew P. Patten,	34	American,	22		Carbondale, Lackawanna county,	Powderly slope.
62	Frederick Repp,	58	Prussian,	18			Second mining district.
63	Ebenezer Frew,	45	Scotch,	21			do. do. do.
64	Morgan J. Harris,	50	Welsh,	26			Dead.
65	Alexander Laird,	65	Scotch,	38			Second mining district.
66	James Vessie,	39	do	22		Olyphant,	Grassey Island, D. & H. C. Co.
67	Patrick Relay,	39	American,	24		Dickson City,	Richmond's new works.

68	Martin Gallagher,	38	do.	17	Dunmore,	Driver boss, Pancoast.
69	James R. James,	39	Welsh,	24	Scranton,	Retired.
70	Thomas Battle,	46	American,	25	Archbald,	Edgerton No. 1 tunnel.
71	John W. White,	36	Irish,	17	Cardondale,	Simpson, N. W. C. Co.
72	Henry J. Brennan,	36	American,	17	do.	Out of service at present.
73	David Williams,	44	Welsh,	25	do.	Carbondale Coal Company.
74	James Young,	45	Scotch,	18	Dunmore,	Mine superintendent, Pennsylvania Coal Co.
75	John R. Law,	34	American,	13	Pittston, Luzerne county,	Mine superintendent, Second mining district.
76	Wm. W. Watkins,	49	Welsh,	29	Carbondale, Lackawanna county,	Coal operator.
77	William D. Reese,	49	do.	25	Scranton, Lackawanna county,	Storr's shaft.
78	Morgan Thomas,	45	do.	20	Carbondale, Lackawanna county,	No. 3 shaft.
79	John H. Morris,	40	Nova Scotian,	15		
80	Timothy Parfrey,	58	English,	20	Moosic,	Out of service.

*Date of certificate on file in the office of the Secretary of the Internal Affairs.

NUMBER OF PERSONS who received certificates of qualifications to entitle them to act as mine foremen, in accordance with section VIII of the anthracite mine laws, approved June 30, A. D. 1885, in the First Anthracite Mine District of Pennsylvania, also giving age, nationality, length of practical experience, date of recommendation to Secretary of Internal Affairs, post-office address and where employed at present.

Number.	Names.	Age.	Nationality.	Length of practical experience (years).	*Date of issue of certificate.	Post-office address.	Where employed at present.
1	James M. Thomas,	35	Welsh,	25	....	Minooka,	Pyne shaft.
2	Christopher Vickers,	46	English,	35	....	Dunmore,	Spencer's mine, assistant mine foreman.
3	John T. Williams,	47	Welsh,	30	....	Scranton,	Out of service; retired.
4	David S Evans,	48	do.	29	....		Second mining district
5	Edward Williams,	46	do.	34	....	Olyphant,	Miner, No. 2 shaft, Olyphant.
6	Thomas G. Jones,	46	do.	39	....	Scranton,	Out of service at present.
7	James McAndrew,	29	American,	14	...	Carbondale,	Mine carpenter, Coal Brook.
8	David Z. Davis,	42	Welsh,	30	...	Scranton,	Fire boss, Central.
9	William G. House,	45	English,	25	....	do.	Running engine, Bellevue.
10	Evan Williams,	37	Welsh,	24	....	do.	Miner, Oxford mines.
11	Richard H. Williams,	44	do.	20	....	do.	Continental mines.
12	Joseph D. Lloyd,	42	do.	23	...	do.	Archbald mines.
13	Thomas Mooney,	44	American,	30	..	Carbondale,	Edgerton No 2 tunnel.
14	William S. Jones,	53	do.	25	...	Scranton,	Out of service.
15	Griffith G. Thomas,	35	Welsh,	15	....	do.	Pine Brook.
16	Samuel Lewis,	40	do.	25	....	do.	Fire boss, Continental mines.
17	John H. Powell,	37	do.	17	...	do.	Second mining district.
18	Thomas E. Williams,	40	do.	15	....	do.	Miner, Central mines.
19	Richard T. Howells,	26	do.	15	....	do.	do. do. do.
20	Jame- White,	38	do.	20	....		Clifford.
21	Thomas R. Young,	26	American,	13	....	Dunmore,	No. 1 shaft, Pennsylvania Coal Company.
22	Ebenezer P. Davis,	35	Welsh,	26	...		Miner, Sloan mines.
23	B. H. Thomas,	40	do.	27	....	Minooka,	do. do. do.
24	David E. Lewis,	38	do.	26	...	Archbald,	Eaton mines.
25	William J. Thomas,	34	do.	24	....	Scranton,	Miner, Continental mines.
26	William O Williams,	46	do.	20	....	do.	Hampton.
27	Richard Evans,	24	do.	6	....	do.	Assistant mine foreman, Sloan mines.
28	William H. Davis,	28	American,	15	....	Olyphant,	Fire boss, Eddy creek.
29	William P. Griffiths,	37	Welsh,	22	...	Minooka,	Miner, Taylor.
30	Thomas Patten,	..	American,	22	....	Olyphant,	Miner, No 2 Olyphant.
31	Thomas A. Richards,	44	Welsh,	33	....	Scranton,	Miner, Oxford mines.

32	Thomas Protheroe,	29	do.	15		Dunmore,	Gypsey Grove.
33	John W. Thompson,	33	Scotch,	20		Pittston,	Second mining district.
34	Jacob W. Evans,	47	Welsh,	33		do.	do. do. do.
35	Thomas H. Evans,	30	do.	15		Scranton,	do. do. do.
36	William P. Morgan,	33	American,	21		do.	Miner, Capouse.
37	Jenkin T Reese,	28	Welsh,	15		do.	Mining engineer, D., L & W. R. R. Co.
38	John E. Evans,	47	do.	20		Wilkes-Barre, Luzerne county,	Miner, Third mining district.
39	Edwin Reese,	30	do	20		Scranton,	Miner, Central mines.
40	Thomas Frank Battle,	23	American.	9		Carbondale,	Simpson mines.
41	Alexander B. Law,	26	do.	10		Pittston,	Second mining district.
42	Joseph P. Phillips,	41	Welsh,	18		Scranton,	Civil and mining engineer.
43	Alfred H. Hale,	28	American,	10		Clinton, New York,	Mine foreman, iron ore mines.
44	David M Evans,	31	Welsh,	20		Scranton,	Miner, Central.
45	John P. Morgan,	13	do.	33		do.	Miner, Central mines
46	Williams Evans,	25	do.	12		Duryea, Luzerne county,	Assistant mine foreman, Halstead, Second district.
47	Daniel C. Phillips,	38	do.	17		Scranton, Lackawanna county,	Miner, Tripp Diamond.
48	Edmond Barti,	30	Hungarian,	5		do. do. do.	Draughtsman, D., L. & W. R. R. Co.
49	Rees A. Phillips,	24	American,	5		do. do. do.	Oxford mines.
50	John R. Johns,	29	Welsh	5		Minooka, Lackawanna county,	Assistant mine foreman, Taylor.
51	Howell Harris,	24	English	9		Scranton, Lackawanna county,	Assistant mine foreman, Tripp Diamond.
52	James W. Smith,	29	American,	14		Peckville, Lackawanna county,	Dolph.
53	Luther Jones,	38	Welsh,	15		Scranton, Lackawanna county,	Pump runner, Tripp Diamond.
54	Martin Morris,	29	American,	11		Dickson City, Lackawanna county,	Jermyn No. 4 mines.
55	John R. Richardson,	35	Welsh,	19		Scranton, Lackawanna county,	Richmond mines.
56	Henry W. Davis,	40	do.	24		do. do. do.	National mines.
57	E. E. Reynolds,	27	American,	10		do. do. do.	Mine surveyor, L. I. & Coal Co.
58	John McNulty,	24	do.	14		Carbondale,	Out of service at present.
59	Michael Barbour,	37	Irish.	18		do	Keystone mines.
60	Daniel C. Phillips,	45	Welsh,	18		Scranton,	Miner, Tripp shaft.
61	Simon Thomas,	53	do.	18		Throop,	Assistant mine foreman, Pancoast.
62	Simpson Wharton,	41	English,	19		Scranton,	Fire boss, Green Ridge mines.
63	Anthony Gillespie,	30	American,	16		Olyphant,	Grassey Island tunnel.
64	William D. Morgan,	42	Welsh,	18			Third mining district
65	T. Ellsworth Davies,	22	American,	7		Scranton,	Assistant mine foreman, Central mines.
66	William P. Jones,	49	Welsh,	17		Minooka,	Miner, Archbald mines.
67	John A. James,	32	American,	12		Scranton,	Mine surveyor, D., L. & W. R. R. Co.
68	Thomas R. Evens,	30	do.	15		do.	Miner, Bellevue shaft.
69	William W. Morgan,	33	Welsh,	18		do.	Driver boss, Central mines
70	Timothy Theophilus,	35	do.	13		Wilkes-Barre,	Red Ash colliery, Third district.
71	Henry E Harris,	23	American,	11		Minooka,	Mine carpenter, Taylor mines.
72	Evan T. Morgans,	47	Welsh,	22		do.	Stafford mines.

* Date of certificate on file in the office of the Secretary of the Internal Affairs.

TABLE 1.—Showing location of Collieries in the First Anthracite District, for year ending December 31, A. D. 1888.

NAME OF COLLIERY.	Name of operator.		Location—County.		Name of superintendent.	P'ost-office address.
	Del., Lackawanna & Western R. R. Co.,		Lackawanna county, ...		Wm. R. Storrs, general coal agt., Wm. H. Storrs, assistant, ... Benj. Hughes, gen'l mine supt. . Thomas D. Davis, assistant. John T. Snyder, chief engineer. Townsend Poor, mastermechanic.	Scranton, Pa. do. do.
					Names of Mine Foremen.	*Names of Outside Foremen.*
Archbald shaft, ...	do.	do.	do.	do.	Joseph D. Lloyd, ...	John Fern.
Bellevue shaft, ...	do.	do.	do.	do.	John Hale, ...	John M. Acker.
Bellevue slope, ...	do.	do.	do.	do.	Thomas Eynon, ...	do
Brisbin shaft, ...	do.	do.	do.	do.	Frank Zimmerman, ...	Edward Evans.
Continental shaft, ...	do.	do.	do.	do.	Richard H. Williams, ...	James F. Green.
Central shaft, ...	do.	do.	do.	do.	Lewis Roberts, ... T. Ellsworth Davis, assistant,	B. C. Green.
Cayuga shaft, ...	do.	do.	do.	do.	Thomas Watkins, ...	G. S. Decker.
Diamond No. 2 shaft, ...	do.	do.	do.	do.	Howell Harris.	W. S. Langstaff.
Diamond Tripp shaft, . . .	do.	do.	do.	do.	James A. Evens, ...	
Dodge shaft, ...	do.	do.	do.	do.	Edw. E James, ...	E. E. Thomas.
Holden shaft, ...	do.	do.	do.	do.	E J. Evans, ...	H. A. Fillmore.
Hampton shaft, ...	do.	do.	do.	do.	W. O. Williams, ...	John H. Hoffman.
Hyde Park shaft, ...	do.	do.	do.	do.	David W. Mosier.	A. M. Ives.
Manville shaft, ...	do.	do.	do.	do.	Thomas W. Phillips, ...	J. L. Atherton.
Oxford shaft, ...	do.	do.	do.	do.	R. A. Phillips, ...	W. B. Thornton.
Pyne shaft, ...	do.	do.	do.	do.	James M. Thomas, ...	Adam Reinhardt.
Sloan shaft.	do.	do.	do.	do.	Henry P. Davies, ... Richard Evans, assistant, .	Fred. Peters.
Storrs shaft, ...	do.	do.	do.	do.	W. D. Reese, ...	J. C. Bowman.
Taylor shaft, ...	do.	do.	do.	do.	Thomas Carson, ... John Johns, assistant, ...	J. P. Cooper.

TABLE 1—*Continued.*

Name of Colliery.	Name of operator.		Location—County.		Name of superintendent.	Post-office address.
	Delaware and Hudson Canal Company, . .		Lackawanna county, ...		A. H. Vandling, supt. coal dept. .	Scranton, Pa.
					J. M. Chittenden, general outside foreman, ...	do.
					A. Nicol, mining engineer, . . .	do.
					A. B. Nicol general mine supt., .	do.
					Chris. Shearer, engineer in charge mine surveys,	do.
					Alex. Simpson, master mechanic,	do.
					Names of Mine Foremen.	*Names of Outside Foremen.*
Coal Brook tunnel, ...	do.	do.	do.	do.	William McMyne, ...	William Bowers.
Midland tunnel, ...	do.	do.	do.	do.	William Dunston, ...	do.
Wilson Creek tunnel, ...	do.	do.	do.	do.	do. do.	do.
Clinton tunnel, ...	do.	do.	do.	do.	William Bryden, ...	
Dickson shaft, ...	do.	do.	do.	do.	Alexander Aikman, ...	William Richmond.
Eddy Creek shaft, ...	do.	do.	do.	do.	John W Jones, ...	William Bell.
Grassey Island shaft, ...	do.	do.	do.	do.	James Vessie, ...	Joseph G. Bell.
Jermyn No. 1 shaft, ...	do.	do.	do.	do.	Joseph Tennis, ...	Thomas Hunter.
Leagitt's Creek shaft, ...	do.	do.	do.	do.	Finlay Ross and Jno. J. Loftus, assistant, . .	George W. Wilder.
Manville shaft, ...	do.	do.	do.	do.	Thomas W. Phillips, ...	J. L. Atherton.
Marvine shaft, ...	do.	do.	do.	do.	Joseph V. Birtley, ...	George Griffin.
No. 1 shaft, Carbondale, . . .	do.	do.	do.	do.	John Waterfield, ...	James P. Loftus.
No. 3 shaft, Carbondale, . . .	do.	do.	do.	do.	Morgan Thomas, ...	Thomas Coogan.
Olyphant No. 2 shaft, ...	do.	do.	do.	do.	Richard Mason, ...	John Mooney.
Powderly slope, ...	do.	do.	do.	do.	Andrew P. Patten, ...	Robert Carter.
Racket Brook breaker, ...	do.	do.	do.	do.	Wm. P. Morse, ...	William P. Morse.
Von Storch, Diamond, Rock, and 14 ft., ...	do.	do.	do.	do.	Martin Loftus, ...	Charles W. Zeigler.
Von Storch Clark vein, . . .	do.	do.	do.	do.	E. D. Jones, ...	do.
White Oak slope, ...	do	do.	do.	do.	James Nicol, ...	Thomas Law.
White Oak No 3½ and 5 tunnel,	do.	do.	do.	do.	J. J. Kearney, ...	do.
White Bridge tunnel, . . .	do.	do.	do.	do.	John Waterfield, ...	James P. Loftus.

TABLE 1—*Continued.*

NAME OF COLLIERY.	Name of operator.	Location--County.	Name of superintendent.	Post-office address.
Shaft No. 1,	Pennsylvania Coal Company,	Dunmore, Lackawanna Co.,	John B. Smith general supt.,	Dunmore, Pa.
Shaft No. 2,	do. do.	do. do.	James Young, mine supt.,	do.
Shaft No. 3, } Gypsy Grove, {	do. do.	do. do.	do. do.	do.
Shaft No. 4, }	do. do.	do. do.	do. do.	do.
Shaft No. 5,	do do.	do. do.	do. do.	do.
Capouse shaft,	Lackawanna Iron and Coal Company,	Scranton, Lackawanna Co.,	Reese G. Brooks, mine supt.,	Scranton, Pa.
Pine Brook shaft,	do. do.	do. do.	do. do.	do.
Meadow Brook shaft,	William Connell & Co,	do. do	Wm. Connell, general supt.,	do.
Meadow Brook tunnel,	do. do.	do. do.	do. do.	do.
National shaft and slope,	do. do.	do. do.	do. do.	do.
Stafford shaft,	do. do.	Lacka. twp, Lacka. Co.,	do. do.	do.
Clifford shaft and slope,	Hillside Coal and Iron Company.	Forest City boro., Susq. Co.,	W. A. May, general supt.,	do.
Forest City shaft and slope,	do. do.	do. do.	do. do.	do.
Erie shaft,	do. do.	Mayville borough, Lacka, Co.,	do. do.	do.
Glenwood shafts,	do. do.	do. do.	do. do.	do.
Keystone tunnel,	do. do.	do. do.	do. do.	do.
Buffalo tunnel,	A. J. Hoole & Co.,	Fell township, Lacka Co.,	Patrick McCabe,	Carbondale, Pa.
Bridge shaft,	Bridge Coal Company (Limited),	Scranton, Lackawanna Co,	A. B. Stevens,	Scranton, Pa.
Belmont tunnels,	A. Langdon,	Carbondale City, Lacka Co.,	William McCullough,	Plains P.O., Luzerne Co., Pa.
Brennan's tunnels,	Friable & Co.,	Fell township Lacka. Co.,		Carbondale, Lacka. Co., Pa.
Church slope and tunnels,	Church Coal Company (Limited),	Scranton, Lackawanna Co.,	Wade M. Finn,	Scranton, Lacka. Co., Pa.
Clark tunnel,	James Flynn.	do do.	James Flynn,	do. do.
Dolph tunnel,	Dolph Coal Company (Limited),	Winton borough, Lacka Co.,		
Eaton shaft and tunnel,	Jones, Simpson & Co.,	Archbald boro. Lacka Co.,	Edward Jones,	Archbald, Lacka. Co., Pa.
Edgerton tunnel,	Edgerton Coal Company (Limited).	do do	J. L. Crawford,	Jermyn, Lacka. Co, Pa.
Fair Lawn slope,	Fair Lawn Coal Company (Limited),	Scranton, Lackawanna Co.,	John H Hoosie,	Scranton, Lacka Co., Pa.
Feler's slope now Mt. Jessup,	Mt. Jessup Coal Company (Limited),	Winton boro., Lacka Co.,	Eli T. Connor,	Peckville, Lacka Co., Pa.
Green Ridge slope,	O. S. Johnson,	Dunmore boro., Lacka. Co.,	O. S. Johnson,	Scranton, Lacka. Co., Pa.
Grassey Island shaft and tunnel,	A. Langdon,	Winton boro, Lacka Co.,	William E. Colbourne,	Peckville Lacka Co., Pa.
Jermyn No. 4 shaft,	John Jermyn,	Dickson City boro., Lacka. Co.,	Walter M. Jermyn,	Scranton, Lacka. Co., Pa.
Lackawanna shaft,	Lackawanna Coal Company (Limited),	Peckville boro., Lacka Co.,	O. S. Johnson,	do. do.
Mount Pleasant slope,	William T Smith,	Scranton, Lackawanna Co.,	Thomas Sprague,	do. do.
Marshwood shaft and tunnel,	Moosic Mountain Coal Company,	Dickson City boro., Lacka. Co.,	Charles P. Ford,	Peckville, Lacka. Co., Pa.
Pancoast shaft,	Pancoast Coal Company,	do. do.	C. D. Sanderson,	Throop, Lacka Co, Pa.
Pierce slope and tunnel,	Jones, Simpson & Co,	Archbald boro, Lacka Co,	Edward Jones,	Archbald Lacka Co., Pa.
Richmond shaft,	Wm. H. Richmond, now Providence Coal Co.,	Scranton, Lackawanna Co,	William H. Richmond,	Dickson City, Lacka. Co., Pa.
Spencer's shaft,	A. D. & F. M Spencer,	Dunmore boro, Lacka. Co.,	A. D. Spencer,	Dunmore, Lacka. Co, Pa.
S. V. White tunnel,	Winton Coal Company (Limited),	Winton boro, Lacka Co.,	Byron M. Winton,	Peckville, Lacka. Co., Pa.
Simpson's slope and tunnel,	Northwest Coal Company (Limited),	Fell township, Lacka. Co,	J. L. Crawford,	Jermyn, Lacka, Co., Pa.
Tripp's local coal sale,	Tripp & Co.,	Scranton, Lackawanna Co.,	Daniel Langstaff,	Scranton, Lacka. Co., Pa
Watkins slope and tunnel,	Carbondale Coal Company (Limited),	Carbondale City, Lacka. Co.,	W. W. Watkins,	Carbondale, Lacka. Co., Pa,

TABLE No. 2 gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employés, number of persons killed and injured, number of kegs of powder used, etc., in the First Anthracite Mining District, for the year ending December 31, 1888.

NAMES OF COLLIERIES.	LOCATION.	Total production in tons of coal.	Total number of tons of coal consumed at mines.	Total number of tons of coal sold at mines.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number of pumping engines and steam pumps.	Number of hoisting, fan, and breaker engines.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Horse power of pumping engines and steam pumps.	Horse power of hoisting, fan, and breaker engines.
Del., Lacka. and W. Railroad Co.															
Archbald shaft,	Lackawanna township,	197,425.19	7,320 00	1,055 00	189,050 19	207 7	471	3	4	7.093	14	64	.	150	190
Bellevue shaft,	" "					193 4	414	8	10	3.590	24	59		222	580
Bellevue slope,	" "	195 336 11	10.000 00	4.575 00	180 761.11	193 4	62	4	2	1.387		17	1	114	100
Brisbin shaft,	3d ward, city of Scranton,	25 952. 6	11.050 00	2 216.00	193 686 06	221	428	11	4	5,938	15	56		250	220
Continental shaft,	Lackawanna township,	253,834.11	6 500 00	1.751 00	245 383 11	216 8	477	6	5	6,030	15	57		215	390
Central shaft,	15th ward, city of Scranton,	278 682 10	18.300 00	5 256 00	255.126 1	214.1	516	12	10	6.198	28	74	1	600	550
Cayuga shaft,	3d " "	194,456 17	8 418 00	5 439 00	180,551.17	214 7	436	5	5	4 770	15	60	1	310	280
Diamond No. 2 shaft,	21st " "						218	7	9	1.400	26	10	1	400	33
Diamond Tripp shaft,	21st " "	248.473 03	18 000 0	3.683 00	226,790 03	197.4	399	6	7	5.379	29	80	3	164	295
Dodge shaft,	Lackawanna township,	167,280 06	5.856.00	2.138 00	159 221 06	207.9	333	3	5	5 012	21	73	1	120	220
Holden shaft,	" "	181 315 18	7 250 00	1.006 00	172 199.18	208 8	311	6	7	5,600	12	67		120	410
Hampton shaft,	" "	146 302.00	5 000 00	1 450 00	139 992 00	159 2	450	3	5	3 887	16	74		130	220
Hyde Park shaft,	5th ward, city of Scranton,	149 851 03	4.495 00	1 670 00	143 686 03	220.9	335	1	6	5.044	12	49		20	210
Manville shaft,	13th " "	102 479 09	5,000.00	2 086. 0	95 393 09	108 3	430	7	11	2 512	18	55	. .	140	405
Oxford shaft,	5th " "	159 230 15	5.475 00	4 110.00	149.645.15	215 8	402	5	8	4,917	19	67		140	340
Payne shaft,	Lackawanna township,	193 928 00	7,000 00	1 869.00	185,059 00	183 5	445	3	5	4,964	12	59	1	190	420
Sloan shaft,	" "	206 397.05	9 175.00	332.00	196 890 05	210.9	482	3	5	6,207	18	75		110	240
*Storrs shaft,	Dickson city borough.	3 000 00	3 000.00				100	. .							120
Taylor shaft,	Lackawanna township,	221.009 09	3,784.00	3,362 00	208 863.09	231 2	472	9	10	6,420	16	87		250	410
Total,		3,104,878.02	140 623.00	42.108 00	2,922,147.02	202 2	7,407	104	120	86,358	316	1,099	9	3,645	5,980

*Sinking shaft and building breaker.

Miscellaneous employes: 100 carpenters, 64 masons, 35 machinists, 23 surveyors and chainmen; clerks, etc., etc., 14—total, 236. Average time worked per colliery, 20.2 days. Average time worked in each colliery per month 16.9 days.

TABLE No. 2—*Continued.*

NAMES OF COLLIERIES.	LOCATION.	Total production in tons of coal.	Total number of tons of coal consumed at mines.	Total number of tons of coal sold at mines.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number of pumping engines and steam pumps.	Number of hoisting, fan, and breaker engines.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Horse power of pumping engines and steam pumps.	Horse power of hoisting, fan, and breaker engines.
Del. and Hudson Canal Co.															
Coal Brook tunnel,	Carbondale city, Lack. county,	294,240.08	3,130.00	42	291,068.08	265½	662	2	3	9,165	7	92	1	16	169
Midland tunnel,	Fell township,	. . . . .	. . . . .	. . .	. . . . .	. . .	. . .	. .	. .		. .	. .	. .	. . . .	. . . .
Wilson Creek tunnel,	" "	. . . . .	. . . . .	. . . . .	. . . . .	. . .	. . .	. .	. .		. .	. .	. .	. . . .	. . . .
*Clinton tunnel,	" "	. . . . .	. . . . .	. . . . .	. . . . .	. . .	. . .	. .	. .		. .	. .	. .	. . . .	. . . .
Dickson shaft,	2d ward, Scranton,	270,205.05	10 642 00	1,803.17	257,762 08	241	420	5	12	6,925	15	49	. .	205	804
Eddy Creek shaft,	Olyphant borough,	173,888.00	8 451 00	1,987.12	163,449.08	25 ½	444	2	9	5,999	12	53	. .	82	516
Grassy Island shaft,	" "	183,182.06	12 520 00	1,343.15	169,268.11	252½	387	6	7	5,484	18	46	1	223	288
Jermyn No. 1 shaft,	Jermyn borough,	219,770.16	13 505 00	6,224 08	2 0 041.08	253½	483	6	9	5,310	15	47	. .	191	306
Liggett's Creek shaft,	1st ward, Scranton,	173,126 01	10,643 00	1,780.19	160 702 02	222½	428	4	7	4,485	15	57	. .	140	328
†Manville shaft,	13th " "	113 806.08	4 695 00	2,736.15	106,374.13	125½	. . . .	. .	. .	. . . .	. .	. . . .	. .	. . . .	. . . .
Marvine shaft,	1st " "	203,563 03	12,775 00	. . .	190,788.03	254½	412	3	5	5 175	15	45	. .	200	310
No 1 shaft, Carbondale,	Carbondale city,	50,696.12	3,130.00	. . . . .	47,566.12	244	283	3	1	3,884	7	30	. .	75	36
No. 3 shaft, Carbondale,	" "	15,067.02	4,695 00	. . .	10,362 02	227	147	2	3	2,026	9	14	. .	140	159
Olyphant No. 2 shaft,	Olyphant borough,	146,269 15	8,451.00	. . .	127,818.15	250	336	6	4	4,200	12	40	. .	262	186
Powderly slope,	Carbondale city,	95,827.19	6,260.04	. . . .	89,567.19	248½	279	4	6	4,798	9	30		306	185
Rackett Brook breaker,	Carbondale township,	203,955.00	2,191 00	. . . . .	201,764.00	265½	76	. .	1	. . . . .	5	3		. . . .	77
Von Storch slope and shaft,	2d ward, Scranton,	288,328.10	18,780.00	4,755.03	264,793 07	250½	615	5	10	7,939	29	90		163	495
White Oak slope,	Archbald borough,	. . . . .	. . .	. . . . .	. . . . .	. . .	. .	. .	. .	. . . .	. .	. .	. .	. . . .	. . . .
White Oak No. 3½ tunnel,	" "	135,550.01	5,390.00	2,203 06	127,566.15	265½	347	3	4	3,665	13	42	1	86	315
White Oak No. 5 tunnel,	" "														
White Bridge tunnel,	Carbondale city,	. . . . .	. . . . .	. . .	. . . . .	. .	.	.		. .	. .	. .	. .	. .	. . . .
Total,		2,567,020 56	125,248 00	22,977.15	2 418,894.11	240.1	5,428	51	81	69,055	181	633	3	2,106	4,154

Pennsylvania Coal Company.															
Shaft No. 1,	Dunmore borough, Lack. Co.,	11,722.00	1,800 00	.....	10,222.00	282½	60	3	3	929	12	2	.	97	215
Shaft No. 2,	" " "	21,690.00	237.00	.....	21,453.00	181½	41	1	1	1,152	3	3	1	90	90
Shaft No. 3, Gypsy Grove,	" " "	66,120.00	2,676.00	.....	63,444.60	294½	175	3	5	2,975	7	14		178	215
Shaft No. 4, Gypsy Grove,	" " "	66,157.00	401 00	.....	65,756 00	249½	166		2	2,977	2	17		. . .	140
Shaft No. 5,	" " "	145,322.00	2,606 00	.....	142,714 00	274½	343	1	3	7,469	4	27	. .	70	265
Total,		311,011.00	7,422 00	.....	303,589 00	284	785	8	14	15,502	29	63	1	435	925
Lackawanna Iron and Coal Co.															
Capouse shaft,	21st ward, Scranton,	335,536.00	4,800 00	2,500.00	328 236.00	230 9	6 4	3	9	9,802	15	31	.	99	818
Pine Brook shaft,	7th " "	280,639.08	6,000 00	13,755.00	260,933 08	303 9	521	3	3	7,575	3	63	.	117	577
Total,		616 229 08	10,800 00	16.255.00	589,174.08	212 4	1,125	6	12	17,377	18	144		216	1,395
Wm. Connell & Co.															
Meadow Brook shaft,	20th ward, Scranton,	256,649.00	10,311 00	13,368.00	232,970 00	231½	387	5	6	7,708	17	40	. .	190	312
Meadow Brook tunnel,	20th " "	72,194.00	412 00	.....	71,782.00	234½	91	. .	1	.....	1	16	1	§35	15
National shaft and slope,	20th " "	125 334 00	12,819 00	....	112 515 00	234½	259	4	5	7,884	10	24	. .	145	306
Stafford shaft,	Lackawanna township,	30,234.00	1,426.00	.....	28,811.00	233½	60	. . .	2	.....	3	7	1	35	102
Total,		484,411.00	24,965 00	13,368 00	446,078.00	233½	797	9	14	15,592	31	87	2	405	735
Hillsdale Coal and Iron Company.															
Clifford shaft and slope,	Forest City Bor., Susquehanna county,	2,328.00	2,328.00	.....	.....	.....	159	. .	. .	...	4	...	. .	...	.....
Erie shaft,	Mayville bor., Lack. county,	182,056.09	14,070.00	3,315.00	164,671.09	246½	482	4	9	5,828	21	50	. .	230	320
Forest City shaft and slope,	Forest City bor., Susq. county,	211,267.09	10,050.06	3,552 00	197,665.00	270	432	7	9	7,959	15	44	2	50	400
Glenwood shaft,	Mayville bor., Lack. county,	112,996.00	5,634 00	.....	107,362 00	206	373	4	8	3,001	6	18	. .	40	350
Keystone tunnel,	" " " "	144,294.19	2,766.00	.....	141,528.19	267½	319	. . .	1	4,560	2	42	. .	....	40
Total,		652,942.08	34,848 00	6,867 00	611,227.08	247½	1,765	15	27	21,348	48	154	2	320	1,110
Miscellaneous Coal Companies.															
Buffalo tunnel,	Fell township, Lack. county,	23 774.00	1,700 00	885.00	21,189.00	197	81		2	390	1	9	1	30	73
Bridge shaft,	14th ward, Scranton, Lack. Co.,	33,323.00	4,560.00	10,071.00	18,692 00	119	188	3	9	. . . .	11	19	.	40	315
Belmont tunnel,	Carbondale city, "	51,637.05	1,170.00	718 16	49,748.09	195	188	. .	2	2,499	6	21		. . .	85
Brennan's tunnel,	Fell township, "	16,422.10	300.00	130.00	15,992.10	219	48	.	1	450	3	13		. . .	30

*Commenced to open mines in December, 1888. †Returned on D., L. and W. sheet, table No. 2. ‡Returned with No. 1 shaft, Carbondale and Rackett Brook breaker.
§Locomotives. Miscellaneous employes: Carpenters, masons, mechanics, surveyors and chainmen, 87,

TABLE No. 2—*Continued.*

NAMES OF COLLIERIES.	LOCATION.	Total production in tons of coal.	Total number of tons of coal consumed at mines.	Total number of tons of coal sold at mines.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number of pumping engines and steam pumps.	Number of hoisting, fan, and breaker engines.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Horse power of pumping engines and steam pumps	Horse power of hoisting, fan, and breaker engines.
Church tunnel,	2d ward, Scranton, Lack. Co.,	16,496.00	300 00	11 310 00	4,886 00	150	28	2	4	6 0	2	4	..	40	101
Clark's tunnel,	31 " " "	6 769 0)	500 00	6,269 00		160	14	. . .	1	280	2	2	..	....	20
Dolph tunnel,	Winton borough, "	69,759 02	2,680 00	397 17	66 681 05	192.8	228		2	2 591	4	21	..	....	100
Eaton tunnel and shaft,	Archbald borough, "	125,195 10	6,608 00	. . .	118.587.10	239.1	340	3	8	4.96o	9	30	2	40	210
Edgerton tunnel,	" " "	143 098 00	2,756 00	861 00	139 481.00	203	305	1	2	5 222	4	35	2	5	110
Fair Lawn slope,	7th ward, Scranton, "	45,486 16	3,500 00	4,605 09	87,381 07	177	177	2	3	2,302	5	12	..	20	152
Filer's (now Mt. Jessup) slope,	Winton borough, "	73,016 14	7 736 0	1 990.00	63, 220 14	232.7	238	3	6	3.770	13	23		12)	320
Green Ridge slope	Dunmore borough, "	115 258 13	8,04 00	2 343 05	104 875.08	272	286	4	6	5, 357	12	32	..	111	716
Grassy Island shaft and tunnel,	Winton borough, "	9 ,538.17	10,49 .00	4,821.17	75, 237 00	200	275	5	8	4 527	15	41	1	135	245
Jermyn No. 4 shaft,	Dickson City borough, "	198 021.02	16 536 00	2, 021.00	179,464 02	252 6	557	6	14	6 709	24	70		168	604
Lackawanna shaft,	Peckville borough, "	222, 650 10	8,040 0)	3. 405 07	211 205 03	252	470	1	6	7. 238	12	51		98	499
Mt. Pleasant slope,	14th ward, Scranton, "	150,345.01	9,380 0)	11 997 15	123 967 11	228	396	3	5	5,000	14	46		91	313
Marshwood slope and tunnel,	Dickson City borough, "	28 446 14	5,36 .00	500.00	22 586 14	120	170	2	4	1, 440	6	8		90	210
Pancoast shaft,	" " " "	188, 61 .6	9 528.00	2, 241.(8	176, 291 18	226½	608	7	7	6 954	16	66	..	253	880
Pierce tunnel,	Archbald borough, "	120 402 03	5 400.00	. . .	115,002 03	146½	350	5	3	2 893	13	23	3	240	255
Richmond shaft,	2d ward Scranton, "	16.630 10	1,378 00	350.00	14, 4 2 10	151	97	2	4	887	4	8	.	20	52
Spencer's shaft,	Dunmore borough, "	147.795 14	3,650.00	5,587.33	138,558 01	208	339	2	10	6.935	11	4)	.	100	345
S. V. White tunnel,	Winton borough, "	75,027.10	4 200. 0	84 00	68.743 10	204 2	269	. . .	1	3 026	3	19	2	....	65
Tripp's local coal sale mines,	21st ward, Scranton, "	12,000 00	.....	11,600 00	400.00	253	25		1	665	. . .	3	..	. . .	25
Watkins' local coal sale mines,	Carbondale city, "	23.000.00	2,010.00	3.3 0 00	17 690 00		201	. .	3	12,00	3	10	.	. . .	81
Simpson's slope,	Fell township, "	132, 444 00	4, 820.00	862 00	126 762 00	213	213	4	5	5, 569	7	33	2	85	180
Local coal sale mines, nine (9) mines,	Lackawanna county, ...	19, 480 00	2 000.00	17,480 00	. . .	.	45	.	5	610	5	19	..	....	100
Total,	.....	2 145,080.02	123,142.00	103, 882.07	1, 916, 105.15		6,218	55	127	82,549	205	664	13	1,686	6,085
Grand totals,	.....	9 881 878 06	467 048 00	205, 308 02	9, 207, 216.04	238 3	23 821	248	395	307, 781	828	2 849	50	8,813	20, 334

TABLE No. 3.—Showing the number of each class of employés at each colliery in the First Anthracite District, during the year 1888.

Names of Collieries.	Names of Persons Employed Inside.							Names of Persons Employed Outside.							Grand total inside and outside.
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers	All other company men.	Superintendents, book-keepers and clerks.	Total outside.	
Archibald shaft,	1	119	119	20	40	14	313	1	8	7	90	51	1	158	471
Bellevue shaft,	1	88	88	17	29	11	234	1	5	12	115	46	1	180	414
Bellvue slope,	1	20	20	10	10	1	62	.	.	.	.	.	.	.	62
Brisbin shaft,	1	97	109	33	33	11	288	1	4	5	80	44	1	135	423
Continental shaft,	1	108	120	33	53	12	327	1	6	9	71	62	1	150	477
Central shaft,	2	121	130	40	47	28	366	1	5	12	80	51	1	150	516
Cayuga shaft,	1	91	93	38	51	9	283	1	6	11	93	42	1	153	436
Diamond No. 2 shaft,	1	25	25	13	7	4	75	.	.	10	70	63	. . .	143	218
Diamond Tripp shaft,	1	113	113	34	32	17	312	1	9	13	42	21	1	87	399
Dodge shaft,	1	87	87	24	24	12	245	1	5	9	30	42	1	88	333
Holden shaft,	1	75	75	24	30	12	227	1	4	5	47	27	. . .	84	311
Hampton shaft,	1	103	103	34	52	17	310	1	5	7	75	51	1	140	450
Hyde Park shaft,	1	73	73	20	41	8	221	1	6	8	60	28	1	114	335
Manville shaft,	1	100	100	27	62	20	310	1	5	12	58	43	1	120	430
Oxford shaft,	1	95	95	20	35	16	262	1	5	11	85	38	. . .	140	402
Pyne shaft,	1	109	111	31	36	13	301	1	7	7	85	43	1	144	445
Sloan shaft,	2	113	113	25	43	20	326	1	4	7	98	45	1	156	482
Storrs shaft,	1	.	.	24	. .	. .	25	1	4	4	. .	66	. . .	75	100
Taylor shaft,	2	103	103	41	51	19	324	1	5	12	77	52	1	148	472
Miscellaneous Employees.															
Machinists,	. . . .	. . . .	. . . .	7	. . . .	. . . .	7	. . . .	. . . .	. . . .	. . . .	28	. . . .	28	35
Carpenters,	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	100	. . . .	100	100
Masons,	. . .	. .	. . .	. .	. . .	. . . .	. . . .	. . .	. . .	. . .	. . . .	54	. . . .	54	54
Surveyors and chainmen,	. . .	. .	. . .	. . . .	. . . .	. . . .	. . .	. .	. . .	. . .	. . . .	23	. . . .	23	23
Officials and clerks,	. . .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	14	. . .	14	14
Totals,	22	1,645	1,692	534	695	245	4,823	17	96	161	1,255	1,044	14	2,584	7,407
Owned and Operated by Delaware and Hudson Canal Company.															
Coal Brook tunnel,	1	89	41	50	18	10									
Midland tunnel,	1	158	38	50	20	21	493	1	7	5	92	35	. . . .	190	683
Wilson Creek,															
Dickson shaft,	1	109	114	29	44	11	308	1	4	10	84	48	. . . .	112	420

TABLE 8—*Continued.*

NAMES OF COLLIERIES.	NAMES OF PERSONS EMPLOYED INSIDE.							NAMES OF PERSONS EMPLOYED OUTSIDE.							Grand total inside and outside.
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, book-keepers and clerks.	Total outside.	
Eddy Creek shaft,	1	130	108	43	41	4	327	1	5	9	63	39	....	117	444
Grassey Island shaft,	1	140	65	29	23	11	269	1	3	14	64	36	....	118	387
Jermyn No. 1 shaft,	1	226	40	46	49	15	377	1	5	9	47	44	....	106	483
Leggitts Creek shaft,	2	104	90	41	66	16	319	1	6	8	53	41	....	109	428
* Manville shaft,	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Marvine shaft,	1	100	100	27	55	20	303	1	6	12	50	40	....	109	412
No. 1 Shaft Carbondale shaft,	1	156	10	26	42	5	240	1	2	2	10	28	....	43	283
No. 3 Shaft Carbondale,	1	66	18	19	16	2	122	1	2	3	3	16	....	25	147
Olyphant No. 2 shaft,	1	118	60	31	33	4	247	1	4	9	46	29	....	89	336
Powderly slope,	1	151	30	30	24	10	246	1	2	4	6	20	....	33	279
Racket Brook breaker,	....	....	....	....	....	....	....	1	....	2	45	28	....	76	76
Von Storch shaft and slope,	2	138	138	65	115	19	477	1	10	16	48	63	....	138	615
White Oak slope and tunnels,	2	86	96	18	40	7	249	1	6	8	53	30	....	98	347
Miscellaneous employees,	....	....	....	....	....	....	....	....	....	....	....	87	....	87	87
Totals,	17	1,766	948	504	586	155	3,976	14	62	111	634	629	....	1,450	5,426
Pennsylvania Coal Company.															
Shaft No. 1,	1	6	6	32	1	..	46	..	1	6	..	7	....	14	60
† Shaft No. 2,	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Shaft No. 3, Gypsey Grove,	1	53	53	6	12	4	129	1	3	6	34	26	....	70	199
Shaft No. 4, Gypsey Grove,	..	51	52	6	20	7	136	..	....	2	..	4	..	6	142
Shaft No. 5,	1	106	104	25	36	14	286	1	2	6	54	35	..	98	384
Miscellaneous employees,	....	....	....	....	....	....	....	....	....	....	....	6	..	6	6
Totals,	3	216	215	69	69	25	597	2	6	20	88	78	.	194	791
Lackawanna Iron and Coal Company.															
Capouse shaft,	2	151	144	44	80	14	435	1	8	7	108	43	2	169	604
Pine Brook shaft,	2	111	124	42	76	19	374	1	7	6	98	33	2	147	521
Totals,	4	262	268	86	156	33	809	2	15	13	206	76	4	316	1,125

* Men returned on D., L. & W. R. R. Co. sheet.

† Abandoned last day of August, 1888. Coal prepared at No. 5 shaft.

William Connell and Company.															
Meadow Brook shaft,	1	112	60	28	44	16	256	1	6	7	70	42	5	121	397
Meadow Brook tunnel,	1	36	24	7	12	6	86	..	....	2	....	3	....	5	91
National shaft and slope,	1	65	22	12	26	12	140	1	3	7	72	36	....	119	259
Stafford shaft,	1	20	13	7	6	4	51	1	1	3		4	....	9	60
Totals,	4	233	119	49	90	38	533	3	10	19	142	85	5	264	797
Hillside Coal and Iron Company.															
Clifford shaft,	1	19	20	83	....	....	123	1	8	....	....	27	...	36	159
Erie shaft,	2	175	80	50	50	7	364	1	3	4	66	42	2	118	482
Forest City shaft and slope,	2	149	96	6	46	13	312	2	4	10	38	63	3	120	432
Glenwood shaft,	1	100	100	15	15	5	236	1	3	5	90	36	2	137	373
Keystone tunnel,	1	125	50	15	50	5	246	1	2	3	36	30	1	73	319
Totals,	7	568	346	169	161	30	1,281	6	20	22	230	198	8	484	1,765
Miscellaneous Coal Companies.															
Buffalo mines,	1	23	15	4	5	2	50	1	4	....	6	20	1	32	82
Bridge shaft,	2	31	31	6	18	6	94	1	4	8	58	26	2	94	188
Belmont tunnels,	1	74	15	3	24	4	121	1	5	2	40	16	3	67	188
Brennans tunnels,	1	20	4	....	2	1	28	....	1	1	8	9	1	20	48
Church tunnels,	1	10	....	....	3	1	15	1	1	3	6	1	1	13	28
Clark tunnels,	1	4	..	....	1	....	6	..	..	.	5	1	1	7	13
Dolph tunnels,	1	60	52	5	37	5	160	1	4	2	40	21	1	69	229
Eaton shaft and tunnels,	1	129	57	11	31	9	238	1	6	12	54	26	3	102	340
Edgerton,	2	96	80	12	27	8	225	1	6	3	41	24	5	80	305
Fair Lawn slope,	1	35	38	11	20	7	112	3	3	2	35	20	2	65	177
Felers, "now Mount Jessup" slope,	1	47	50	11	23	6	138	1	5	5	76	8	5	100	238
Green Ridge slope,	1	65	60	23	37	7	193	1	3	5	36	27	1	73	266
Grassey Island shaft, etc.,	2	84	88	18	32	5	229	1	2	5	75	40	2	125	354
Jermyn No. 4 shaft,	2	125	125	35	95	21	403	1	3	2	79	67	2	154	557
Lackawanna shaft,	1	125	125	30	67	12	380	1	5	6	63	34	1	110	470
Mount Pleasant shaft,	1	82	82	26	51	9	251	1	4	3	72	63	2	145	396
Marshwood slope and tunnel,	1	40	50	4	14	4	113	1	3	4	30	15	4	57	170
Pancoast shaft,	2	146	146	58	74	17	443	1	6	4	88	64	2	165	608
Pierce slope and tunnel,	1	113	90	15	20	7	246	1	6	11	60	40	2	120	366
Richmond shaft,	1	25	22	2	10	2	62	1	2	2	20	8	2	35	97
Spencer's shaft,	2	77	77	13	44	10	223	2	2	...	52	50	...	116	339
S. V. White tunnel,	2	55	65	25	41	8	196	1	4	2	42	22	2	73	269
Simpson's slope,	1	70	40	10	17	6	144	1	5	6	27	26	4	69	213
*Tripp shaft, "Local,"	....	..	....	..	..	..	..	1		1	12	10	1	25	25
Watkins' slope and tunnel,	1	45	25	3	8	3	85	2	2	2	15	26	1	46	133
Totals,	31	1 581	1,437	325	701	160	4.135	29	89	91	1 035	674	51	1,946	6,009
Grand totals,	88	6,271	4,925	1,726	2,458	686	16 154	71	292	437	3,590	2.784	82	7,256	23,410

* Coal mined by Tripp shaft miners.

TABLE No. 4.—List of fatal accidents occurring in and about the mines of the First Anthracite Mine District, for the year ended December 31, 1888.

No. of accident.	Date of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	No. of orphans.	Name of colliery.	Location—County.
1	January 6, 1888	Thomas Carney,	Footman,	18	..	.	Olyphant No. 2,	Olyphant borough, Lackawanna county.
2	January 7, 1888,	Michael Cullen,	Miner,	48	1	7	Spencers',	Dunmore borough, Lackawanna county.
3	January 16, 1888	Thomas Rogan,	Miner,	40	1	4	Olyphant No. 2,	Olyphant borough, Lackawanna county.
4	January 23, 1888	William Brezee,	Laborer,	45	1	3	Taylor,	Lackawanna township, Lackawanna county.
5	January 26, 1888	John Harvilick,	Laborer,	28	1	1	Archbald,	Lackawanna township, Lackawanna county.
6	February 10, 1888,	James Kline,	Miner,	45	1	4	Leggett's Creek,	First ward, Scranton, Lackawanna county.
7	February 16 1888,	Thomas McHugh,	Miner,	43	1	5	Central,	Fifteenth ward, Scranton, Lackawanna county.
8	March 1, 1888,	Charles Dermott,	Laborer,	24	1	..	Powderly,	Carbondale City, Lackawanna county.
9	March 3, 1888,	Patrick McNally,	Laborer,	45	..	..	Hampton,	Lackawanna township, Lackawanna county.
10	March 3, 1888,	Robert Williams,	Laborer,	27	..	..	Mount Pleasant,	Fourteenth ward, Scranton, Lackawanna co.
11	March 9 1888,	Charles Carroll,	Miner,	27	1	1	Von Storch,	Second ward, Scranton, Lackawanna county.
12	March 13, 1888,	Richard Henwood,	Shaft sinker,	30	1	1	Glenwood,	Jermyn borough, Lackawanna county.
13	March 13 1888,	Peter Steeley,	Shaft sinker,	22	..	..	Glenwood,	Jermyn borough, Lackawanna county.
14	March 24, 1888,	John Jenkins,	Laborer,	32	..	..	Holden,	Lackawanna township, Lackawanna county.
15	March 29, 1888,	Charles Dillon,	Miner,	59	1	..	Hyde Park,	Fifth ward, Scranton, Lackawanna county.
16	March 30, 1888,	Wm. R Thomas,	Miner,	60	..	..	Dolph,	Winton borough, Lackawanna county.
17	March 30, 1888,	Nicholas Moneeta,	Laborer,	30	1	1	Dolph,	Winton borough, Lackawanna county.
18	March 30, 1890,	Patrick Ruddy,	Driver,	16	..	..	Spencers',	Dunmore borough, Lackawanna county.
19	April 3, 1888,	Daniel Thomas,	Driver,	18	..	..	Diamond "Tripp."	Twenty-first ward, Scranton, Lackawanna co.
20	April 7, 1888,	William Langman,	Laborer,	69	..	..	Edgerton Breaker,	Jermyn borough, Lackawanna county.
21	April 23, 1888,	Elias Jones,	Laborer,	28	1	2	Hyde Park,	Fifth ward, Scranton, Lackawanna county.
22	April 24, 1888,	John Turnbull,	Driver,	15	..	..	No 1 Shaft, Forest City,	Forest City borough, Susquehanna county.
23	May 1 1888	Martin Millett,	Laborer,	45	1	4	Gypsey Grove No. 4 Shaft,	Dunmore borough, Lackawanna county.
24	May 4, 1888,	Henry White,	Miner,	23	..		Eddy Creek,	Olyphant borough, Lackawanna county.
25	May 23, 1888,	Michael Ganghan,	Driver,	16	..		Manville,	Thirteenth ward, Scranton, Lackawanna county.
26	May 23, 1888,	Owen Owens,	Miner,	50	..	2	Hyde Park,	Fifth ward, Scranton, Lackawanna county.
27	May 25, 1888,	Thomas P. Jones,	Door boy,	14			Taylor,	Lackawanna township, Lackawanna county.
28	June 6, 1888,	Martin Dougherty,	Miner,	45	1	4	White Oak Tunnel,	Archbald borough, Lackawanna county.
29	June 15 1888,	Lewis R Jenkins,	Miner,	51	1	8	Bellevue slope,	Lackawanna township, Lackawanna county.
30	June 19, 1888,	John Smith,	Driver,	16			Grassy Island, D. & H. C. Co.,	Olyphant borough, Lackawanna county.
31	June 22, 1888,	John Purcell,	Miner,	44	1	1	Paucoast,	Dickson City, Lackawanna county.
32	July 9, 1888,	Patrick Jordan,	Miner,	30	1	4	Wilson Creek Tunnel,	Fell township, Lackawanna county.
33	July 10, 1888,	Charles Moon,	Culm dump driver,	13		..	Jermyn No. 1 breaker,	Jermyn borough, Lackawanna county.
34	July 25, 1888,	Fritz Mellick,	Driver,	18	..	..	Mount Pleasant,	Fourteenth ward, Scranton, Lackawanna co.
35	July 6, 1888,	Leopold Nedjaniskey,	Miner,	31		..	Simpson,	Fell township, Lackawanna county.
36	July 8, 1888,	Andrew Visgor,	Laborer,	20	.	..	Dickson,	First ward, Scranton, Lackawanna county.
37	July 23, 1888,	William Hartshorn,	Miner,	50	1	7	Marvine,	First ward, Scranton, Lackawanna county.

38	August 1, 1888,	Ivor Williams,	Door boy,	16	..		Oxford,	Fifth ward, Scranton, Lackawanna county.
39	August 1, 1888,	James Casticks,	Laborer,	28	..	..	Forest City slope,	Forest City borough, Susquehanna county.
40	August 7, 1888,	Darby Walsh,	Miner,	31	1	2	Lackawanna Coal Company,	Blakely borough, Lackawanna county.
..	August 17, 1888,	John Morris,	Driver,	17	..	..	Taylor,	Lackawanna township, Lackawanna county.
41	August 21, 1888,	Patrick Murray,	Laborer,	27	..	..	No. 2 Diamond shaft,	Twenty-first ward, Scranton, Lackawanna co.
42	August 22, 1888,	John Jones,	Driver,	17	..	..	Taylor breaker,	Lackawanna township, Lackawanna county.
43	August 23, 1888,	Harry Tonkins,	Miner,	24	1	2	Wilson Creek Tunnel,	Fell township, Lackawanna county.
44	August 27, 1888,	Anthony Smyth,	Miner,	23	..	..	National,	Twentieth ward, Scranton, Lackawanna county.
45	August 28, 1888,	John Merinchok,	Laborer,	22	..	..	S. V. White,	Winton borough, Lackawanna county.
46	September 10, 1888,	Patrick Connelly,	Driver,	17	..	..	Taylor,	Lackawanna township, Lackawanna county.
47	September 11, 1888,	Wm. T. Jones,	Miner,	34	1	..	Grassey Island, D. & H. C. Co.,	Olyphant borough, Lackawanna county.
48	September 13, 1888,	William Richardson,	Miner,	34	1	4	Pancoast,	Dickson City borough, Lackawanna county.
49	September 15, 1888,	Dolph Hazen,	Laborer,	19	..	..	Marshwood,	Dickson City borough, Lackawanna county.
50	September 17, 1888,	Adam Geise,	Laborer,	18	..	..	Capouse,	Twenty-first ward, Scranton, Lackawanna co.
51	September 25, 1888,	William Lawrence,	Miner,	56	1	6	Brisbin,	Third ward, Scranton, Lackawanna county.
52	September 26, 1888,	Reese Davis,	Driver,	15	..	..	Holden,	Lackawanna township, Lackawanna county.
53	September 27, 1888,	John Murphy,	Driver,	15	..	..	Eddy Creek,	Olyphant borough, Lackawanna county.
54	September 27, 1888,	Martin Mahoby,	Culm man,	51	1	5	Grassey Island, D. & H. C. Co.,	Olyphant borough, Lackawanna county.
55	September 27, 1888,	Christian Gabrial,	Culm man,	48	1	..	Grassey Island, D. & H. C. Co.,	Olyphant borough, Lackawanna county.
56	September 27, 1888	John O. Mally,	Driver,	16	..	..	Dolph,	Winton borough, Lackawanna county.
57	October 8, 1888,	Anthony Lisazus,	Laborer,	22	..	..	Glenwood,	Jermyn borough, Lackawanna county.
58	October 10, 1888,	Frederick Hawkins,	Miner,	28	1	4	Capouse,	Twenty-first ward Scranton, Lackawanna co.
59	October 15, 1888,	Patrick O. Neil,	Outside driver,	15	..	..	Hyde Park,	Fifth ward, Scranton, Lackawanna county.
60	October 17, 1888,	Michael Scott,	Driver,	18	..	..	Jermyn No. 4,	Dickson City borough, Lackawanna county.
..	October 18, 1888	Ignatius Stacrynski,	Laborer,	21	..	..	Hampton,	Lackawanna township, Lackawanna county.
61	November 2, 1888,	Andrew Kuiucz,	Miner,	30	..	..	Forest City slope,	Forest City borough, Susquehanna county.
62	November 8 1888,	Patrick Corcoran,	Laborer,	29	..	..	Shaft No. 5, Penns. C. Co.,	Dunmore borough, Lackawanna county.
63	November 12, 1888,	Patrick Hart,	Miner,	57	1	7	Central,	Fifteenth ward, Scranton, Lackawanna county.
64	November 13 1888,	Henry Richards,	Slate picker,	13	..	..	Capouse,	Twenty-first ward, Scranton, Lackawanna co.
65	November 13, 1888	Charles Toolin,	Laborer,	18	..	..	White Oak No. 5 drift,	Archbald borough, Lackawanna county.
66	November 20, 1888,	Owen Cavanagh,	Miner,	52	1	7	Midland Tunnel Coal Bank,	Fell township, Lackawanna county.
67	November 6, 1888	Edward Connelly,	Laborer,	20	..	..	Taylor Drift mine,	Lackawanna township, Lackawanna county.
68	December 4, 1888,	Michael Heffron,	Laborer,	40	1	2	Powderly Slope mines,	Carbondale City, Lackawanna county.
69	December 14 1888,	Thomas Fergusson,	Miner,	35	1	1	Mount Pleasant slope,	Fourteenth ward, Scranton, Lackawanna co.
70	December 15, 1888,	Hugh Stone,	Miner,	40	1	6	Eddy Creek mines,	Olyphant borough, Lackawanna county.
71	December 20, 1888,	John Sheridan,	Miner,	44	1	7	Hampton mines,	Lackawanna township, Lackawanna county.
72	December 27, 1888,	John Keough,	Driver,	16	..	..	Pine Brook mines,	Seventh ward, Scranton, Lackawanna county.
					31	113		

TABLE No. 4.—*Continued.*

No. of accident.	NAME OF PERSON.	Nature and cause of accident.
1	Thomas Carney, ...	Seriously injured ; run over by cars. Died next morning.
2	Michael Cullen, ...	Seriously injured ; squeezed between car and pillar. Died two hours after.
3	Thomas Rogan, ...	Seriously injured ; fall of rock roof. Died immediately after he got home.
4	William Brezee, ...	Killed ; fell off railroad car of props which he was unloadening, fell on his head on the ice Died ten minutes after.
5	John Harvilick, ...	Killed ; fall of top coal and falling roof; his wife and one child in Europe.
6	James Kline, ...	Seriously burned ; accidently exploded powder in his box while handling it. Died on the thirteenth.
7	Thomas McHugh, ...	Killed ; fall of top coal.
8	Charles Dermoit, ...	Seriously injured ; fall of roof. Died two hours after.
9	Patrick McNally, ...	Killed ; fall of roof.
10	Robert Williams, ...	Killed ; fall of roof.
11	Charles Carroll, ...	Killed instantly ; fall of coal.
12	Richard Henwood, . . .	Killed instantly by a bucket falling on him in new shaft while sinking it; it fell a distance of one hundred feet.
13	Peter Steeley, ...	Seriously injured by same bucket striking him. Died four hours after.
14	John Jenkins, ...	Killed ; fall of bony coal and roof.
15	Charles Dillon, ...	Knee joint dislocated ; fall of roof. Died April first, at eleven o'clock A. M. Not reported as seriously injured.
16	Wm. R. Thomas, ...	Killed ; fall of roof.
17	Nicholas Moneeta, . . .	Seriously injured by same fall. Died twelve o'clock M., April 9.
18	Patrick Ruddy, ...	Skull fractured ; kicked by a mule. Died three o'clock A. M., April 3.
19	Daniel Thomas, ...	Seriously injured ; caught between car and pillar. Died next day.
20	William Langman, . . .	Killed ; smothered in coal pockets in breaker.
21	Elias Jones, ...	Small bone in arm fractured ; fall of coal. Died April 29. Not reported serious.
22	John Turnbull, ...	Seriously injured ; run over by mine cars. Died same night.
23	Martin Millett, ...	Killed ; fall of roof.
24	Henry White, ...	Seriously burned by explosion of three-fourths keg of powder. It is supposed a spark from his lamp fell into it. Died same night.
25	Michael Ganghan, . . .	Killed ; run over by mine cars. Fell off front bumper of car.
26	Owen Owens, ...	Killed instantly ; fall of roof.
27	Thomas P. Jones, . .	Killed ; squeezed between cars.
28	Martin Dougherty, . . .	Killed instantly ; fall of roof.
29	Lewis R. Jenkins, . . .	Killed instantly ; fall of roof.
30	John Smith, ...	Seriously injured ; kicked by a mule. Died on the night of the twentieth.
31	John Purcell, ...	Killed instantly ; fall of bony coal.
32	Patrick Jordan, ...	Killed by a piece of rock falling on him.
33	Charles Moon, ...	Killed on culm dump ; fell in front of loaded car.
34	Fritz Mellick, ...	Found dying along side of track ; supposed to be caught between two cars.
35	Leopold Nedjaniskey, .	Killed instantly ; fall of top coal.
36	Andrew Visgor, ...	Seriously injured ; fall of roof. Died five hours after.
37	William Hartshorn, . .	Seriously injured ; premature blast. Died eight hours after.
38	Ivor Williams, ...	Seriously injured ; caught between cars. Died same night.

39	James Castlicks,	Killed ; fall of roof.
40	Darby Walsh,	Seriously injured ; fall of top coal. Died one hour after.
..	John Morris,	Killed ; fall of rock.
41	Patrick Murray,	Killed ; fall of rock.
42	John Jones,	Seriously injured ; fell under car and it run over him. Died same day.
43	Harry Tonkins,	Seriously injured ; fall of top coal and rock roof. Died shortly after.
44	Anthony Smyth,	Killed ; fall of top coal.
45	John Merinchok,	Killed ; fall of top coal.
46	Patrick Connelly,	Killed instantly ; fall of roof.
47	Wm. T. Jones,	Killed ; fall of top coal
48	William Richardson,	Killed ; fall of top coal.
49	Dolph Hazen,	Killed instantly ; fall of rock roof
50	Adam Geiss,	Killed ; fall of coal.
51	William Lawrence,	Killed ; was standing on a car barring down top coal, when it fell forcing end of the drill against his body in front of heart, killing him.
52	Reese Davis,	Seriously injured ; explosion of gas Died next morning.
53	John Murphy,	Seriously injured on twenty-first, died on night of twenty-sixth ; run over by loaded car. Report received on twenty-seventh.
54	Martin Mahody,	Killed instantly ; fall of rock roof.
55	Christian Gabrial,	Killed instantly ; fall of rock roof.
56	John O. Malley,	Killed ; tripped and fell in front of a loaded car. Mule pulled car on him.
57	Anthony Lisazus,	Killed instantly ; fall of coal and buck.
58	Frederick Hawkins,	Seriously injured on back and hips ; fall of bony coal. Died the same night.
59	Patrick O'Neil,	Killed ; squeezed between cars outside at breaker.
60	Michael Scott,	Killed ; drawhead of car broke while on plane, cars run back down plane caught and killed him.
..	Ignatius Sracrynski,	Killed ; fall of roof
61	Andrew Kurucz,	Killed instantly ; fall of rock.
62	Patrick Corcoran,	Killed ; jammed between loaded car and head block.
63	Patrick Hart,	Killed ; was cutting out prop when roof fell and killed him.
64	Henry Richards,	Killed ; fell from walkway to chutes a distance of ten feet ; struck on his head and was killed.
65	Charles Toolin,	Killed ; fall of six inch coal roof.
66	Owen Cavanagh,	Killed ; fall of rock roof in his chamber.
67	Edward Connelly,	Killed ; fall of roof.
68	Michael H ffron,	Seriously injured ; fall of buck. Died three hours after.
69	Thomas Fergusson,	Seriously injured by a premature blast. Cut his match too short. Died that night.
70	Hugh Stone,	Injured seriously ; fall of top coal and roof. Died next day.
71	John Sheridan,	Killed ; fall of roof.
72	John Keough,	Seriously injured ; caught between cars. Died as they got him into his home.

Cause of Fatal Accidents.

Falls of roof,	26,	equal to 35 2 per cent.	Caught by cars outside,	3,	equal to 4.0 per cent.
Falls of coal,	21,	equal to 27 0 per cent.	Killed by bucket falling down shaft,	2,	equal to 2.7 per cent.
Caught by mine cars,	14,	equal to 18 9 per cent.	Killed in breakers,	2,	equal to 2.7 per cent.
Explosion of CH_4 gas,	1,	equal to 1.4 per cent.			
Blasting and powder explosions,	4,	equal to 5.4 per cent.		74	100.0
Killed by mules,	2,	equal to 2 7 per cent.			

TABLE No. 5.—List of non-fatal accidents occurring in and about the Mines of the First Anthracite Mine District, for the year ended December 31, 1888.

No. of accident.	Date of accident.	Name of Person.	Occupation.	Age.	Name of Colliery.	Location—County.
1	January 2,	Michael Durkin,	Driver,	17	Cayuga,	Third ward, Scranton, Lackawanna county.
2	do. 5,	Edward Deane,	Laborer,	27	Pierce,	Archbald borough, Lackawanna county.
3	do. 5,	Evan L. Evans,	Miner,	34	Sloan,	Lackawanna township, Lackawanna county.
4	do. 7,	Thomas Muldowning,	Miner,	25	Pancoast,	Dickson City borough, Lackawanna county.
5	do. 9,	Samuel Bryant,	Miner,	31	Oxford,	Fifth ward, Scranton, Lackawanna county.
6	do. 9,	James Palmer,	Laborer,	28	Taylor shaft,	Lackawanna township, Lackawanna county.
7	do 11,	Henry Thomas,	Miner,	39	Hyde Park,	Fifth ward, Scranton, Lackawanna county.
8	do. 11,	Edward Long,	Miner,	62	Sloan,	Lackawanna township, Lackawanna county.
9	do. 12,	James Price,	Miner,	26	Taylor,	Lackawanna township, Lackawanna county.
10	do. 12,	Frank Burke,	Laborer,	24	Hampton,	Lackawanna township, Lackawanna county.
11	do. 14,	William Smith,	Laborer,	30	Manville,	Thirteenth ward, Scranton, Lackawanna county.
12	do 14,	Thomas Patterson,	Miner,	35	Manville,	Thirteenth ward Scranton, Lackawanna county.
13	do. 14,	Stephen Pender,	Miner,	37	Pancoast,	Dickson City borough, Lackawanna county.
14	do. 14,	Stephen Storrick,	Laborer,	34	Pancoast,	Dickson City borough, Lackawanna county.
15	do. 16,	David Davis,	Miner,	22	Archbald,	Lackawanna township, Lackawanna county.
16	do 16,	V G. Kellett,	Culm driver,	15	Archbald breaker,	Lackawanna township, Lackawanna county.
17	do. 16,	Thomas O'Rourke,	Laborer,	19	Olyphant No. 2,	Olyphant borough, Lackawanna county.
18	do. 17,	Dennis McCarthy,	Laborer,	28	Taylor,	Lackawanna township, Lackawanna county.
19	do. 19,	James Lucats,	Miner,	27	Fair Lawn,	Seventh ward, Scranton, Lackawanna county.
20	do. 19,	John Washelie,	Laborer,	23	Fair Lawn,	Seventh ward, Scranton, Lackawanna county.
21	do. 20,	Peter Mackerel,	Driver,	16	Grassey Island, D. & H. C. Co.,	Olyphant borough, Lackawanna county.
22	do. 20,	Richard Evans,	Drivers'-helper,	16	Taylor,	Lackawanna township, Lackawanna county.
23	do. 20,	James Maugan,	Driver,	17	Meadow Brook tunnel,	Twentieth ward, Scranton, Lackawanna county.
24	do. 21,	John Nicols,	Driver,	16	Mount Pleasant,	Fourteenth ward, Scranton, Lackawanna county.
25	do. 21,	Michael Burns,	Miner,	32	Belmont,	Carbondale city, Lackawanna county.
26	do. 22,	John Lynn,	Driver,	15	Brisbin,	Twenty-first ward, Scranton, Lackawanna county.
27	do. 23,	Joshua Fawcett,	Laborer,	28	Pancoast,	Dickson City borough, Lackawanna county.
28	do. 24,	Philip Evans,	Miner,	32	Pine Brook,	Seventh ward, Scranton, Lackawanna county.
29	do. 24,	John Locusek,	Miner,	48	Jermyn No. 4,	Dickson City borough, Lackawanna county.
30	do. 24,	Anthony Locusek,	Laborer,	22	Jermyn No. 4,	Dickson City borough, Lackawanna county.
31	do. 24,	John Palmer,	Brattice man,	20	Jermyn No. 4,	Dickson City borough, Lackawanna county.
32	do. 26,	Ephram T. Davis,	Laborer,	52	Capouse,	Twenty-first ward. Scranton, Lackawanna county.
33	do. 26,	Alfred Broadherst,	Driver,	17	Cayuga,	Third ward, Scranton, Lackawanna county.
34	do. 26,	Patrick Walker,	Miner,	33	Cayuga,	Third ward, Scranton, Lackawanna county.

35	do.	26,	James James,	Miner,	27	Oxford,	Fifth ward, Scranton, Lackawanna county.
36	do.	26,	Eph Thomas,	Laborer,	21	Oxford,	Fifth ward, Scranton, Lackawanna county.
37	do.	26,	John Moran,	Laborer,	40	Oxford,	Fifth ward, Scranton Lackawanna county.
38	February	1,	Peter Brady,	Miner,	47	Pancoast,	Dickson City borough, Lackawanna county.
39	do	6,	John McDonnell,	Driver,	14	Leggitt's Creek,	First ward, Scranton, Lackawanna county.
40	do.	7,	John Williams,	Driver,	18	Hyde Park,	Fifth ward, Scranton, Lackawanna county.
41	do.	8,	Mike Corcoran,	Driver,	16	Eaton,	Archbald borough, Lackawanna county.
42	do.	10,	James Burnsides,	Laborer,	62	Jermyn No 4,	Dickson City borough, Lackawanna county.
43	do.	10,	Daniel Thomas,	Miner,	50	Cayuga,	Third ward, Scranton, Lackawanna county.
44	do.	11,	Peter Nealon,	Miner,	34	Grassey Island, D. & H ,	Olyphant borough, Lackawanna county.
45	do.	11,	Thomas Walton,	Miner,	38	Manville,	Thirteenth ward, Scranton, Lackawanna county.
46	do.	11,	Andrew Lunney,	Miner,	40	Continental,	Lackawanna township, Lackawanna county.
47	do.	11,	James Gallagher,	Laborer,	45	Continental,	Lackawanna township, Lackawanna county.
48	do.	14,	Thomas McDermott,	Driver,	15	Meadow Brook shaft,	Twentieth ward, Scranton, Lackawanna county.
49	do.	15,	George Morgan,	Runner,	18	Eddy Creek,	Olyphant borough, Lackawanna county.
50	do.	16,	Stephen Slatte,	Laborer,	23	Central,	Fifteenth ward, Scranton, Lackawanna county.
51	do.	17,	Martin King,	Driver,	16	Capouse,	Twenty-first ward, Scranton, Lackawanna county.
52	do.	20,	William Warren,	Miner,	39	Grassey Island, G. I. C. Co.,	Winton borough, Lackawakna county.
53	do.	23,	Michael Regan,	Footman,	23	Von Storch Clark Vein,	Second ward, Scranton, Lackawanna county.
54	do.	23,	Martin McNamarra,	Runner,	15	Leggitt's Creek,	First ward, Scranton, Lackawanna county.
55	do.	24,	Andy Haverleck,	Laborer,	34	Hampton,	Lackawanna township, Lackawanna county.
56	do	24,	Richard Reese,	Laborer,	35	Marvine,	First ward, Scranton, Lackawanna county.
57	do.	28,	Patrick Langan,	Culm dump driver,	16	Bellevue breaker,	Lackawanna township, Lackawanna county.
58	do.	28,	James Keegan,	Car loader,	16	Bellevue breaker,	Lackawanna township, Lackawanna county.
59	March	2,	Sabina Baldo,	Miner,	40	Meadow Brook shaft,	Twentieth ward, Scranton. Lackawanna county.
60	do.	6,	David Davis,	Miner,	25	Leggitt's Creek,	First ward, Scranton, Lackawanna county.
61	do.	7,	Patrick Moran,	Runner,	19	Marvine,	First ward Scranton, L ckawanna county.
62	do.	9,	Thomas Mulchrone,	Driver,	16	Leggitt's Creek,	First ward, Scranton, Lackawanna county.
63	do.	17,	David Morris,	Miner,	35	Bridge,	Fourteenth ward, Scranton, Lackawanna county.
64	do.	19,	James McGivin,	Miner,	27	Bridge,	Fourteenth ward, Scranton, Lackawanna county.
65	do.	19,	Charles Klees,	Miner,	25	Cayuga,	Third ward, Scranton, Lackawanna county.
66	do.	23,	Patrick Cronin,	Driver,	15	White Oak,	Archbald borough, Lackawanna county.
67	do.	23,	Daniel Evans.	Driver,	17	Dodge,	Lackawanna township, Lackawanna county.
68	do.	24,	Robert Norris,	Culm man,	55	Grassey Island, D. &. H.,	Olyphant borough, Lackawanna county.
69	do.	25,	George Jones,	Miner,	45	Green Ridge,	Dunmore borough, Lackawanna county.
70	do.	26,	Thomas J. Jones,	Miner,	48	Hyde Park,	Fifth ward, Scranton, Lackawanna county.
71	do.	26,	Michael Yarick,	Slate picker,	30	Sloan breaker,	Lackawanna township, Lackawanna county.
72	do.	26,	Thomas Thomas,	Driver,	14	Central,	Fifteenth ward, Scranton, Lackawanna county.
73	do.	27,	Thomas MacKay,	Laborer,	40	Pine Brook,	Seventh ward, Scranton, Lackawanna county.
74	do.	27,	William Proudlock,	Driver,	15	Marvine,	First ward, Scranton, Lackawanna county.
75	do.	28.	Archbald MacKay,	Miner,	26	Grassey Island, D. & H.,	Olyphant borough, Lackawanna county.
76	do.	28,	Robert Baxter,	Miner,	24	Grassey Island, D. & H ,	Olyphant borough, Lackawanna county.
77	do.	29,	William Jopling,	Miner,	55	Jermyn No. 4,	Dickson City borough, Lackawanna county.
78	do.	31,	James Powell,	Driver,	16	Taylor,	Lackawanna township, Lackawanna county.
79	April	2,	John F. Summers,	Miner,	41	Pierce,	Archbald borough, Lackawanna county.
80	do	2,	James Davis,	Laborer,	20	Taylor,	Lackawanna township, Lackawanna county.
81	do	3,	Fred Weber,	Laborer,	42	Pyne,	Lackawanna township, Lackawanna county.
82	do	5,	Michael Geraty,	Miner,	43	Filer's slope,	Winton borough, Lackawanna county.
83	do.	7,	David Phillips,	Miner,	30	Holden,	Lackawanna township, Lackawanna county.
84	do.	7.	John Walsh,	Miner,	32	Holden,	Lackawanna township, Lackawanna county.
85	do.	7,	Mike Burke,	Laborer,	30	Holden,	Lackawanna township, Lackawanna county.
86	do	7,	Joseph Rugins,	Miner,	35	Richmond,	Twenty-first ward, Scranton, Lackawanna county.
87	do.	10,	John Baker,	Driver,	17	White Bridge,	Carbondale city, Lackawanna county.

TABLE No. 5—*Continued.*

No. of accident.	Date of accident.	NAME OF PERSON.	Occupation.	Age.	Name of Colliery.	Location—County.
88	April 11,	Aaron Herbert,	Miner,	50	Leggitt's Creek,	First ward, Scranton, Lackawanna county.
89	do. 17,	Michael Duffy,	Miner,	24	Midland,	Fell township, Lackawanna county.
90	do. 18,	Rosser Jenkins,	Miner,	60	Dolph,	Winton borough, Lackawanna county.
91	do. 18,	Thomas Manley,	Laborer,	30	Dolph,	Winton borough, Lackawanna county.
92	do. 18,	Peter J. Byrnes,	Fireman,	36	Grassey Island eng. house,	Olyphant borough, Lackawanna county.
93	do. 18,	Peter Coyne,	Miner,	25	Grassey Island,	Olyphant borough, Lackawanna county.
94	do. 19,	Joseph Gardner,	Laborer,	30	Brisbin,	Third ward, Scranton, Lackawanna county.
95	do. 19,	Henry Cook,	Miner,	40	Jermyn No. 4,	Dickson City borough, Lackawanna county.
96	do. 19,	William Dwire,	Driver,	16	Dickson,	Second ward, Scranton, Lackawanna county.
97	do. 19,	Evan Marshal,	Runner,	21	Sloan,	Lackawanna township, Lackawanna county.
98	do. 20,	Fred Sprangler,	Laborer,	25	Mount Pleasant,	Fourteenth ward, Scranton, Lackawanna county.
99	do. 24,	Alfred Moses,	Driver,	17	Bellevue shaft,	Lackawanna township, Lackawanna county.
100	May 1,	John Millett,	Laborer,	18	Gypsey Grove,	Dunmore borough, Lackawanna county.
101	do. 3,	Pat. Jennings,	Miner,	50	Leggitt's Creek,	First ward, Scranton, Lackawanna county.
102	do. 5,	Robert Combs,	Driver helper,	14	Pyne,	Lackawanna township, Lackawanna county.
103	do. 7,	James Brace,	Fire-boss helper,	43	Mount Pleasant,	Fourth ward, Scranton, Lackawanna county.
104	do. 11,	John Murray,	Driver,	17	Filer's slope,	Winton borough, Lackawanna county.
105	do. 15,	Alfred Bayless,	Driver,	15	Forest City mines,	Clifford township, Susquehanna county.
106	do. 16,	Patrick Finegan,	Laborer,	33	Tripp shaft,	Twenty-first ward, Scranton, Lackawanna county.
107	do. 18,	Anthony Carey,	Laborer,	35	Richmond,	Twenty-first ward, Scranton, Lackawanna county.
108	do. 18,	Brian McGuire,	Laborer,	38	Richmond,	Twenty-first ward, Scranton, Lackawanna county.
109	do. 19,	Zephaniah Watson,	Miner,	36	Coal Brook tunnel,	Carbondale city, Lackawanna county.
110	do. 21,	George Morse,	Miner,	24	Pine Brook,	Seventh ward, Scranton, Lackawanna county.
111	do. 23,	Joseph Shon,	Miner,	41	Grassey Island tunnel,	Winton borough, Lackawanna county.
112	do. 29,	John Higgins,	Driver,	15	Marvine,	First ward, Scranton, Lackawanna county.
113	do. 29,	David J. Evans,	Miner,	32	Von Storch Clark Vein,	Second ward, Scranton, Lackawanna county.
114	do. 31,	John Marsh,	Laborer,	29	Hampton,	Lackawanna township, Lackawanna county.
115	June 1,	Thomas Jones,	Miner,	24	Brisbin,	Third ward, Scranton, Lackawanna county.
116	do. 1,	John Toy,	Miner,	47	Manville,	Thirteenth ward, Scranton, Lackawanna county.
117	do. 2,	Frank Shelinski,	Miner,	28	Fair Lawn,	Seventh ward, Scranton, Lackawanna county.
118	do. 4,	John H. Jones,	Fire-boss,	60	Hyde Park,	Fifth ward, Scranton, Lackawanna county.
119	do. 5,	Charles Bennett,	Culm man,	25	Pancoast,	Dickson City borough, Lackawanna county.
120	do. 5,	James Sheerin,	Miner,	45	Central,	Fifteenth ward, Scranton, Lackawanna county.
121	do. 7,	James Gilgallon,	Driver,	17	Dodge,	Lackawanna township, Lackawanna county.
122	do. 9,	John J. Meehan,	Miner,	28	Richmond,	Twenty-first ward, Scranton, Lackawanna county.

132	do.	11,	Leon Sodosky,	Miner,	30	Jermyn No. 4,	Dickson City borough, Lackawanna county.
134	do.	11,	John Coolix,	Laborer,	37	Jermyn No. 4,	Dickson City borough, Lackawanna county.
135	do.	12,	Daniel Murphy,	Miner,	46	Pine Brook,	Seventh ward, Scranton, Lackawanna county.
136	do.	14,	Patrick Gilboy,	Miner,	43	Coal Brook tunnel,	Carbondale city, Lackawanna county.
137	do.	14,	Grant Compton,	Driver,	18	Belmont,	Carbondale city, Lackawanna county.
138	do.	16,	William Phillips,	Carpenter,	22	Von Storch Diamond vein,	Second ward, Scranton, Lackawanna county.
139	do.	18,	Joseph Marks,	Doorboy,	15	Sloan,	Lackawanna township, Lackawanna county.
140	do.	23,	Lawrence Pole,	Laborer,	36	Dodge,	Lackawanna township, Lackawanna county.
141	do.	25,	Reese Thomas,	Miner,	54	Capouse,	Twenty-first ward, Scranton, Lackawanna county.
142	do.	27,	Frank Durgos,	Laborer,	28	Taylor breaker,	Lackawanna township, Lackawanna county.
143	do.	27,	William Kearney,	Laborer,	60	National,	Twentieth ward, Scranton, Lackawanna county.
144	do.	28,	Michael Ladick,	Laborer,	24	Keystone,	Glenwood borough, Lackawanna county.
145	do.	28,	Sydney Miller,	Drivers' helper,	14	Green Ridge,	Dunmore borough, Lackawanna county.
146	do.	29,	James Evans,	Driver,	19	Tripp shaft,	Twenty-first ward, Scranton, Lackawanna county.
147	July,	2,	John Nailor,	Driver,	15	White Oak,	Archbald borough, Lackawanna county.
148	do.	7,	Peter Smith,	Driver,	14	Central,	Fifteenth ward, Scranton, Lackawanna county.
149	do.	7,	Frederick Reese,	Laborer,	48	Capouse,	Twenty-first ward, Scranton, Lackawanna county.
140	do.	9,	Alexander Okes,	Chargeman,	27	Shaft No. 1, P. C. Co.,	Dunmore borough, Lackawanna county.
141	do.	9,	Peter Lalasky,	Laborer,	28	Simpson,	Fell township, Lackawanna county.
142	do.	11,	D. W. Mosier,	Mine foreman,	53	Hyde Park,	Fifth ward, Scranton, Lackawanna county.
143	do.	13,	John D. Evans,	Miner,	27	Jermyn, No. 4,	Dickson City borough, Lackawanna county.
144	do.	13,	Thomas Sowa,	Laborer,	24	Simpson,	Fell township, Lackawanna county.
145	do.	14,	William Jenkins,	Laborer,	28	Holden,	Lackawanna township, Lackawanna county
146	do.	15,	Evan H. Evans,	Miner,	33	Pine Brook,	Seventh ward, Scranton, Lackawanna county.
147	do.	18,	Griffith W. Jones,	Laborer,	24	Pine Brook,	Seventh ward, Scranton, Lackawanna county.
148	do.	20,	William Curtis,	Laborer,	24	Spencer,	Dunmore borough, Lackawanna county.
149	do.	21,	John McBride,	Driver,	18	Keystone,	Glenwood borough, Lackawanna county.
150	do.	31,	Clinton W. Silkman,	Chainman,	23	Leggitt's Creek,	First ward, Scranton, Lackawanna county
151	August	2,	William Price,	Oil boy,	14	Taylor breaker,	Lackawanna township, Lackawanna county.
152	do.	3,	John Proper,	Culm-dump driver,	14	Archbald breaker,	Lackawanna township, Lackawanna county.
153	do.	3,	John Carroll,	Miner,	55	Holden,	Lackawanna township, Lackawanna county.
154	do.	3,	Albert Wall,	Driver,	17	Pyne,	Lackawanna township, Lackawanna county.
155	do.	3,	George Lusinger,	Laborer,	25	Filer's slope,	Winton borough, Lackawanna county.
156	do.	3,	Howell H. Davis,	Miner,		National,	Twentieth ward, Scranton, Lackawanna county.
157	do.	6,	Robert Neil,	Driver,	15	Von Storch rock vein,	Second ward, Scranton, Lackawanna county.
158	do.	7,	John Olishnish,	Laborer,	30	Grassy Island, D. & H.,	Olyphant borough, Lackawanna county.
159	do.	7,	William Aston,	Miner,	28	Dodge,	Lackawanna township, Lackawanna county.
160	do.	8,	John McDonald,	Driver's helper,	16	Dodge,	Lackawanna township, Lackawanna county.
161	do.	8,	John Evans,	Miner,	45	Pancoast,	Dickson City borough, Lackawanna county.
162	do.	9,	Thomas Phillips,	Laborer,	19	Capouse,	Twenty-first ward, Scranton, Lackawanna county.
163	do.	11,	James Ruddy,	Driver,	16	Fair Lawn,	Seventh ward, Scranton, Lackawanna county.
164	do.	11,	Patrick Coar,	Miner,	36	Pancoast,	Dickson City borough, Lackawanna county.
165	do.	13,	P. H. Thomas,	Miner,	41	Pyne,	Lackawanna township, Lackawanna county.
166	do.	13,	Ananiah Evans,	Miner,	45	Dodge,	Lackawanna township, Lackawanna county.
167	do.	15,	Joseph ——,	Laborer,	35	Dolph,	Winton borough, Lackawanna county.
168	do.	16,	James McDonagh,	Driver,	16	Spencer,	Dunmore borough, Lackawanna county.
169	do.	18,	John Davis,	Miner,	36	Leggitt's Creek,	First ward, Scranton, Lackawanna county.
170	do.	18,	Michael Hoban,	Laborer,	63	Leggitt's Creek,	First ward, Scranton, Lackawanna county.
171	do.	18,	William Walsh,	Loader,	16	Spencer,	Denmore borough, Lackawanna county.
172	do.	18,	William Fitzgerald,	Laborer,	20	Dolph,	Winton borough, Lackawanna county.
173	do.	21,	John Fidium,	Doorman,	55	Marvine,	First ward, Scranton, Lackawanna county.
174	do.	22,	John Bolton,	Runner,	16	Olyphant, No. 2,	Olyphant borough, Lackawanna county.

TABLE No. 5—*Continued.*

No. of accident.	Date of accident.	NAMES OF PERSONS.	Occupation.	Age.	Name of colliery.	Location—County.
175	August 23,	John Passmore,	Miner,	25	Wilson Creek tunnel,	Fell township, Lackawanna county.
176	do. 25,	Peter McNulty,	Laborer,	22	Bellevue shaft,	Lackawanna township, Lackawanna county.
177	do. 25,	Andrew Harmatta,	Headman,	35	Clifford,	Forest City borough, Susquehanna county.
178	do. 27,	Richard Phillips,	Driver,	17	Capouse,	Twenty-first ward, Scranton, Lackawanna county.
179	do. 28,	John McAndrews,	Miner,		No 3 shaft,	Carbondale city, Lackawanna county.
180	September 4,	Thompson Hall,	Runner,	19	Jermyn No 4,	Dickson City borough, Lackawanna county.
181	do. 5,	Stephen Marwick,	Driver's helper,	15	Central,	Fifteenth ward, Scranton, Lackawanna county.
182	do. 5,	Henry Herskin,	Laborer,	30	Manville,	Thirteenth ward, Scranton, Lackawanna county.
183	do. 7,	Edward McEdwards,	Miner,	40	Dodge,	Lackawanna township, Lackawanna county.
184	do. 7,	Joseph Evans,	Driver,	15	Sloan,	Lackawanna township, Lackawanna county.
185	do. 8,	Michael Beergen,	Miner,	33	Taylor,	Lackawanna township, Lackawanna county.
186	do. 12,	Michael McGuire,	Laborer,	35	Cayuga,	Third ward, Scranton, Lackawanna county.
187	do. 13,	Frank Glimish,	Driver,	18	Brisbin,	Third ward, Scranton, Lackawanna county.
188	do. 17,	Charles Hoban,	Runner,	15	Eddy Creek,	Olyphant borough, Lackawanna county.
189	do. 24,	John Jermyn,	Driver,	17	Von Storch Diamond vein,	Second ward, Scranton, Lackawanna county.
190	do. 24,	Niles Allen,	Laborer,	30	Central,	Fifteenth ward, Scranton, Lackawanna county.
191	do. 27,	John Goeffrey,	Miner,	29	Filer's slope,	Winton borough, Lackawanna county
192	do. 29,	Richard Friend,	Miner,	47	Jermyn No. 1,	Jermyn borough, Lackawanna county
193	do 29,	Pat. Duffy,	Miner,	45	Bellevue shaft,	Lackawanna township, Lackawanna county.
194	October 2,	William Davis,	Driver,	16	Dodge,	Lackawanna township, Lackawanna county.
195	do. 3,	David Davis,	Laborer,	32	Sloan,	Lackawanna township, Lackawanna county.
196	do. 4,	Stephen Mackrel,	Laborer,	19	Grassy Island, D. & H.,	Olyphant borough, Lackawanna county.
197	do. 6,	Edward Gilroy,	Miner,	42	Dodge,	Lackawanna township, Lackawanna county.
198	do. 8,	John Brill,	Footman,	21	Central,	Fifteenth ward, Scranton, Lackawanna county.
199	do. 9,	Paul Gawsky,	Miner,	30	National,	Twentieth ward, Scranton, Lackawanna county.
200	do. 11,	Andrew Yanochik,	Laborer,	21	Lackawanna Coal Company,	Blakeley borough, Lackawanna county.
201	do. 11,	John Fallen,	Driver,	14	Eaton,	Archbald borough, Lackawanna county.
202	do. 12,	Andrew Vinsahirifsky,	Laborer,	45	Dodge,	Lackawanna township, Lackawanna county.
203	do. 12,	Patrick Murphy,	Laborer,	40	Dodge,	Lackawanna township, Lackawanna county.
204	do. 12,	Jacob Morgan,	Miner,	38	Dodge,	Lackawanna township, Lackawanna county.
205	do. 12,	James Dunleavy,	Miner,	39	Sloan,	Lackawanna township, Lackawanna county.
206	do. 16,	James Gaughan,	Laborer,	27	Von Storch Clark vein,	Second ward, Scranton, Lackawanna county.
207	do. 19,	Patrick McHale,	Runner,	20	Von Storch Clark vein,	Second ward, Scranton, Lackawanna county.
208	do. 20,	John D Davis,	Pumpman,	24	Holden,	Lackawanna township, Lackawanna county.
209	do. 22,	Peter Dougherty,	Miner,	39	Tripp shaft,	Twenty-first ward, Scranton, Lackawanna county.
210	do. 22,	Lewis Collins,	Laborer,	20	Tripp shaft,	Twenty-first ward, Scranton, Lackawanna county.
211	do. 23,	Andrew Marti,	Plateman,	55	Pyne breaker,	Lackawanna township, Lackawanna county,

212	do.	26,	Henry Kline,	Laborer,	34	Bellevue slope,	Lackawanna township, Lackawanna county.
213	do.	27,	Mike Andre,	Miner,	28	Mount Jessup,	Winton borough, Lackawanna county.
214	do.	27,	James Cassidy,	Laborer,	27	Dodge,	Lackawanna township, Lackawanna county.
215	do.	29,	Hugh J. Rooney,	Driver,	16	Tripp shaft,	Twenty-first ward, Scranton, Lackawanna county.
216	do.	31,	John Edwards,	Driver,	16	Bristin,	Third ward, Scranton, Lackawanna county.
217	November	2,	George Liplady,	Driver,	15	Marvine,	First ward, Scranton, Lackawanna county.
218	do.	5,	Luke Gilmarten,	Laborer,	40	Spencer's,	Dunmore borough, Lackawanna county.
219	do.	5,	Michael Duffy,	Miner,	24	Midland tunnel,	Fell township, Lackawanna county.
220	do.	6,	Charles Williams,	Miner,	31	Lackawanna Coal Company,	Blakely borough, Lackawanna county.
221	do.	6,	Alexander Gooscoff,	Laborer,	28	Lackawanna Coal Company,	Blakely borough, Lackawanna county.
222	do.	7,	Thomas Jones,	Miner,	45	Marvine,	First ward, Scranton, Lackawanna county.
223	do.	9,	Anthony Connor,	Miner,	43	Coal Brook tunnel,	Carbondale city, Lackawanna county.
224	do.	10,	Richard Williams,	Miner,	46	Pyne,	Lackawanna township, Lackawanna county.
225	do.	10,	David Phillips,	Driver,	15	Von Storch Clark vein,	Second ward, Scranton, Lackawanna county.
226	do.	13,	Rosser Jenkins,	Miner,	45	Dolph,	Winton borough, Lackawanna county.
227	do.	13,	Howell Harris,	Asst. mine foreman,	23	Tripp shaft,	Twenty-first ward, Scranton, Lackawanna county.
228	do.	14,	Michael Grady,	Driver's helper,	15	Taylor,	Lackawanna township, Lackawanna county.
229	do.	15,	John Gardner,	Driver,	15	Jermyn No. 1,	Jermyn borough, Lackawanna county.
230	do.	16,	John Healy,	Water bailer,	20	Von Storch rock vein,	Second ward, Scranton, Lackawanna county.
231	do.	19,	Michael Simmons,	Laborer,	31	Shaft No. 5, P. C. Co.,	Dunmore borough, Lackawanna county.
232	do.	20,	Emory Aumick,	Culm driver,	15	Archbald,	Lackawanna township, Lackawanna county.
233	do.	28,	Peter Smith,	Laborer,	21	Clifford shaft,	Forest City borough, Susquehanna county.
234	do.	28,	Thomas Pinder,	Miner,	28	Midland tunnel,	Fell township, Lackawanna county.
235	do.	28,	John Crane,	Driver,	15	Stafford,	Lackawanna township, Lackawanna county.
236	December	1,	John Hogan,	Miner,	25	Bellevue shaft,	Lackawanna township, Lackawanna county.
237	do.	1,	Thomas Gleason,	Driver,	16	Continental,	Lackawanna township, Lackawanna county.
238	do.	4,	William Drew,	Miner,	28	Grassy Island, D. & H.,	Olyphant borough, Lackawanna county.
239	do.	4,	Thomas E Owens,	Miner,	40	Grassy Island, A. L.,	Winton borough, Lackawanna county.
240	do.	5,	William Pearce,	Driver,	15	Von Storch Clark vein,	Second ward, Scranton, Lackawanna county.
241	do.	10,	Patrick Levens,	Miner,	34	Von Storch Clark vein,	Second ward, Scranton, Lackawanna county.
242	do.	11,	Lewis Owens,	Driver,	15	Von Storch Clark vein,	Second ward, Scranton, Lackawanna county
243	do.	11,	Michael Hughes,	Miner,	25	White Oak,	Archbald borough, Lackawanna county.
244	do.	11,	William Lee,	Driver,	16	Marvine,	First ward, Scranton, Lackawanna county.
245	do.	12,	Joseph Knott,	Miner,	25	Brisbin,	Third ward, Scranton, Lackawanna county.
246	do.	13,	Richard Farrell,	Runner,	21	Pancoast,	Dickson City borough, Lackawanna county.
247	do.	20,	John Calvey,	Door boy,	15	Marvine,	First ward, Scranton, Lackawanna county
248	do.	20,	Michael Toner,	Runner,	22	Von Storch Clark vein,	Second ward, Scranton, Lackawanna county.
249	do.	21,	Peter Benskey,	Laborer,	30	Mount Jessup,	Winton borough, Lackawanna county.
250	do.	21,	Thomas H. Jones,	Driver,	15	Continental,	Lackawanna township, Lackawanna county.
251	do.	21,	Joseph Throop,	Laborer,	37	Central,	Fifteenth ward, Scranton, Lackawanna county.
252	do.	27,	Anton Varman,	Door boy,	16	Taylor,	Lackawanna township, Lackawanna county.
253	do.	28,	Patrick McDonough,	Miner,	45	Brisbin,	Third ward, Scranton, Lackawanna county.
254	do.	28,	John Smith,	Laborer,	24	Green Ridge,	Dunmore borough, Lackawanna county.
255	do.	31,	Roger Jones,	Door boy,	29	Pine Brook,	Seventh ward, Scranton, Lackawanna county.

TABLE 5—*Continued.*

No. of accident.	Names of Persons.	Nature and cause of accident.
1	Michael Durkin,	Hand cut off while in the act of coupling cars.
2	Edward Deane,	Slightly cut on hand and hip; fall of roof.
3	Evan L. Evans,	Severely injured by premature explosion of a blast.
4	Thomas Muldowning,	Slightly injured; fall of slate roof.
5	Samuel Bryant,	Injured slightly; fall of top coal.
6	James Palmer,	Burned slightly; explosion of gas.
7	Henry Thomas,	Leg fractured below knee; fall of coal.
8	Edward Long,	Knee fractured while in the act of putting a car on the track; fell and caught his knee.
9	James Price,	Foot slightly injured; fall of roof.
10	Frank Burke,	Shoulder dislocated and cut about the head; fall of roof.
11	William Smith,	Both these men were working together and in getting a cartridge of giant powder into the hole it stuck. Patterson hit it a tap, when it exploded, blowing off both of Smith's hands and seriously injuring both.
12	Thomas Patterson,	
13	Stephen Pender,	Both of these men were working together and got caught by a fall of roof. Storrick's leg was fractured in two places while trying to get away from fall.
14	Stephen Storrick,	
15	David Davis,	Burned slightly; premature explosion of a blast while charging a hole.
16	V. G. Kellett,	Third finger fractured; kicked by a mule.
17	Thomas O'Rourke,	Leg fractured; fall of rock roof.
18	Dennis McCarthy,	Slightly injured; fall of roof
19	James Lucats,	Both these men burned by explosion of gas. They went into old chamber for old mine rails against orders and with a danger signal displayed at mouth of chamber.
20	John Washelle,	
21	Peter Mackerel,	Slightly injured; squeezed between car and pillar.
22	Richard Evans,	Injured about head and face; run over and tramped on by mule.
23	James Maugan,	Leg fractured; fell off car.
24	John Nicols,	Ankle dislocated; car jumped track and caught it.
25	Michael Burns,	Slightly injured on legs by coal flying from blast.
26	John Lynn,	Slightly injured; caught between car and pillar.
27	Joshua Fawcett,	Burned by an explosion of a cartridge of powder; caught by a spark falling from his lamp.
28	Phillip Evans,	Slightly injured; fall of roof.
29	John Locusek,	These men were burned by an explosion of fire-damp. The check door was left open while some cars were being run down from chutes, which caused the explosion. John Locusek was badly burned and the other two slightly.
30	Anthony Locusek,	
31	John Palmer,	
32	Ephraim T Davis,	Arm fractured; fall of roof.
33	Alfred Brodherst,	Badly injured; kicked on face by mule.
34	Patrick Walker,	Arm fractured, scalp wound and leg bruised; fall of rock.
35	James James,	All these men were slightly burned by an explosion of gas. There was no gas in the chamber when they started to work in the morning, but James fired a shot and tapped a "blower," which ignited, causing the explosion
36	Eph Thomas,	
37	John Moran,	
38	Peter Brady,	Left leg fractured; fall of roof
39	John McDonnell,	Collar bone fractured; run over by car on culm dump.
40	John Williams,	Slightly injured; car jumped the track and he was caught under it.
41	Mike Corcoran,	Injured slightly; was riding on bumper of car, foot caught on rail and he fell in front of car.
42	James Saunaides,	Seriously injured; fall of roof.
43	Daniel Thomas,	Seriously injured; he thought blast missed fire and went back to face, when it exploded.
44	Peter Nealon,	Slightly injured; fall of roof.

45	Thomas Walton,	Injured slightly; fall of coal.
46	Andrew Lunney,	Both these men slightly injured; fall of roof.
47	James Gallagher,	
48	Thomas McDermott,	Slightly injured: jumped on cars while in motion and fell under.
49	George Morgan,	Arm fractured, caught between two cars.
50	Stephen Slatte,	Slightly injured; fall of top coal.
51	Martin King,	Arm broken; caught between two cars.
52	William Warren,	Slightly injured; fall of roof.
53	Michael Reagan,	One finger taken off; caught in stretcher.
54	Martin McNamarra,	Arm fractured; kicked by a mule.
55	Andy Haverleck,	Leg broken while in the act of spragging a car.
56	Richard Reese,	Injured; jumped off hoisting carriage.
57	Patrick Langan,	Foot and arm injured; car run over him on culm dump.
58	James Keegan,	Finger mangled while in the act of coupling large railroad cars under breaker chutes.
59	Sabina Baldo,	Injured by runaway car in the chamber which he had charge of.
60	David Davis,	Leg fractured; struck by a piece of coal flying from a blast.
61	Patrick Moran,	Thumb cut off; caught by door of mine car.
62	Thomas Mulchrone,	Leg fractured; car run over it.
63	David Morris,	Badly bruised; thought his blast missed fire, went back and was caught, the blast exploding.
64	James McGivin,	
65	Charles Klees,	Slightly injured. Thought shot went off, went back to face when it exploded.
66	Patrick Crouin,	Head badly injured; caught between cars.
67	Daniel Evans,	Ankle injured slightly; caught by mine cars.
68	Robert Norris,	Body badly bruised; struck by a trip of cars.
69	George Jones,	Body badly hurt; fall of roof.
70	Thomas J. Jones,	Leg fractured; fall of roof.
71	Michael Yarick,	Leg fractured; caught in pony rolls.
72	Thomas Thomas,	Injured; kicked in face by a mule.
73	Thomas MacKay,	Slightly injured; premature blast.
74	William Proudlock,	Badly hurt, kicked in the stomach by a mule.
75	Archbald MacKay,	Both of these men were slightly injured by being shot through the pillar from the next chamber. They
76	Robert Baxter,	were notified, but did not pay any attention.
77	William Jopling,	Slightly injured on back; fall of roof.
78	James Powell,	Foot slightly injured; car jumped track and caught him.
79	John F. Summers,	Slightly injured; fall of top coal.
80	James Davis,	Injured slightly; fall of roof.
81	Fred Weber,	Leg fractured; coal dropped out of pillar on him.
82	Michael Geraty,	Slightly injured; fall of roof.
83	David Phillips,	These men were slightly burned by an explosion of gas.
84	John Walsh,	
85	Mike Burke,	
86	Joseph Rugins,	Slightly injured; fall of roof.
87	John Baker,	Arm fractured; stumbled and fell while walking on plane.
88	Aaron Herbert,	Head and shoulder badly bruised; fall of rock.
89	Michael Duffy,	Arm fractured and three (3) teeth knocked out; kicked by a mule.
90	Rossr Jenkins,	These men worked together and each had a leg fractured; fall of roof.
91	Thomas Manley,	
92	Peter J. Byrnes,	Left leg fractured; car jumped track and caught him.
93	Peter Coyne,	Eyes injured; premature explosion of a blast.
94	Joseph Gardner,	Injured; was taking prop off a carriage when it fell on him.
95	Henry Cook,	Was making a wedge, when axe slipped and he cut his thumb off.
96	William Dwire,	Badly bruised, cut about leg, face and hand by door.
97	Evan Marshal,	Injured; squeezed between car and prop; car jumped track.

TABLE No. 5.—*Continued.*

No. of accident.	NAMES OF PERSONS.	Nature and cause of accident.
98	Fred. Sprangler,	Arm fractured; fall of coal.
99	Alfred Moses,	Seriously injured on face; kicked by a mule.
100	John Millett,	Leg fractured; fall of roof.
101	Pat Jennings,	Face badly burned; a powder cartridge exploded in his hands.
102	Robert Combs,	Left arm fractured; wheels of mine car ran over it.
103	James Brace,	Slightly burned by explosion of gas.
104	John Murray,	Right foot squeezed between two cars.
105	Alfred Bayless,	Kicked in face by a mule.
106	Patrick Finnegan,	Hip slightly injured; fall of bony coal.
1 7	Anthony Carey,	Leg broken above the knee; fall of rock.
108	Brian McGuire,	Slightly injured; fall of roof.
109	Zephaniah Watson,	Three teeth knocked out; fall of coal.
110	George Morse,	Slightly injured; fall of coal.
111	Joseph Shon,	Left leg and arm fractured; while undermining top coal it fell on him.
112	John Higgins,	Arm fractured; squeezed between car and rib.
113	David J. Evans,	Slightly injured; fall of rock roof.
114	John Marsh,	Left leg fractured; fall of roof.
115	Thomas Jones,	Leg fractured; fall of bony coal.
116	John Toy,	Slightly injured; fall of top coal.
117	Frank Shelinski,	Seriously injured in face; premature explosion of blast.
118	John H. Jones,	Arm fractured; kicked by a mule.
119	Charles Bennett,	Back slightly injured; fall of roof
120	James Sheerin,	Back slightly injured; fall of roof.
121	James Gilgallon,	Slightly injured on hand; caught between sprag and car sill.
122	John J. Meehan,	Both legs fractured above the knee; fall of roof.
123	Leon Sodosky,	Both these men severely burned by an explosion of powder in the box while in the act of making a cartridge; lamp fell into powder in box.
124	John Cooliz,	
125	Daniel Murphy,	Slightly injured; fall of roof
126	Patrick Gilboy,	First joint of fore finger cut off; wheel of car run over it.
127	Grant Compton,	Compound fracture of skull; kicked by a mule.
128	William Phillips,	Left leg broken; fall of rock.
129	Joseph Marks,	Right leg broken; run over by a trip of loaded cars.
130	Lawrence Pole,	Small bone in left leg broken; fell while running away from a fall of roof.
131	Reese Thomas,	Foot slightly injured; fall of rock.
132	Frank Durgos,	Severely injured; squeezed between car and breaker.
133	William Kearney,	Back injured; fall of top coal.
134	Michael Ladick,	Leg broken; fall of buck or bony coal.
135	Sydney Miller,	Injured; his light went out, and he was struck by a car in mines.
136	James Evans,	Foot squeezed; car jumped the track and caught it.
137	John Nailor,	Leg broken above the knee; slipped off car and was caught.
138	Peter Smith,	Large flesh wound on leg; hit and caught by stretcher.
139	Frederick Reese,	Badly bruised on body; fell under car and it ran over him.
140	Alexander Oakes,	Left leg broken below the knee; hit by coal flying from blast.
141	Peter Lalaskey,	Leg fractured; pulley-block gave way and hit him on leg.

142	D. W. Mosier,	Right arm and one rib broken; was caught between lumber on truck and post at head of plane.
143	John D. Evans,	Severely injured about back; was caught under a collar and roof that fell.
144	Thomas Sowa,	Slightly injured; fell from empty trip of mine cars at head of breaker while they were in motion.
145	William Jenkins,	Injured slightly; fall of bony coal at face of chamber.
146	Evan H. Evans,	These men were burned on face and hands by an explosion of gas; they were in the act of shoving a car into face of gangway, when they lit a blower on main road, fifty feet back from face, in a strong air current.
147	Griffith W. Jones,	
148	William Curtis,	Left hip slightly injured; fall of roof.
149	John McBride,	Back of head cut; tripped and fell under a car.
150	Clinton W. Silkman,	Arm broken; shot through a pillar
151	William Price,	Both arms broken; fell down a flight of steps in engine room.
152	John Proper,	Leg badly lacerated; fell in front of cars on culm-dump.
153	John Carroll,	Hip slightly injured; fall of roof.
154	Alvert Wall,	Severely injured about breast; fell in front of cars, was caught and rolled against rib.
155	George Lusinger,	Slightly injured; fall of rock roof.
156	Howell H. Davis,	Slightly injured; explosion of gas.
157	Robert Neil,	Slightly injured; knocked down by a mule stumbling against him.
158	John Olishnish,	Collar-bone fractured; fall of top coal.
159	William Aston,	Slightly injured; fall of coal.
160	John McDonald,	Injured slightly; kicked by a mule.
161	John Evans,	Slightly injured; fall of rock roof.
162	Thomas Phillips,	Left hand crushed; fall of rock roof.
163	James Ruddy,	Left arm broken; fell in front of a car.
164	Patrick Coar,	Slightly injured; fall of rock roof.
165	P. H. Thomas,	Injured slightly; hit by flying coal from blast.
166	Ananiah Evans,	Slightly injured; fall of roof.
167	Joseph ——,	Leg fractured; car jumped track and caught it.
168	James McDonagh,	Right leg fractured; car ran over it
169	John Davis,	Injured on thigh; by flying coal from blast.
170	Michael Hoban,	Back slightly injured; fall of rock roof.
171	William Walsh,	Shoulder blade fractured; fell in stepping from one car to another.
172	William Fitzgerald,	Right leg fractured, wrist dislocated and several bruises: fall of top coal.
173	John Fidium,	Slightly injured; truck ran against a door he was attending and struck him.
174	John Bolton,	Collar-bone fractured; caught between car and prop.
175	John Passmore,	Slightly injured; fall of coal and roof.
176	Peter McNulty,	Leg slightly cut; car jumped track and caught him.
177	Andrew Harmatta,	Leg slightly injured; light truck ran over it.
178	Richard Phillips,	Both legs fractured below the knees; caught between rib and car.
179	John McAndrews,	Two ribs fractured; slipped and fell on a piece of coal.
180	Thompson Hall,	Small bone of left leg broken; run over by car.
181	Stephen Marwick,	Right arm cut off; run over by car.
182	Henry Herskin,	Slightly injured; fall of roof
183	Edward McEdwards,	Injured slightly; fall of roof.
184	Joseph Evans,	Slightly injured; squeezed between car and prop; car jumped track and caught him.
185	Michael Beergen,	Injured slightly about body; fall of roof.
186	Michael McGuire,	Slightly injured about hips and back; fall of top coal.
187	Frank Glimish,	Seriously injured about head; caught between rib and car.
188	Charles Hoban,	Left arm broken; kicked by a mule.
189	John Jermyn,	Two ribs fractured; was riding on front bumper; in stepping off slipped and fell in front of car.
190	Niles Allen,	Collar-bone fractured; fall of coal in chamber.
191	John Goeffrey,	Slightly injured on hip; struck by coal from blast; shot through pillar.
192	Richard Friend,	Seriously injured; fall of buck roof.
193	Pat. Duffy,	Leg crushed and afterwards amputated; fall of rock.

TABLE No. 5—*Continued.*

No. of accident.	Names of Persons.	Nature and cause of accident.
194	William Davis,	Foot slightly injured; caught in frog.
195	David Davis,	Both hips dislocated; fall of roof.
196	Stephen Mackrel,	Slightly injured; fall of roof.
197	Edward Gilroy,	Injured slightly on arms and ribs; premature explosion of blast.
198	John Brill,	Right leg broken; caught by car jumping track.
199	Paul Gawskey,	Back hurt; fall of bony coal.
200	Andrew Yanoschik,	Seriously injured; fall of top and bony coal.
201	John Fallen,	Fourth finger taken off right hand; caught by cars.
202	Andrew Vinsahirifsky,	Slightly injured on foot; lump of coal rolled on it.
203	Patrick Murphy,	These men worked together and were slightly burned on face and arms; explosion of gas.
204	Jacob Morgan,	
205	James Dunleavy,	Injured on jaw and other parts of body; fall of roof.
206	James Gaughan,	Slightly injured; a prop fell on him.
207	Patrick McHale,	Right leg broken; stumbled against a T-iron rail and fell in front of car.
208	John D. Davis,	Right shoulder blade broken; fall of top bony coal.
209	Peter Dougherty,	These men were working together and were injured by a premature explosion of a blast, caused by forcing a cartridge into the hole.
210	Lewis Collins,	
211	Andrew Marti,	Two ribs broken; fell on bonnet of hoisting carriage.
212	Henry Kline,	Injured about head and face; fall of roof.
213	Mike Andre,	Arm severely cut; struck by piece of coal from blast.
214	James Cassidy,	Slightly burned on arms and hands; explosion of gas.
215	Hugh J. Rooney,	Right leg severely crushed; run over by mine car.
216	John Edwards,	Right leg severely crushed; fell under car while unhitching mule.
217	George Triplady,	Bad flesh wound on leg; car ran on it
218	Luke Gilmartin,	Right arm and three ribs broken; shot through cross-cut by a blast.
219	Michael Duffey,	Leg broken; fell off mule while taking it to the barn.
220	Charles Williams,	These men slightly injured; fall of slate roof.
221	Alexander Gooscoff,	
222	Thomas Jones,	Leg badly mashed; struck by coal from premature blast.
223	Anthony Connor,	Left leg broken; struck by coal from blast.
224	Richard Williams,	Slightly injured on head and hips; fall of top coal.
225	David Phillips,	Injured slightly; head cut and arms bruised; fall of rock.
226	Rosser Jenkins,	Seriously injured; fall of top coal.
227	Howell Harris,	Severely burned on hands and face; explosion of gas.
228	Michael Grady,	Foot injured; caught by cars jumping track.
229	John Gardner,	Leg fractured; caught between car and rib.
230	John Healy,	Ankle disjointed.
231	Michael Simmons,	Cut over eye and nose split; fall of roof
232	Emory Aumick,	Flesh wound and left leg lacerated; fell in front of car and wheel ran on him.
233	Peter Smith.	Foot slightly bruised; a piece of rock from gob slid down on it.
234	Thomas Pinder,	Arm and one rib broken; fall of 14 inches coal.
235	John Crane,	Leg broken; mule fell and threw him under bumper of mine car.
236	John Hogan,	Back seriously injured; fall of coal.

237	Thomas Gleason,	Right arm broken between elbow and wrist; caught between car and roof.
238	William Drew,	Slightly injured on back; fall of roof.
239	Thomas E Owens,	Left leg cut off; fall of roof.
240	William Pearce,	Kicked on mouth by a mule, splitting his lips and loosening some of his teeth.
241	Patrick Levens,	Foot badly bruised; fall of top coal.
242	Lewis Owens,	Head cut; hit by mine rail falling off car.
243	Michael Hughes,	Both arms cut and bruised; fall of roof.
244	William Lee,	Internally injured. fell in front of car while in motion.
245	Joseph Knott,	Slightly burned about hands and face; explosion of gas.
246	Richard Farrell,	Hip slightly injured; fall of bony coal.
247	John Calvey,	Slightly burned on face and hands; stole powder and ignited it.
248	Michael Toner,	Cut on hand while in the act of spragging.
249	Peter Benskey,	Slightly cut about head and face; hit by coal from blast.
250	Thomas H Jones,	Arm fractured; tripped and fell while walking out of mines.
251	Joseph Throop,	Some of his teeth knocked out; hit by piece of timber while at work.
252	Anton Varnan,	Leg broken above the knee; fell in front of car and it ran on him.
253	Patrick McDonough,	Bruised on back and leg; fall of coal,
254	John Smith,	Ankle and foot mashed; fall of roof.
255	Roger Jones,	Right leg broken; caught between cars in mines.

There were 255 accidents: Legs fractured, 46; arms fractured, 25; bones fractured, 12; total, 83. Other injuries are slight.

TABLE No. 6—Showing the condition of ventilation in all the collieries in the First Anthracite (or Scranton) District, including a portion of Lackawanna and a portion of Wayne and Susquehanna counties, Pennsylvania, for year ending 31st day of December, A. D. 1888.

NAME OF COLLIERIES.	Local name, number or letter of each split of air.	Mode of ventilation.	DIMENSIONS OF FAN. Diameter in feet.	DIMENSIONS OF FAN. Width of face in feet.	Revolutions of fan per minute.	Dimensions of area of furnace grate.	Height of heated columns of air.	Pressure as shown by water gauge, in inches.	AMOUNT OF VENTILATION PER MINUTE. At intake.	At face of workings.	At outlet or upcast.
Operated by Del., Lacka. & W. R. R. Co.											
Archbald shaft,	John Wrist,	Fan,	12	3½	167			.7	141,910	32,472	161,120
Archbald shaft,	John Butler,	"	12	3½	167			.7		19 878	
Archbald shaft,	William P. Jones,	"	12	3½	167			.7		22 934	
Archbald shaft,	Rees Williams,	"	12	3½	167			.7		34 320	
Archbald shaft,	James Stappene,	"	12	3½	167			.7		31,395	
Archbald shaft,	Rock vien,	"	12	3½	167			.7	12 480	11,340	12 760
									154,390	152 337	173 880
Bellevue shaft,	A. & J.,	"	16	4½	110			1.5	27 432	18 225	59 647
Bellevue shaft,	B. & C.,	"	16	4½	110			1.5	54 612	31,744	90,825
Bellevue shaft,	J. W. & N.,	"	16	4½	110			1.5	43 104	33,930	
Bellevue shaft,	S & S.,	"	14	4	100			1.5	12 672	29 304	
Bellevue shaft,	C.,	"	14	4	100					13 332	
									137 220	126,535	150,472
Bellevue slope,	J H. F.,	"	14	4	100			1.1	43,280	13 005	45 022
Bellevue slope,	G. E.,	"	14	4	100			1.1		7 690	
Bellevue slope,	K L.,	"	14	4	100			1 1		21 910	
									43,280	42 595	45,022
Brisbin shaft,	J. Watkins, Clark vein,	"	14	4	112			.8	22 000	20 776	79 072
Brisbin shaft,	B. Williams, Clark vein,	"	14	4	112			.8	23,184	19 404	
Brisbin shaft,	M. Riley, Clark vein,	"	14	4	112			.8	27 792	25 476	
Brisbin shaft,	John Watkins, G. vein,	"	14	4	112			.8	17 340	15 470	41,120
Brisbin shaft,	James Roberts, G. vein,	"	14	4	112			.8	21,294	20,280	
									111,610	101,456	120 192

Continental shaft,	William J. Hughes,	an.		12	3¾	120			.7	56 700	12 600		
Continental shaft,	Crist. Jones,	"		12	3½	130			.7	38,500	16 600		
Continental shaft,	William E. Rees,	"		12	3¾	130			.7		10 400		
Continental shaft,	Morgan W. Morgan,	"		12	3¾	130			.7		13,880		
Continental shaft,	Pat. Hogan,	"		12	3¾	130			.7		10.500		
Continental shaft,	Pat. Cannon,	"		12	3¾	130			7		9 450		
Continental shaft,	John Evans,	"		12	3¾	130			.7		15,600	111,996	
										95 200	89.010	111.996	
Central—Main and air shafts,	E. & Y. splits,	"		14	3¾	130			1 3	113 787	12 528	66,528	
Central—Main and air shafts,	Moyle or G splits,	"		14	3¾	130			1 3		15.424		
Central—Main and air shafts,	Locomotive splits,	"		14	3¾	130			1.3		14 203		
Central—Main and air shafts,	S. & W. splits,	"		14	3¾	130			1 3	10,875	16,599		
Central—Main and air shafts,	Westside splits,	"		14	3¾	130			1 3	12 480	12 480	34 080	
Central—Main and air shafts,	Timlin or X. splits,	"		14	3½	130			1 3		23 430		
Central—Main and air shafts,	P. R. & T. splits,	"		14	4	127			1.2	19,200	16,653	61.908	
Central—Main and air shafts,	A. & K. splits,	"		14	4	127			1 2	23,310	9 990	50,274	
Central—Main and air shafts,	B. C. & F. splits,	"		14	4	127			1.2		11 680		
Central—Main and air shafts,	Hampton splits,	"		14	4	127			1 2	17,820	17,820		
										197,472	150,782	212 790	
Cayuga shaft,	Diamond,	"		12	4	130			1	25 436	22 570	27,757	
Cayuga shaft,	John Stanton,	"		12	4	130			1	48,195	24 637	48 790	
Cayuga shaft,	George Burtch,	"		12	4	130			1		18,270		
										73 631	65 527	76,547	
Diamond No. 2 shaft,	No. 1 split,	"		14	4	25			.2	37.800	36.855		
Diamond No. 2 shaft,	No. 2 split,	"		14	4	25			.2	33 600	31 500	74 400	
										71,400	68 355	74,400	
Diamond Tripp shafts,	William Lee split,	"		14	4	120			1	53 150	49 300		
Diamond Tripp shafts,	Andrew Robinson,	"		14	4	120			1	24 300	22 800		
Diamond Tripp shafts,	Brisbin,	"		14	4	120			1	30 300	28 210	14 200	
Diamond Tripp shafts,	Barn,	"		14	4	118			1 2	54 600	49 000		
Diamond Tripp shafts,	Thomas Rees,	"		14	4	118			1 2	13 800	11 550		
Diamond Tripp shafts,	Daniel C. Phillips,	"		14	4	118			1.2	41,100	37 800	107,000	
										217 250	198,660	254,200	
Dodge shaft,	B split,	"		16	4½	88			.8	67,367	26,940		
Dodge shaft,	C. & R. split,	"									31,195		
Dodge shaft,	E. & H. split,	"								42 '68	38 240	58 386	
Dodge shaft,	F. split,	"								17 856	14 985	57 021	
Dodge shaft,	R Y. & A. split,	"								21 060	29.400	77,813	
Dodge shaft,	S. split,	"								34,967	23,520		
										184,018	164,280	193,220	

TABLE No. 6—*Continued.*

NAME OF COLLIERIES.	Local name, number or letter of each split of air.	Mode of ventilation.	DIMENSIONS OF FAN.		Revolutions of fan per minute.	Dimensions or area of furnace grate.	Heights of heated columns of air.	Pressure as shown by water gauge, in inches.	AMOUNT OF VENTILATION PER MINUTE.		
			Diameter in feet.	Width of face in feet.					At intake.	At face of workings.	At outlet or upcast.
Holden shaft,	E. New County vein,	Fan,	25	8	45			.6	53,760	12,880	
Holden shaft,	G. New County vein,	"	25	8	45			.6		13,220	75,840
Holden shaft,	C. Clark vein,	"	25	8	45			.6	51,840	22 000	
Holden shaft,	D. Clark vein,	"	25	8	45			.6		16 750	55,030
Holden shaft,	B. Old Works,	"	25	8	45			.6	11 760	11 760	
Holden shaft,	Barn Clark vein,	"	25	8	45			.6	7,800	7.68	
Holden shaft,	Barn New County vein,	"	25	8	45			.6	3,096	3.0e0	
									128 256	87,380	130,920
Hampton shaft,	Rock Vein West,	"	14	4	90			.8	12 168	10 380	
Hampton shaft,	Rock Vein East side,	"	14	4	90			.8	48 720	13,272	
Hampton shaft,	John Griffiths,	"	14	4	90			.8		3,672	
Hampton shaft,	T. T. Richards,	"	14	4	90			.8		11.319	
Hampton shaft,	W. H. Rees,	"	14	4	90			.8		19.152	
Hampton shaft,	Old Works,	"	14	4	90			.8	9,792	9,792	83, 864
									70, 680	67.587	83, 864
Hyde Park shaft,	R. T. Edwards,	"	14	4	104			1 2	61 625	22 902	63,990
Hyde Park shaft,	New County vein,	"	14	4	104			1 2		18 624	
Hyde Park shaft,	Henry Thomas,	"	14	4	104			1.2	31,620	25 30)	32,994
									93.245	66, 826	99, 974
Manville shafts,	Straight Gangway,	Closed fan,	20	5	75			.6	98, 550	20 980	122,000
Manville shafts,	Matt Riley,	"	20	5	75			.6		18,480	
Manville shafts,	Collins,	"	20	5	75			.6		15,960	
Manville shafts,	Crooked Road,	"	20	5	75			.6		10,200	

Manville shafts,	Powells,	"	20	5	75			.6		8,460		
Manville shafts,	Burns,	"	20	5	75			.6		21,840		
									93 550	95,870	122 000	
Manville shaft,	No. 1 split, No. 4 vein,	Open fan,	14	4	69			.2	48,140	15 400	72,000	
Manville shaft,	No. 2 split, No. 4 vein,	"	14	4	69			.2		19 200		
Manville shaft,	No. 3 split, No. 4 vein,	"	14	4	69			.2		7,350		
Manville shaft,	No. 4 split, No. 4 vein,	"	14	4	69			.2		4 250		
									48,140	46 200	72, 000	
Oxford shaft,	Hutchings',	Fan,	14	4	130			1 1	17.490	15 288	89,700	
Oxford shaft,	Hayes',	"	14	4	130			1 1	42,375	18.306	11,040	
Oxford shaft,	Dyer's,	"	14	4	130			1.1		15 744		
Oxford shaft,	Gleason's,	"	14	4	130			1.1	24 276	21,840		
Oxford shaft,	A.,	"	14	4	130			1.1	14 637	11.433	26,400	
Oxford shaft,	B. & C.,	"	14	4	130			1.1	23 3.2	19 923		
Oxford shaft,	D.,	"	14	4	130			1.1		17,220		
Oxford shaft,	E.,	"	14	4	130			1.1	32 424	19,404	34 320	
									154,524	139 763	161 460	
Pyne shaft,	R. & E. split,	"	14	4	140			.7	19 683	14 063		
Pyne shaft,	W. J. split,	"	14	4	140			.7	21 216	14 850		
Pyne shaft,	J. D. split,	"	14	4	140			.7	21,228	15 756		
Pyne shaft,	E. R. split,	"	14	4	110			.7	42,105	16 549		
Pyne shaft,	W. R. split,	"	14	4	140			.7		25 333	105,141	
Pyne shaft,	W. D., New County vein,	"	14	4	140			.7	19 305	16 229		
Pyne shaft,	T. G., New County vein,	"	14	4	140			.7	776	1,502	21 802	
									124,816	104,292	126,943	
Sloan shaft,	A. or Rock Cut split,	"	12	3½	140			.9	44.070	17,262	101,200	
Sloan shaft,	H., John Lewis split,	"	12	3½	140			.9		18 828		
Sloan shaft,	B., West Side split,	"	12	3½	140			.9	37,400	23 667		
Sloan shaft,	E., or Slope split,	"	12	3½	140			.9		17 820		
Sloan shaft,	C., or Barn split,	"	12	3½	140			.9	12, 145	7.872		
Sloan shaft,	J., or Big Vein split,	"	12	3	140			.9		18 820		
Sloan shaf.,	Slope, Old Works split,	"	12	3½	140			.9	41 151	13.380	55,200	
Sloan shaft,	Old Works split,	"	12	3½	140			.9		7 200		
									134,766	124,849	156,400	
Taylor shaft,	S. split,	Two fans,	14	4	140			1.4	35 182	37 240		
Taylor shaft,	B. split,	Fan,	14	4	140			1 4	57,980	33.981		
Taylor shaft,	R. split,	"	14	4	140			1.4	60,900	24 100		
Taylor shaft,	J. split,	"	14	4	140			1 4		29 900		
Taylor shaft,	Bottom Vein split,	"	14	4	140			1.4		16,380	163,760	
									154 052	141, 601	163,760	

TABLE No. 6—*Continued.*

NAME OF COLLIERIES.	Local name, number or letter of each split of air.	Mode of ventilation.	DIMENSIONS OF FAN. Diameter in feet.	DIMENSIONS OF FAN. Width of face in feet.	Revolutions of fan per minute.	Dimensions or area of furnace grate.	Height of heated columns of air.	Pressure as shown by water-gauge in inches.	AMOUNT OF VENTILATION PER MINUTE. At intake.	AMOUNT OF VENTILATION PER MINUTE. At face of workings.	AMOUNT OF VENTILATION PER MINUTE. At outlet of upcast.
Taylor drift,	W. split,	Fan,	12	3½	110			.8	32 690	21 750	
Taylor drift,	M. split,	"	12	3½	110			.8	28 512	24 864	69 300
									61 202	46,614	69,300
Operated by Del. and Hudson Canal Co.											
Coal Brook Tunnel mines,	No. 1, South,	"	17	4	100			1.1	9 600	9,120	7,320
Coal Brook Tunnel mines,	West,	"							11,000	9,240	13,020
Coal Brook Tunnel mines,	East,	"							10,500	9 600	11,000
									41.100	27,960	31,340
Midland Tunnel mines,	No. 1 split,	"							17,600	15 000	19,200
Midland Tunnel mines,	No. 2 split,	"								8,100	
									17,600	23,100	19,200
Wilson Creek tunnel,	No. 1 split,	"							20 400	13,500	11 000
Wilson Creek tunnel,	No. 2 split,	"							19 800	11,880	16,560
Wilson Creek tunnel,	No. 3 split,	"							8 400	8,400	10,800
									48 600	33,780	48,360
No 3 shaft,	No. 1 split,	"	17	4	75			.6	9 360	3 170	9 400
No. 3 shaft,	No. 2 split,	"							12 480	5,250	9 320
No. 3 shaft,	No. 3 split,	"							6 975	2,420	
									28 815	10,840	17,720
No. 1 shaft,	No. 1 split,	"							8,600	7,820	8 960
No. 1 shaft,	No. 2 split,	"							10,120	9,120	13,920
									18,720	16 940	22,880

White Bridge tunnel,	No. 1 split,	"	17	4	101			1.1	8 400	7.200	9.000
White Bridge tunnel,	No. 2 split,	"							12.000	9.800	12.980
White Bridge tunnel,	No. 3 split,	"							9,240	7,200	
									29.640	23.900	21,980
Powderly mines,	No. 1 split,	"	17	4	64			.7	12 560	10.470	11,620
Powderly mines,	No. 2 split,	"							11 475	12.460	12,460
Powderly mines,	No. 3 split,	"							17.400	14 630	19 216
Powderly mines,	No. 4 split,	"							11.200	10.368	11,160
Powderly mines,	No. 5 split,	"							13,545	10,280	14,160
									86,180	58 208	67,616
Jermyn, No. 1,	No. 1 split slope,	"	17	4	66			.7	12.000	11 000	13 690
Jermyn, No. 1,	No. 2 split slope,	"							18 180	16 300	19,080
Jermyn, No. 1,	No. 1 split, south,	"							22.340	17.400	24 800
Jermyn, No. 1,	No. 2 split, south,	"							26.040	18.240	27 900
Jermyn, No. 1,	No. 3 split, south,	"							18,000	16 400	18.900
									96,560	79 340	104 270
White Oak slope,	No. 1 split,	"	17	4	68			.4	27.200	18,600	24 800
White Oak slope,	No. 2 split,	"							13.500		12,300
White Oak slope, No. 3,		Natural,							50.400		
White Oak slope, No 3½,		"							56 000		
White Oak slope, No. 5,		Furnace,							15 000	9 950	14 400
									162 100	28 550	51,200
Grassy Island,	North split,	Fan,	20	5	68			.9	22 300	18 900	20,800
Grassy Island,	Slope split,	"							33.100	26,850	30.270
Grassy Island,	Slope, No. 1 split,	"							12 100	12.100	11,350
Grassy Island,	Slope, No. 2 split,	"							16 872	12 400	13,000
									84 372	70,250	75,420
Eddy Creek,	Split No. 1,	Fan,	20	5	80			.5	14 310	10 780	15.000
Eddy Creek,	Split No. 2,	"							8 200	7 200	10,000
Eddy Creek,	Split No. 3,	"							7,200	6 600	9 000
Eddy Creek,	Split No. 4,	"							16 000	13 620	16 500
Eddy Creek,	West,	"							14 875	10.000	15.660
Eddy Creek,	North,	"							16 000	11.250	12.950
Eddy Creek,	East, No. 1,	"							18 000	15 000	20 000
Eddy Creek,	East, No. 2,	"							22 000	21 000	22 750
									116 685	95, 450	121, 850

TABLE No. 6—*Continued.*

NAME OF COLLIERIES.	Local name, number or letter of each split of air.	Mode of ventilation.	DIMENSIONS OF FAN		Revolutions of fan per minute.	Dimensions or area of furnace grate.	Height of heated columns of air.	Pressure as shown by water-gauge in inches.	AMOUNT OF VENTILATION PER MINUTE.		
			Diameter in feet.	Width of face in feet.					At intake.	At face of workings.	At outlet of upcast.
Olyphant,	East split,	Fan,							15,750	15,410	15,600
Olyphant,	South, No. 1 split,	"							18,000	16,896	17,480
Olyphant,	South, No. 2 split,	"							14,490	15,120	14,850
Olyphant,	Pump room,	"							5,000	5,00	5,000
									53,240	52,425	52,930
Marvine,	East split,	"	20	5	80			.8	16,200	13,500	17,000
Marvine,	Filer's split,	"							14,400	13,000	14,810
Marvine,	Bright's split,	"							12,500	11,420	13,220
Marvine,	No. 1 Plane, split,	"							17,640	15,200	18,190
Marvine,	No 2 Plane, split,	"							16,380	14,780	16,980
Marvine,	No. 3 Plane, split,	"							12,160	12,000	14,000
									89,280	79,900	94,180
Leggitt's Creek,	East split, South side,	"	20	5	82			1 1	46,980	44,600	46,980
Leggitt's Creek,	Genet split, South side,	"							16,000	15,500	16,000
Leggitt's Creek,	East split, North side,	"							24,420	20,300	24,420
Leggitt's Creek,	West split,	"							24,790	23,850	24,790
Leggitt's Creek,	North split,	"							22,600	21,850	22,600
Leggitt's Creek,	Tunnel split, Diamond vein,	"							14,440	10,600	14,440
Leggitt's Creek,	North split, Diamond vein,	"							15,650	14,800	15,650
									164,880	151,500	164,880
Dickson,	Powell's split,	"	12	8½	130			.8	21,660	23,176	22,176
Dickson,	Slope split,	"							20,944	21,892	21,892

Dickson,	Flynn's split,	"								20 313	20 944	20,944	
Dickson,	Plane split,	"								22.374	22,110	23 110	
										85, 291	86, 622	86, 622	
Von Storch, Diamond vein,	Plane split,	"		17	4	100			1.1	16.900	14.980	19 200	
Von Storch, Diamond vein,	Rock Heading split,	"								12 480	9 800	14 380	
Von Storch, Fourteen Foot vein,	North split,	"								20 640	16.500	22, 480	
Von Storch, Fourteen Foot vein,	Foot Heading split,	"								19.300	15.470	21 380	
Von Storch, Clark vein,	No. 1, North split,	"		20	5	85			.9	59 200	30, 800	39 600	
Von Storch, Clark vein,	No. 2, North split,	"									18, 000	21 100	
Von Storch, Clark vein,	No. 1, South split,	"								34, 700	20 200	39, 250	
Von Storch, Clark vein,	New split,	"									22 200	24 900	
										163, 200	147 930	202 270	
Pennsylvania Coal Company.													
Shaft No. 1,	Top vein, S. W. split,	"		17½	5	30			½	13 392	13 200	13 440	
Shaft No. 1,	Bottom vein, S. W.,	"		17½	5	30			½	10, 296	10 000	10, 320	
										23 688	23 200	23, 760	
Gypsey Grove, Shaft No. 3,	Top vein, split,	"		17½	5	70			.4	17. 280	16, 302	17 615	
Gypsey Grove, Shaft No. 3,	Middle vein, split,	"		17½	5	70			.4	15 280	12 630	15 950	
Gypsey Grove, Shaft No 4,	Bottom vein, S. W. S. split,	"		17½	5	70			.4	15 840	14, 688	16, 400	
Gypsey Grove, Shaft No. 4,	Bottom vein, N. E. S. split,	"		17½	5	70			.4	16 875	13, 926	17, 400	
										63 275	57, 546	67, 365	
Shaft No. 5,	Top vein, N. E. S. split,	"		17½	5	80			.2	13, 200	9 600	27 115	
Shaft No. 5,	Top vein, S. W. S. split,	"		17½	5	80			.2	13. 500	10 140		
Shaft No. 5,	Second vein, N. E. S. split,	"		17½	5	80			.2	13 080	9 900	26 650	
Shaft No. 5,	Second vein, S. W. S. split,	"		17½	5	80			.2	13 500	11 280		
Shaft No. 5,	Third vein, N. E. S. split,	"		17½	5	80			.2	12 600	9 520	26, 040	
Shaft No. 5,	Third vein, S. W. S. split,	"		17½	5	80			.2	13 320	8 640		
Shaft No. 5,	Fourth vein, split,	"		17½	5	80			.2	15, 520	8. 600	15, 565	
										94, 720	67, 680	95, 370	
Lackawanna Iron and Coal Company.													
Capouse shaft,	G. vein, No. 1 split,	"		18	5	80			.6	22, 440	21, 000	23 400	
Capouse shaft,	G. vein, No. 2 split,	"		18	5	80			.6	24 570	26 180	28 000	
Capouse shaft,	Rock vein, No. 1 split,	"		18	5	80			.6	25, 750	23. 040	27, 840	
Capouse shaft,	Rock vein, No. 2 split,	"		20	5	60			.9	22, 440	20, 160	23 500	
Capouse shaft,	Diamond vein, No. 1 split,	"		20	5	60			.9	21, 780	19. 220	24 840	
Capouse shaft,	Diamond vein, No. 2 split,	"		20	5	60			.9	15 120	14 400	16 500	
Capouse shaft,	Diamond vein, No 3 split,	"		20	5	60			.9	16 080	15, 478	18 000	
Capouse shaft,	Diamond vein, No. 4 split,	"		20	5	60			.9	21, 840	19, 400	23 040	
										169, 970	158, 880	184, 120	

TABLE No. 6—*Continued.*

NAME OF COLLIERIES.	Local name, number or letter of each split of air.	Mode of ventilation.	DIMENSIONS OF FAN. Diameter in feet.	DIMENSIONS OF FAN. Width of face in feet.	Revolutions of fan per minute.	Dimensions or area of furnace grate.	Height of heated columns of air.	Pressure as shown by water gauge, in inches.	AMOUNT OF VENTILATION PER MINUTE. At intake.	At face of workings.	At outlet or upcast.
Pine Brook shaft,	No. 3 vein, A. or No. 1,	Double fan,	17½ / 17½	4	80			1.2	34,400	29.000	35,200
Pine Brook shaft,	No. 3 vein, B. or No. 2,	" "	17½ / 17½	4	80			1 2	32 000	28 000	35,000
Pine Brook shaft,	Clark vein, C. or No. 3,	" "	17½ / 17½	4	80			1.2	34,000	27,000	36 000
Pine Brook shaft,	Clark vein, D. or No. 4,	" "	17½ / 17½	4	80			1 2	33.000	28 700	36,000
Pine Brook shaft,	Clark vein, E. or No. 5,	" "	17½ / 17½	4	80			1 2	34 000	28,000	36,000
									167 400	140,700	178 200
William Connell and Company.											
Meadow Brook shaft,	No. 3 and 4, lifts in slope,	Fan,	14	3½	120			.1		16 490	
Meadow Brook shaft,	No. 2, lifts in slope,	"	14	3½	120			.1	45 045	12 080	71,050
Meadow Brook shaft,	West side from shaft,	"	14	3½	120			.1		14,112	
Meadow Brook shaft,	Two counters, East side,	"	14	3½	120			.1		12.160	
Meadow Brook shaft,	Counters at head of plane,	"	14	3½	120			.1	25 164	10 060	
									70 209	64 912	71,050
Meadow Brook tunnel,	Counter gangway,	Furnace,				8x8 - 64	52	.3	21 696	18 072	23 616
Meadow Brook tunnel,	Lower gangway,	"				6x6 - 36	70	.4	20 376	17 856	22,104
									42 072	35 928	45 720
National shaft and slope,	Slope gangway, East,	Fan,	14	3½	120			.7		13 980	
National shaft and slope,	Slope gangway, West,	"	14	3½	120			.7	40,014	11.200	72 072
National shaft and slope,	No. 3 vein,	"	14	3½	120			.7		11 952	
National shaft and slope,	Shaft gangway, East and slope,	"	14	3½	120			.7		16.020	
National shaft and slope,	Shaft gangway, West,	"	14	3½	120			.7	31,284	12,780	
									71.298	65,932	72,070

Stafford shaft,	No. 2 vein,	"	9	3	120			.4	41,265	21,168	43,344
Stafford shaft,	No. 3 vein,	"	9	3	120			.4		17,784	
									41,265	38,952	43,344
Hillside Coal and Iron Company.											
Erie shaft,	Bengough's heading,	"	17½	4	62			slope shaft	47,650 89,600	18,500	
Erie shaft,	Burdish heading,	"								16,800	
Erie shaft,	Lyon's heading,	"								16,526	
Erie shaft,	No. 3 West Plane,	"								18,900	90,000
									87,250	70,725	90,000
Forest City shaft,	North split,	"	18	6	73				44,852	29,265	
Forest City shaft,	South split,	"							31,584	20,430	32,436
									76,936	49,695	32,436
Forest City slope,	South split,	"	12	4	120				56,571	13,533	
Forest City slope,	South-west split,	"								19,466	68,546
									56,571	32,999	68,546
Glenwood shaft,	North split,	"	18	6	70				38,740	31,730	42,220
Glenwood shaft,	South split,	"							42,660	34,610	44,350
									81,400	66,330	86,570
Keystone tunnel,	Plane split,	Furnace,				8x10=80	70		23,040	21,000	23,625
Keystone tunnel,	Second opening split,	"							21,420	17,280	21,000
Keystone tunnel,	Top coal split,	"							23,750	21,000	24,000
									68,210	59,280	68,625
Buffalo mines,	One current,	"				4x 6=24	55		1,800	5,300	12,840
Bridge shaft,*	New County Vein No. 1,	Fan,	14	7½	56				26,550	25,850	27,060
Bridge shaft,	New County Vein No. 2,	"	14	8½	56				9,200	8,785	9,550
									35,750	34,635	36,610
Belmont tunnels,	Steel's gangway,	"	6	3	175				12,800	10,525	
Belmont tunnels,	Hemlock gangway,	"	6	3	175				10,800	9,425	
Belmont tunnels,	Meddle drift,	"	6	3	175				9,525	8,625	33,600
									32,625	28,575	33,600
Brauman's tunnels,		Furnace,				4x 6= 24	40		2,740	1,080	2,900
Brauman's tunnels,		"				4x 6= 24	45		3,200	1,860	3,340
Church slope and tunnel,		Fan,	3	1	200				5,200	3,400	6,000

* Abandoned August 17, 1883.

TABLE No 6.—*Continued.*

Name of Collieries.	Local name, number or letter of each split of air.	Mode of ventilation.	Dimensions of Fan.		Revolutions of fan per minute.	Dimensions or area of furnace grate.	Height of heated columns of air	Pressure as shown by water gauge, in inches.	Amount of Ventilation per Minute.		
			Diameter in feet.	Width of face in feet.					At intake.	At face of workings.	At outlet or upcast.
Dolph tunnel,	No. 1 split,	Fan,	15	4	78				37,340	9,440	
Dolph tunnel,	No. 2 split,	"	15	4	78					15,920	
Dolph tunnel,	No. 3 split,	"	15	4	78					9,460	40,000
									37,340	34,760	40,000
Eaton mines tunnel, *	3 splits,	"	15	8½	80				58,650	40,000	58,100
Eaton mines shaft,	Slope heading,	"	12	8½	80				24,200	20,000	24,300
Edgerton mines, No. 1 tunnel,	S. E. gangway, No. 1 split,	2 Furnaces,				10x10—100 10x10—100	100 100		39,690	19,260	
Edgerton mines, No. 1 tunnel,	N. E. gangway, No. 2 split,	"								18,680	39,300
Edgerton mines, No. 1 tunnel,	New air shaft, No. 3 split,	"							21,390	20,650	22,300
									60,040	58,530	61,400
Edgerton mines, No. 2 tunnel,	One current,	Furnace,				4x 6— 24	60		26,050	21,400	26,570
Fair Lawn slope,	Dip split,	Fan,	5	1½	450				16,788	14,888	
Fair Lawn slope,	Plane split,	"	5	1½	450				14,965	11,365	
Fair Lawn slope,	No. 2 split,	"	5	1½	450				10,965	9,675	43,875
									42,018	35,928	43,875

* One locomotive used in mine.

Filer's slope, "now Mount Jessup" mines,	Pump heading,	"	15	4½	150				18,540	15,321	20,340
Filer's slope, "now Mount Jessup" mines,	Filger's heading,	"	15	4½	150				8,245	8,056	8,220
Filer's slope, "now Mount Jessup" mines,	Cawley's heading,	"	15	4½	150				7,321	7,113	7,330
Filer's slope, "now Mount Jessup" mines,	Conner's heading,	"	15	4½	150				8,914	8,740	8,980
									43,020	39,230	44,890
Green Ridge slope mines,	No. 3 Heading, No. 1 split,	"	12	4	90				41,000	12,800	
Green Ridge slope mines,	No. 2 Syphon, No. 2 split,	"	12	4	90					10,200	
Green Ridge slope mines,	No. 2 Heading, No. 3 split,	"	12	4	90					9,460	
Green Ridge slope mines,	Powell's Heading, No. 4 split,	"	12	4	90					7,600	41,480
									41,000	40,060	41,480
Grassey Island shaft mines,	Top Vein, south side,	"	12	3½	60				18,450	11,520	21,060
Grassey Island shaft mines,	Top Vein, north side,	"	13	3½	60				21,000	9,072	24,000
Grassey Island shaft mines,	Bottom Vein, north side,	"	12	2½	60				12,000	8,032	15,060
									51,450	28,624	60,120
Grassey Island drift mine,	North side split,	Furnace,				80	60		16,000	10,080	19,080
Grassey Island drift mine,	South side split,	"				80	60		12,000	8,018	15,028
									28,000	18,098	34,108
Jermyn No. 4, shaft mines,	John Hank gangway,	Fan,	20	5	68			1.5	111,090	13,980	
Jermyn No. 4, shaft mines,	James Daw's gangway,	"	20	5	68			1.5		14,040	
Jermyn No. 4, shaft mines,	John Judge gangway,	"	20	5	68			1.5		14,010	
Jermyn No. 4, shaft mines,	Phillip Morgan's gangway,	"	20	5	68			1.5		13,890	
Jermyn No. 4, shaft mines,	John Nicolson's gangway,	"	20	5	68			1.5		16,230	
Jermyn No. 4, shaft mines,	Thomas Alsup's gangway,	"	20	5	68			1.5		14,105	112,150
									111,090	85,635	112,150
Lackawanna shaft mine,	East side split,	"	20	5	50				48,500	15,600	47,960
Lackawanna shaft mine,	East side water level split,	"	20	5	50				13,000	10,200	13,600
Lackawanna shaft mine,	Slope and west side split,	"	20	5	50				39,200	16,600	40,100
Lackawanna shaft mine,	On main roads,									13,540	
									100,700	55,940	101,660
Mount Pleasant slope mines,	Straight road split,	Fan,	14	4	80			.5	7,300	7,000	7,500
Mount Pleasant slope mines,	Upperfoot split,	"	11	4	80			.5	16,500	16,240	16,690
Mount Pleasant slope mines,	Rock Vein East, No. 1 split,	"	14	4	80			.5	6,240	6,080	6,570
Mount Pleasant slope mines,	Rock Vein East, No. 2 split,	"	14	4	80			.5	9,280	9,080	9,290
Mount Pleasant slope mines,	Rock vein west split,	"	14	4	80			.5	8,560	8,240	8,650
									47,880	46,620	48,690
Mount Pleasant slope mines,	Clark vein east split,	"	20	6	50				23,000	22,460	23,600
Mount Pleasant slope mines,	Clark vein east split,	"	20	6	50				31,500	30,860	31,600
									54,500	53,320	55,200

TABLE No. 6—*Continued*

NAME OF COLLIERIES.	Local name, number or letter of each split of air.	Mode of ventilation.	DIMENSIONS OF FAN. Diameter in feet.	DIMENSIONS OF FAN. Width of face in feet.	Revolutions of fan per minute.	Dimensions or area of furnace grate.	Height of heated columns of air.	Pressure as shown by water gauge, in inches.	AMOUNT OF VENTILATION PER MINUTE. At intake	At face of workings.	At outlet or upcast.
Marshwood slope and tunnel,	West gangway slope,	Fan,	12	7½	68				48,960	16,575	
Marshwood slope and tunnel,	East gangway slope,	"	12	7½	68					14,250	
Marshwood slope and tunnel,	Tunnel,	"	12	7½	68				11,920	11,025	49,345
									60,850	41,750	49,345
Pancoast shaft,	Diamond vein east,	"	15	5	60				18,520	17,630	19,969
Pancoast shaft,	Diamond vein west,	"	15	5	60				11,410	11,210	12,620
Pancoast shaft,	Clark vein east,	"	15	5	60				17,825	17,348	19,750
Pancoast shaft,	Daw's heading,	"	15	5	60				16,300	16,180	18,225
Pancoast shaft,	Twiss heading,	"	15	5	60				9,570	9,895	11,585
Pancoast shaft,	Hammond's heading,	"	15	5	60				12,700	12,58[illegible]	14,880
Pancoast shaft,	Young's heading,	"	15	5	60				12,310	12,10[illegible]	14,985
									98,585	96,891	110,984
Pierce slope and tunnel,	Tunnel,	"	12	3	80	from ol	worl ing	at W	hite Oak.		20,460
Pierce slope and tunnel,	Slope No. 1 split,	"	12		70				26,460	34,776	75,900
Pierce slope and tunnel,	Slope No. 2 split,	"	12	4	70				47,280	36,025	
Pierce slope and tunnel,	Slope No. 3 split,	"	12	4	70					12,140	
									73,740	72,941	75,900
Richmond shaft,	One current,	"	8	3	115				17,100	16,600	19,800
S. V. White tunnel,	South heading on plane,	Furnace,				40	115		19,650	4,350	20,200
S. V. White tunnel,	North heading on plane,	"				40	115			4,260	
S. V. White tunnel,	Water level heading,	"				40	75			8,740	
									19,650	17,350	20,200

Spencer's shaft,	Top vein southeast split,	Fan,	......	14	5	115	....	......	..	9,100	9,000	9,280
Spencer's shaft,	Slope in top vein,	"	......	14	5	115	....	......	...	12,420	12,360	12,600
Spencer's shaft,	Middle vein northeast split,	"	......	14	5	115	....	......	...	9,220	9,100	9,300
Spencer's shaft,	Middle vein southeast split,	"	......	14	5	115	....	......	...	10,860	10,700	11,000
										41,600	41,160	42,180
Simpson's slope,	East gangway No. 1 split,	"	......	....	...	75	....	......	...	60,820	36,190	.....
Simpson's slope,	West gangway No. 2 split,	"	......	14	5	75	....	......	...	.....	24,225	61,140
										60,820	60,415	61,140
Watkins' slope and tunnel,	Tunnel split,	"	......	7	2½	130	....	......	..	12,910	9,180	14,520
Watkins' slope and tunnel,	Slope split,	"	......	7	2½	130	....	......	...	20,090	14,820	20,480
										33,000	24,000	35,000

TABLE No. 6—*Continued.*

NAME OF COLLIERIES.	Dimensions of place where air was measured at intake, in feet.	Dimensions of place where air was measured at face of workings, in feet.	Dimensions of place where air was measured at outcast.	Condition of ventilation.	Velocity of air taken at intake, in feet, per minute.	Velocity of air at face of workings, in feet, per minute.	Velocity of air at outcast, in feet, per minute.	Number of persons working in each split.	Number of horses and mules in each split.	Dimensions of intake in feet.	Dimensions of outcast in feet.
Operated by D. L. & W. R. R. Co.											
Archbald shaft,	8½ x 19½	7½ x 11	9½ x 10	Good,	879	396	1,686	28	6	10 x 14	10 x 12
Archbald shaft,		9 x 11½		"		192		21	6		
Archbald shaft,		6½ x 11		"		223		61	6		
Archbald shaft,		8 x 16½		"		280		71	8		
Archbald shaft,		7 x 15		"		299		53	5		
Archbald shaft,	6½ x 8	7 x 9	6½ x 9	"	240	180	220	41	6		
								285	37		
Bellevue shaft,	6 x 12	6 x 7½	7½ x 10	"	381	405	823	33	4	10 x 18	10 x 10
Bellevue shaft,	6 x 14	7½ x 8	7½ x 10	"	643	512	1 211	65	9	10 x 18	
Bellevue shaft,	6 x 16	6½ x 10		"	449	532		62	7		
Bellevue shaft,	5½ x 12	6 x 11		"	192	444		40	6		
Bellevue shaft,		5½ x 12		"		202		7	1		
								207	27		
Bellevue slope,	8 x 10	5 x 9	6½ x 10	"	541	289	667	38	7	8 x 10	7 x 10
Bellevue slope,		5 x 8		"		192		6	1		
Bellevue slope,		7 x 10		"		313		7	4		
								51	12		
Brisbin shaft,	8 x 11	7 x 14	7 x 16	"	280	212	707	48	5	10 x 14	9 x 10
Brisbin shaft,	7 x 16	7 x 12		"	207	232		38	4		
Brisbin shaft,	6 x 12	6 x 11		"	397	387		50	4		
Brisbin shaft,	6 x 10	7 x 10	10 x 12	"	290	222	377	28	7		
Brisbin shaft,	7 x 9	7 x 10			328	290		29	2		
								189	22		

Continental shaft,	7 x 18	6 x		"	450	350		44	5	10 x 21		
Continental shaft,	7 x 10	6½ x 12		"	550	200		60	8			
Continental shaft,		2 x 4		"		1,200		36	4			
Continental shaft,		4 x 11		"		315		28	3			
Continental shaft,		7 x 10		"		150		26	4			
Continental shaft,		3 x 9		"		350		23	4			
Continental shaft,		2½ x 6	7 x 18½	"		1,200	1,200	28	4		11 x 12	
								255	32			
Central—Main and air shafts,	7 x 18½	6 5/12 x 8½	8 7/12 x 10½	"	804	232	56	45	5	10 x 14	9 x 10	
Central—Main and air shafts,		7½ x 8½		"		241		40	4			
Central—Main and air shafts,		7 5/12 x 8½		"		223		3				
Central—Main and air shafts,	3½ x 6½	4½ x 7 5/12		"	435	503		38	7			
Central—Main and air shafts,	4 7/12 x 6½	4 7/12 x 6½	8½ x 9½	"	416	416	426					
Central—Main and air shafts,		6½ x 8½		"		426		51	6			
Central—Main and air shafts,	6½ x 9½	6½ x 14	5½ x 12½	"	300	183	804	35	6	8 x 10	9 x 10	
Central—Main and air shafts,	7½ x 12½	7½ x 10½	7½ x 13½	"	222	135	513	55	8			
Central—Main and air shafts,		6½ x 8½				212		50	8			
Central—Main and air shafts,	7½ x 18	7½ x 18			135	135						
								317	44			
Cayuga shaft,	7½ x 9½	7½ x 9½	6½ x 6½	"	257	305	677	74	11	10 x 14	9 x 10	
Cayuga shaft,	7 x 17	9 x 13	7½ x 9½	"	405	211	680	70	10			
Cayuga shaft,		6½ x 12		"		174		46	5			
								190	26			
Diamond No. 2 shaft,	7 x 12	7 x 8		"	450	405		63	7	10 x 14		
Diamond No. 2 shaft,	6 x 14	7½ x 12	8 x 10	"	400	350	930				10 x 12	
								63	7			
Diamond Tripp shafts,	6 x 14½	6 x 14½		"	610	580		46	8	12 x 14	12 x 12	
Diamond Tripp shafts,	6 x 14	6 x 10		"	290	280		74	13			
Diamond Tripp shafts,	7 x 14½	7 x 13	8 x 16	"	300	310	1,150	38	4			
Diamond Tripp shafts,	7 x 13	7 x 14		"	600	500		48	8	10 x 12	12 x 12	
Diamond Tripp shafts,	6 x 10	7 x 11		"	220	150		14	2			
Diamond Tripp shafts,	6½ x 11	7 x 12	6½ x 15	"	580	450	1,100	54	9			
								274	44			
Dodge shaft,	6½ x 16	6 x 10		"	667	449		18	4	10 x 22		
Dodge shaft,		7⅝ x 11½		"		267		50	6			
Dodge shaft,	6½ x 10	7 x 11½	8½ x 9 1/2	"	648	478	789	47	5			
Dodge shaft,	7 5/12 x 8½	5½ x 7	8½ x 10½	"	279	405	667	4	1			
Dodge shaft,	6½ x 7½	7 x 10	7½ x 13½	"	405	419	787	67	11			
Dodge shaft,	5½ x 13½	7 x 7		"	479	480		30	9			
								216	36		13 Circ.	

TABLE No 6—*Continued.*

NAME OF COLLIERIES.	Dimensions of place where air was measured at intake, in feet.	Dimensions of place where air was measured at face of workings, in feet.	Dimensions of place where air was measured at outcast.	Condition of ventilation.	Velocity of air at intake, in feet, per minute.	Velocity of air at face of workings, in feet, per minute.	Velocity of air at outcast, in feet, per minute.	Number of persons working in each split.	Number of horses and mules in each split.	Dimensions of intake in feet.	Dimensions of outcast in feet.
Holden shaft,	6 x 16	7 x 8		Good,	580	230		70	15	10 x 14	
Holden shaft,		7 x 7	8 x 13	"		270	790	15	7		
Holden shaft,	12 x 19	5 x 8		"	240	550		70	17		
Holden shaft,		8 x 10	9 x 13	"		335	510	65	10		
Holden shaft,				"	80	80					
Holden shaft,	7 x 21	7 x 21		"							
Holden shaft,	2 x 2	8 x 8		"	1 950	120					
Holden shaft,	3 x 4	7 x 8		"	258	55					
								220	49		10 x 10
Hampton shaft,	6 x 6	6 x 10		"	888	172		23	3	9 x 13	
Hampton shaft,	7 x 16	7 x 12		"	435	158		70	12		
Hampton shaft,		4 x 7		"		158		10	1		
Hampton shaft,		7 x 11		"		147		89	16		
Hampton shaft,		6 x 6		"		532		23	23		
Hampton shaft,	6 x 6	6 x 6	8 x 11	"	272	272	953				
								179	55		6 x 10
Hyde Park shaft,	8¼ x 10	6 x 11	11 x 14	"	725	247	495	64	11	10 x 16	10 x 12
Hyde Park shaft,		9½ x 10½		"		193		54	4		
Hyde Park shaft,	7 x 6	7 x 7½	7 x 8	"	738	506	589	72	12		
								190	27		
Manville shafts,	7½ x 10	7 x 13	10 x 10	"	910	280	1,220	67	10	10 x 21	7 x 10
Manville shafts,		7 x 11		"		240		74	10		
Manville shafts,		7 x 13		"		190		62	12		
Manville shafts,		6½ x 11		"		140		26	2		

Manville shafts,		6 x 6		"		235						
Manville shafts,		7 x 12		"		260						
								228	34			
Manville shaft,	6 x 14	5 x 14	8 x 10	"	195	220	900	8	1	8 x 10	10 x 12	
Manville shaft,		6 x 8		"		400		9				
Manville shaft,		7 x 10		"		105						
Manville shaft,		2 x 2½		"		850						
								17	1			
Oxford shaft,	6 x 11	7 x 12	6 x 12	"	265	182	1,150	22	3	11 x 16	13 x 12	
Oxford shaft,	6 x 12	6 x 13¾	7½ x 6,	"	565	226	220	41	4			
Oxford shaft,		6 x 13 1/8		"		192		44	4			
Oxford shaft,	6¼ x 13	6¼ x 13		"	239	260		12	3			
Oxford shaft,	7⅛ x 5¼	5 7/8 x 6¼	9 x 12½	"	337	309	240	29	3			
Oxford shaft,	6 x 11½	6 1/8 x 14		"	333	212		22	4			
Oxford shaft,		6 x 7½		"		396		11	1			
Oxford shaft,	6½ x 13	7 x 13	6 x 13	"	386	231	440	36	4			
								217	26			
Pyne shaft,	6 5/8 x 8	6 x 6½		"	336	343		34	3	10 x 14	10 x 10	
Pyne shaft,	6 1/8 x 7⅜	6¼ x 8		"	416	275		34	5			
Pyne shaft,	7 5/8 x 11¾	6¼ x 11 7/8		"	244	202		39	6			
Pyne shaft,	10 1/16 x 10 1/16	7½ x 12¾		"	401	177						
Pyne shaft,		5½ x 9¼	9½ x 12	"		517	1 041	75	9			
Pyne shaft,	6 x 8¼	9 x 7½		"	390	241		75	10			
Pyne shaft,	1⅛ x 1¼	1 x 1	4½ x 4½	"	388	1,502	991					
								257	33			
Sloan shaft,	6 x 13	6 x 7	9 x 1½	"	584	876	900	71	14	6 x 14 / 10 x 14	10 x 10	
Sloan shaft,		3 x 6		"		1 030		42	7			
Sloan shaft,	8 x 12½	3 x 7⅛		"	387	1,012		70	12			
Sloan shaft,		6 x 11		"		230		69	12			
Sloan shaft,	5 x 7	4 x 8		"	309	205		17	2			
Sloan shaft,		4 x 5		"		922		30	7			
Sloan shaft,	6 x 14½	2 x 3	6 x 10	"	489	2,250	900					
Sloan shaft,		6 x 8		"		106						
								299	54			
Taylor shaft,	7 x 14	7 x 10		"	322	532		45	9	7 x 9 / 10 x 15		
Taylor shaft,	7 x 9	10 x 14 1/8		"	906	241		64	11			
Taylor shaft,	10 x 14	10 x 10		"	400	241		71	10			
Taylor shaft,		10 x 10		"		299		44	4			
Taylor shaft,		9 x 10	9 5/16 x 9 7/16	"		140	1,780				10 x 12	
								234	34			

TABLE No. 6—*Continued.*

NAME OF COLLIERIES.	Dimensions of place where air was measured at intake, in feet.	Dimensions of place where air was measured at face of workings, in feet.	Dimensions of place where air was measured at outcast.	Condition of ventilation.	Velocity of air at intake, in feet, per minute.	Velocity of air at face of workings, in feet, per minute.	Velocity of air at outcast, in feet per minute.	Number of persons working in each split.	Number of horses and mules in each split.	Dimensions of intake in feet.	Dimensions of outcast in feet.
Taylor drift,	7 x 10	5 x 10	.....	Good,	433	425	....	17	5	7 x 10 8 x 9	10 x 10
Taylor drift,	8 x 9	7 x 8	5 x 9	"	360	444	1,540	25	4	.....	.....
								42	9		
Operated by Del. and Hudson Canal Company.											
Coal Brook Tunnel mines,	30	48	32	"	330	190	260	54	6	5 x 6	4 x 8
Coal Brook Tunnel mines,	50	42	42	"	260	220	310	75	8	5 x 10	6 x 7
Coal Brook Tunnel mines,	50	40	50	"	210	240	230	75	11	5 x 10	5 x 10
								204	25		
Midland Tunnel mines,	55	50	60	"	320	300	320	44	8	5 x 11	6 x 10
Midland Tunnel mines,	.....	30	.....	"	....	270	..	18	4	5 x 6	.....
								62	12		
Wilson Creek tunnel,	60	50	60	"	240	270	350	70	8	6 x 10	6 x 10
Wilson Creek tunnel,	99	54	72	"	200	220	230	35	3	9 x 11	6 x 12
Wilson Creek tunnel,	60	60	45	"	140	140	240	34	3	6 x 10	5 x 9
								139	14		
No. 3 shaft,	26	28	42	"	220	105	175	34	3	6 x 6	6 x 7
No. 3 shaft,	42	36	48	"	260	175	194	52	5	6 x 7	6 x 8
No. 3 shaft,	36	30	.....	"	194	81	..	20	2	6 x 6	.....
								106	10		
No. 1 shaft,	40	46	45	"	215	170	200	50	5	5 x 8	5 x 9
No. 1 shaft,	45	48	60	"	225	190	232	41	3	5 x 9	6 x 10
								91	8		

White Bridge tunnel,	40	36	50	Fair,	210	200	180	10	2	5 x 8	5 x 10
White Bridge tunnel,	60	50	48	"	200	190	270	53	10	6 x 10	6 x 8
White Bridge tunnel,	42	40	.....	"	220	180	.....	46	6	6 x 7	.....
								109	18		
Powderly mines,	40	30	35	Good,	314	349	332	25	4	5 x 8	5 x 7
Powderly mines,	15	35	35	"	765	356	356	25	3	3 x 5	5 x 7
Powderly mines,	60	35	9	"	290	418	2 024	75	12	6 x 10	3 x 3
Powderly mines,	56	48	24	"	200	216	465	58	5	7 x 8	3 x 8
Powderly mines,	35	40	30	"	387	287	472	53	3	5 x 7	5 x 6
								236	27		
Jermyn, No. 1,	50	48	18	"	240	320	706	42	4	5 x 10	3 x 6
Jermyn, No. 1,	60	45	60	"	303	280	320	66	5	6 x 10	6 x 10
Jermyn, Ny. 1,	54	60	40	"	413	290	620	71	12	6 x 9	5 x 8
Jermyn, No. 1,	63	60	30	"	445	304	930	70	6	7 x 9	5 x 6
Jermyn, No. 1,	48	54	40	"	375	304	470	69	6	6 x 8	5 x 8
								318	33		
White Oak slope,	32	60	70	"	850	310	350	61	8	4 x 8	7 x 10
White Oak slope,	54	.....	6	"	250	....	2,050	10	1.	6 x 9	2 x 3
White Oak slope, No. 3,	.....	.....	.....	"	....	....	....	10	3	.. ..	.....
White Oak slope, No. 3½,	.....	.....	.....	"	..	..		65	13	.. ..	
White Oak slope, No. 5,	50	84	72	Fair,	300	165	200	73	3	5 x 10	6 x 12
								219	28		
Grassy Island,	54	63	78	Good,	413	300	267	48	5	6 x 9	6 x 13
Grassy Island,	62	72	60	"	403	428	504	73	8	8 x 10	6 x 10
Grassy Island,	50	80	6	"	151	151	1,891	59	5	8 x 10	2 x 3
Grassy Island,	9	39	42	"	1,574	318	309	68	7	3 x 8	6 x 7
								248	25		
Eddy Creek,	53	49	50	"	270	220	300	50	2	6 x 9	5 x 10
Eddy Creek,	50	60	50	"	166	117	200	35	2	5 x 10	5 x 10
Eddy Creek,	50	5	50	"	144	1 320	180	20	2	5 x 10	5 x 10
Eddy Creek,	50	60	50	"	320	227	330	50	3	5 x 10	5 x 10
Eddy Creek,	35	50	27	"	422	200	580	7	1	5 x 10	3 x 9
Eddy Creek,	50	50	35	"	320	225	370	45	5	5 x 10	5 x 7
Eddy Creek,	48	30	50	"	375	500	400	65	9	6 x 8	5 x 10
Eddy Creek,	50	70	35	"	440	300	650	66	8	5 x 10	5 x 7
								348	32		

TABLE No. 6—*Continued.*

NAME OF COLLIERIES.	Dimensions of place where air was measured at intake, in feet.	Dimensions of place where air was measured at face of workings, in feet.	Dimensions of place where air was measured at outcast.	Condition of ventilation.	Velocity of air at intake, in feet, per minute.	Velocity of air at face of workings, in feet, per minute.	Velocity of air at outcast, in feet, per minute.	Number of persons working in each split.	Number of horses and mules in each split.	Dimensions of intake in feet.	Dimensions of outcast in feet.
Olyphant,	45	46	49	Good,	390	395	325	68	3	5 x 9	6 x 8
Olyphant,	60	31	38	"	300	445	460	72	7	6 x 10	4 x 9
Olyphant,	21	38	33	"	690	420	450	70	6	3 x 7	3 x 11
Olyphant,	33	.....	2	"	150	.....	.....	24	4	3 x 11	1 x 2
								234	25		
Marvine,	64	50	100	"	253	270	170	52	4		
Marvine,	50	48	112	"	238	271	122	42	6		
Marvine,	62	46	80	"	201	248	165	45	5	24 x 10	10 x 10
Marvine,	64	50	100	"	275	304	152	68	8		
Marvine,	67	56	114	"	240	284	149	58	7		
Marvine,	47	33	40	"	259	315	350	50	6		
								316	36		
Leggitt's Creek,	31	70	90	"	580	638	522	. .	. .		
Leggitt's Creek,	40	80	70	"	400	250	279	28	9		
Leggitt's Creek,	28	32	95	"	370	249	207	28	6		
Leggitt's Creek,	37	48	72	"	670	497	345	52	9	24 x 10	10 x 11
Leggitt's Creek,	40	56	80	"	565	390	282	44	6		
Leggitt's Creek,	56	65	56	"	240	163	240	28	7		
Leggitt's Creek,	33	48	63	"	252	350	247	20	3		
								204	40		
Dickson,	.....	114	112	"	...	190	193	704	12		
Dickson,	.....	112	112	"	....	187	191	58	7		
Dickson,	.....	111	113	"	....	183	187	42	8	9 x 20	9 x 10
Dickson,	.....	113	110	"	....	198	201	75	9		
								879	36		

Von Storch, Diamond vein,	75	42	70	"	223	248	150	32	9	7 x 12	3 x 11
Von Storch, Diamond vein,	66	54	60	"	210	228	118	33	5		
Von Storch, Fourteen Foot vein,	51	100	45	"	283	312	168	20	8	9 x 10	3 x 11
Von Storch, Fourteen Foot vein,	84	50	42	"	258	233	141	48	7		
Von Storch, Clark vein,	120	80	70	"	493	385	566	58	8		
Von Storch, Clark vein,		70	60	"		257	351	45	8	14 x 10	7 x 10
Von Storch, Clark vein,	65	96	75	"	534	210	523	56	8		
Von Storch, Clark vein,		64	67	"		347	371	48	7		
								383	60		
Pennsylvania Coal Company.											Area.
Shaft No. 1,	6 x 16	4 x 12	4 x 16	"	124	275	210	6	1	12 x 12	126
Shaft No. 1,	8 x 16	5 x 10	4 x 15	"	78	200	172	10			
								16	1		
Gypsey Grove, Shaft No. 2,	5 x 12	5½ x 12	5 x 13	"	288	247	271	68	6	6 x 12	6 x 10
Gypsey Grove, Shaft No 2,	5 x 16	5 x 11	5½ x 10	"	191	220	290	66	6	5 x 12	9 x 16
Gypsey Grove, Shaft No. 4,	5 x 12	6 x 12	6 x 15	"	204	204	205	59	9	10 x 11	7 x 12
Gypsey Grove, Shaft No. 4,	5 x 15	5½ x 12	6 x 10	"	225	211	280	71	8	6 x 10	6 x 12
								284	29		
Shaft No. 5,	5 x 12	4 x 12	5 x 11	"	220	200	493	48	6	6 x 10	10 x 12
Shaft No. 5,	6 x 10	4 x 18		"	226	195		50	6	6 x 10	10 x 12
Shaft No. 5,	6 x 10	4 x 15		"	218	166		44	4		
Shaft No. 5,	5 x 12	5 x 12	5 x 10	"	220	188	533	52	5		
Shaft No. 5,	5 x 12	4 x 14		"	210	170		43	4		
Shaft No. 5,	6 x 12	4 x 12	5 x 12	"	185	180	434	29	1		
Shaft No. 6,	6 x 14	5 x 10	5 x 11	"	185	172	283	18	1		
								284	27		
Lackawanna Iron and Coal Company.	Area.	Area.	Area.							Area.	Area.
Capouse shaft,	66	84	90	"	340	260	280	63	14	140	90
Capouse shaft,	91	77	100	"	270	340	280	66	12	140	90
Capouse shaft,	99	72	95	"	260	320	290	64	10	140	90
Capouse shaft,	66	72	90	"	340	280	250	38	3	140	70
Capouse shaft,	66	72	108	"	330	320	230	50	9	140	70
Capouse shaft,	72	80	50	"	210	130	330	24	3	140	70
Capouse shaft,	50	91	100	"	320	170	180	27	5	140	70
Capouse shaft,	84	72	96	"	280	270	240	62	12	140	70
								394	68		
	Area.	Area.	Area.							Area.	Area.
Pine Brook shaft,	60	69	80	"	430	420	440	75	12	140	153
Pine Brook shaft,	80	70	80	"	400	460	438	75	10	140	153
Pine Brook shaft,	100	90	90	"	340	300	400	76	11	140	153
Pine Brook shaft,	80	70	90	"	420	410	400	75	10	140	153
Pine Brook shaft,	100	70	90	"	340	400	400	74	12	140	153
								374	55		

TABLE No. 6 (Continued.

NAME OF COLLIERY.	Dimensions of place where air was measured at intake, in feet.	Dimensions of place where air was measured at last of working, in feet.	Dimensions of place where air was measured at outcast	Condition of ventilation.	Velocity of air at intake, in feet, per minute.	Velocity of air at face of workings, in feet, per minute.	Velocity of air at outcast, in feet, per minute.	Number of persons working in each split.	Number of horses and mules in each split.	Dimensions of intake in feet.	Dimensions of outcast in feet.
William Connell and Company.										Area.	Area.
Meadow Brook shaft,		5 x 16		Good,		206		65	8		
Meadow Brook shaft,	7 x 9	5 x 16		"	715	151		45	8		
Meadow Brook shaft,		6 x 16	5 x 14	"		147	1,015	80	6	48	68
Meadow Brook shaft,	6 x 9	5 x 16		"	466	183		20	6		
Meadow Brook shaft,		6 x 16		"		113		35	5		
								256	31		
										Area.	Area.
Meadow Brook tunnel,	6 x 8	6 x 12	6 x 6	"	462	261	659	41	8	54	36
Meadow Brook tunnel,	6 x 12	6 x 12	6 x 6	"	288	349	614	45	8		36
								86	16		
National shaft and slope,		5 x 12				288		35	5		
National shaft and slope,	6½ x 13	5 x 10			342	234		15	3		
National shaft and slope,		6 x 12	6 x 11			186	819	20	3		
National shaft and slope,		5 x 12				287		50	5		
National shaft and slope,	11 x 13	5 x 12			136	218		20	4		
								140	19		
Stafford shaft,	6 x 7½	7 x 12	4 x 12		917	252	908	25	3	45	48
Stafford shaft,		6 x 13				247		26	3		
								51	6		
Hillside Coal and Iron Company.											
Erie shaft,	7 x 9	7 x 10		Good,	750	270		75	7	7 x 9	10 x 10
	6 x 12				550					6 x 12	
Erie shaft,		x 12		"		220		72	6		

Erie shaft,		5x12		"		225		62	8		
Erie shaft,		6x14	10x10	"		225	900	75	17		10x10
								284	88		
Forest City shaft,	6x14	6x12		"	528	406		71	8	6x14	
Forest City shaft,	7x13	6x12	8x16	"	376	284	644	70	2	7x12	8x16
								141	10		
Forest City slope,	6x16	6x12		"	586	188		46	5	6x16	
Forest City slope,		6x12	6x14	"		270	816	62	7		6x14
								108	12		
Glenwood shaft,	12x14	7x8	8x16	"	280	566	828	68	4	12x14	
Glenwood shaft,	12x16	7x8	7x16	"	222	618	895	72	9	12x16	12x14
								140	13		
Keystone tunnel,	6x12	6x10	7x9	Fair,	320	350	375	75	8	6x12	
Keystone tunnel,	7x9	6x9	6x10	"	340	320	350	75	8	7x9	
Keystone tunnel,	5x10	5x10	5x8	"	475	420	600	70	10	5x10	10x10
								280	26		
Buffalo mines,								50	5		
Bridge shaft,								63	16		
Bridge shaft,								16	3		
								79	19		
Belmont tunnels,								48	8		
Belmont tunnels,								31	6		
Belmont tunnels,								16	3		
								95	17		
Bruman's tunnels,								13	1		
Bruman's tunnels,								15	1		
Church slope and tunnel,	6x7	10x7	6x10	Good,	128	49	100	12	1		
Dolph tunnel,								37	6		
Dolph tunnel,								75	8		
Dolph tunnel,								49	4		
								161	18		
										Area.	Area.
Eaton mines tunnel,				Fair,	513		880	170	18	103	70

TABLE No. 6—*Continued.*

NAMES OF COLLIERIES.	Dimensions of place where air was measured at intake, in feet.	Dimensions of place where air was measured at face of workings, in feet.	Dimensions of place where air was measured at outcast.	Condition of ventilation.	Velocity of air at intake, in feet, per minute.	Velocity of air at face of workings, in feet, per minute.	Velocity of air at outcast, in feet, per minute.	Number of persons working in each split.	Number of horses and mules in each split.	Dimensions at intake, in feet.	Dimensions at outcast, in feet.
Eaton mines shaft,	8x12	7x12	8x12	Good,	252	238	253	24	4	96	100
Edgerton mines, No. 1 tunnel,	8x	8x10	.....	"	168	241	.....	64	...	10x10	.....
Edgerton mines, No. 1 tunnel,	.....	8x9	10x10	"	.....	259	292	52	4	.....	10x10
Edgerton mines, No. 1 tunnel,	10x10	7x11	10x10	"	214	266	222	60	8	.....	10x10
								176	19		
Edgerton mines, No. 2 tunnel,	8x14	8x10	10x12	.....	288	267	223	48	8	.....	.....
Fair Lawn slope,	.....	.....	.....	Good,	.....	.....	.....	39	8	.....	.....
Fair Lawn slope,	.....	.....	.....	"	.....	.....	.....	24	8	.....	.....
Fair Lawn slope,	.....	.....	.....	"	.....	.....	.....	36	8	.....	.....
								99	9		
Filer's slope, now "Mount Jessup" mines,	126	120	84	"	147	128	242	74	14	9x14	6x14
Filer's slope, now "Mount Jessup" mines,	105	81	66	"	78	99	126	30	2	7x15	4x12
Filer's slope, now "Mount Jessup" mines,	96	81	108	"	76	88	68	17	1	6x16	9x 2
Filer's slope, now "Mount Jessup" mines,	98	81	78	"	91	108	114	7	1	7x14	4x12
								128	18		
Green Ridge slope mines,	84	.....	.....	Fair,	477	.....	.....	60	6	7x12	.....
Green Ridge slope mines,	.....	.....	.....	.....	.....	.....	.....	48	6	.....	.....
Green Ridge slope mines,	.....	.....	.....	.....	.....	.....	.....	47	6	.....	.....
Green Ridge slope mines,	.....	.....	96	.....	.....	.....	481	38	4	.....	8x12
								198	22		
Grassey Island shaft mines,	45	36	80	.....	410	330	268	66	6	45	.....
Grassey Island shaft mines,	50	72	80	.....	425	126	300	60	7	.....	.....
Grassey Island shaft mines,	48	32	36	.....	250	260	418	15	2	.....	80
								141	15		

Grassey Island drift mine,	48	36	72		333	280	275	27	6	48	72
Grassey Island drift mine,	45	38	52		267	211	289	51	5		
								78	11		
Jermyn No. 4, shaft mines,	26x10				427			58	7	26x10	
Jermyn No. 4, shaft mines,								60	6		
Jermyn No. 4, shaft mines,								64	7		
Jermyn No. 4, shaft mines,								55	8		
Jermyn No. 4, shaft mines,								60	7		
Jermyn No. 4, shaft mines,			10x10				1,120	50	6		10x10
								347	41		
Lackawanna shaft mine,	140	84	100					75	15	140	
Lackawanna shaft mine,	72	60	72					46	7		
Lackawanna shaft mine,	70	77	100					75	6		
Lackawanna shaft mine,		42						67	2		100
								263	30		
Mount Pleasant slope mines,								29	9		
Mount Pleasant slope mines,								25	5		
Mount Pleasant slope mines,								53	7		
Mount Pleasant slope mines,								39	6		
Mount Pleasant slope mines,								49	6		
					311		512	195	33	154	95
Mount Pleasant slope mines,								58	4	154	
Mount Pleasant slope mines,								53	6		150
					299		368	106	10		
Marshwood slope and tunnel,								56	6		
Marshwood slope and tunnel,								39	3		
Marshwood slope and tunnel,								8	1		
								103	10		
Pancoast shaft,								65	8		
Pancoast shaft,								67	14		
Pancoast shaft,								54	7		
Pancoast shaft,								41	7		
Pancoast shaft,								41	5		
Poncoast shaft,								48	4		
Pancoast shaft,								53	6		
								368	51		

TABLE No. 6—*Continued.*

NAME OF COLLIERIES.	Dimensions of place where air was measured at intake, in feet.	Dimensions of place where air was measured at face of workings, in feet.	Dimensions of place where air was measured at outcast.	Condition of ventilation.	Velocity of air at intake, in feet, per minute.	Velocity of air at face of workings, in feet, per minute.	Velocity of air at outcast, in feet, per minute.	Number of persons working in each split.	Number of horses and mules in each split.	Dimensions of intake in feet.	Dimensions of outcast in feet.
Pierce slope and tunnel,	Air cannot be measured at intake.							61	8		
Pierce slope and tunnel,	7x8½	6x12½			487	463		70	4	858.3	
Pierce slope and tunnel,			(¾x11				1,000	73	7		75.9
Pierce slope and tunnel,								39	8		
								246	22		
Richmond shaft,								68	15		
S. V. White tunnel,								73	1		
S. V. White tunnel,								66	5		
S. V. White tunnel,								53	3		
								194	15		
Spencer's shaft,								41	7		
Spencer's shaft,								61	12		
Spencer's shaft,								46	5		
Spencer's shaft,								55	7		
								208	31		
Simpson's slope,					Working at night.			7	9		
								18	3		
Simpson's slope,					"	"	"	15	2		
								63	8		
								167	22		
Watkins' slope and tunnel,								35	3		
Watkins' slope and tunnel,								50	3		
								85	6		

NOTE.—There are 78 fans, 13 furnaces and 2 by natural means in the old mines where they are taking out pillars.

SECOND ANTHRACITE DISTRICT.

OFFICE OF INSPECTOR OF MINES,
SECOND DISTRICT, ANTHRACITE COAL FIELD,
PITTSTON, PA., *March 1, 1889.*

Hon. THOMAS J. STEWART,
Secretary of Internal Affairs:

SIR: I have the honor of presenting herewith my annual report as Inspector of Coal Mines in the Second district of the Anthracite coal field, for the year 1888. It contains the usual tables, which show that 5,435,539 tons of coal were mined during the year 1888, an increase of 392,023 tons over the production of 1887. The number of fatal accidents was 46, leaving 21 widows and 38 orphans, a decrease of 6 fatal accidents, with the same number of widows, but a decrease of 31 orphans as per report of 1887.

The number of serious non-fatal accidents was 131, a decrease of 15 as compared with the year 1887. It is with regret that I have to report so many fatal accidents in this district, which, with ordinary care by the majority of the victims themselves, would not have occurred. In addition to the above number of non-fatal accidents, 55 were reported as very slightly injured. These men were only off work a day or two; therefore, I have not included them in this report.

Yours, very respectfully,
H. MCDONALD,
Inspector of Mines.

Total Tons of Coal Mined During the Year 1888.

Pennsylvania Coal Company,	1,251,947.00
Lehigh Valley Coal Company,	883,435.17
Delaware & Hudson Canal Company,	540,023.05
Delaware, Lackawanna & Western Railroad Company,	267,386.16
Miscellaneous coal companies,	2,492,746.13
Total of all coal companies,	5,435,537.51

Number of Fatal Accidents and Amount of Coal Produced per Life Lost.

NAMES OF COMPANIES.	Number of lives lost.	Coal mined per life lost, in tons.
Pennsylvania Coal Company,	7	178,849
Lehigh Valley Coal Company,	7	126,205
Delaware and Hudson Canal Company,	2	270,011
Delaware, Lackawanna and Western Railroad Company,	1	267,386
Miscellaneous coal companies,	29	85,956
Total of all coal companies,	46	118,120

Number of widows, 21; orphans, 38.

Number of Serious and Fatal Injuries and Tons of Coal Produced per each Person Killed or Injured.

NAMES OF COMPANIES.	Killed or injured.	Tons of coal mined per person killed or injured.
Pennsylvania Coal Company,	23	54,432
Lehigh Valley Coal Company,	39	22,652
Delaware and Hudson Canal Company,	12	45,002
Delaware, Lackawanna and Western Railroad Company,	6	44,564
Miscellaneous coal companies,	97	24,667
Total of all coal companies,	177	30,703

Nationality of Persons Killed and Injured.

	Irish.	Welsh.	Americans.	English.	Scotch.	Germans.	Hungarians.	Polish.	Italians.	Total.
Killed or fatally injured,	19	5	2	5	2	2	5	4	2	46
Injured,	47	17	21	15	4	7	7	12	1	131
	66	22	23	20	6	9	12	16	3	177

Classification of Fatal and Non-fatal Accidents.

CAUSE OF ACCIDENTS.	Number of killed or fatally injured.	Seriously injured.
By falls of roof and coal,	21	37
By explosions of gas,	4	31
By explosions of powder and blasts,	5	18
By falling down shafts,	2	....
Crushed and run over by mine cars,	5	22
Miscellaneous causes inside,	3	10
Miscellaneous causes outside,	6	13
Total,	46	131

Occupations of Persons Killed and Injured.

	Killed.	Injured.
Miners,	23	50
Laborers,	11	35
Drivers and runners,	4	19
Door tenders,	2	3
Miscellaneous occupations,	6	24
Total,	46	131

Prosecutions for non-compliance with the Mine Law.

On two occasions I was compelled to enter proceedings to enforce the compliance with the mine laws.

The first was that of Joseph H. Clark, miner, employed in the Clear Spring colliery, located in the borough of West Pittston, Luzerne county, for neglecting to properly block and sprag his car, on the 10th day of March, 1888. After the driver had taken the car to face of chamber, Clark prepared a blast, and firing the same caused the car to run away down the chamber road, striking a door at foot of said chamber, and instantly killing Thomas McAnulty, the door boy who was attending the door. The case was tried before his Honor C. E. Rice, president judge of Luzerne court, who fined him thirty dollars and costs.

The second case was against John Harris, fire boss in the Twin Shaft, located in the borough of Pittston, Luzerne county, for not complying with Rule 8th of Article 12, of the act of June 30, 1885.

Whereby James Gaffeny was fatally and John Gavin and James Ford were painfully burned by an explosion of gas, on the morning of October the 18th, 1888. The case was tried before his Honor C. E. Rice, president judge of Luzerne court, who fined him fifty dollars and costs.

Examination of Applicants for Mine Foreman's Certificates.

The annual examination of applicants for mine foreman's certificates in the Second district, was held in the Welsh Hill school building, Pittston, Pa., June 25th and 26th. The examiners were H. McDonald, inspector, A. G. Mason, superintendent, both of Pittston, Pa, and Archie McQueen, of Pleasant Valley, Pa.

The following fourteen were successful, John W. Reid, Samuel M. Johnson, James R. Walsh, John Marian, Richard Beer, William J. Thomas, Patrick S. Coyne, Stephen McLinarie, James Blease, James Wilson, Mathew D. Macky, John Hastie, David D. Davis and Evan H. Reese.

James Waddell, of Kingston, Pa., applied for a certificate of service and was recommended to receive one.

General Condition of the Mines.

The mines of this district are in comparatively good condition as regards ventilation with the exception of a few which are not in the condition that the law requires, but I am happy to state that these mines are now being attended to, so that in a short time they will be in such condition as to give all the air to the workingmen that is required by law.

The drainage in the mines has been improved more than in former years, yet there is room for improvement in this regard. Likewise the timbering is receiving its share of attention. As there has not been one accident in this district this year attributable directly to the neglect of timbering or propping.

Mine Improvements during 1888.

Pennsylvania Coal Company.—In shaft No. 6 of this company two underground tunnels were driven from the Pittston to the Marcy seam, a distance of one hundred and twenty, and three hundred feet respectively, which opens up an extensive lift of good coal.

At shaft No. 11 of this company, a new underground slope was sunk in the Pittston seam, a distance of five hundred and twenty-two feet. The engines are located on the surface and the ropes pass down through the air shaft.

A new tunnel was driven by this company about one mile south of No. 14 shaft, from the surface, cutting the Pittston seam at a distance of two hundred feet. The coal is of a good quality and is taken by a small locomotive to No. 14 breaker, to be prepared for market.

A new shaft was sunk by this company close to old No. 4 shaft, in Pittston borough, from the surface to the Powder Mill seam, a distance of four hundred and sixty-four feet. Size of shaft twelve by thirty-two feet. It will be used for hoisting coal.

Lehigh Valley Coal Company.—At Coal Brook slope an air shaft was sunk to the Red Ash seam, and a new fan twenty feet diameter

was erected thereon. The engine is seventy horse power, connected directly to the shaft of fan. It is used to ventilate the slope workings which were opened the year before.

The Maltby shaft of this company resumed operations in December, 1888, after being idle for four years.

Delaware and Hudson Canal Company.—This company has erected a new breaker at the Delaware shaft, located at Mill Creek. It was started to prepare and ship coal in August, 1888. It is one of the largest and best equipped, with the most improved machinery for the cleaning and preparing of coal that there is in the valley. The shaft workings are ventilated by the old twenty-foot fan that was formerly in operation at Pine Ridge shaft.

At the Laurel Run mines of this company an underground tunnel was driven from the bottom to the top split of the Baltimore seam a distance of eighty feet, likewise an air shaft to ventilate the same a depth of twenty-four feet, which will give good ventilation to this portion of the workings.

Butler Colliery Company.—The Mosier shaft of this company has been sunk from the Marcy to the Powder Mill seam, a distance of three hundred and eighty feet. The air shaft was sunk the year previous, so that the both shafts are now connected in the bottom seam, and the ventilation restored in the proper direction.

The Twin main and air shafts of this company have been sunk to the Powder Mill seam, a distance of two hundred and sixty-three feet. A new fan fourteen feet in diameter was erected on the air shaft, connected directly with a horizontal engine of forty horse power.

The Ravine shaft of this company was sunk to the Powder Mill seam, a distance of five hundred and seven feet, which opens up a large field of good coal for this colliery. A new fan twenty feet in diameter was erected on this shaft, connected directly by a horizontal engine of seventy-five horse power to ventilate this seam. A new air shaft was started from the surface and sunk to the Marcy seam connecting both shafts in this vein, the air shaft not having reached the Powder Mill seam yet, the second opening has not been completed in this vein. This company has likewise built a new breaker to prepare and ship the coal mined in the Twin and Ravine shafts. It is situated close to the Susquehanna river, in the borough of Pittston. It is the largest breaker in the district, and has a capacity of fifteen hundred tons of coal per day, having the latest improved machinery for the preparing of coal for market. All the machinery is covered or fenced off according to law. The coal is taken from the shafts, by two locomotives to the breaker, over a trestling one mile long.

Hillside Coal and Iron Company.—At the Consolidated slope a new fan was erected on a new air shaft, sunk for the purpose of ventilation. It is a closed fan twelve feet in diameter, connected with a horizontal engine by belt gearing. This slope was ventilated by a fur-

nace which gave such unsatisfactory results that it had to be dispensed with.

Black Diamond Colliery.—This company has sunk their air shaft from the Bennett to the Ross seam, a distance of two hundred and thirty feet. The coal is hoisted from the Ross seam through the air shaft to the Bennett vein and then taken to the foot of the main hoisting shaft to be hoisted to the breaker. They are widening the air shaft from the surface to the Bennett seam, to make the air shaft the main hoisting shaft, and having the shaft they are now hoisting the coal in for the air shaft, which will, in my opinion, be a decided improvement for the safety of the employés under ground, as the breaker is located over the main opening at present.

Florence Coal Company.—In the Elmwood shaft of this company a new underground slope was sunk a distance of seven hundred and twenty-five feet. The coal is hoisted to the bottom of shaft by a pair of double engines situated in the mines at head of slope.

Coal Breakers Destroyed by Fire.

The Dunn breaker with the surrounding buildings of Jermyn & Co., in Old Forge township, Lackawanna county, were totally destroyed by fire on the night of Tuesday, July 17, 1888. The culm bank had been on fire for some time, and being in close proximity to the breaker, the supposition is that it caught fire from the culm pile. A new breaker has been erected, two hundred feet from the shaft on the site of the old breaker which was erected over the shaft. A new fan of the Murphy pattern, fourteen feet in diameter, is to be erected in place of the one destroyed by the fire.

The Burning of the Consolidated Breaker.

On the night of Tuesday, December 11, 1888, the Consolidated breaker of the Hillside Coal and Iron Company, located in Pleasant Valley, was discovered to be on fire, and although strenuous efforts were made to prevent its destruction, in a short time it was completely destroyed. It is not known how the fire originated as there were no stoves or lights in the breaker at the time. A new breaker is now being built on the site of the old one.

TABLE 1—Showing Location of Collieries in the Second Anthracite Mine District.

Name of Colliery.	Name of Operator.	Location—County.	Name of Superintendent.	Post-office Address.
Barnum shaft No. 1,	Pennsylvania Coal Company,	Marcy twp., Luz. Co.,	A. Bryden; assistant, Alexander Bryden,	Pittston, Luzerne Co.
Barnum shaft No. 2,	do. do.	do. do.	do. do. do.	do. do.
Laws shaft,	do. do.	Pittston twp., Luz. Co.,	William Law; assistant, John Law,	do. do.
Shaft No. 13,	do. do.	Old Forge twp., Lack. Co.,	do. do. do.	do. do.
Old Forge shaft,	do. do.	do do.	do. do. do.	do. do.
Shaft No. 9,	do. do.	Hughestown bor., Luz. Co,	A. Bryden; assistant, Alexander Bryden,	do. do.
Shaft No. 10,	do. do.	do. do.	do. do. do.	do. do.
Shaft No. 10, Jr.,	do. do.	do. do.	do. do. do.	do. do.
Abbott's slope,	do. do.	do. do.	do. do. do.	do. do.
Shaft No. 1,	do. do.	do. do.	do. do. do.	do. do.
Shaft No. 8,	do. do.	do. do.	do. do. do.	do. do.
Slope No. 4,	do. do.	Jenkins twp., Luz. Co.,	do. do. do.	do. do.
Shaft No. 7,	do. do.	do. do.	William Law; assistant, John Law,	do. do.
Shaft No. 5,	do. do.	do. do.	do. do. do.	do. do.
Shaft No. 6,	do. do.	do. do.	do. do. do.	do. do.
Shaft No. 11,	do. do.	do. do.	do. do. do.	do. do.
Shaft and slope No. 14,	do. do.	do. do.	do. do. do.	do. do.
Mill Creek slope,	Delaware and Hudson Canal Co.,	Plains twp., Luz. Co.,	A. H. Vandling; assistant, C. H. Scharar,	Scranton, Lacka. Co.
Delaware shaft,	do. do.	do. do.	do. do. do.	do. do.
Pine Ridge shaft,	do. do.	Miners' Mills bor., Luz. Co.,	do. do. do.	do. do.
Laurel Run slope,	do. do.	Parsons boro., Luz. Co.,	do. do. do.	do. do.
Prospect shaft,	Lehigh Valley Coal Company,	Plains twp., Luz. Co.,	W. A. Lathrope; Wm. Samuels, general inside foreman.	Wilkes-Barre, Luz. Co.
Oakwood shaft,	do. do.	do. do.		
Wyoming shaft,	do. do.	do. do.	W. A. Lathrope; assistant, Wm. Lyons,	do. do.
Henry shaft,	do. do.	do. do.	do. do. do.	do. do.
Midvale shaft,	do. do.	do. do.	do. do W. Samuels,	do. do.
Mineral Spring slope,	do. do.	Parsons boro., Luz. Co.,	W. A. Lathrope,	do. do.
Coal Brook slope,	do. do.	Plains twp., Luz. Co.,	do.	do. do.
Maltby shaft,	do. do.	Kingston twp, Luz. Co.,	W. A. Lathrope; assistant, Wm. Lyons,	do. do.
Exeter shaft,	do. do.	Exeter boro., Luz. Co.,	W. A. Lathrope; assistant, A. G. Mason,	do. do.
Heidelburg shaft,	do. do.	Pittstown twp., Luz Co.,	do. do. do.	do. do.
Ontario slope,	do. do.	do. do.	do. do. do.	do. do.
Pettebone shaft,	Del., Lacka. and W. Railroad Co.,	Kingston twp., Luz Co.,	W. R. Storrs; B. Hughes, gen. foreman,	
Hunt shaft,	do. do.	do. do.	do. do. do.	
Hallstead shaft,	do. do.	Marcy twp., Luz. Co.,	do. do. do.	
Butler shaft,	S. B. Bennett,	Pittston twp., Luz. Co.,	S. B. Bennett,	Pittston, Luz. Co.
Mosier shaft and slope,	Butler Colliery Company,	Hughestown boro., Luz. Co,	F. C. Deninney,	do. do.
Twin shaft,	do. do.	Pittston boro., Luz. Co.,	do.	do. do.
Ravine shaft,	do. do.	do. do.	do.	do. do.
Seneca shaft,	do. do.	do. do.	do.	do. do.
Forty Fort shaft,	Wyoming Valley Coal Company,	Kingston twp., Luz. Co.,	Richard Martin,	Wilkes-Barre, Luz. Co.
Harry E. shaft,	do. do.	do. do.	do.	do. do.

TABLE No. 1—*Continued.*

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of Superintendent.	Post-office Address.
Boston slope,	Nelson Cowan,	Jenkins twp., Luz Co.,	Nelson Cowan,	Pittston, Luzerne Co.
Schooley shaft,	do. do.	Exeter boro., Luz. Co.,	do.	do. do.
Bernice drift,	State Line and Sullivan R. R. Co.,	Bernice, Sullivan Co.,	I O. Blight,	Towanda, Bradford Co.
Bennett shaft,	Waddell & Walters,	Plains twp., Luz Co.,	James Waddell,	Kingston, Luzerne Co.
Mill Hollow shaft,	Thomas Waddell,	Luzerne boro., Luz. Co.,	do.	do. do.
Black Diamond shaft,	John C. Haddock,	Kingstown twp, Luz Co.,	James B Davis,	Plymouth, Luzerne Co.
Cedar Spring shaft,	Clear Spring Coal Company,	West Pittston boro, Luz Co.,	J. L. Cake,	Pittston, Luzerne Co.
Consolidated shaft and slope,	Hillside Coal and Iron Company,	Pleasant Valley bor., Luz. Co.	W. A. May,	Scranton, Lacka. Co.
Dunn shaft,	Penna. Anthracite Coal Company,	Old Forge twp., Lack Co.,	John Jermyn,	do. do.
Sibley shaft,	Elliott, McClure & Co.,	do. do	James C. McClure,	do. do.
Greenwood shaft,	Penna. Anthracite Coal Company,	Lackawanna twp., Lack. Co.,	W. G. Thomas,	do. do.
Elmwood shaft,	Florence Coal Company,	Pittston twp., Luz. Co,	Austin Moore,	Avoca, Luzerne Co.
Enterprise shaft and slope,	A. Langdon,	Plains twp., Luz. Co.,	William McCullough,	Plains, Luzerne Co.
East Boston shaft,	W. G. Payne & Co.,	Kingston twp., Luz. Co.,	E. F. Payne,	Kingston, Luzerne Co.
Fairmount shaft,	H. W. Harris & Co.,	Pittston twp., Luz Co.,	H. W. Harris,	Pittston, Luzerne Co.
Hillman slope,	H Baker Hillman,	Plains twp., Luz. Co.,	H. B. Hillman,	Wilkes-Barre, Luz. Co.
Keystone slope,	Keystone Coal Company,	do. do.	James H Hughes,	do do.
Columbia shaft,	Old Forge Coal Company, Limited,	Marcy twp., Luz. Co.,	John A. Means,	Scranton, Lacka. Co.

TABLE No. 22.—Giving the total number of tons of coal mined in each colliery, number of days worked, number of employés, number of persons killed and injured, number of kegs of powder used, etc., in the Second Anthracite Mining District, for the year ending December 31, 1888.

NAMES OF COLLIERIES.	Location.	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs of powder used	Number steam boilers.	Number horses and mules.	Number mine locomotives.
Pennsylvania Coal Company.											
Barnum, 2 shafts,	Marcy township, Luzerne county,	190,701.00	190,701 00	213	466		2	7,063	19	60	
Central breaker—Laws shaft,	Pittston township, Luzerne county,	90.179 00	90.179 00	212 25	224		4	2 230	19	28	1
Shaft No. 13,	Old Forge township, Lacka. Co.,	85 738 00	85 738 00	212 25	236	2		2 487	13	29	..
Old Forge, 2 shafts,	do. do.	148.554. 0	148 554 00	210	366	1	1	5 331	13	33	1
No. 10 breaker—Shaft No. 9,	Hughestown boro., Luz Co.,	49 801 00	49.801.00	140	140			1.663	7	19	..
Shafts No. 10, 10 Jr. & Abbott's slope,	do. do.	110,451.00	110.451 00	204 75	357	1	2	4.487	14	43	..
Ewen breaker—Shaft No. 1,	do. do.	65,(59 00	65.059 00	225 25	151		..	2.134	11	17	
Shaft No. 8,	do. do.	56,382.00	56 382 00	224 25	157	1		1.902	6	15	..
Slope No 4,	Jenkins township, Luzerne county,	66,576 00	66 576 00	224.50	175	..	2	1,653	7	33	
Shaft No. 7,	do. do.	84 414 00	84 414 00	227	194	..		1.873	13	26	..
No. 6 breaker—Shaft No. 5,	do. do.	62,324 00	62 324 00	219 50	166			1 843	10	24	
Shaft No. 6,	do. do.	65.850 00	65 880.00	219 50	162		2	2,123	7	28	..
Shaft No. 11,	do. do.	28 942 00	28,942.00	221 50	96			811	7	11	
Shaft and slope No. 14,	do. do.	146,946.00	146,946.00	219 50	355	2	3	5,287	22	40	1
Total, Pennsylvania Coal Company,		1,251,947.00	1 251,947 00	2 973.25	3.245	7	16	40,887	168	411	3
Delaware and Hudson Canal Company.											
Mill Creek slope,	Plains township, Luzerne county,	128 699.10	128 699 10	238 25	214	1	3	1.983	21	23	
Delaware shaft,	do. do.	59.608 17	58,108.17	111 75	254	..	2	1.823	12	18	..
Pine Ridge shaft,	Miner's Mill boro., Luz. Co.,	195,130 02	192.192 18	253.50	451	1	5	5.598	21	52	
Laurel Run slope,	Parsons borough, Luzerne county,	155,584 16	155,584 16	253	385			4,642	12	53	
Total, Delaware and Hudson Canal Company,		540,023.05	534 586 01	849 50	1,285	2	10	14 046	68	144	..

TABLE No. 2.—*Continued.*

NAME OF COLLIERIES.	Location.	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.
Lehigh Valley Coal Company.											
Prospect, 2 shafts and slope,	Plains township, Luzerne county,	289 639 04	289.504 04	223 80	672	..	7	7,434	46	83	3
Wyoming slope and shaft,	do. do.	140.349.12	132 349.12	191 80	352		14	4 940	18	49	..
Henry shaft,	do. do.	185 485 03	174, 383 13	213 10	371	1	9	5,933	18	69	
Maltby shaft,	Kingston township, Luzerne county,	1.925.11	1.743 04	12 80	179			138	18	14	
Mineral Spring, 2 slopes,	Parsons borough, Luzerne county,	66 329 17	61 613 07	192 40	220	2	.	2.300	12	25	1
Exeter shaft,	Exeter borough, Luzerne county,	128.228 10	126 273 19	215 50	334	3	2	4 295	18	32	
Heidelburg shaft and slope,	Pittston township, Luzerne county,	71,500 00	71.5 0 00	191 45	340	1	.	2,535	17	27	1
Total, Lehigh Valley Coal Company,		883,435 17	857,872 19	1,240 35	2,478	7	32	27.595	147	299	5
Del., Lacka. & Western Railroad Company.											
Hunt shaft,	Kingston township, Luzerne county,	59,551 08	42 990 08	194 60	194	.	1	2 763	12	36	..
Hallstead shaft,	Marcy township, Luzerne county,	207 535 08	194,024 08	212 80	560		3	7,179	15	63	..
Pettebone shaft,	Kingston township, Luzerne county,	Still sinking.	. .	. .	54	1	1		12	12	..
Total, Del., Lacka. & Western Railroad Co.,		267 386 16	237,014.16	407.40	808	1	5	9.942	39	111	
Miscellaneous Coal Companies.											
Butler shaft,	Pittston township, Luzerne county,	55 001 00	51 893 00	257	208	1	2	3 358	7	15	..
Mosier shaft and slope,	Hugnestown boro., Luzerne Co.,	94 541 11	92 100 16	249 20	212	1	3	2 676	12	22	..
Twin shaft	Pittston borough, Luzerne county,	16 838 16	15 448 13	67 40	190	1	3	733	10	22	..
Forty Fort shaft,	Kingston township, Luzerne county,	107.712 00	94 031 00	219 70	219	2	5	5 155	18	31	
Harry E shaft,	do. do.	138 733 00	127 102 00	200.20	381	3	1	5 906	16	35	..
Boston slope,	Jenkins township, Luzerne county,	56 615 00	53 562 00	222	205	1	1	2 167	7	27	
Schooley shaft,	Exeter borough Luzerne county,	116 330.05	103 314 00	197	318	2	6	5 313	21	33	
Bernice drifts,	Bernice, Sullivan county,	84 030 16	81.294 09	220 50	273	1		1 288	2	32	
Bennett shaft,	Plains township, Luzerne county,	114 303 10	107 536 10	267	219	1	1	4 161	0	22	
Mill Hollow shaft,	Luzerne borough, Luzerne county,	66 158.03	60 840 01	201	204	.	2	3 283	14	23	
Black Diamond shaft,	Kingston township, Luzerne county,	135 169 00	120.319 00	180 55	287		3	4 900	21	33	
Clear Spring shaft,	West Pittston boro., Luzerne Co.,	180 625 07	165 804.18	224 50	367	4	1	5.985	18	50	..
Consolidated shaft and slope,	Pleasant Valley boro., Luzerne Co.,	142,484 07	140 332 07	209 50	480	..	..	4,922	14	50	1

Dunn shaft,	Old Forge twp., Lacka. Co.,	68 882 00	63 808 00	121.75	408	1	1	2.329	12	39	..
Sibley shaft,	do. do.	135 224 17	122 839 07	211.90	350	.	1	5.391	13	44	.
Greenwood shaft and slope,	Lackawanna twp., Lacka. Co.,	104 373 03	96.731 03	183.60	444	..	2	4.570	16	55	2
Elmwood shaft,	Pittston township, Luzerne county,	164 424 00	156 021 00	250 50	336		3	5 342	11	41	..
Enterprise shaft and slope,	Plains township, Luzerne county,	127 917 10	130.520 10	239	404	1	8	4 776	16	52	..
East Boston shaft,	Kingston township, Luzerne county,	175 861 12	173 879 12	217 70	416	2	10	5 207	21	30	..
Fairmount shaft,	Pittston township, Luzerne county,	33 208 00	28.000 00	151.10	186	2	1	1.845	6	12	.
Hillman slope,	Plains township, Luzerne county,	49 883 00	46 786 00	228	119	1	1	1.810	8	17	
Keystone slope and tunnel,	do. do.	119 018 05	118 469 15	250	336	3	4	5 231	8	22	
Columbia shaft and tunnel,	Marcy township, Luzerne county,	187.386 09	184 425 08	214	300		2	3 842	8	32	
Seneca shaft,	Pittston borough, Luzerne county,	62, 897 14	59 333.10	145	259	2	4	3,000	18	15	2
Total, miscellaneous coal companies,		2, 492, 746 13	2 349, 436 19	4, 937 70	7, 251	29	68	92, 675	305	754	5

Recapitulation.

Pennsylvania Coal Company,	1.251 947 00	1,251, 947 00	2 973 25	3,245	7	16	40, 887	168	411	3
Delaware and Hudson Canal Company,	540 023 05	534 586 01	848 50	1 235	2	10	14 046	63	144	
Lehigh Valley Coal Company,	883 435 17	857. 872 19	1 240 85	2 478	7	32	27. 595	147	299	5
Delaware, Lackawanna and Western Railroad Company,	287 396 16	237 014 16	467 40	808	1	5	9 942	39	111	..
Miscellaneous coal companies,	2, 492 746 13	2 349, 436 19	4, 937 70	7, 251	29	68	92, 675	305	754	5
Total, all companies,	5, 435, 539 11	5, 230, 857. 15	10, 407. 70	15, 067	46	131	185, 145	727	1, 719	13

125, 697 tons of marketable coal in the above were used to generate steam at the mines.

TABLE No. 3.—Showing the number of each class of employés at each Colliery in the Second Anthracite Mine District, during the year 1888.

NAME OF COLLIERY.	Location.	NUMBER OF PERSONS EMPLOYED.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand totals—Inside and outside.
		Inside foreman or mine boss.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door-boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All company men.	Superintend't, bookkeepers and clerks.	Total outside.	
Pennsylvania Coal Company.																
Barnum, 2 shafts,	Marcy township, Luz. Co.,	2	121	122	29	53	25	351	1	4	11	59	37	3	115	466
1 aws shaft,	Pit ston township, Luz. Co.,	1	57	57	11	21	10	157	1	3	12	28	21	2	67	224
Shaft No. 13 Central breaker,	Old Forge twp., Lacka. Co.,	2	61	61	14	24	10	172	. .	2	8	32	21	1	64	236
Old Forge shaft,	do. do.	1	95	97	18	29	16	256	1	3	11	58	35	2	110	366
Shaft No. 9,	Hughestown boro, Luz. Co.,	1	50	44	10	18	3	126	. .	1	4	2	6	1	14	140
Shafts No. 10, 10 Jr. and Abbott's slope,	do. do.	2	82	82	25	36	8	235	2	3	10	70	34	3	122	357
Shaft No. 1,	do. do.		44	44	8	11	2	109	1	1	4	21	13	2	42	151
Shaft No. 8,	Jenkins township., Luz. Co.,	1	42	42	8	14	3	110	1	1	4	24	16	1	47	157
Slope No. 4, Ewen breaker,		1	46	36	12	23	5	122	1	2	4	26	20		53	175
Shaft No. 7,		1	49	48	19	21	6	144	1	1	7	22	18	1	50	194
Shaft No. 5,	do. do.	1	42	42	10	20	3	118	. .	2	3	28	14	1	48	166
Shaft No. 6, Breaker No. 6,	do. do.	1	42	42	12	16	2	115	. .	1	6	25	13	2	47	162
Shaft No. 11,			19	20	7	6	2	54	1	1	3	25	11	1	42	96
Shaft No. 14 and Slope No. 14,	do. do..	2	90	90	24	31	7	244	1	3	10	57	33	2	111	355
Total Penna. Coal Company,		16	840	827	207	321	102	2 313	11	28	97	477	297	23	932	3,245
Delaware & Hudson Canal Company.																
Will Creek slope,	Plains township, Luz. Co.,	1	29	41	24	13	4	112	1	3	9	54	34	1	102	214
Delaware shaft,	do. do.	1	46	60	13	23	4	147	1	5	10	54	35	2	107	254
Pine Ridge shaft,	miners' Mills boro., Luz. Co.,	1	90	90	40	56	14	291	1	6	11	110	31	1	160	451
Laurel Run slope,	Parsons borough, Luz. Co.,	1	68	66	28	44	11	216	1	5	6	99	38	1	150	366
Total Dela. & Hudson Coal Co.,		4	233	257	103	136	33	766	4	19	36	317	138	5	519	1,285
Lehigh Valley Coal Company.																
Prospect, 2 shafts and slope,	Plains township, Luz. Co.,	3	154	160	64	85	27	493	2	9	21	81	63	3	179	672
Wyoming shaft and slope,	do. do.	1	71	71	33	33	15	224	1	6	14	67	38	2	128	352
Henry shaft,	do. do.	1	70	70	31	90	26	288	1	3	12	39	20	3	83	371
Maltby shaft,	Kingston township, Luz Co.,	1	55	10	18	14	2	100	1	5	12	40	20	1	79	179
Mineral Spring, 2 slopes,	Parsons boro., Luz Co.,	1	45	30	19	29	5	129	1	5	10	58	26	1	101	231
Exeter shaft,	Exeter boro., Luz. Co.,	1	71	71	32	27	8	210	1	5	10	79	27	2	124	334

Heidelburg shaft and slope,	Pittston twp., Luz. Co,	1	67	67	31	34	6	206	1	8	13	98	12	2	134	340
Total Lehigh Valley Coal Co.,		9	533	479	228	312	89	1,650	8	46	92	462	206	14	828	2,478
Dela., Lack. & Western R. R. Co.																
Pettebone shaft,	Kingston township, Luz. Co.,	..	18	...	.	..	..	18	1	5	8	..	22	.	36	54
Hunt shaft,	do. do.	1	42	40	11	16	4	114	1	4	6	35	34	.	80	194
Hallstead shaft,	Marcy township, Luz. Co.,	2	130	125	60	37	21	375	1	6	13	91	73	1	185	560
Total Dela., Lacka. & W. R. R. Co.		3	190	165	71	53	25	507	3	15	27	126	129	1	301	808
Miscellaneous Coal Companies.																
Butler shaft,	Pittston twp., Luz. Co.,	1	40	40	11	18	5	115	1	3	4	50	29	1	88	203
Mosier shaft,	Hughestown boro., Luz. Co.,	1	50	50	4	32	2	139	1	4	6	50	10	2	73	212
Twin shaft,	Pittston boro., Luz Co.,	2	50	45	7	24	4	132	1	4	4	40	8	1	58	190
Forty Fort shaft,	Kingston township, Luz. Co.,	2	95	42	27	29	10	205	1	5	4	46	31	2	89	294
Harry E. shaft,	do. do.	1	121	40	16	41	11	230	1	6	6	64	51	3	131	361
Boston slope,	Jenkins township, Luz Co.,	1	55	40	16	16	1	129	1	4	4	42	24	1	76	205
Schooly shaft,	Exeter borough, Luz. Co.,	2	93	93	28	19	7	237	1	5	9	71	23	2	111	348
Bernice drift,	Bernice, Sullivan county,	1	145	. . .	5	24	5	180	2	4	3	49	34	1	93	273
Bennett shaft,	Plains township, Luz. Co.,	1	57	52	9	16	6	141	1	4	5	41	24	3	78	219
Mill Hollow shaft,	Luzerne borough Luz. Co.,	2	75	40	25	24	3	169	1	4	8	40	30	2	85	254
Black Diamond shaft,	Kingston township, Luz Co.,	1	60	53	30	28	12	184	1	5	12	65	18	2	103	287
Clear Spring shaft,	West Pittston boro., Luz. Co.,	1	85	85	29	45	28	273	1	4	6	50	30	3	94	367
Consolidated shaft and slope,	Pleasant Valley boro., Luz. Co.,	3	112	100	28	37	12	292	2	12	11	99	63	1	188	480
Dunn shaft,	Old Forge twp., Luz Co.,	1	95	95	22	43	8	269	1	4	7	56	68	3	139	408
Sibley shaft,	do. do.	1	88	67	20	40	9	225	1	4	6	84	28	2	125	350
Greenwood shaft and slope,	Lackawanna twp., Lacka. Co.,	1	103	122	30	37	12	305	1	10	4	45	76	3	139	444
Elmwood shaft	Pittston twp., Luzerne Co.,	2	70	70	17	42	5	206	1	3	4	85	33	4	130	336
Enterprise shaft and slope,	Plains township, Luz. Co.,	1	73	119	23	51	21	293	1	5	7	44	51	3	111	404
East Boston shaft,	Kingston township, Luz. Co.,	3	95	85	40	47	12	282	1	5	8	85	32	3	134	416
Fairmount shaft,	Pittston township, Luz. Co.,	1	40	45	20	23	4	133	1	2	3	32	14	1	53	186
Hillman slope,	Plains township, Luz. Co.,	1	25	30	6	10	4	76	1	2	6	14	20		43	119
Keystone slope and tunnel,	do. do.	1	90	86	20	24	5	226	1	5	6	52	43	3	110	336
Columbia shaft and slope,	Marcy township, Luz. Co.,	1	64	64	17	26	2	174	1	5	9	70	39	2	126	300
Ravine or Seneca shaft,	Pittston twp., Luz. Co.,	2	50	50	16	12	4	134	1	9	12	70	30	3	125	259
Total miscellaneous coal cos.,		34	1,831	1,513	466	713	192	4,749	26	118	154	1,344	809	51	2,502	7 251

Recapitulation.

Pennsylvania Coal Company,	16	840	827	507	321	102	2 313	11	28	97	477	297	22	932	3 245
Delaware and Hudson Canal Company,	4	233	257	108	136	33	766	4	19	36	317	138	5	519	1,285
Lehigh Valley Coal Company,	9	533	479	228	312	89	1,650	8	46	92	462	206	14	828	2,478
Delaware, Lackawanna and Western Railroad Company,	3	190	165	71	53	25	507	3	15	27	126	129	1	301	808
Miscellaneous coal companies,	34	1,831	1,513	466	713	192	4,749	26	118	154	1,344	809	51	2 502	7 251
Total all companies,	66	3,627	3,241	1,075	1,535	441	9,985	52	226	406	2,726	1,579	93	5,062	15,067

In addition to the above list of men, the Pennsylvania Coal Company has 102 men employed in sinking shafts, which would make the total number of persons employed in this district, 15,169.

TABLE No. 4.—List of fatal accidents occuring in and about the mines of the Second Anthracite Mine District for the year ended December 31, 1888.

No. of accident.	Date of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	No. of orphans.	Name of Colliery.	Location—County.
1	January 17,	Edward Keife,	Miner,	35	..	..	Fairmount,	Pittston township, Luzerne county.
2	do. 19,	Martin Boleck,	Laborer,	31		..	East Boston,	Kingston township, Luzerne county.
3	do. 24,	James Graham,	Miner,	27	1	..	Bernice,	Bernice, Sullivan county.
4	do. 30,	Joseph Jonbrockie,	do.	33	..	..	Exeter,	Exeter borough, Luzerne county.
5	February 2,	John McDonnell,	Driver,	18	..	..	Shaft No. 10,	Hughestown borough, Luzerne county.
6	do. 7,	John Rush,	Miner,	50	..	1	Clear Spring,	West Pittston borough, Luzerne county.
7	do. 9,	Charles Tregaski,	Driver,	17		..	Pine Ridge,	Miners Mills, Luzerne county.
8	do. 9,	Thomas Mullen,	Laborer,	22	..	..	Enterprise,	Plains township, Luzerne county.
9	do. 11,	Owen Thomas,	Fire boss,	31	1	4	Mineral Spring,	Parsons borough, Luzerne county.
10	do. 13,	Wm. Thompson,	Engineer,	17	..	..	Keystone,	Plains township, Luzerne county.
11	do. 15,	Patrick Murry,	Laborer,	26	..	..	Shaft No 14,	Jenkins township, Luzerne county.
12	do. 21,	Frank Gillespie,	Miner,	60	1	..	Forty Fort,	Kingston township, Luzerne county.
13	do. 24,	Walter McDonnell,	Slate picker,	14		..	Ewen breaker,	Jenkins township, Luzerne county.
14	March 2,	Michael Gallegher,	Miner,	50	1	..	Bennett,	Plains township, Luzerne county.
15	do. 3,	Thomas Moran,	do.	30	..	..	Shaft No. 13,	Old Forge township, Lackawanna county.
16	do. 7,	Wm. Fehlinger,	do.	29	1	3	Hillman,	Plains township, Luzerne county.
17	do. 8,	George Quinn,	do.	32	1	..	Dunn,	Old Forge township, Lackawanna county.
18	do. 10,	Thomas McAnulty,	Door boy,	15		..	Clear Spring,	West Pittston borough, Luzerne county.
19	do. 27,	Lewis Weicarger,	Miner,	50	1	..	Butler,	Pittston township, Luzerne county.
20	do. 29,	Thomas Javins,	do.	28	1	1	Keystone,	Plains township, Luzerne county.
21	April 28,	Wm. Easton,	Pump runner,	30	1	3	Pettebone,	Kingston township, Luzerne county.
22	May 11,	Martin Corcoran,		40	1	3	Exeter,	Exeter borough, Luzerne county.
23	do 15,	Thomas Edwards,		62	1	3	Clear Spring,	West Pittston borough, Luzerne county.
24	June 15,	Anthony Martin,	Driver,	15	..	..	Heidelburg,	Pittston township, Luzerne county.
25	do. 28,	Ignace Robinski,	Laborer,	26	..	..	Exeter,	Exeter borough Luzerne county.
26	July 9,	Frank Harkins,	Door boy,	15	..	..	Shaft No. 14,	Jenkins township Luzerne county.
27	do. 11,	John Muirshouks,	Laborer,	22	..	..	Forty Fort,	Kingston township, Luzerne county.
28	do. 17,	Anthony Rossa,	Miner,	30	..	..	Pechooly,	Exeter borough, Luzerne county.
29	do. 17,	Joseph Stakat,	Slate picker,	59	1	..	Boston breaker,	Jenkins township, Luzerne county.
30	August 9,	Patrick McDonnell,	Miner,	35		..	Henry,	Plains township, Luzerne county.
31	do. 22,	Michael Cox,	Loader,	56	1	2	Fairmount breaker,	Pittston township, Luzerne county.
32	do. 27,	John Soswhy,	Laborer,	36	1	4	East Boston,	Kingston township, Luzerne county.
33	do. 27,	Patrick Brown,	do.	26		..	Old Forge shaft,	Old Forge township, Lackawanna county.
34	September 14,	Thomas Meyrick,	Miner,	33	..	..	Keystone slope,	Plains township, Luzerne county.
35	do. 19,	Patrick McCue,	Slate picker,	15	..	..	Seneca breaker,	Pittston borough, Luzerne county.
36	do. 24,	James Barrett,	Miner,	40	1	2	Clear Spring,	West Pittston borough, Luzerne county.

37	October 4,	Griffith H. Pugh,	do.	45	1		Schooley,				Exeter borough, Luzerne county.
38	do. 8,	Pat Horan,	Laborer,	23			Shaft No. 12,				Old Forge township, Lackawanna county.
39	do. 17,	John Carr,	Miner,	35		1	Harry E.,				Kingston township, Luzerne county.
40	do. 18,	James Gaffeny,	Laborer,	22			Twin shaft,				Pittston borough, Luzerne county.
41	do. 25,	Robert Redpath,	Miner,	33	1	1	Mill Creek,				Plains township, Luzerne county
42	do. 26,	John Joseestick,	Laborer,	33	1		Mosier,				Hughestown borough, Luzerne county.
43	November 20,	Joseph Horney,	Outside laborer,	45	1	5	Harry E. breaker,				Kingston township, Luzerne county.
44	December 12,	Jenkin Frances,	Miner,	59	1	4	Mineral Spring,				Parsons borough, Luzerne county.
45	do. 13,	Simon Kordit,	do.	23			Seneca,				Pittston borough, Luzerne county.
46	do. 15,	John Beaup,	do.	35	1	1	Harry E.,				Kingston township, Luzerne county

6 MINES.

TABLE No. 4—*Continued.*

No. of accident.	NAME OF PERSON.	Nature and Cause of Accident.
1	Edward Keife,	Fatally burned by an explosion of gas Died January 23, 1888.
2	Martin Boleck,	Fatally injured by a fall of top rock. Died January 21, 1888.
3	James Graham,	Instantly killed by being struck by a piece of rock from a blast he was firing.
4	Joseph Jonbrockie,	Instantly killed by a fall of fire-clay roof, while working out loose coal under it.
5	John McConnell,	Instantly killed by falling off trestling of breaker
6	John Rush,	Instantly killed by being run over by cars on inside slope.
7	Charles Tregaski,	Fatally kicked by a mule that he was driving Died February 19, 1888.
8	Thomas Mullen,	Instantly killed by falling down shaft, caused by the connecting link on bucket breaking.
9	Owen Thomas,	Fatally burned by gas while making an examination in the morning. Died February 17, 1888.
10	Wm. Thompson,	Fatally scalded by steam by fall of rock on steam pipe breaking it. Died the next day.
11	Patrick Murry,	Instantly killed by a fall of top rock.
12	Frank Gillespie,	Was fatally injured by a premature blast. He died February 25 1888.
13	Walter McDonnell,	Instantly killed by falling off breaker trestling.
14	Michael Gallegher,	Fatally injured by a fall of top coal Died March 4, 1888.
15	Thomas Moran,	Instantly killed while in the act of knocking out a prop.
16	Wm. Fehlinger,	Instantly killed by a fall of rock from the roof.
17	George Quinn,	Instantly killed by premature blast.
18	Thomas McAnulty,	Instantly killed by a runaway car out of a chamber.
19	Lewis Weiscarger,	Fatally injured by a piece of top coal striking him on the head. He died April 2, 1888.
20	Thomas Javins,	Instantly killed by a fall of top rock
21	Wm. Easton,	Instantly killed by igniting the gas and falling to the bottom of shaft.
22	Martin Corcoran,	Instantly killed by a fall of top rock
23	Thomas Edwards,	Fatally injured by a fall of rock. Died May 20, 1888.
24	Anthony Martin,	Instantly killed by falling under loaded car.
25	Ignace Robinski,	Instantly killed by fall of roof rock in face of chamber.
26	Frank Harkins,	Fatally injured by being crushed between car and pillar. Died July 15, 1888.
27	John Muirshouks,	Fatally injured by a fall of top rock. Died the same day.
28	Anthony Rossa,	Fatally injured on head by a piece of coal while barring down same. Died July 18, 1888.
29	Joseph Stakat,	Instantly killed by an ash car while crossing the track at breaker.
30	Patrick McDonnell,	Fatally injured by a fall of rock; he died after being taken home.
31	Michael Cox.	Instantly killed by a freight car running over him at breaker.
32	John Sosnhy,	Instantly killed by a fall of rock while in the act of loading a car.
33	Patrick Brown,	Fatally injured on back by a fall of coal. Died October 12 1888.
34	Thomas Meyrick,	Instantly killed by a fall of rock in face of chamber.
35	Patrick McCue,	Smothered in culm chute in breaker.
36	James Barrett,	Fell dead in his working place. Caused by aneurism of the heart.
37	Griffith H Pugh,	Fatally injured by a premature blast. Died the same evening.
38	Pat Horan,	Fatally injured by fall of rock. Died October 14, 1888.

39	John Carr,	Instantly killed by a premature blast.
40	James Gaffney,	Fatally burned by an explosion of gas. Died October 21, 1886.
41	Robert Redpath,	Fatally injured by a fall of rock. Died after being taken to his home.
42	John Joseslick,	Instantly killed by a fa l of rock
43	John Horney,	Smother. d in a pea coal chute of breaker.
44	Jenkins Frances,	Fatally injured by being run over by car while going along the gangway. Died December 24, 1886.
45	Simon Kordit,	Fatally burned by an explosion of gas in his chamber. Died December 20, 1886.
46	John Benup,	Fatally injured i y a fall of middle rock. Died the same night.

TABLE No. 5.—List of non-fatal accidents occurring in and about the mines of the Second Anthracite Mine District for the year ending December 31, 1888.

Number of accident.	Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Number of children.	Name of colliery.	Location—County.
1	January 11.	Frank Williamson,	Miner,	50	No,		East Boston,	Kingston township, Luzerne county.
2	do. 14.	Joseph Grilz,	do.	36	Yes,	4	do.	do. do.
3	do. 14.	James Dobson,	Driver,	16	No,		Elmwood,	Pittston township, Luzerne county.
4	do. 17.	Dennis Boyle,	Miner,	38	Yes,	6	Fairmount,	do. do.
5	do. 17,	William Barrett,	Laborer,	45	Yes,	2	do.	do. do.
6	do. 17	James Joyce,	do.	22	No,		do.	do. do.
7	do. 21,	Alexander Muir,	Driver,	20	No,		Forty Fort,	Kingston township, Luzerne county.
8	do 28,	John Monohan,	Miner,	24	No,		Columbia tunnel,	Marcy township, Luzerne county.
9	do 30,	William Beesecker,	Runner,	20	No,		Hallstead breaker,	do. do.
10	do 31,	William Hislop,	Timber-man,	22	Yes,		Enterprise,	Plains township, Luzerne county.
11	do. 31,	Mike Gallagher,	Door-boy,	15	No,		do.	do. do.
12	do. 31,	Frank Benson,	Driver,	17	No,		do.	do. do.
13	February 4,	Adam Savage,	Miner,	38	Yes,		Twin,	Pittston borough, Luzerne county.
14	do. 8,	John Hennegar,	do.		No,		Barnum,	Marcy township, Luzerne county.
15	do. 8,	Michael Nallon,	do.		Yes,		do.	do. do.
16	do. 9,	John Quinn,	Footman,	18	No,		Shaft No. 14 breaker,	Jenkins township, Luzerne county.
17	do. 13,	Thomas Hayes,	Slate-picker,	13	No,		Mill Creek,	Plains township, Luzerne county.
18	do. 13,	Anthony Himes,	Miner,	25	No,		Shaft No. 16,	Hughestown borough, Luzerne county
19	do. 15.	Frank Jones,	Fire-boss,	32	Yes,	3	Wyoming,	Plains township, Luzerne county.
20	do. 15.	Jacob Monohan,	Track-layer,	35	Yes,	3	do.	do. do.
21	do. 15,	John Boyle,	do.	40	Yes,	7	do.	do. do.
22	do. 15,	Thomas Moore,	Driver-boss,	21	No,		do.	do. do.
23	do. 15,	Llewellyn Price,	Brattice-man,	25	No,		do.	do. do.
24	do. 16,	James Fitzpatrick,	Miner,	50	Yes,		Clear Spring,	West Pittston borough, Luzerne county.
25	do. 16,	Isaac Allen,	do.	50	Yes,	4	Pine Ridge,	Miners' Mills borough Luzerne county.
26	do. 17,	Luke Eagen,	Laborer,	23	No,		Wyoming,	Plains township, Luzerne county.
27	do. 18,	James Reap,	Culm-man,	42	Yes,	2	Law's shaft,	Pittston township, Luzerne county.
28	do. 20,	Alexander Porter,	Miner,	43	Yes,		Hunt shaft,	Kingston township, Luzerne county.
29	do. 20,	George Doherty,	do.	45	No,		Harry E,	do. do.
30	do. 24,	Owen Rowland,	do.	32	Yes,		Wyoming,	Plains township, Luzerne county.
31	do. 24,	John Yolitch,	Laborer,	30	Yes,		do.	do. do.
32	do. 25.	John McHale,	Foot-boy,	15	No,		Pine Ridge breaker,	Miners' Mills borough, Luzerne county.

33	March	2,	James Hagerty,	Miner,	55	Yes,	5	Columbia,	Marcy township, Luzerne county.
34	do.	2,	Michael Burk,	do.	40	Yes,	4	Prospect,	Plains township, Luzerne county.
35	do.	7,	John Fehlinger,	do.	22	No,		Hillman,	do. do.
36	do.	8,	John Brenn,	Laborer,		No,		Dunn,	Old Forge township, Lackawanna county.
37	do.	20,	John Snyder,	Slate-picker,	16	No,		Prospect breaker,	Plains township Luzerne county.
38	do.	21,	William Carless,	Driver,	22	No,		do.	do. do.
39	do.	26,	Martin Garety,	Laborer,	24	No,		Enterprise,	do. do.
40	do.	28,	Pat Cunningham,	Miner,	60	Yes,	2	Law's shaft,	Pittston township, Luzerne county.
41	April	4,	Joseph Little,	do.	21	No,		Midvale,	Plains township, Luzerne county.
42	do.	16,	Charles Lawkens,	Laborer,	35	No,		Black Diamond,	Kingston township, Luzerne county.
43	do.	18	David Thomas,	Miner,	25	No,		Henry,	Plains township, Luzerne county.
44	do.	18,	Thomas Roberts,	Laborer,	25	No,		do.	do. do.
45	do	19,	Hugh Carlin,	Miner,	46	Yes,	4	East Boston,	Kingston township, Luzerne county.
46	do.	20,	Adam Summers,	Laborer,	35	No,		do.	do. do.
47	do	2',	William Thomas,	Miner,	54	Yes,	3	Mill Creek,	Plains township, Luzerne county.
48	do	28,	Andria Druffock,	Laborer,	29	No,		Schooley,	Exeter borough, Luzerne county.
49	do.	23,	David James.	do.	25	Yes,	2	East Boston,	Kingston township, Luzerne county.
50	do.	28,	David Griffith,	Driver,	19	No,		Mill Hollow,	Luzerne borough, Luzerne county
51	do.	29,	John Murry	Laborer,	26	No,		Butler,	Pittston township, Luzerne county.
52	May	7,	Timothy Kinney,	Miner,	25	No.		Enterprise,	Plains township, Luzerne county.
53	do.	8,	Joseph Kosiva,	Slate-picker,	15	No.		Henry breaker,	do. do.
54	do.	12,	Charles Vanchuskie,	Miner,	23	Yes,	1	Keystone,	do. do.
55	do.	16,	Edward W. Thomas,	do.	40	Yes,	10	Black Diamond,	Kingston township, Luzerne county.
56	do.	31,	James Ables,	do.	35	No,		Prospect,	Plains township, Luzerne county.
57	June	4,	John Ryan,	do.	48	Yes,	5	Henry,	do. do
58	do.	9,	John Williams,	Laborer,	23	No,		Pine Ridge,	Miners' Mills borough, Luzerne county.
59	do.	12,	Robert Johnson,	Miner,	38	Yes,	3	Hallstead,	Marcy township, Luzerne county.
60	do.	16,	Thomas W. Reese,	do	40	Yes,		Wyoming,	Plains township, Luzerne county.
61	do.	16,	William Kelly,	Driver,	16	No,		Slope No. 4,	Jenkins township, Luzerne county.
62	July	2,	Thomas Smiles,	Mine-boss,	60	Yes,		Seneca shaft,	Pittston borough, Luzerne county.
63	do	2,	James Tigue.	Track-layer,	44	Yes,		do.	do. do.
64	do.	2,	John McQuillan,	Miner,	47	Yes,	2	Schooley,	Exeter borough, Luzerne county.
65	do.	2,	Thomas Todd.	Laborer.	23	Yes,		do.	do. do.
66	do.	7,	John Abramson,	Door-boy,	15	No,		Pine Ridge,	Miners' Mills borough, Luzerne county.
67	do.	12,	Edward Roberts,	Sinker,	35	Yes,		Pettibone,	Kingston township, Luzerne county.
68	July	13,	Llewellyn Thomas,	Miner,	30	Yes,	3	Wyoming,	Plains township, Luzerne township.
69	do.	13,	David Jones,	Laborer,	26	No,		do.	do. do.
70	do.	14.	John Grimes,	Miner,	30	Yes,		Exeter,	Exeter borough, Luzerne county.
71	do.	15,	Robert Nesbit,	Dumpman,	38	Yes,	4	Enterprise,	Plains township, Luzerne county.
72	do.	16,	Henry Fedden,	Loader,	16	No,		Butler breaker,	Pittston township, Luzerne county.
73	do.	27,	John Haddock,	Laborer,		No,		Seneca,	Pittston borough, Luzerne county.
74	August	1,	Joseph Stobisky,	do.	25	No,		Elmwood,	Pittston township, Luzerne county.
75	do.	3,	William Carey,	Slate picker,	12	No,		Keystone breaker,	Plains township, Luzerne county.
76	do.	4,	Stephen Pikera,	Laborer,	28	Yes,	2	Mill Creek,	do. do.
77	do.	13,	John Coustine,	do.	32	Yes,	2	East Boston,	Kingston township, Luzerne county.
78	do.	14,	Charles Tilley,	Miner,	40	Yes,	3	Mosier,	Hughestown borough, Luzerne county.
79	do.	14,	Thomas Munby,	do.	22	No,		do.	do. do.
80	do.	14,	Martin McDonnell,	Laborer,	20	No,		do.	do. do.
81	do.	20,	W. J. Back,	Miner,	46	Yes,	3	East Boston,	Kingston township, Luzerne county.
82	do.	20,	Alex. Patterson,	Engineer,	60	Yes,		Enterprise breaker,	Plains township, Luzerne county.
83	do	20,	Edward Gibbins,	Miner,	46	Yes,	10	Law's shaft,	Pittston township, Luzerne county.
84	do.	22,	Anthony O. Mally,	Driver,	16	No,		Boston,	Jenkins township, Luzerne county.
85	do.	22,	Peter Peteroff,	Miner,	32	Yes,	1	Schooley,	Exeter borough, Luzerne county.

TABLE No. 5.—*Continued.*

Number of accident.	Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Number of children.	Name of colliery.	Location—County.
86	August 24,	Michael Lynott,	Laborer,	30	Yes,		Old Forge,	Old Forge township, Lackawanna county.
87	August 30,	Wm. Lancaster,	do.	17	No,		Forty Fort,	Kingston township, Luzerne county.
88	August 31.	Edwin Thompson,	do.	30	Yes,	3	do.	do. do.
89	September 4.	John Cambell,	Miner,	45	Yes,	3	Keystone,	Plains township, Luzerne county.
90	September 10,	Matthew Lyne,	Laborer,	21	No,		Forty Fort,	Kingston township, Luzerne county.
91	September 10,	John Evany,	Driver,	16	No,		Hallstead,	Marcy township, Luzerne township.
92	September 11,	Patrick Clune,	Miner,	37	Yes,	1	Bennett,	Plains township, Luzerne county.
93	September 12,	Patrick Keating,	do.	72	Yes,	6	Slope No. 4,	Jenkins township, Luzerne county.
94	September 14,	James McGowen,	Driver,	16	No,		Pine Ridge,	Miners Mills borough, Luzerne county.
95	September 14,	John Books,	Door boy,	14	No,		Henry,	Plains township, Luzerne county.
96	September 20,	Patrick Finn,	Driver,	19	No,		do.	do. do.
97	September 21,	John Bannan,	Miner,	30	Yes,	6	Wyoming,	do. do.
98	September 27,	Daniel Creeden,	Driver,		No.		Laws shaft,	Pittston township, Luzerne county.
99	October 4.	Thomas McGlynn,	Laborer,	20	No,		Shaft No. 6.	Jenkins township, Luzerne county.
100	October 4,	Albert Herbert,	Slate picker,	13	No,		Keystone breaker,	Plains township, Luzerne county.
101	October 6,	John Murry,	Footman,	39	No,		Fairmount,	Pittston township, Luzerne county.
102	October 13,	Carl Shaffer.	Miner.	24	No,		Forty Fort,	Kingston township, Luzerne county.
103	October 16,	Patrick Wallice,	Driver,	17	No		Greenwood,	Lackawanna township, Lackawanna county.
104	October 18,	John Gavin,	Laborer,	20	No,		Twin,	Pittston borough, Luzerne county.
105	October 18,	John Ford,	Pumpman	23	No,		do.	do. do.
106	October 22,	Michael Michaels,	Laborer,	28	Yes,	2	Wyoming,	Plains township, Luzerne county
107	October 22,	John Keating,	Slate picker,	14	No,		Shaft No. 14 breaker,	Jenkins township, Luzerne county.
108	October 23,	James Borusky,	Laborer,	19	No,		do. do.	do. do.
109	October 30,	Michael Soski,	Miner,	25	Yes,	1	Schooley,	Exeter borough Luzerne county
110	October 30,	James O'Donnell,	Laborer,	38			Mill Hollow,	Luzerne borough, Luzerne county.
111	October 31.	Michael Kelly,	do.	35	Yes,	6	Henry,	Plains township, Luzerne county.
112	November 5,	Frank Martin,	Slate picker,	14	No,		Prospect breaker,	Plains township, Luzerne county.
113	November 8,	Joseph Deitz,	Miner,	33	No,		East Boston,	Kingston township, Luzerne county.
114	November 9,	A. E. Russell,	Car loader,	22	No,		do.	do. do.
115	November 9,	David J. Thomas,	Driver,	16	No,		Prospect,	Plains township, Luzerne county.
116	November 10,	Peter Dougherty,	do	15	No.		Henry,	do. do.
117	November 13,	John Hays,	Miner,	49	Yes,	7	Delaware shaft,	do. do.
118	November 15,	David Jones,	Laborer,	30	No,		Enterprise,	do. do.
119	November 15,	Thomas Delaney,	Miner,	50	Yes,	1	Shaft No. 6,	Jenkins township, Luzerne county.
120	November 19,	Thomas Pointing,	do.	35	Yes,	3	Elmwood,	Pittston township, Luzerne county.
121	November 23,	James Brannen,	do.	28	No,		Ravine,	Pittston borough, Luzerne county.

122	November 28,	Robert Kelley,	Laborer,	21	No,	6	Greenwood,		Lackawanna township, Lackawanna county.
123	November 21,	Thomas Bath,	Miner,	24	Yes,		Delaware,		Plains township, Luzerne county.
124	November 22,	William Smaltz,	Driver,	15	No,		Shaft No. 10 outside,		Hughestown borough, Luzerne county.
125	December 12,	John Sweeney,	do.	20	No,		East Boston,		Kingston township, Luzerne county.
126	December 17,	William McCawley,	Runner,	20	No,		Exeter,		Exeter borough, Luzerne county.
127	December 19,	W. Hyager,	Laborer,	22	Yes,		Schooley,		do.
128	December 19,	John Moran,	do.	47	Yes,	7	Sibley,		Old Forge township, Lackawanna county.
129	December 21,	Thomas Powell,	Miner,	25	Yes,		Wyoming,		Plains township, Luzerne county.
130	December 22,	John Novlakey,	do.	23	Yes,	3	Henry,		do.
131	December 26,	Geo. Eichorne,	do.	36	Yes,	2	Black Diamond,		Kingston township, Luzerne county.

TABLE No. 5—*Continued.*

Number of accident.	Name of person.	Nature and cause of accident.
1	Frank Williamson,	Hand severely cut by a piece of coal he was barring down.
2	Joseph Grilz,	Face and hands burned by powder while filling a cartridge.
3	James Dobson,	Leg fractured by being run over by a mine car.
4	Dennis Boyle,	Face and hands burned by gas.
5	William Barrett,	Face and hands burned by gas; same explosion.
6	James Joyce,	Face and hands burned by gas; same explosion.
7	Alexander Muir,	Ribs fractured and scalp wound by being caught between car and pillar.
8	John Monohan,	Back and hips injured by fall of top coal.
9	William Beesecker,	Arm and hand severly bruised while coupling cars.
10	William Hislop,	Severely burned by gas.
11	Mike Galligher,	Severely burned by gas at same time as Hislop.
12	Frank Benson,	Severely burned by gas at same time as Hislop.
13	Adam Savage,	Slightly burned by gas.
14	John Hennegar,	Slightly burned by gas.
15	Michael Nallon,	Slightly burned by gas
16	John Quinn,	Seriously injured by getting under carriage at tower at breaker.
17	Thomas Hayes,	Leg fractured by being caught between cars. [on his leg.
18	Anthony Himes,	Leg fractured by holding on to car coming to head block, knocking hind end off of car and coming
19	Frank Jones,	Seriously burned by an explosion of gas.
20	Jacob Monohan,	Seriously burned by an explosion of gas at same time as Jones.
21	John Boyle,	Seriously burned by an explosion of gas at same time as Jones.
22	Thomas Moore,	Seriously burned by an explosion of gas at same time as Jones.
23	Llewellyn Price,	Seriously burned by an explosion of gas at same time as Jones.
24	James Fitzpatrick,	Leg fractured by falling on rock in cross cut.
25	Isaac Allen,	Seriously injured by coal flying from a premature blast.
26	Luke Eagen,	Bruised on head and back by fall of rock.
27	James Reap,	Spine injured by coal falling from pillar.
28	Alexander Porter,	Collar bone broken and leg cut by a runaway car on slope.
29	George Doherty,	Arm fractured and hip dislocated by fall of rock.
30	Owen Rowland,	Slightly burned by gas while barring down rider coal.
31	John Yolitch,	Slightly burned by gas at same time as Rowland.
32	John McHale,	Arm fractured in two places by culm car.
33	James Hagerty,	Leg fractured by slipping of bottom coal.
34	Michael Burk,	Face and hands slightly burned by gas.

35	John Fehlinger,	Seriously injured by a fall of rock.
36	John Brenn,	Leg fractured by premature blast.
37	John Snyder,	Arm fractured by falling on edge of slate chute.
38	William Carless,	Arm fractured by being caught between car and p llar.
39	Martin Garety,	Face slightly burned by powder.
40	Pat Cunningham,	Leg fractured by getting his foot fast in coal and falling.
41	Joseph Little,	Face and hands slightly burned by gas.
42	Charles Lawkens,	Leg injured by fall of slate.
43	David Thomas,	Injured by fall of top rock.
44	Thomas Roberts,	Injured by fall of top rock at same time.
45	Hugh Carlin,	Head and back seriously injured by fall of coal.
46	Adam Summers,	Ribs broken and head injured by fall of rock.
47	William Thomas,	Leg fractured by fall of rider coal.
48	Andria Druffock,	Face and hands burned by gas.
49	David James,	Head and foot badly cut by fall of slate.
50	David Griffith,	Arm fractured by falling from car while in motion.
51	John Murry,	Face and hands burned by powder.
52	Timothy Kinney,	Leg crushed while mining out loose coal from a shot by top coal.
53	Joseph Kosiva,	Leg fractured by getting into pea coal screen to ride.
54	Charles Vanchuskie,	Foot crushed by fall of top coal while standing timber.
55	Edward W. Thomas,	Bruised by coal while mining out shot.
56	James Ables,	Arm fractured by coal flying from a blast.
57	John Ryan,	Hand blown off and skull fractured while tamping a rock-hole by premature blast.
58	John Williams,	Foot seriously crushed by coal falling on it.
59	Robert Johnson,	Head and back bruised by fall of top rock.
60	Thomas W. Reese,	Head and leg seriously bruised by coal.
61	William Kelly,	Seriously injured by fall of rock; the car he was in got off the track, knocking out a prop.
62	Thomas Smiles,	Seriously burned by gas while exploring the old workings.
63	James Tigue,	Seriously burned by gas while exploring the old workings.
64	John McQuillan,	Slightly burned by gas igniting from a blast.
65	Thomas Todd,	Slightly burned by gas igniting from same blast.
66	John Abramson,	Arm fractured; caught between car and door.
67	Edward Roberts,	Collar bone fractured by laggen falling down shaft.
68	Llewellyn Thomas,	Seriously burned by gas.
69	David Jones,	Seriously burned by gas.
70	John Grimes,	Back seriously bruised by fall of soap stone he was taking down.
71	Robert Nesbit,	Seriously burned by gas while starting his pump.
72	Henry Fedden,	Arm fractured by falling from cars.
73	John Haddock,	Seriously burned by gas.
74	Joseph Stobisky,	Toes crushed by fall of coal, necessitating amputation
75	William Carey,	Seriously injured by falling in pinion wheels while playing in breaker.
76	Stephen Pikera,	Seriously injured by fall of rock.
77	John Coustine,	Foot badly cut by slate falling on it.
78	Charles Tilley,	These three men Tilley, Munby and McDonnell were burned by powder; caused by putting a squib
79	Thomas Munby,	into a blasting barrel to clean it out, and in doing so the squib flew into a half keg of powder, ex-
80	Martin McDonnell,	ploding it with the above results.
81	W. J. Back,	Head and neck badly cut by coal he was barring down.
82	Alex. Patterson,	Hand crushed in cog wheels while oiling; causing amputation at the wrist.
83	Edward Gibbons,	Leg fractured by fall of coal.
84	Anthony O. Mally,	Leg fractured by being canght between car and ties on road.
85	Peter Peteroff,	Seriously bruised and cut by flying coal from a premature blast.
86	Michael Lynott,	Leg fractured and back seriously bruised by fall of rock.
87	William Lancaster,	Leg fractured in three places by fall of rock.

TABLE No. 5.—*Continued.*

Number of accident.	NAME OF PERSON.	Nature and Cause of Accident.
88	Edwin Thompson,	Eye knocked out by a piece of coal flying from a blast.
89	John Campbell,	Foot crushed by fall of bone coal.
90	Mathew Llyne,	Leg fractured by top r ck.
91	John Evany,	Head seriously bruised by falling from a car.
92	Patrick Clune,	Hand badly burned by powder exploding while he was carrying it.
93	Patrick Keating,	Seriously bruised by top coal.
94	James McGowen,	Head seriously injured by mule kicking him.
95	John Brooks,	Head and breast injured by ca- striking the door knocking it on him.
96	Patrick Finn,	Seriously injured by falling o'f car.
97	John Bannan,	Seriously injured by a blast by going back to soon.
98	Daniel Creeden,	Seriously injured by a prop he was unloading from a car.
99	Thomas McGlynn,	Leg fractured by mine car.
100	Albert Herbert,	Arm fractured by being caught between cars.
101	John Murry,	Leg fractured ; caught between bumpers of cars.
102	Carl Shaffer,	Skull fractured by fall of roof rock.
103	Patrick Wallice,	Arm fractured in two places by cars.
104	John Gavin,	Slightly burned by an explosion of gas.
105	John Ford,	Seriously burned by this same explosion of gas.
106	Michael Michaels,	Leg fractured by fall of rock.
107	John Keating,	Leg fractured by cars.
108	James Borusky,	Leg fractured by culm car.
109	Michael Soski,	Seriously injured by premature blast.
110	James O'Donnell,	Seriously injured by lever or hoisting drum striking him.
111	Michael Kelly,	Back injured by fall of rock.
112	Frank Martin,	Arm fractured while wrestling with a boy in breaker.
113	Joseph Deitz,	Arm fractured by premature blast.
114	A. E. Russell,	Leg fractured by falling from top of car at breaker.
115	David J. Thomas,	Arm fractured ; caught between car and prop.
116	Peter Dougherty,	Badly squeezed between the car and mule.
117	John Hays,	Seriously injured by fall of rider coal
118	David Jones,	Leg fractured and foot bruised by fall of rock.
119	Thomas Delaney,	Leg fractured by rock rolling on it.
120	Thomas Pointing,	Face and hands seriously cut by going back to a blast he thought had missed.
121	James Brannen,	Face and hands burned by gas.
122	Robert Kelley,	Leg crushed between bumpers of cars ; rendering amputation necessary.

123	Thomas Bath,	Seriously injured by going back to a blast he thought had missed.
124	William Smaltz,	Jaw fractured in two places by getting his head between car and mule.
125	John Sweeney,	Hips squeezed between car and door post
126	William McCawley,	Knee dislocated by falling under a car he was running.
127	W. Hyager,	Head and foot bruised by coal falling on him.
128	John Moran,	Eye seriously injured by running against sharp end of mining drill.
129	Thomas Powell,	Hip bruised by coal flying from a blast.
130	John Novisky,	Both legs fractured by a fall of coal.
131	George Eichorne,	Burned by gas.

THIRD ANTHRACITE DISTRICT.

OFFICE OF THE INSPECTOR OF MINES,
WILKES-BARRE, PA., *March 25, 1889.*

Hon. THOMAS J. STEWART,
Secretary of Internal Affairs:

SIR: I have the honor of presenting my annual report as inspector of coal mines for the Third district of the anthracite coal field for the year 1888. It shows that the production of coal was greater than ever before in any one year, being 8,684,493 tons, and 1,143,738.93 tons more than the production of the year 1887.

The number of fatal accidents was 83, leaving 44 widows and 126 orphans, but a number of the latter are grown up and are able to care for themselves. The number of non-fatal accidents was 250, but a large number of these were not of a serious character. As compared with the number of accidents during 1887, there was an increase of 18 fatal, and a decrease of 45 non-fatal during 1888.

The report contains the usual tables and also a few remarks on questions of interest to those connected with coal mines.

Yours very respectfully,

G. M. WILLIAMS,
Inspector of Mines.

Total Tons of Coal Mined During the Year 1888.

	Tons.
Lehigh and Wilkes-Barre Coal Company,	2,259,900.75
Delaware and Hudson Canal Company,	1,305,585.80
Susquehanna Coal Company,	1,894,810.55
Kingston Coal Company,	1,005,147 80
Red Ash Coal Company,	364,674.65
Miscellaneous coal companies,	1,854,373.45
Totals of all coal companies,	8,684,493.00

Number of Fatal Accidents and Tons of Coal Produced per Life Lost.

NAMES OF THE OPERATORS.	Number of lives lost.	Tons of coal mined per life lost.
Lehigh and Wilkes-Barre Coal Company,	20	112,995
Delaware and Hudson Canal Company,	11	118,689
Susquehanna Coal Company,	21	90,229
Kingston Coal Company,	10	100,514
Red Ash Coal Company,	3	121,558
Miscellaneous coal companies,	18	103,020
Total of all coal companies,	83	104,632

Number of Non-Fatal Accidents and Tons of Coal Produced per Persons Injured.

NAMES OF THE OPERATORS.	Number of persons injured.	Tons of coal produced per person injured.
Lehigh and Wilkes-Barre Coal Company,	82	27,559
Delaware and Hudson Canal Company,	26	50,214
Susquehanna Coal Company,	63	30,076
Kingston Coal Company,	34	29,563
Red Ash Coal Company,	6	60,779
Miscellaneous coal companies,	39	47,548
Total of all coal companies,	250	34,737

Number of Serious and Fatal Injuries and Tons of Coal Produced per Each Person Injured or Killed.

NAMES OF THE OPERATORS.	Number injured or killed.	Tons of coal produced per person injured or killed.
Lehigh and Wilkes-Barre Coal Company,	102	22,156
Delaware and Hudson Canal Company,	37	35,286
Susquehanna Coal Company,	84	22,557
Kingston Coal Company,	44	22,844
Red Ash Coal Company,	9	40,519
Miscellaneous coal companies,	57	32,532
All coal companies,	333	26,079

Classification of Fatal and Non-Fatal Accidents.

CAUSES OF INJURIES.	Killed or fatally injured.	Seriously injured.
By explosion of carbureted hydrogen gas,	5	43
By falls of roof and coal,	34	88
By falling down shafts,	4	1
Crushed and run over by mine cars,	15	41
By explosions of powder and blasts,	9	27
Miscellaneous causes, inside,	9	21
Miscellaneous causes, outside,	7	29
Totals,	83	250

In addition to the above number of serious non-fatal accidents 89 were reported as very slightly injured. These being of a very slight character were not included in the list of serious injuries. Three additional fatal accidents were also reported, but they were not properly mining accidents and were not therefore included.

Condition of the Mines.

The quantity of coal produced during the year 1888 exceeded that of any previous year. The breakers were in operation an average of 233 19 days, and produced a total of 8,684,493 tons of coal. This was the greatest quantity hitherto produced in one year, and shows that by working full time over eleven million tons of coal could be produced from the mines of this district.

The improvement of the mines progresses with the needs arising from the extension of the workings. By reference to table A in this report it may be seen that the ventilation of the mines was increased in the same ratio as the employés, and that an average of 392 cubic feet per minute of pure air entered the mines to each person employed. This table contains the air measurements of the last week in December, 1888, and shows the condition of the ventilation at the end of the year. The perils of mining coal increase every year with the extension of the workings and with the depth as they approach the deepest points in the coal basins. In the deepest mines the roof is generally friable and of an exceedingly dangerous character. The gases inclosed under a greater tension cause large pieces of rock to burst down without sign or warning. The coal in the pillars also fractures more freely and increases the danger greatly in the thickest seams. Where the depth of overlying strata exceeds one thousand feet the fire-clay floors of the mines heaves, being too soft to sustain the pressure, and recedes into the open passages. In the future this we apprehend will be a source of trouble in deep mines. A large quantity of dangerous

gases are given out in nearly all the mines, requiring unremitting care on the part of the mine officials, and also on the part of the workingmen, to avoid accidents.

The provision for ventilation is good throughout the district, and as long as the ventilators can be operated without interruption we apprehend no danger of extensive disasters, unless there is something existing which we are not aware of. The abandoned workings are reported to be clear of fire-damp, and they are very generally ventilated so that a large body of gas cannot accumulate unknown to the officicals.

In mines working thin seams it is difficult to have large passages for haulage of cars or for ventilation, but by cutting considerable rock fairly sized passages are made. This is necessary in order to insure a fair degree of safety to drivers and runners, and to produce a good effective ventilation.

The inspector frequently finds miners violating the law. There are only a few rules requiring obedience from them. but notwithstanding this, it is exceedingly hard to insure compliance. Nearly all of them have boxes to keep powder in, but only by continually reminding them of the requirements of the law, can they be made to comply with it by locking their boxes. They are frequently caught preparing cartridges and handling powder while having their lamps hanging over it upon their hats. When caught they beg to be "excused," promising that "they will never do so again," etc. In a few of the mines these offences are rarely committed. The foremen having made it clear that any one caught would be punished by suspension from work. In other mines the foremen seem to lack the qualities necessary for enforcing good discipline.

The great depth of sand and gravel existing at points in the Wyoming basin is a source of much danger, and it is extremely difficult to preascertain the points where the danger exists. Chambers, or breasts, have struck into a pile of boulders and sand, at some points, over two hundred feet below the surface, and that where no such a formation was expected to exist. Owing to this, the upper seams have to be mined with exceeding care lest the wash may be tapped where sufficient water exists to make it flow into the workings. A large number of test holes were sunk to ascertain the depth of wash and thickness of rock overlying the seems at all suspicious points, but the surprising difference found between different points where no indication of such are shown on the surface, demonstrates that the test of a bore-hole is very unsatisfactory. Yet it is the best we have, and, though imperfect, it has to be relied on to a certain extent.

Examination of Applicants for Mine Foremen Certificates.

The annual examination of applicants for certificates of qualification for mine foremen was held in this district, at Wilkes-Barre, Pa.

June 25 and 26. The board of examiners were G. M. Williams, inspector of mines; Jacob Roberts, Jr., operator and Michael Finn, miner.

Thirty-two applicants appeared for examination, and the following were recommended for certificates: Stephen M. Roberts, Daniel J. James, David W. Thomas, Thomas B. Davies, John Williams, William E. Jones, John R. James, Owen C. Jones and John Richards of Wilkes-Barre; John Protheroe, of Ashley; James O. Davies and Matthew Griffiths, of Glen Lyon; Edwin S. Stackhouse and Willard Good, of Shickshinny; and Morgan V. Lewis, of Plymouth.

Accidents.

No less than eighty-three fatal and two hundred and fifty non-fatal accidents occurred in this district during the year 1888. Though we regret that the number is so great, the responsibility for nearly all that occurred, rests on those who suffered. To those familiar with the mines, and with the carelessness of the employés generally, it is astonishing that the number injured is so few, and that it is not much higher as compared to the number of persons employed, and with the quantity of coal produced. No large disasters occurred, and only in a few instances were there more than one person injured at one time. It is evident that a few of these could have been averted, if a more efficient discipline was in force in all of the mines, but the most could have been averted only by the exercise of greater care on the part of those who themselves were injured.

When considering the large quantity of gas evolved in the mines of this district, it is remarkable that the accidents occurring from this source are so few as they are. In all, except a few of the gangways, the workingmen use naked lights, and in nearly all the cases where explosions have taken place they were the result of over-sight or recklessness. Persons are rarely burned because gas is found at unexpected points, but because of carelessness as to its existence in places where it is known or expected to exist.

Falls of roof and falls of coal are the most numerous causes of the mine accidents, and these are the most difficult to deal with by supervision. The aspect of a miner's working-place, changes with every blast exploded, and with every piece of coal pulled down, and the miner chiefly is the one to whom we must look for a reduction of this class of accidents. If he is hasty and desires to finish his day's work in less time than is consistent with safety, he takes risks, and takes them frequently. The result is that this class of men is the most numerous of those who are injured by accidents in mines, not only from falls, but also from explosions of fire-damp and from explosions of powder and premature blasts. If men could be persuaded to take

proper time while doing their work, the number of accidents would certainly be greatly reduced.

It is frequently claimed that a large number of accidents occur owing to the ignorance of the employés, and while this is evidently true as to a few of the accidents, the records show that it is not true as to the largest number. The records show, beyond doubt, that those who are the most indifferent to danger, and who take the most risks are those who are also the persons who have had the best and longest experience in mines, because the greater number of accidents occur to these persons. It is generally recognized that the American, Welsh, Irish and English miners, are the most experienced of those employed in this district. At my request the following Table B, containing a statement showing the number of accidents of all grades and their distribution among the nationalities employed by the Lehigh and Wilkes-Barre Coal Company, for the year 1888, was prepared by the superintendent, Mr. T. H. Phillips, a perusal of which will prove interesting as evidence that the percentage of accidents is as great to the experienced as it is to those who are reputed to be inexperienced:

TABLE B.—Lehigh and Wilkes-Barre Coal Company—Wyoming Division—Statement showing the number of accidents and their distribution among the Nationalities employed in 1888.

NATIONALITY.	NUMBER EMPLOYED.			NUMBER ACCIDENTS.			PERCENTAGE OF EMPLOYES.			PERCENTAGE OF ACCIDENTS.			RATIO OF ACCIDENTS UNDERGROUND TO EVERY ONE HUNDRED MEN EMPLOYED THEREIN OF EACH NATIONALITY.			RATIO OF ACCIDENTS TO EVERY ONE HUNDRED MEN EMPLOYED OF EACH NATIONALITY.		
	Outside.	Inside.	Total.	Fatal.	Non-fatal.	Total.	Outside.	Inside.	Total.	Fatal.	Non-fatal.	Total	Fatal.	Non-fatal.	Total.	Fatal.	Non-fatal.	Total.
American,	492	324	816	2	10	12	8 237	5 425	13 662	1 526	7 634	9 160	.617	1.852	2.469	.245	1 225	1.470
English,	88	439	527	3	10	13	1.474	7 349	8.823	2.290	7 632	9 922	.693	2 278	2 961	.569	1 897	2 466
Welsh,	69	1.099	1,168	7	36	43	1 155	18 399	19.554	5 343	27 480	32 823	.546	3 184	3.730	.599	3 082	3 681
Irish,	372	744	1 116	3	27	30	6 228	12 457	18 685	2 290	20 610	22 900	.260	3 091	3 350	.269	2 419	2 688
German,	175	94	270	....	3	3	2 947	1.575	4 522	....	2.290	2 290	....	3 192	3 192	....	1 111	1 111
Scotch,	15	23	33	....	....	....	251	.385	.636	....	....	....	....	....	....	....	....	....
Hungarian,	740	253	993	....	7	7	12.389	4 236	16 625	....	5 343	5 343	....	2 371	2 371	....	.705	.705
Polish,	236	727	963	5	17	22	3 951	12.172	16.123	3 818	12.976	16.794	.688	2 338	3 026	.519	1.765	2 284
Russian,	1	9	10	....	....	....	.016	.151	.167	....	....	....	....	....	....	....	....	....
Arabian,	....	1	1	....	....	....	....	.016	.016	....	....	....	....	....	....	....	....	....
Danes,	....	3	3	....	....	....	....	.050	.050	....	....	....	....	....	....	....	....	....
Swedes,	4	39	43	....	1	1	.067	.653	.720	....	.768	.768	....	2.564	2 564	....	2 326	2.326
Hebrew,	6	....	6	....	....	....	.100	....	.100	....	....	....	....	....	....	....	....	....
French,	1	....	1	....	....	....	.016	....	.016	....	....	....	....	....	....	....	....	....
Italians,	10	....	10	....	....	....	.168	....	.168	....	....	....	....	....	....	....	....	....
Colored,	8	....	8	....	....	....	.133	....	.133	....	....	....	....	....	....	....	....	....
Total,	2,213	3,755	5,973	20	111	131	37.132	62.868	100 000	15 267	84.733	100 000	.479	2 690	3.169	.335	1.858	2.193

Mine Improvements during 1888.

During this year the spirit of improvement was active, and a number of important movements were made towards improving the condition and the producing capacity of the collieries. Among the number the following were perhaps the most important:

Lehigh and Wilkes-Barre Coal Company.

At the Hollenback colliery movements are in progress towards working the Red Ash seam. A new air shaft is being sunk from the surface and has, at this writing, passed below the Baltimore seam. Its size is 12x37 feet, and it is expected to cut the Red Ash seam at a depth of about 650 feet. Preparations are in progress also to have the main shaft extended from the Baltimore seam, where it now is, to the Red Ash.

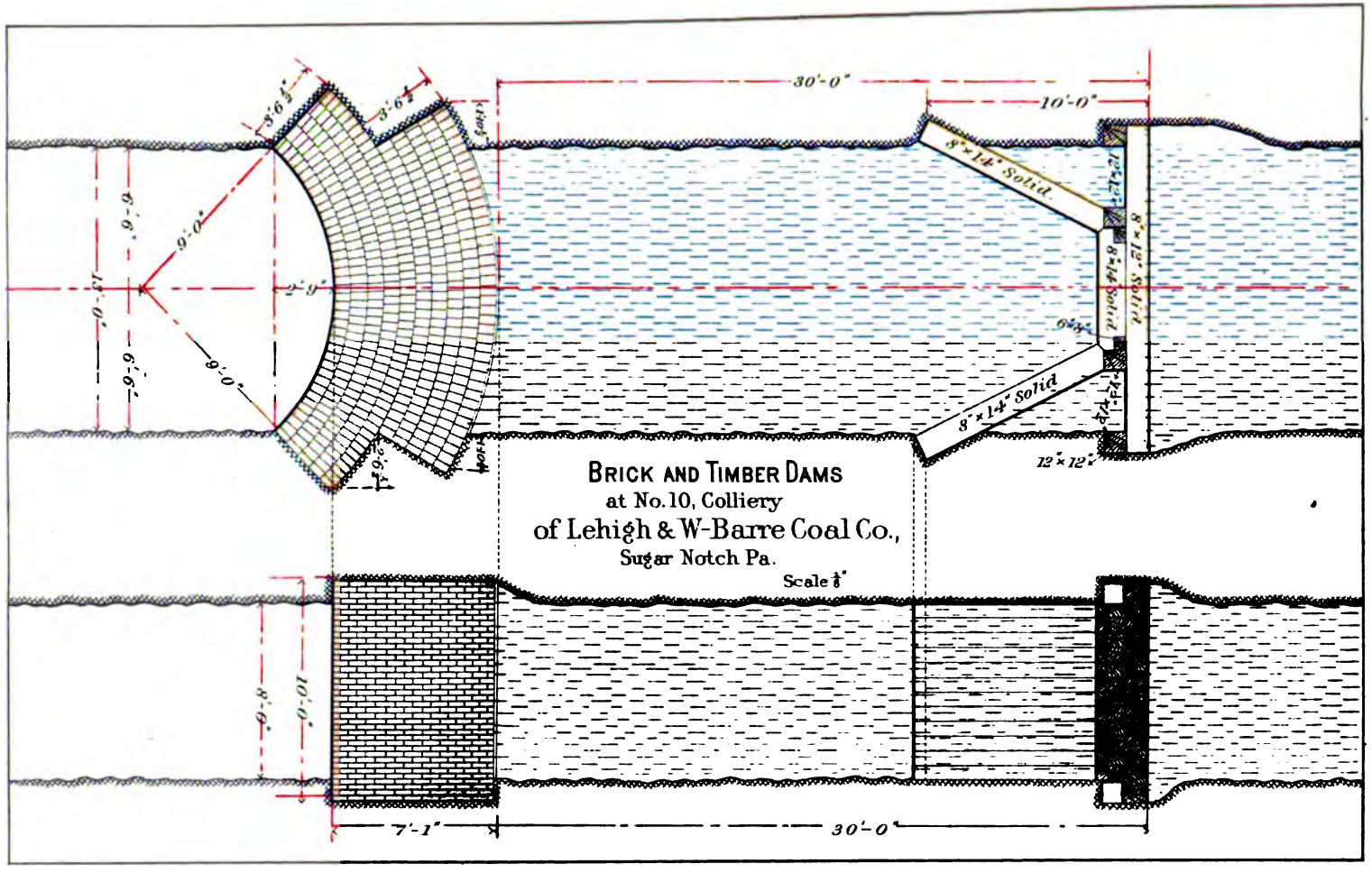
At the Stanton colliery a new fan was erected on the air shaft to duplicate their other thirty-five foot fan. The mine gives off such an enormous quantity of fire-damp that it was very hazardous to suspend the course of the air currents for any length of time. To avoid this a new thirty-five foot fan was erected adjacent to the other, and doors were so adjusted that, in case one fan stops running, the other can be operated in a few minutes to ventilate the mine. This mine now has one pair of seventeen-foot double fans and two thirty-five feet fans for the purpose of producing ventilation.

At the South Wilkes-Barre shafts, Nos 3 and 5, extensive preparations are in progress for the completion of the colliery. The main shaft is 1,064 feet deep to the Baltimore seam, where the coal was found in its usual thickness of sixteen feet and of excellent quality. The shaft is divided into four hoisting compartments and an up-cast air shaft. This work is now completed, and a large force is at work erecting foundations for the massive hoisting engines which are to be placed thereon.

The other shaft (No. 3) was sunk to the Baltimore seam also, and cut the latter at a depth of 250 feet below the old terminal or Hillman seam. One of these shafts will constitute a second opening to the other, and coal will be mined from both. A new pair of first-motion hoisting engines were placed on this shaft, and a solid wall of mason work was erected to support the earth from the rock to a point several feet above the surface around the shaft, greatly enhancing its safety. It is expected that a considerable amount of coal will be mined during 1889 from this colliery, which will be shipped from the Diamond breaker.

At the Sugar Notch shaft, No. 9, a new twenty-four foot fan was erected chiefly to ventilate the workings of two seams opened at the bottom of the shaft; *i. e.*, splits of the Baltimore seam. This makes the third fan used in ventilating this colliery, which is quite effective.

At Wanamie the water was pumped out of the old No. 19 slope,



BRICK AND TIMBER DAMS
at No. 10, Colliery
of Lehigh & W-Barre Coal Co.,
Sugar Notch Pa.
Scale $\frac{1}{8}$"

which has been idle since 1878. The gangways were retimbered and the tracks relaid, so that the mine is now in shape to produce coal. It is to be hauled to, and shipped through, the No. 18 breaker.

At the Nottingham colliery, in Plymouth, the new air shaft was completed to the Ross seam, and a twenty-four foot Guibal fan was erected thereon to ventilate the workings. A cage and an engine adapted to hoist the workmen was also placed thereon, which proved a relief to both employés and company.

Delaware and Hudson Canal Company.

The new Baltimore shaft of this company was completed to the Red Ash seam, which was cut at a depth of 655 feet. It opens an extensive field of this seam, and the other shaft (No. 2), already working that seam, will be connected to effect a second opening.

At the Boston mine a new seventeen and a-half-foot fan was erected, which improved the ventilation of the mine to some extent. It was located at the No. 3 shaft—too far away to be of much effect as a ventilator of the Boston workings; hence, the result is not quite satisfactory.

The No. 2 shaft of this company, at Plymouth, was sunk from the Cooper to the Bennett seam, and opened an extensive field of that seam.

At No. 3 colliery a slope is being sunk underground in the Cooper seam. The hoisting engine is located on the surface, and the rope passes into the mine through a bore-hole made for the purpose.

Susquehanna Coal Company.

A number of minor improvements were effected at the mines of this company, but I shall note only a few. At No. 1 shaft, in both the Forge and Red Ash seams, underground slopes were sunk, extending to lower levels. The hoisting engines of both were located on the surface, and the ropes pass down through bore-holes.

The No. 4 slope was graded and thereby made to work much more satisfactorily. It is now being extended through the rock into the Hillman seam.

Red Ash Coal Company.

The No. 1 slope of this company was extended and a new pair of direct-acting hoisting engines were placed to hoist therefrom. The cylinders are 28x48 inches, and they work admirably.

At the No. 2 colliery a new slope was made to a length of 750 feet, and a pair of direct-acting hoisting engines were furnished, having cylinders 28x48 inches.

A new sixteen-foot fan was also erected on this mine, which has improved the ventilation to an appreciable degree. The collieries of this company are now in good shape for producing coal for a number or years.

Alden Coal Company.

The shaft-tunnel of this company was extended to the Red Ash seam. A new fifteen foot Guibal fan was also erected on the mine, making the second fan in use for the purpose of producing ventilation. While running at lower speed than it is capable of it is exhausting 50,000 cubic feet of air per minute, which, at present, is found sufficient.

Delaware, Lackawanna and Western Railroad Company.

The Woodward colliery of this company was completed and began to prepare coal for shipment in July, 1888. The breaker is a large double structure, capable of preparing 2,000 tons of coal per day for the market. It is well lighted and is heated throughout by steam. Everything in the breaker and around the colliery is finished in an exceedingly satisfactory shape. No expense has been spared to make everything as safe as possible. The main shaft is a double one; *i. e.*, it has four cages for hoisting coal—two working for the Red Ash seam and two for the Bennett. The hoisting engines are powerful and are directly connected with the drums. From each of the seams conversation with the engineers can be had by telephones, and signals are given by pneumatic gongs.

The main shaft is 53x12 feet area, and is over 1,000 feet deep to the Red Ash seam.

The No. 2 shaft is 35x12 feet area, and is also sunk to the Red Ash seam, a depth of 1,013 feet, and both are connected by openings in the Bennett and Red Ash seams. This shaft is being fitted with cages and machinery to work the Cooper seam. Two fans were erected, one on each shaft, and one is twelve and the other sixteen feet diameter, exhausting respectively 55,000 and 59,700 cubic feet of air per minute.

Lehigh Valley Coal Company.

The Dorrance shaft having been extended to the Baltimore seam a second opening was effected by a slope sunk from the Hillman to the latter on a grade of 30 degrees. This was 7x12 feet area and 400 feet long, all in rock.

Plymouth Coal Company.

At the Dodson colliery a new Guibal fan, 15 feet diameter, was erected to replace the old one. By running 70 revolutions it produces a ventilating pressure of one and two-tenths inches of water gauge, and 108,000 cubic feet of air per minute. The driving engine is 16x13 inches, connected directly to the fan.

Hanover Coal Company.

The Maffet shaft of this company was sunk from the Ross to the Red Ash seam, and is now at a depth of 385 feet below surface. This opens a new lift of good coal extending up to the level of the old Ross tunnel.

Newport Coal Company.

The Newport colliery, formerly called East End, is being prepared to resume work by this company, and is expected to be ready to ship coal at the beginning of the year 1889.

Parrish Coal Company.

A new slope was opened by this company on the Ross vein, and was sunk to a length of 1500 feet. This opens an extensive area of coal, which is convenient for shipment and is of excellent quality.

Observations on the Furnace and Fan Mine Ventilation.

The ventilation of the Third Anthracite District is produced entirely by fans, which are frequently called centrifugal ventilators. In times past the furnace was extensively employed for this purpose, but in all shallow mines this proved itself to be a fickle, unreliable and inefficient producer of air-currents, and it was gradually superseded by the fan as the superiority of that machine became known.

With the knowledge now extant regarding the laws of mine-ventilation, it is astonishing that the ventilation of a shallow mine should be attempted by a furnace. It has been demonstrated in many instances that where the depth of the upcast column of air is less than from eight to nine-hundred feet, the fan is more effective, more reliable, and in many ways safer for the purpose of producing ventilation.

It is well-known that motion in air, or air-currents, are produced by a difference in pressure, and the direction of the current is, invariably, from the air under the highest pressure, towards the air under the lowest pressure. It makes no difference by what means a difference of pressure is produced, whether by a furnace, by a fan or by a piston-machine, the samedifference of pressure produces the same quantity of air-current. It is obvious, therefore, that the most effective ventilator is the one which produces the greatest difference of pressure. This difference of pressure may be measured by any of the various instruments which indicate small pressures, such as a barometer, water gauge or a pressure meter, and it is frequently designated as so many inches of "water gauge," "drag," "depression," or "ventilating pressure." Whichever term is used, it is understood to be expressing the length of a column of water equal in weight to the pressure exerted in producing the ventilation, and a pressure which sustains a column of one inch of water is equal to a power of five and two-tenths pounds per square foot, acting on the intake air-way as a propeller of the air-current.

In a mine where the air is of equal temperature, and also of equal pressure, there cannot be a current, but if there are two openings to the mine, and if the equillibrium is broken by a decrease or increase of pressure in one of the openings, a current will rise and move from the point of greater towards the lesser pressure.

Air, on being heated, expands and becomes lighter, volume for

volume, than air which is not heated. A furnace, when placed at the bottom of a shaft imparts heat to the air column in the shaft, causes it to expand and become of less weight than a column of air of equal length at the other opening. And, whatever be the difference thus produced in the weight of the two air columns, this is the power acting in moving the air and producing the current. As long as this difference of weight is maintained by continually heating the air on passing through the furnace, the current will constantly flow in that direction.

For every increase of one degree in temperature commencing at zero, air will expand 1.459 of its volume, and it is evident that the hotter the air-column is, the greater is the expansion and difference of weight between that and the cold air-column of the other opening. It is also evident that the longer the heated air column is, the greater also is the said difference. The length of the air-column in a shallow mine is limited by the depth of the mine, and the air cannot be heated during its passage over the furnace to a temperature which would produce effective difference of pressure in a short column, because the heat generated is limited to that which is necessary for the consumption of coal. Therefore, inasmuch as it has proven impracticable to produce effective difference of pressure without having a long air column above a furnace, and as the quantity of air propelled through a mine is the product of a difference of pressure, a furnace is not a commendable ventilator for a shallow mine.

The law prohibits the use of a furnace in gaseous mines, and it ought to be made so as to prohibit its use also in all shallow mines, because an insufficient supply of pure air in a mine, even where no fire-damp is evolved, does the workmen more permanent injury and shatters their health quicker than does the presence of fire-damp in a well ventilated mine.

As stated before, the fan is more effective in producing ventilation in mines of less depth than nine hundred feet, and it is considered safer in mines of all depths. In most cases it is located on the surface, where it can be reached in all emergencies, and it is a machine which may be regulated to suit the necessities of the mine. A fan produces air currents in consequence of the centrifugal force developed by its rotation, causing the air to be thrown out over the edge of the blades and leaving a partial vacuum or rarefaction of the air in the fan. From this a difference of pressure arises between the air in the fan and that of the atmosphere. Impelled by the excess of pressure, the atmospheric air rushes in through the side openings to replace the expelled air, and as long as the rotation of the fan is continued the inrushing of the air is also continued.

It has been found by experiment that the ventilating pressure produced by a fan increases or decreases in proportion with the square of the speed of rotation, and that the quantity of air varies directly with

the speed. In other words, when the speed of a fan is increased two-fold, four times the difference of pressure is produced, and twice the quantity of air. But if the condition of the air-ways of the mine is changed, so as to increase or decrease the resistance, the quantity of air is affected by this resistance.

There are two methods for applying the fan for the purpose of producing ventilation, viz., the "forcing" and the "exhausting" mode.

When the periphery of a fan is enclosed by a casing and this again connected to a mine by a conduit or passage so that the air on being expelled from the blades cannot have access to the atmosphere without first passing through the airways of the mine, it is characterized a "forcing fan," but if it is adjusted to expel the air from the blades directly to the atmosphere, and having side openings connected by a conduit to the mine so that the air cannot have access to the fan without first traversing the air-ways of the mine, it is characterized an "exhaust fan."

The characteristic effects of a "forcing fan" are that the air on being expelled from the blades is compressed, owing to the resistance presented by the air-ways to its passage through the mine, and by the atmospheric air to its diffusion at the exit. The point where the air is of greatest density is at the fan. Here the pressure exceeds the pressure of the atmosphere as much as is necessary to overcome the resistances due to the two causes just stated.

The density of the air, and also the pressure, is gradually reduced with the resistance from the point where it is expelled from the fan until it is diffused into the atmosphere.

The characteristic effects of the "exhaust fan" are, that owing to the resistance presented to the air in its passage through the mine from the atmosphere to the fan, the air is rarefied so that its density is reduced below the density of the atmospheric air, consequently the pressure also, at the fan, becomes less than the atmospheric pressure, and the difference thus produced is the force which propels the air through the mine.

The differences in the effect of the two methods of applying the fans are, that a difference exists in the densities of the air currents, and that the currents travel in opposite directions. With both the air is moved by excess of pressure at one or the other of the mine openings, but it is not drawn or "sucked" with either.

The difference in the density of air produced by both equals that due to twice the difference of pressure produced by one, *i. e.*, if a "forcing fan," producing a ventilating pressure equal to one inch water-gauge, was changed to an "exhaust fan," producing a pressure of one inch water-gauge, the difference in the density of the two airs at the fan would equal that due to a pressure of two inches of water-gauge, which is equal to that due to a change of 0.148 inch on the barometer. However, this difference decreases with the distance

from the fan, so that the density of the air with both becomes equal at the opposite opening.

While running at the same speed the ventilating force developed is equal in both applications under the same conditions. Owing to the difference in the density of air a slight difference exists in the volume of air at the fan, but this is only in appearance—the weight of air passing is the same, and at the other opening where the density is equalized the volume is also equal, *i. e.*, if the gases generated in the mine are not included. Therefore, as to the quantity of air propelled, it makes no difference which way the fan is applied, the same speed produces the same results from both. Fans of different diameters, if running at the same periphery speed, and if constructed alike, produce equal pressures, but the orifices for the passage of the air through the fans differ with their dimensions.

The small blower used to blow the blacksmith's forge, if running at the same periphery speed, produces a pressure equal to that of a large fan, but the orifice of passage through the blower is not large enough to pass a large volume of air. The essentials of an effective fan are, the power to produce a high difference of pressure, or "water gauge," and an orifice, or opening, of ample area to pass the air forced into it by said pressure with minimum resistance.

In the ventilation of a mine there are three sources of resistance presented to the passage of the air. *a.* That which is presented by the atmosphere to the discharge and diffusion of the air. *b.* That which is presented by the fan. *c.* That which is presented by the air-ways of the mine. The resistances presented by these three sources increase and decrease in proportion with the square of the velocity of the air-current. The first should be reduced to a minimum by having the area of the discharge-outlet at the blades, adjusted to that which is necessary for the passage of the air-volume at its velocity on leaving the blades, which is nearly equal to the circular velocity of the center of the fan-blades. From this point, also, the air should be allowed to expand and equalize its tension before entering the atmosphere. To have the blades exposed to the atmosphere more than is necessary for the emission of the air-current is detrimental to the efficiency of the fan in its effort to produce pressure, and if the area of the discharge-outlet is too large or too small the blades become exposed to influxes of air or rebounding currents, which cause the shocks or clapping noises so often heard in fans.

Second, the fan should be of sufficient dimensions to pass the maximum quantity of air required for the ventilation of the mine with as little resistance as possible, and the blades should be curved in conformity with the curved path given to the air-current in its passage through the fan.

Third, the resistance of the mine should be minimized by multi-

plying and enlarging the air-ways, by providing and utilizing all the inlets available, and by splitting the air-currents.

A fan is not doing work until it begins to unload air, and the more air it is unloading, the greater is the engine power required to run it. Very little steam is sufficient to run an empty fan, but as the quantity of air discharged increases, more steam-power must be applied to keep the speed up. The power required to propel air and exhaust it by a fan, increases and decreases in proportion to the cube of the velocity, or of the quantity of air discharged.

Taking fans of sufficient dimensions for the passage of the required volume of air, the most effective ventilator would be the one which would produce the highest ventilating pressure at equal periphery speed. In this the writer has found a difference of 37 per cent. in the production of fans constructed nearly alike, and this may be taken to express the relative value of these fans as ventilators of mines.

If the side inlets of a fan are closed so that no air can enter, and, while running at any desired speed the pressure is taken, it would indicate the maximum pressure that the fan would produce at that speed. Again, when the side inlets are opened and the usual volume of air admitted, if the pressure is again taken, a slight difference would be shown. The first indicates the full pressure produced by the fan; the second indicates the pressure expended in moving the air current through the mine, and the difference in the two readings would be the pressure expended in moving the air through the fan. If the resistance of the mine is reduced, and the volume of air thereby increased, less of the pressure would be expended in the mine and more in moving the increased volume through the fan, and the difference referred to would increase in consequence. This seems to be the proper method of ascertaining the capacity of a fan for producing ventilating pressure and the proportion of that pressure expended in the fan and also in the mine.

A large volume of air passing under a small ventilating pressure is an evidence of small resistance to the passage of the air; but a high water-gauge or pressure, and a small volume of air current, is an evidence of high efficiency in the fan, and also an evidence of high resistance to the passage of the air, either in the mine, or in the fan, or perhaps in both, but almost invariably in the mine.

To test the capacity of a fan for passing air, it should be done while running at the required speed in the open atmosphere, or where the air passage is only long enough to give room to measure the air current. If the fans of this region were tested thus, I question whether the engine power of any would be able to run them at the required speed, and whether the fans are constructed strong enough to stand the work which they would have to perform. Of course the load of air would be equal to their full capacity, which would be much greater than any fan now known to the writer is receiving, but it should be remem-

bered that a fan is capable of exhausting more air until it becomes charged to this extent. This shows that, if it was possible to reduce the resistance of the air ways to a minimum, the maximum quantity of air would pass through the mine and be exhausted by the fan. Therefore it is obvious that the air currents of a mine can be increased in volume by giving them freer access to the fan until the said maximum quantity is produced.

It is not advisable to multiply fans on a mine, only when it is necessay to relieve the strain and share or divide the work. When two fans of equal effective power are placed to ventilate a mine in common, or on the same air-ways or inlets, the ventilating pressure acting in propelling air through the said air-ways is equal only to the pressure produced by one fan, and the volume of air passing, is only a little more than would be passing with one fan.

By adding fans the propelling pressure is not increased, but the air meets less resistance in passing through two fans than through one, consequently the volume is increased in proportion to the decrease in this resistance, and this is much less than we would naturally expect.

It is advisable, whenever practicable, to add new inlets and more air passages until the volume of air becomes too large for the fan to pass without being in danger of breaking, but it is not advisable, nor justifiable, to add fans until these conditions are fulfilled. Nearly the same results are obtained by using the opening, where the added fan is erected, as an inlet air-way.

In conclusion I wish to state that in order to produce constant and reliable ventilation, it is of paramount importance to maintain a constant ventilating pressure. All fans are subject to adverse effects, from storms and high winds, from slipping of belts, variation of steam pressure, etc., and for that reason every fan should have a pressure gauge attached showing the ventilating pressure, and every fan-engineer should be directed to run the fan so as to maintain the required pressure. This is of as much importance for the safety of a mine as it is to have a pressure gauge to show the steam pressure on boilers for the safety of their surroundings. The ventilating pressure is the power which propels the air currents, and it is of great importance that it shall be properly watched and invariably maintained in order to produce reliable and safe ventilation.

TABLE A.—Showing the quantity of air circulating through the mines of the Third Anthracite District at the end of the year 1888.

NAMES OF MINES.	Names of Operators.	Number of fans.	Number of persons employed in the mines.	Number of separate splits of air.	Cubic feet of air per minute at the inlet.	Cubic feet of air per minute at the face of workings.	Cubic feet of air per minute at the outlet.
1. Diamond,	Lehigh and Wilkes-Barre Coal Company,	2	49	6	173,657	103,645	155,000
2. Hollenback,	do. do. do.	2	337	8	313 000	196 800	315,800
3 Empire,	do. do. do.	1	441	7	228,000	178,580	190,910
4. Stanton,	do. do. do.	2	313	5	200,800	179,993	230,556
5. South Wilkes-Barre,	do. do. do.	2	Not in operation.				
6. Jersey,	do. do. do.	2	231	6	91 443	65 823	95,874
7 No. 9 shaft,	do. do. do.	2	353	12	270.700	270 370	341,280
8. Lance No. 11,	do. do. do.	1	352	9	178.220	158 870	191,420
9 Nottingham No. 15,	do. do. do.	2	646	9	208.850	205 720	218,000
10. Reynolds No. 16,	do. do. do.	1	338	5	93 300	84,200	91 700
11. Wanamie No. 18,	do. do. do.	2	198	4	100,900	62 000	128.100
12. Baltimore slope,	Delaware and Hudson Canal Company,	1	92	2	112,243	97 980	115 200
13. Baltimore tunnel,	do. do. do.	1	218	3	224,000	114 100	227 000
14 Conyngham,	do. do. do.	1	173	6	145 300	115 400	165 300
15. Boston,	do. do. do.	1	177	4	53.360	47 565	56.420
16. No. 2, Plymouth,	do. do. do.	1	190	2	71,680	60.810	80 000
17. No. 3, Plymouth,	do. do. do.	1	295	5	63 880	62 940	69 200
18. No. 4, Plymouth,	do. do. do.	1	250	3	36 360	27 640	36 980
19. No. 5, Plymouth,	do. do. do.	2	287	6	122 000	119 050	124.000
20. No. 1 slope,	Susquehanna Coal Company,	1	108	2	8,220	6 780	8 600
21. No. 2 slope,	do. do.	2	231	4	123 500	97 000	132 500
22 No. 3 slope,	do. do.	1	87	5	88 540	65,700	89 650
23. No. 4 slope,	do. do.	2	235	5	136.210	91 980	137 260
24 No. 4 tunnel,	do. do.	1	43	2	20,600	13 386	23 280
25. No. 6 tunnel,	do. do.	1	188	4	81 425	57 035	81.165
26. No. 1 shaft,	do. do.	2	199	5	131.684	115 710	206 464
27. No. 1 Deep shaft,	do. do.	1	144	6	132.075	109 960	86.725
28. No. 2 shaft,	do. do.	3	391	8	152.260	118 550	171 046
29. No 6 shaft,	do. do.	1	177	3	106 000	82.000	108 000
30. No. 6 slope,	do. do.	1	80	2	76 000	46 000	78 000
31. No. 1 shaft,	Kingston Coal Company,	2	234	4	82 590	64 000	89 600
32. No. 2 shaft,	do. do.	1	215	6	79,100	57,800	82 600
33. No. 3 shaft,	do. do.		117	6	66 170	58.150	63 480
34. No. 4 shaft,	do. do.	1	103	5	80 910	62 604	90 930
35. Gaylord shaft,	do. do.	1	214	5	132,000	69,800	204,100
36. Gaylord slope,	do. do.						

TABLE A—*Continued.*

NAMES OF MINES.	Names of Operators.	Number of fans.	Number of persons employed in the mines.	Number of separate splits of air.	Cubic feet of air per minute at the inlet.	Cubic feet of air per minute at the face of workings.	Cubic feet of air per minute at the outlet.
37. Red Ash No. 1,	Red Ash Coal Company,	1	200	4	77 765	59 231	77 701
38 Red Ash No. 2,	do. do.	1	219	6	69 238	68 929	71 043
39. Alden,	Alden Coal Company,	2	234	6	75 345	62 825	107. 100
40 Avondale,	Delaware, Lackawanna and Western Railroad Company,	1	211	6	126 960	114 180	133 850
41 Woodward,	do. do. do. do.	2	43	4	122 810	81 846	124 090
42. Dodson,	Plymouth Coal Company	1	223	4	60 875	53 440	61 995
43 Dorrance,	Lehigh Valley Coal Company,	1	86	7	193 718	153 496	215 796
44 Franklin Old slope,	Franklin Coal Company,	1	132	4	76, 128	40 441	130 680
45. Franklin Brown slope,	do. do.	1	93	4	12 000	10 950	40 000
46 Hillman vein,	Hillman Vein Coal Company,	1	164	5	102 617	92 702	107 616
47. Maffett,	Hanover Coal Company,	1	180	3	34 000	24 500	87 000
48. Parrish slope No. 1,	Parrish Coal Company,	2	328	7	153 630	109. 200	154, 050
49 Parrish slope No. 2,	do. do.						
50 Warrior Run,	A. J. Davis,	1	115	5	42 570	36 920	43 650
51. West End,	West End Coal Company,	2	210	3	95 740	48, 875	112 580
Totals,	Totals,	67	10,184	142	5 492 933	4 225 331	5 986 885

N. B.—There were 3 791 persons employed where the main currents were passing which were not reported as working in any particular split of air. Adding this to the above number makes a total of 13,981 persons employed underground, and an average of 392 cubic feet of air per minute entering the mines for each person employed.

TABLE 1—Showing Location of Collieries in the Third Anthracite District.

Name of Colliery.	Name of operator.	Location—Luzerne county.	Name of Superintendent.	Post-office address.
Diamond,	Lehigh and Wilkes-Barre Coal Company,	Wilkes-Barre,		Wilkes-Barre, Pa.
Hollenback,	do.	do.		do.
Empire,	do.	do.		do.
Stanton,	do.	do.		do.
South Wilkes-Barre,	do.	do.	T. H. Phillips, general superintendent; W. T. Smyth inside superintendent; S. Tomkin, outside superintendent.	do.
Tillinghast,	do.	do.		do.
Jersey,	do.	Ashley,		do.
Sugar Notch shaft,	do.	Sugar Notch borough,		do.
Lance No. 11,	do.	Plymouth,		do.
Nottingham,	do.	do.		do.
Reynolds No. 16,	do.	do.		do.
Wanamie,	do.	Wanamie, Newport twp.,		do.
Baltimore slope,	Delaware and Hudson Canal Company,	Wilkes-Barre township,		Providence, Scranton, Pa.
Baltimore shaft,	do.	do.		do. do.
Baltimore tunnel,	do.	Wilkes-Barre city,		do. do.
Conyngham,	do.	do.	A. H. Vandling, general superintendent; C. H. Scharar, mining engineer.	do. do.
Boston,	do.	Plymouth township,		do. do.
No. 2 Plymouth,	do.	do.		do. do.
No. 3 Plymouth,	do.	do.		do. do.
No. 4 Plymouth,	do.	do.		do. do.
No. 5 Plymouth,	do.	Plymouth,		do.
No. 4 tunnel,	Susquehanna Coal Company,	Nanticoke,		Wilkes-Barre, Pa.
No. 1 slope,	do.	do.		Nanticoke, Pa.
No. 2 slope,	do.	do.		Wilkes-Barre, Pa.
No. 3 slope,	do.	West Nanticoke,		do.
No. 4 slope,	do.	Nanticoke,	I. A. Stearns, general manager; G. T. Morgan, general superintendent; J. H. Bowden, chief engineer.	do.
No. 6 slope,	do.	Glen Lyon,		do.
No. 1 shaft,	do.	Nanticoke,		do.
No. 1 deep shaft,	do.	do.		do.
No. 2 shaft,	do.	do.		do.
No. 6 shaft,	do.	Glen-Lyon,		do.
No. 6 tunnel,	do.	do.		do.
No. 1 shaft,	Kingston Coal Company,	Edwardsdale,	Daniel Edwards,	Kingston, Pa.
No. 2 shaft,	do.	do.	do.	do.
No. 3 shaft,	do.	do.	do.	do.
No. 4 shaft,	do.	do.	do.	do.
Gaylord shaft,	do.	Plymouth,	do.	do.
Gaylord slope,	do.	do.	do.	do.
Alden tunnel,	Alden Coal Company,	Alden Station,	K. M. Smith,	Alden Station, Luzerne county Pa.
Alden shaft,	do.	do.	do	do. do.
Avondale,	Delaware, Lackawanna & Western R. R. Co.,	Plymouth township,	W. R. Storrs, general manager; W. H. Storrs, general outside foreman; B. Hughes, general inside foreman,	Scranton, Pa.
Woodward No. 1,	do.	do.		do.
Woodward No. 2,	do.	do.		do.

TABLE 1—*Continued.*

NAME OF COLLIERY.	Name of operator.	Location—Luzerne county.	Name of superintendent.	Post-office address.
Dodson,	Plymouth Coal Company,	Plymouth,	James B. Davies,	Plymouth, Pa.
Dorrance,	Lehigh Valley Coal Company,	Wilkes-Barre,	W. A. Lathrop,	Wilkes-Barre, Pa.
Franklin slope,	Franklin Coal Company,	do.	R. R. Morgan,	do.
Brown slope,	do. do.	do.	do.	do.
Rock slope,	do. do.	do.	do.	do.
Hillman vein,	Hillman Vein Coal Company,	do.	J. B. Shearn,	do.
Maffett,	Hanover Coal Company,	Sugar Notch,	Jacob Roberts, Jr.,	do.
No. 1 Red Ash,	Red Ash Coal Company,	Wilkes-Barre township,	M. B. Williams,	do.
No. 2 Red Ash,	do. do.	do. do.	do.	do.
Newport colliery,	Newport Coal Company,	Newport township,		
Parrish,	Parrish Coal Company,	Plymouth,	H. H. Ashley,	Plymouth, Pa.
West End,	West End Coal Company,	Mocanaqua,	John Teasdale,	Shickshinney, Pa.
Warrior Run,	A. J. Davis,	Sugar Notch borough.	A. J. Davis,	Wilkes-Barre, Pa.

TABLE No. 2.—Giving the total number of tons of coal mined in each colliery, number of days worked, number of employés, number of persons killed and injured, number of kegs of powder used, etc., in the Third Anthracite Mining District, for the year ending December 31, 1888.

NAME OF COLLIERIES.	Location.	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.
Lehigh and Wilkes-Barre Coal Company.											
1. Diamond,	Wilkes-Barre,	82 916 85	82 358 85	199.75	191	. . .	6	1,632	21	11	1
2. Hollenback,	do.	285.900 70	264.483 95	223.00	578	3	10	6 847	30	52	. .
3. Empire,	do.	298 330 70	293 471 50	214 65	784	2	9	7,869	30	53	2
4 Stanton,	do.	229 566 35	220 641 85	195 60	657	2	16	4,126	40	59	1
5 South Wilkes-Barre,	do.	180 00	180.00	No brea ker.	40	3	. . .	. . .	12	2	. .
6 Jersey No. 8,	Ashley,	133.579 45	127 872 20	215.40	468	. . .	3	4,594	24	29	1
7. Sugar Notch shaft,	Sugar Notch,	178.169 90	175 832 40	209.40	580	2	4	6,388	25	44	1
8. Wanamie No. 18,	Newport township,	153 355.75	151 342.25	215.60	526	1	5	5 194	22	63	1
9. Lance No. 11,	Plymouth,	211 351.40	209.620 40	216.85	626	2	5	6.871	18	59	. .
10. Nottingham,	do.	529 393.25	521 521.25	217 00	1 099	3	19	11,181	31	106	2
11. Reynolds,	do.	159 126 40	159,126.40	214 45	581	2	5	4,835	13	61	. . .
Totals,		2 259,900 75	2,206 451.05	*212 10	6 080	20	82	59 515	266	545	9
Delaware and Hudson Canal Company.											
12 Baltimore slope,	Wilkes-Barre township,	103 506 90	103,506.90	284 75	256	1	3	3,029	23	34	. . .
13. Baltimore shaft,	do. do.						1				
14. Baltimore tunnel,	Wilkes-Barre,	144 186.65	141 821.90	242.75	348	. .	3	4.763	18	51	2
15. Conyngham,	do.	105 537 50	101, 902 85	206 00	284	1	8	2.371	14	37	. . .
16 Boston,	Plymouth township,	202 923 85	199.643 85	228 75	320			4 803	12	46	. . .
17. No. 2,	Plymouth,	131, 165.50	131 165 50	202.75	325	1	2	4,197	21	52	. . .
18 No. 3,	Plymouth township,	228 836 80	227 018 30	243.75	497	2	1	7 620	15	58	. .
19. No 4,	Plymouth,	174 812 20	174 812.20	237 00	373	3	3	5.729	15	48	. .
20. No. 5,	do.	214,616 40	210,600.15	227.60	418	3	5	5 649	18	52	1
Totals,		1,305,585 80	1,290,471.65	†227.66	2 791	11	26	38 161	136	378	3

TABLE No. 2—*Continued.*

NAMES OF COLLERIES.	Location.	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers	Number horses and mules.	Number mine locomotives.
Susquehanna Coal Company.											
21. No. 1 slope, breaker No. 1,	Nanticoke,	243,272.10		286.50	276	.	4		26	35	1
22. Nos. 1 and 4 tunnel, breaker No. 1,	do.					.	1				
23. No. 1 shaft, breaker No. 2,	do.						10				
24. No. 1 Deep shaft, breaker No. 2,	do.	523,768 40		286 55	1,578	2	4		86	146	6
25. No. 2 slope, breaker No. 2,	do.					2	6				
26. No 3 slope or Grand tunnel,	West Nanticoke,	110,352.50	1,872,789.70	236 95	270	5	6	46,529	29	40	1
27. No. 2 shaft, breaker No. 5,	Nanticoke,	622,027 95		287 00	1,133	5	15		66	142	. . .
28. No. 4 slope, breaker No. 5,	do.					.	6				
29. No. 6 shaft,	Glen Lyon,					2	6				
30. No. 6 slope, breaker No. 6,	do.	395,289.60		262 70	1,210	1	2		84	110	1
31. No. 6 tunnel,	do.					2	2				
Totals,		1 894 810.55	1,872 789,70	271 94	4,567	21	63	46,529	291	473	9
Kingston Coal Company.											
32. No. 1 shaft,	Edwardsdale,	243 860 10	226,703.75	239.35	390	2	6	6,017	34	59	. .
33. No. 2 shaft,	do.	352,444 95	344,444.95	233 80	772	1	6	8,603	39	77	2
34. No. 3 shaft,	do.					2	6				
35. No. 4 shaft,	do.	105,523 65	103,023.65	215.75	297	1	10	2,668	12		
36 Gaylord shaft,	Plymouth,	303,319.10	294,421.10	209 80	658	2	6	7,709	31	61	. . .
37. Gaylord slope,	do.					1					
Totals,		1,005,147.80	968,593 45	224.67	2 157	10	34	24,997	116	197	3
Red Ash Coal Company.											
38 Red Ash No. 1,	Wilkes-Barre township,	165 195 20	15 .5 20	212.85	328	. .	4	5 001	15	33	. .
39. Red Ash No. 2,	do. do.	199,479 45	,243 45	242 40	375	2	2	6 230	8	34	. . .
Totals,		364,674 65	361,423.65	242.62	703	3	6	11,231	23	66	

Miscellaneous Coal Companies.											
40. Alden,	Newport township,	313,456.00	304,286.65	270.15	744	3	6	11,013	15	67	. .
41. Avondale,	Plymouth township,	191,502.00	184,446.55	226.10	446	2	3	4 247	26	67	1
42. Woodward,	do do.	49.874 95	35,412.45	97 50	201	. . .	2	1 070	24	26	1
43. Dodson,	Plymouth,	150,140.00	134,961.00	136.40	413	1	1	5 896	15	45	. .
44 Dorrence,	Wilkes-Barre,	78 094 65	67 971 90	226 70	171	3	1	2 546	16	21	1
45. Franklin,	do.	155 025 95	143.080 95	242.25	540	3	6	4 280	46	49	2
46. Hillman vein,	do.	118,097.85	98.543 60	204.70	329	1	5	4 747	9	28	. . .
47. Maffett,	Hanover township,	153.638 80	152 339 30	233 20	332	. . .	4	3,591	12	22	. .
48. Parrish,	Plymouth,	349 894.90	345.720 90	247 70	628	. .	5	9.807	25	80	
49. West End,	Mocanaqua,	196,567 35	182 478 40	280.40	460	2	1	6 178	19	16	2
50. Warrior Run,	Hanover township,	96.081.00	83,881.00	207 00	280	3	3	2,220	26	17	. .
51. Newport or East End,	Newport township,	2,000.00	Breaker did	not wor k.	109	. . .	2	100	9	6	. . .
Totals,		1,854,373 45	1,732,122.70	*220 19	4,653	18	39	55,695	247	444	7

Recapitulation.

Lehigh and Wilkes-Barre Coal Company,	2,259 900 75	2,206,451 05	212 10	6,080	20	82	59 515	266	545	9
Delaware and Hudson Canal Company,	1.305 585 80	1,290 471 65	227.66	2 791	11	26	38 161	136	278	3
Susquehanna Coal Company,	1.894.810.55	1,872.789 70	271.94	4.567	21	63	46.529	291	473	9
Kingston Coal Company,	1,005 147 80	969 593 45	234 67	2.157	10	34	24 997	116	197	3
Red Ash Coal Company,	364,674 65	361 438 65	242.62	703	3	6	11 231	23	66	. .
Miscellaneous coal companies,	1,854,373 45	1,732,122.70	220.19	4,653	18	39	55,695	247	444	7
Grand totals,	8,684,493.00	8,432,867 20	233 19	20 951	83	250	226,128	1,079	2,103	31

In the shipments of the Lehigh and Wilkes-Barre Coal Company 46,168 95 tons of Buckwheat coal and 29,177 10 tons of culm are included. In the total production of the same company 47,013,70 tons of Buckwheat and 29,177.10 tons of culm are included. The culm used for generating steam at the mines is not included by any of the companies.

TABLE No. 3.—Showing the number of each class of employés at each colliery in the Third Anthracite Mine District, during the year 1888.

NAMES OF COLLIERIES.	Location.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.								Grand totals—inside and outside.
		Inside foreman or mine boss	Miners.	Miners' laborers.	All company men	Drivers and runners.	Doorboys and helpers.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All company men.	Superintendent, bookkeepers and clerks.	Total outside.	
Lehigh and Wilkes-Barre Coal Company.																	
1. Diamond,	Wilkes-Barre,	1	89	24	21	14	5	104	1	3	7	35	40	1	87	191
2. Hollenback,	do.	1	127	127	57	43	32	387	1	5	21	106	57	1	191	578
3. Empire,	do.	1	170	170	60	60	30	491	1	3	14	196	78	1	293	784
4. Stanton,	do.	1	130	138	42	84	30	425	1	4	25	150	[illegible]	[illegible]	232	657
5. South Wilkes-Barre,	do.	2	27	. . .	. . .	. . .	. . .	29	. . .	3	8	. . .	. . .	. . .	11	40
6. Jersey No. 8,	Ashley,	1	102	90	40	16	19	268	1	4	15	131	48	1	200	468
7. Sugar Notch shaft,	Sugar Notch,	1	115	115	60	37	25	353	1	5	14	138	68	1	227	580
8. Wanamie No. 18,	Newport township,	1	110	117	57	39	28	352	1	5	18	95	59	1	174	526
9. Lance No. 11,	Plymouth,	1	147	108	68	55	27	406	1	2	9	164	43	1	220	626
10. Nottingham,	do.	1	289	170	125	76	58	719	1	6	12	280	79	2	380	1,099
11. Reynolds No. 16,	do.	1	110	114	33	46	42	346	1	3	7	126	47	1	185	531
Totals,		12	1,366	1,178	563	470	296	3,880	10	43	145	1,421	569	12	2,200	6,080
Delaware and Hudson Canal Company.																	
12. Baltimore slope,	Wilkes-Barre township,	1	45	45	20	23	6	140	1	5	15	65	29	1	116	256
13. Baltimore shaft,	do. do.															
14. Baltimore tunnel,	Wilkes-Barre,	1	75	60	38	36	8	218	1	6	13	66	42	2	130	348
15. Conyngham,	do.	1	44	44	39	33	10	171	1	3	8	75	25	1	113	284
16. Boston,	Plymouth township,	1	60	60	42	28	15	206	1	4	8	58	41	2	114	320
17. No. 2,	Plymouth,	2	64	64	37	41	11	222	1	5	11	80	34	2	108	325
18. No. 3,	Plymouth township,	2	110	110	49	51	29	351	1	4	5	74	31	1	116	467
19. No. 4,	do. do.	1	90	87	38	48	15	274	1	4	10	46	36	2	99	373
20. No. 5,	Plymouth,	1	81	76	66	49	32	305	1	6	11	58	39	3	118	418
Totals,		10	569	546	324	313	126	1,887	8	37	81	487	277	14	904	2,791

Susquehanna Coal Company.															
21. Breaker No. 1—No. 1 slope,	Nanticoke,	1	81	71	18	30	16	217	1	9	6	74	68	1	159	376
22. do. Nos. 1 and 4 tunnel,	do.															
23. Breaker No. 2—No. 1 shaft,	do.															
24. do. No. 1 deep shaft,	do.	3	315	530	123	142	53	1,166	1	17	30	168	200	1	412	1,578
25. do. No. 2 slope,	do.															
26. No. 3 slope,	West Nanticoke,	1	51	56	27	12	8	155	1	5	6	60	42	1	115	270
27. Breaker No. 5—No. 2 shaft,	Nanticoke,	2	283	395	76	116	44	868	1	9	17	149	87	2	265	1,133
28. do. No. 4 slope,	do.															
29. Breaker No. 6—No. 6 shaft,	Glen Lyon,															
30. do. No. 6 slope,	do.	2	310	430	64	96	86	988	1	15	17	165	72	2	272	1,260
31. do. No. 6 tunnel,	do.															
Totals,		9	992	1,482	308	396	157	3,344	5	55	76	611	469	7	1,223	4,567
Kingston Coal Company.															
32. No. 1 shaft,	Edwardsdale,	2	110	70	28	40	16	266	1	4	7	82	23	2	124	390
33. No. 2 shaft,	do.	2	200	190	29	52	40	513	3	8	19	168	59	2	259	772
34. No. 3 shaft,	do.															
35. No. 4 shaft,	do.	1	75	70	25	28	12	206	1	4	8	47	31	....	91	297
36. Gaylord shaft,	Plymouth,	3	185	110	58	82	14	452	1	10	12	175	45	3	246	698
37. Gaylord slope,	do.															
Totals,		8	570	440	140	197	82	1,437	6	26	46	472	168	7	720	2,157
Red Ash Coal Company.															
38. No. 1 Red Ash,	Wilkes-Barre township,	1	88	70	20	28	8	210	1	5	5	57	48	2	118	328
39. No. 2 Red Ash,	do. do.	1	90	88	23	35	10	247	1	5	4	63	53	2	128	375
Totals,		2	178	158	43	63	18	457	2	10	9	120	101	4	246	703
Miscellaneous Coal Companies.															
40. Alden,	Nanticoke borough,	1	170	172	91	70	21	525	1	11	11	141	49	6	219	744
41. Avondale,	Plymouth township,	2	95	105	42	39	14	297	1	5	16	88	48	1	149	446
42. Woodward,	do. do.	1	21	21	32	5	2	82	1	6	11	40	60	1	119	201
43. Dodson,	Plymouth,	1	79	65	100	37	14	296	1	4	7	60	42	3	117	413
44. Dorrance,	Wilkes-Barre,	1	25	33	23	15	4	100	1	4	9	25	29	3	71	171
45. Franklin,	do.	1	95	60	65	33	18	274	1	12	19	80	151	3	266	540
46. Hillman vein,	do.	1	74	82	40	24	31	252	1	4	8	38	28	3	77	329
47. Maffet,	Sugar Notch borough,	2	70	70	12	20	8	182	1	5	5	90	47	2	150	332
48. Parrish,	Plymouth,	2	124	130	68	53	25	397	1	7	14	140	66	3	231	628
49. West End,	Macanaqua,	2	136	110	84	48	5	385	1	5	12	59	55	3	135	460
50. Warrior Run,	Sugar Notch borough,	1	78	76	10	16	9	190	1	6	8	52	22	1	90	280
51. Newport or East End,	Newport township,	1	10	12	26	6	1	56	1	5	5	....	41	1	53	109
Totals,		16	967	935	538	368	152	2,976	12	74	125	808	628	30	1,677	4,653

TABLE No. 8.—Recapitulation.

NAMES OF COLLIERIES.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							(Grand totals—Inside and outside.
	Inside foremen or mine bosses.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and trappers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All company men.	Superintendent, bookkeepers and clerks.	Total outside.	
Lehigh and Wilkes-Barre Coal Company,	13	1,366	1,178	563	470	296	3,880	10	48	145	1,431	869	13	2,200	6,080
Delaware and Hudson Canal Company,	10	560	646	824	812	126	1,887	8	87	81	497	277	14	904	2,791
Susquehanna Coal Company,	9	992	1,482	808	896	187	3,344	5	53	76	611	459	7	1,228	4,567
Kingston Coal Company,	8	570	410	140	197	82	1,437	6	26	45	473	183	7	720	2,157
Red Ash Coal Company,	2	173	156	43	68	18	461	2	10	9	130	101	4	246	708
Miscellaneous coal companies,	15	987	925	838	966	184	3,915	12	74	125	806	628	80	1,677	4,653
Grand totals of all coal companies,	57	4,637	4,731	1,916	1,806	831	18,981	43	245	482	4,919	2,907	74	6,970	20,951

TABLE No. 4.—List of fatal accidents occurring in and about the mines of the Third Anthracite Mine District, for the year ending December 31, 1888.

Number of accident.	Date of accident.	NAME OF PERSON.	Occupation	Age.	Widow.	Number of orphans.	Name of Colliery.	Location—Luzerne County.
1	January 1,	Gustave Nordstrom,	Miner,	25	..	..	Dorrance,	Wilkes-Barre.
2	do. 4,	Charles Woods,	Shaftsinker,	40	1	6	Tillinghast,	South Wilkes-Barre.
3	do. 5,	William P. Howells,	Fire boss,	35	1	2	Hollenback,	Wilkes-Barre.
4	do. 19,	Paul Zoter,	Laborer,	24		..	Newport tunnel,	Glen Lyon.
5	do. 21,	Patrick O Connell,	Miner,	47	1	7	Franklin,	Wilkes-Barre.
6	do. 25,	Mark M. Bolton,	do.	28	1	8	Slope No. 3,	West Nanticoke.
7	do. 26,	Christopher Knauss,	do.	33	1	5	Slope No. 3,	do.
8	do. 27,	Thomas O. Driscoll,	do.	50	1		Shaft No. 5,	Plymouth.
9	do. 27.	Daniel Rees, Jr.,	Tracklayer,	35	1	3	Nottingham,	do.
10	February, 3,	Mike Dedovitch,	Laborer,	56	1	..	Gaylord breaker,	do.
11	do. 4,	John M. Evans,	Driver,	17			Shaft No. 2,	do.
12	do. 7,	Frank Raminski,	Laborer,	26	1	1	Slope No 3,	West Nanticoke.
13	do. 8,	Cornelius McCall,	Miner,	37		4	Dorrance,	Wilkes-Barre.
14	do. 8.	Joseph Jobliski,	Laborer,	35	1	2	Shaft No. 2,	Plymouth.
15	do. 8,	Anthony Smith,	do.	24			Alden,	Newport township.
16	do. 10,	John Brown,	Miner,	45		3	Shaft No. 2,	Nanticoke.
17	do. 15.	Patrick McLaughlin,	Door boy,	15	..		Empire,	Wilkes-Barre.
18	do. 21,	George Tippens,	Miner,	38	1	5	Shaft No. 1,	Edwardsdale.
19	do. 24,	David Edmonds,	do.	60	..	..	Newport tunnel,	Glen Lyon.
20	do. 25,	Rees G. Richards,	Slate picker,	13	..	..	Gaylord breaker,	Plymouth.
21	do. 25,	Joseph Ulavitch,	Laborer,	21		..	Newport tunnel,	Gley Lyon.
22	March 28,	Patrick Murray,	Oiler,	16			Breaker No 9,	Sugar Notch.
23	April 9,	William W. Jones,	Miner,	50	1	2	Shaft No. 11, Lance,	Plymouth.
24	do. 10,	John Perookl,	Laborer,	47	1		Reynolds No. 16,	do.
25	do. 11,	Edward Frazer,	Miner,	33	1	7	Alden,	Newport township.
26	do. 17,	Luke McManaman,	Rockman,	24			Dodson,	Plymouth.
27	do 23,	Thomas Gibbs,	Miner,	31	1	1	Shaft No. 1, Lee vein,	Nanticoke.
28	do. 27,	William Carlaw,	do.	34	1	3	Shaft No. 4,	Edwardsdale.
29	do. 28	John Kniese,	Rockman,	34	1	3	Shaft No. 4,	Plymouth.
30	do. 28,	Patrick McGill,	Laborer,	21		..	Shaft No. 4,	do.
31	May 8,	Joseph Kamawla,	do	24	.	..	Stanton,	Wilkes-Barre.
32	do. 10,	William Stacy,	Driver,	18	..	..	Lance No 11,	Plymouth.
33	do. 11,	David C. Williams,	Miner,	31	1	1	Nottingham,	do.
34	do. 16.	Thomas Rowane,	Headman,	41	1	6	Tillinghast,	South Wilkes-Barre.

TABLE 4.—*Continued.*

Number of accident.	Date of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	Number of orphans.	Name of Colliery.	Location—Luzerne County.
35	May, 16,	William M. Hughes,	Miner,	30	1	2	Franklin,	Wilkes-Barre.
36	do. 22,	Henry Mapstone,	do.	45	1	8	Shaft No. 2,	Nanticoke
37	do. 26,	Andrew Sutton,	do.	31			Warrior Run,	Hanover township.
38	do. 28,	James Sullivan,	do.	53	1	5	Newport shaft,	Glen Lyon
39	June 1,	Mathew Weill,	Driver,	18			Avondale,	Plymouth township.
40	do. 6,	Lewis Davies,	Shaft sinker,	29	1	5	Baltimore shaft,	Wilkes-Barre township.
41	do. 6,	William Symbolic,	Laborer,	22			Wanamie,	Newport township.
42	do. 8,	Nelson Carey,	Footman,	25	1	1	Shaft No. 2,	Nanticoke.
43	do. 18,	John Corcoran,	Miner,	37	1	5	Shaft No. 5,	Plymouth.
44	do. 27,	Thomas W. Roberts,	do.	25	1	2	Shaft No. 2,	Nanticoke.
45	July 3,	Taliesin Edwards,	Locomotive engineer,	27	1		Breaker No. 2,	Edwardsdale.
46	do. 5,	Casper Sheminski,	Laborer,	32	1	2	Reynolds,	Plymouth.
47	do. 12,	John Schwartz,	Loader,	21			Breaker No. 2, Red Ash,	Wilkes-Barre township.
48	do. 20,	Thomas Madden,	Driver,	18			Slope No. 3,	West Nanticoke.
49	do. 30,	Stephen Homalige,	Laborer,				Empire,	Wilkes-Barre.
50	do. 31,	John Pollark,	do.	26			Shaft No. 3,	Edwardsdale.
51	August 1,	Joseph Schutt,	do.	27			Alden,	Newport township.
52	do. 2,	David Kinney,	Footman,	22			Shaft No. 9,	Sugar Notch.
53	do. 4,	John W. Thomas,	Company hand,	25			Shaft No. 1, Lee vein,	Nanticoke
54	do. 7,	Thomas Watkins,	Rockman,	40	1		Avondale,	Plymouth township.
55	do. 7,	Adam Kurtkofski,	Laborer,	19			West End,	Mocanaqua.
56	do. 7,	John Molitorias,	do.	29			Hollenback,	Wilkes-Barre.
57	do. 9,	Joseph Richards,	Driver,	15			Hollenback,	do.
58	do. 22,	Peter Casey,	Miner,	40	1	2	Shaft No. 2,	Nanticoke.
59	do. 24,	John Cromiac,	Laborer,	30	1	1	Shaft No. 5,	Plymouth.
60	do. 25,	John O. Donnell,	Slate picker,	12			Franklin breaker,	Wilkes-Barre.
61	do. 28	John M. Jones,	Driver,	16			Newport tunnel,	Glen Lyon.
62	do. 30,	John Anderson,	Miner,	32	1	2	Slope No. 2,	Nanticoke.
63	September 5,	Joseph Tontaki,	Laborer,	58	1		Shaft No. 4,	Plymouth.
64	do. 7,	Fred. Taylor,	do.	23			Hillman vein,	Wilkes-Barre.
65	do. 22,	Thomas Vinto,	do.	26	1	1	Slope No. 2,	Nanticoke.
66	do 29,	Thomas Merry,	do.	38	1	4	No. 2, Red Ash,	Wilkes-Barre township.
67	October 4,	John Phillips,	Miner,	51			Warrior Run,	Hanover township.
68	do. 5,	Richard Hook,	do.	47	1	1	Shaft No. 3,	Edwardsdale.
69	do. 13,	Benjamin Markey,	Doorboy,	15			Dorrance,	Wilkes-Barre.

70	do.	31,	Charles Gallagher,	Company hand,	68	1		Gaylord slope,	Plymouth.
71	do.	31,	Samuel Veil,	Miner,	45	1	4	West End,	Macanaqua.
72	November	6,	Morris Roberts,	Laborer,	27			Stanton,	Wilkes-Barre.
73	do.	9,	Lewis Lawson,	Miner,	31			Shaft No. 3,	Plymouth.
74	do.	10,	James Watkins,	Laborer,	21			Nottingham,	do
75	do.	14,	John Abbock,	do.	35	1		Red Ash No. 2,	Wilkes-Barre township.
76	do.	15,	John Sadofski,	do.	3	1	1	Slope No 3,	West Nanticoke
77	do	19,	Patrick Moore	do.	18			Warrior Run,	Hanover township.
78	do.	27,	William Bradbury,	Footman,	22	1		Shaft No. 3,	Edwardsdale.
79	December	1,	Michael McDermott,	Miner,	34	1	3	Conyngham,	Wilkes-Barre.
80	do.	8,	John Alasko,	Carpenter,	23			Breaker No. 1,	Edwardsdale.
81	do.	21,	Albert Markery,	Laborer,	44	1	8	No. 1 Deep shaft,	Nanticoke.
82	do.	24,	Edward Carragher,	Miner,	29	1		Slope No 6,	Glen Lyon.
83	do.	29,	Robert Davies,	Shaft sinker,	24	1		South Wilkes-Barre shaft,	Wilkes-Barre.
			Total,			44	126		

TABLE 4.—*Continued.*

Number of accident.	NAME OF PERSON.	Nature and Cause of Accident.
1	Gustave Nordstrom, . . .	Instantly killed by a fall of coal while tamping a hole for blasting at face. [came from.
2	Charles Woods, ...	Fatally hurt and died in nine hours thereafter. Small stone falling from the shaft above struck him. It is not known where the stone
3	William P. Howells, . .	While sounding a suspicious looking piece of coal, it fell on him and killed him instantly.
4	Paul Zoter, ...	Skull fractured; struck by a lump of coal which rolled down the chute. Died February 5. [preparing. He died February 2.
5	Patrick O. Connell, . . .	Face, chest and hands burned by an explosion of powder; having his lamp on his hat a spark flew into a cartridge of powder which he was
6	Mark M. Bolton, ...	while running from a blast he met a car coming which struck him down and ran upon him causing injuries from which he died on the 27th. His hearing was very defective.
7	Christopher Knauss, .	Instantly killed by a large fall of coal at face of his breast.
8	Thomas O. Driscoll, . . .	Fatally hurt by a fall of rock; returned too hastily after blasting without proper precaution. He died in about six hours after the occurrence.
9	Daniel Rees, Jr., ...	A door was blown against him causing fatal injuries. Gas accumulated through leaving the said door stand open, at a point on the air-way inside, and it exploded from the mason's lamps. Three persons were more or less burned, and the force of the wind blew the door upon Rees. He died the same day. [Juries from which he died in a few hours after.
10	Mike Dedavitch, ...	A piece of coal fell off a car on breaker trestling, and rolled over the side, striking the deceased, who was below, on his head, causing in-
11	John M. Evans, ...	While bringing a car out at face of gangway, was caught between it and brattice and was killed.
12	Frank Rominski, ...	Instantly killed by a fall of coal.
13	Cornelius McCall, ...	Killed by a fall of rock while pulling brattice boards loose in an abandoned breast.
14	Joseph Jobliski, ...	Instantly killed by a fall of rock. The roof was wet and of a very dangerous character.
15	Anthony Smith, ...	Leg crushed between cars. It was amputated at the hospital, but he died on the 9th.
16	John Brown, ...	Fatally hurt by a fall of rock, and died while being conveyed home. His attention was called to the dangerous character of the rock, yet he continued working under it until it fell.
17	Patrick McLaughlin, . . .	Fatally injured by being struck by cars. Died in six hours.
18	George Tippens, ...	Instantly killed by fall of rock. He worked under it after repeated warnings to pull it down.
19	David Edmonds, ...	Fatally hurt by a fall of rock from beneath the top coal in face of gangway. Died two hours after. [and frame.
20	Rees G. Edwards, ...	He and another boy had gone where they should not, and while playing he fell on a revolving screen and was crushed to death between it
21	Joseph Ulavitch, ...	Instantly killed by a fall of rock A result of carelessness.
22	Patrick Murray, ...	Clothing caught in set-screw head and he was pulled on to a revolving shaft, and was killed.
23	William W. Jones, . . .	Fatally hurt by a premature blast which fired while he was close by. He died in about four hours.
24	John Jerooski, ...	Killed; car jumped off track in breast and crushed him against the side or rib.
25	Edward Frazen, ...	Instantly killed by a fall of rock in face of gangway Evidently proper care had not been exercised.
26	Luke McManaman, . . .	Instantly killed by a falling rock which he was in the act of pulling down.
27	Thomas Gibbs, ...	Instantly killed by a fall of rock It burst down on him unexpectedly close to face of gangway.
28	William Carlaw, ...	Instantly killed by a premature blast. He had not stirred from the hole when it fired.
29	John Kniese, . . . }	While charging a hole in a rock tunnel the powder exploded. Kniese was fatally hurt, and died in two hours. McGill was killed,
30	Patrick McGill, ... }	and Charles O Connell was severely injured.
31	Joseph Kamawia, . . .	While a blast was fired in the adjacent breast a lump of coal flew out from the rib, crushing his head against a car, killing him instantly.
32	William Stacey, . . .	While uncoupling moving cars his leg was crushed He died from shock at the hospital that night
33	David C. Williams, . . .	Had charged a hole and when igniting the match it fired. He was injured so that he died in four hours.

34	Thomas Rowane,	Instantly killed by falling down the shaft. There was no one present to see the accident.
35	William M. Hughes,	By not exercising sufficient care in handling powder it fired. He was severely burned about the body and lived only six hours.
36	Henry Mapstone,	Instantly killed by a fall of top coal. Was evidently deceived by an unseen slip which caused the coal to fall unexpectedly.
37	Andrew Sutton,	Injured by a falling prop in breast. Died at the hospital May 31
38	James Sullivan,	Burned by an explosion of gas. Died June 7 Occurred in an abandoned breast.
39	Mathew Weill,	A runaway car came toward the car on which he was riding. In the collision he was injured so that he died on the second day.
40	Lewis Davies,	Killed by a piece of rock falling on him from side of shaft
41	William Symbolic,	Fatally hurt by a piece of coal slipping on him from corner of pillar. Died June 7.
42	Nelson Carey,	Instantly killed; cage was pulled up without signal and he was crushed between it and side of shaft.
43	John Corcoran,	Killed by a fall of top rock. Occurred at face of dip air-way while he was mining coal.
44	Thomas W. Roberts,	Fatally injured by a premature blast. Had not moved from it when it fired. Died July 5
45	Taliesin Edwards,	Fatally injured; locomotive ran off track and over side of a bridge. He died the same night. [morning.
46	Casper Sheminski,	Fatally injured; did not go to a safe position while a shot was fired. The flying coal struck him, causing severe injuries. Died the next
47	John Schwartz	Fatally hurt by falling under a railroad car which he was running out from the breaker. Died within one hour after
48	Thomas Madden,	Instantly killed; caught between a car and side of airway. [as to the cause of his death.
49	Stephen Homalige,	While assisting the miner to pry down coal the bar slipped and struck him on his abdomen, and he died during the night. There are doubts
50	John Pollark,	A car ran away from his breast, and he rode down clinging to the brake endeavoring to stop it On reaching the gangway, the car turned on its side and caught him under it. He was injured seriously and died at the hospital the next day.
51	Joseph Schutt,	Instantly killed by a fall of rock in a breast. The miner had tried to pry it down and had failed.
52	David Kinney,	Rode up on a gravity plane and two runaway loaded cars came down He was severely injured in the collision and died August 6.
53	John W. Thomas,	Instantly killed by falling down the upcast shaft. Was working on a platform and fell off.
54	Thomas Watkins,	Instantly killed, neck broken by being struck by the plane-rope at head of plane.
55	Adam Kurtkofski,	Instantly killed by a fall of rock. A thin flake of rock fell on him at face of breast.
56	John Molitorias,	A thin piece of coal fell on him at face of breast and killed him instantly. [so that he died August 10
57	Joseph Richards,	Five empty cars uncoupled on slope and ran down. Richards was driving a trip of cars to the branch, when they collided, crushing him
58	Peter Casey,	Severely bruised about hips by a fall of rock Inflamation caused his death September 4.
59	John Cromlac,	Instantly killed by a fall of coal. It shot down without any warning and struck him.
60	John O. Donnell,	Was running across the track when a car came and struck him down injuring him and causing his death that night.
61	John M. Jones,	Killed by being kicked on his head by a mule.
62	John Anderson,	Sprained fractured by a fall of rock. Was on his knees estimating the quantity of powder he should charge the hole with. He died Sept 8.
63	Joseph Tonatsko,	While drilling a hole at the face of breast a piece of fireclay suddenly fell on him injuring him so severely that he died in about half an hour.
64	Fred. Taylor,	Killed by a fall of roof in a place driving across pillars It fell suddenly and without warning.
65	Thomas Vento,	Instantly killed by a car running upon him at foot of slope.
66	Thomas Merry,	Fatally hurt by a fall of coal He knew it was dangerous and walked under just at the moment it fell. He died on being taken home.
67	John Phillips,	Instantly killed by a fall of rock rushing down a steep breast upon him.
68	Richard Hook,	Fatally injured while descending the shaft on the cage. A piece of iron broke from the ascending cage and following the other down, passed through roof and penetrated Hook's body, causing injuries from which he died in about half an hour.
69	Benjamin Markey,	Fatally injured by an explosion of gas From some mysterious cause, gas accumulated on the upper side of a passing branch, and when the drivers passed in it fired. The driver and runner were slightly burned, but Markey who was walking in advance was severely burned and the mule ran upon him with the cars causing injuries from which he died the same evening.
70	Charles Gallagher,	Killed by a runaway car at foot of gravity plane
71	Samuel Vail,	Fatally injured by a fall of top coal Died the following day.
72	Morris Roberts,	A large mass of top coal fell suddenly from corner of breast killing him instantly.
73	Lewis Lawson,	While in the act of cutting a prop out with an axe a large mass of bone fell on him causing injuries from which he died November 13.
74	James Watkins,	Killed by a fall of bone and coal at face of gangway while busy loading a car.
75	John Abbock,	Fatally injured by a fall of rock at face of breast Died the same night.
76	John Sadofski,	Someone left a door open, causing gas to accumulate at face of the breast where he was working. It came in contact with his lamp and exploded, burning him so that he died November 16
77	Patrick Moore,	Killed by a runaway car on the slope. A coupling-link broke leaving two cars back just as he was about to walk down from one lift to another.

TABLE 4.—*Continued.*

Number of accident.	NAME OF PERSON.	Nature and Cause of Accident.
1	Gustave Nordstrom, . . .	Instantly killed by a fall of coal while tamping a hole for blasting at face. [came from.
2	Charles Woods, . . .	Fatally hurt and died in nine hours thereafter. Small stone falling from the shaft above struck him. It is not known where the stone
3	William P. Howells, . .	While sounding a suspicious looking piece of coal, it fell on him and killed him instantly.
4	Paul Zoter, ...	Skull fractured; struck by a lump of coal which rolled down the chute. Died February 5. [preparing. He died February 2.
5	Patrick O. Connell, . . .	Face, chest and hands burned by an explosion of powder; having his lamp on his hat a spark flew into a cartridge of powder which he was
6	Mark M. Bolton, ...	while running from a blast he met a car coming which struck him down and ran upon him causing injuries from which he died on the 27th. His hearing was very defective.
7	Christopher Knauss, .	Instantly killed by a large fall of coal at face of his breast.
8	Thomas O. Driscoll, . . .	Fatally hurt by a fall of rock: returned too hastily after blasting without proper precaution. He died in about six hours after the occurrence.
9	Daniel Rees, Jr., ...	A door was blown against him causing fatal injuries. Gas accumulated through leaving the said door stand open, at a point on the air-way inside, and it exploded from the mason's lamps. Three persons were more or less burned, and the force of the wind blew the door upon Rees. He died the same day. [juries from which he died in a few hours after.
10	Mike Dedavitch, ...	A piece of coal fell off a car on breaker trestling, and rolled over the side, striking the deceased, who was below, on his head, causing in-
11	John M. Evans, ...	While bringing a car out at face of gangway, was caught between it and brattice and was killed.
12	Frank Rominski, ...	Instantly killed by a fall of coal.
13	Cornelius McCall, ...	Killed by a fall of rock while pulling brattice boards loose in an abandoned breast.
14	Joseph Jobliski, ...	Instantly killed by a fall of rock. The roof was wet and of a very dangerous character.
15	Anthony Smith, ...	Leg crushed between cars. It was amputated at the hospital, but he died on the 9th.
16	John Brown, ...	Fatally hurt by a fall of rock, and died while being conveyed home. His attention was called to the dangerous character of the rock, yet he continued working under it until it fell.
17	Patrick McLaughlin, . . .	Fatally injured by being struck by cars. Died in six hours.
18	George Tippens, ...	Instantly killed by fall of rock. He worked under it after repeated warnings to pull it down.
19	David Edmonds, ...	Fatally hurt by a fall of rock from beneath the top coal in face of gangway. Died two hours after. [and frame.
20	Rees G. Edwards, ...	He and another boy had gone where they should not, and while playing he fell on a revolving screen and was crushed to death between it
21	Joseph Ulavitch, ...	Instantly killed by a fall of rock A result of carelessness.
22	Patrick Murray, ...	Clothing caught in set-screw head and he was pulled on to a revolving shaft, and was killed.
23	William W. Jones, . . .	Fatally hurt by a premature blast which fired while he was close by. He died in about four hours.
24	John Perooski, ...	Killed; car jumped off track in breast and crushed him against the side or rib.
25	Edward Frazen, ...	Instantly killed by a fall of rock in face of gangway Evidently proper care had not been exercised.
26	Luke McManaman, . . .	Instantly killed by a falling rock which he was in the act of pulling down.
27	Thomas Gibbs, . .	Instantly killed by a fall of rock It burst down on him unexpectedly close to face of gangway.
28	William Carlaw, ...	Instantly killed by a premature blast. He had not stirred from the hole when it fired.
29	John Kniese, . . . }	While charging a hole in a rock tunnel the powder exploded. Kniese was fatally hurt, and died in two hours. McGill was killed,
30	Patrick McGill, ... }	and Charles O'Connell was severely injured.
31	Joseph Kamawla, . . .	While a blast was fired in the adjacent breast a lump of coal flew out from the rib, crushing his head against a car, killing him instantly.
32	William Stacey, . .	While uncoupling moving cars his leg was crushed He died from shock at the hospital that night
33	David C. Williams, . . .	Had charged a hole and when igniting the match it fired. He was injured so that he died in four hours.

34	Thomas Rowane,	Instantly killed by falling down the shaft. There was no one present to see the accident.
35	William M. Hughes,	By not exercising sufficient care in handling powder it fired. He was severely burned about the body and lived only six hours.
36	Henry Mapstone,	Instantly killed by a fall of top coal. Was evidently deceived by an unseen slip which caused the coal to fall unexpectedly.
37	Andrew Sutton,	Injured by a falling prop in breast. Died at the hospital May 31
38	James Sullivan,	Burned by an explosion of gas. Died June 7 Occurred in an abandoned breast.
39	Mathew Weill,	A runaway car came toward the car on which he was riding. In the collision he was injured so that he died on the second day.
40	Lewis Davies,	Killed by a piece of rock falling on him from side of shaft
41	William Symbolic,	Fatally hurt by a piece of coal falling on him from corner of pillar. Died June 7.
42	Nelson Carey,	Instantly killed; car was pulled up without signal and he was crushed between it and side of shaft.
43	John Corcoran,	Killed by a fall of top rock. Occurred at face of dip air-way while he was mining coal.
44	Thomas W. Roberts,	Fatally injured by a premature blast. Had not moved from it when it fired. Died July 5
45	Taliesin Edwards,	Fatally injured; locomotive ran off track and over side of a bridge. He died the same night. [morning.
46	Casper Sheminski,	Fatally injured; did not go to a safe position while a shot was fired. The flying coal struck him, causing severe injuries. Died the next
47	John Schwartz	Fatally hurt by falling under a railroad car which he was running out from the breaker. Died within one hour after
48	Thomas Madden,	Instantly killed; caught between a car and side of airway. [as to the cause of his death.
49	Stephen Homalige,	While assisting the miner to pry down coal the bar slipped and struck him on his abdomen, and he died during the night. There are doubts
50	John Pollark,	A car ran away from his breast, and he rode down clinging to the brake endeavoring to stop it On reaching the gangway, the car turned on its side and caught him under it. He was injured seriously and died at the hospital the next day.
51	Joseph Schutt,	Instantly killed by a fall of rock in a breast. The miner had tried to pry it down and had failed.
52	David Kinney,	Rode up on a gravity plane and two runaway loaded cars came down He was severely injured in the collision and died August 6.
53	John W. Thomas,	Instantly killed by falling down the upcast shaft. Was working on a platform and fell off.
54	Thomas Watkins,	Instantly killed, neck broken by being struck by the plane-repeat head of plane.
55	Adam Kurtkofski,	Instantly killed by a fall of rock. A thin flake of rock fell on him at face of breast.
56	John Molitorias,	A thin piece of coal fell on him at face of breast and killed him instantly. [so that he died August 10
57	Joseph Richards,	Five empty cars uncoupled on slope and ran down. Richards was brakeing a trip of cars to the branch, when they collided, crushing him
58	Peter Casey,	Severely bruised about hips by a fall of rock Inflamation caused his death September 4.
59	John Cromiac,	Instantly killed by a fall of coal. It shot down without any warning and struck him.
60	John O. Donnell,	Was running across the track when a car came and struck him down injuring him and causing his death that night.
61	John M. Jones,	Killed by being kicked on his head by a mule.
62	John Anderson,	Sp ne fractured by a fall of rock Was on his knees estimating the quantity of powder he should charge the hole with. He died Sept 8.
63	Joseph Tonatsko,	While drilling a hole at the face of breast a piece of fireclay suddenly fell on him injuring him so severely that he died in about half an hour.
64	Fred. Taylor,	Killed by a fall of roof in a place driving across pillars It fell suddenly and without warning.
65	Thomas Vinto,	Instantly killed by a car running upon him at foot of slope.
66	Thomas Merry,	Fatally hurt by a fall of coal He knew it was dangerous and walked under just at the moment it fell. He died on being taken home.
67	John Phillips,	Instantly killed by a fall of rock rushing down a steep breast upon him.
68	Richard Hook,	Fatally injured while descending the shaft on the cage. A piece of iron broke from the ascending cage and following the other down, passed through roof and penetrated Hook's body, causing injuries from which he died in about half an hour.
69	Benjamin Markey,	Fatally injured by an explosion of gas From some mysterious cause, gas accumulated on the upper side of a passing branch, and when the drivers passed in it fired. The driver and runner were slightly burned, but Markey who was walking in advance was severely burned and the mule ran upon him with the cars causing injuries from which he died the same evening.
70	Charles Gallagher,	Killed by a runaway car at foot of gravity plane
71	Samuel Vell,	Fatally injured by a fall of top coal Died the following day.
72	Morris Roberts,	A large mass of top coal fell suddenly from corner of breast killing him instantly.
73	Lewis Lawson,	While in the act of cutting a prop out with an axe a large mass of bone fell on him causing injuries from which he died November 13.
74	James Watkins,	Killed by a fall of bone and coal at face of gangway while busy loading a car.
75	John Abbock,	Fatally injured by a fall of rock at face of breast Died the same night.
76	John Sadofski,	Someone left a door open, causing gas to accumulate at face of the breast where he was working. It came in contact with his lamp and exploded, burning him so that he died November 16
77	Patrick Moore,	Killed by a runaway car on the slope. A coupling-link broke leaving two cars back just as he was about to walk down from one lift to another.

TABLE 4.—*Continued.*

No. of accident.	NAME OF PERSON.	Nature and Cause of Accident.
78	William Bradbury, ...	While he and two other persons were in the cage about to be lowered into the shaft, the fulcrum-pin of the throttle valve lever slipped out. The engineer, instantly endeavering to place the reversing lever on centre, pulled it a little too far causing the engine to reverse and pull the cage up. Bradbury on seeing the cage go up past the upper landing jumped off and fell backwards into the shaft and was killed. The engineer succeeded in stopping the engine when the cage was fifteen feet above the landing, and the two persons remaining in it escaped uninjured.
79	Michael McDermott, . . .	Went in between the loaded cars and rib, at foot of shaft to see if one of his cars was among them. The cars moved on and he was squeezed and injured so severely as to cause his death as soon as he was conveyed home.
80	John Alasko, ...	Attempted to step over a small pair of revolving bevelled cog-wheels and was caught and injured so that death ensued in about one hour. He did this to avoid walking a distance of about twenty feet.
81	Albert Markery, ...	Fatally hurt by the unexpected fall of a piece of rock He died within four hours.
82	Edward Carragher, ...	Fatally burned by an explosion of gas Died December 24. While he and P J. McCune were working together at the face of a steep pitching breast, a piece of coal falling brought gas to their lamp and caused an explosion. Both were severely burned.
83	Robert Davies, ...	While standing on a narrow platform within sixty feet to bottom of shaft and leading the rope over the bunting, he fell to the bottom and was fatally injured. Died at the hospital within four hours after.

Recapitulation.

OCCUPATION.	Number.	Per cent.
Miners, ...	28	33 73
Laborer, ...	27	32 53
Drivers and runners, ...	6	7 23
Door-tenders, ...	2	2 41
Miscellaneous, ...	18	21.69
Slate-pickers, ...	2	2 41
Total, ...	83	100 00

NATIONALITY.	Number.	Per cent.
American, ...	7	8 435
Welsh, ...	19	22 89
Irish, ...	17	20.48
English, ...	11	13 25
German, ...	2	2 41
Polish, ...	17	20.48
Hungarian, ...	7	8.435
Swedish, ...	3	3.62
Total, ...	83	100 00

CAUSES OF THE ACCIDENTS.	Number.	Per cent.
By explosions of gas, ...	5	6.03
By falls of roof and coal, ...	34	40.97
By falling down shafts, ...	4	4 82
Crushed and run over by cars, ...	15	18 07
By explosions of powder and blasts, . .	9	10.84
By miscellaneous causes underground, . . .	9	10 84
By miscellaneous causes on surface, ...	7	8 43
Total, ...	83	100.00

Three fatalities were reported which were not attributable to the work of mining and preparing coal; therefore they were not included in the above list, viz: Stephen Homaligo reported from the Empire, July 31st, who was taken home sick and died during the night. Hugh Brown killed by playing with railroad cars at the Baltimore slope No 6, and Seymour Osborne, who fell dead at the bottom of No. 2 shaft, Plymouth, December 24.

TABLE No. 5.—List of non-fatal accidents occurring in and about the mines of the Third Anthracite Mine District for the year ending December 31, 1888.

Number of accident.	Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Number of children.	Name of colliery.	Location—Luzerne county.
1	January 4,	Josiah Jenkins,	Miner,	43	Wid.,		Woodward,	Plymouth township.
2	do. 6,	Alf. Wilcox,	Laborer,	19			Stanton,	Wilkes-Barre.
3	do. 6,	Julian Schmitz,	do.	30			Hollenback,	do.
4	do. 9,	Patrick Cleary,	Runner,	21			Hillman vein,	do.
5	do. 10,	John Welsh	Laborer,	24			Maffet,	Sugar Notch.
6	do. 10,	Daniel Powell,	Brakeman,	16			Slope No. 4,	Nanticoke.
7	do. 11,	Robert R Roberts,	Runner,	20			Shaft No. 3,	Edwardsville.
8	do. 11,	John Fisher,	Miner,	40	M.,	4	Parrish,	Plymouth.
9	do. 13,	Christopher Nesbit,	Engineer,	34	M.,	1	Nottingham,	do
10	do. 13,	John Conyngham,	Miner,	42	M.,	4	Stanton	Wilkes-Barre.
11	do. 13,	Morgan Thomas,	Driver,	15			Red Ash No. 2,	do.
12	do. 18,	Edward R James,	do.	17			Stanton,	do.
13	do. 19,	Samuel H. Jones,	Miner,	38	M.,	4	Slope No 1,	Nanticoke.
14	do. 19,	Michael Soady,	Fireman,	21			Shaft No. 1,	Edwardsville.
15	do. 19,	Patrick Manly.	Slate-picker,	14			do.	do.
16	do. 23,	Thomas S. Thomas,	Miner,	30	M.,		Empire,	Wilkes-Barre.
17	do. 23,	Frank Monk,	Driver,	18			Gaylord,	Plymouth.
18	do. 25,	John Travester,	Miner,	30	M.,	2	Shaft No. 4,	Edwardsville.
19	do. 26,	Milton Snyder,	Slate-picker,	16			Jersey No. 8,	Ashley.
20	do. 27,	John T. H Jones,	Mason,	45			Nottingham,	Plymouth.
21	do. 27,	Lodwick Davies,	do.	35	M.,	1	do.	do.
22	do. 27,	David Lloyd,	Laborer,	29	M.,		do.	do.
23	February 1,	Stephen Roberts,	Miner,	25			Stanton,	Wilkes-Barre.
24	do. 2,	Charles Ravage,	Driver,	18			Shaft No. 1,	Edwardsville.
25	do. 2,	John Roberts,	Teamster,	37	M.,	4	Avondale,	Plymouth township.
26	do. 4,	Michael Masko,	Oiler,	22			Newport No. 6,	Glen Lyon,
27	do. 4,	William Brennen,	Driver,	17			Empire,	Wilkes-Barre.
28	do. 4,	Eckley Morgan,	Laborer,	22			Nottingham,	Plymouth.
29	do. 4,	John Griffiths,	Miner,	27			Shaft No. 1, Lee vein,	Nanticoke.
30	do. 4,	Vorchick Ostroski,	Laborer,	28	M.,	3	do. do.	do.
31	do. 4,	David S. Evans,	Miner,	25	M.,	2	do. do.	do.
32	do. 4,	James Gibson,	Laborer,	26			do. do.	do.
33	do. 4,	John Cosgrove,	do.	28	M.,		Slope No. 1,	do.
34	do. 7,	George Gnydes,	Footman,	22			Shaft. No. 2,	do.

TABLE No. 5—*Continued.*

Number of accident.	Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Number of children.	Name of colliery.	Location—Luzerne county.
35	February 3,	Eli Pittenbender,	Laborer,	17			Breaker No. 2,	Plymouth.
36	do. 9,	John Cubl ski,	do.	40	M.,	4	Shaft No. 2,	Nanticoke.
37	do. 13,	Hugh Nolan,	Miner,	54	M.,	5	Hillenback,	Wilke -Barre.
38	do. 13,	Isaac Sartain,	do.	31	M.,	3	Shaft No. 1, Forge vein,	Nanticoke.
39	do. 13,	Frank Lanezug,	Laborer,	27			do. do.	do.
40	do. 18,	Frank Bray,	Mason,	16			Breaker No. 2,	do.
41	do. 18,	Merritt Frederick,	Outside foreman,	47	M.,	5	Parrish,	Plymouth.
42	do. 18,	Thomas Finerty,	Driver,	17			Stanton,	Wilkes-Barre.
43	do. 20,	Jacob Perry,	Miner,	35	M.,	4	Shaft No. 2,	Nanticoke.
44	do. 20,	John Ball, Jr.,	Oiler,	16			Shaft No. 9,	Sugar Notch.
45	do. 21,	Morgan J. Rowlands,	Helper,	15			Shaft No. 4,	Kingston.
46	do. 22,	George F McGinnis,	Miner,	27	M.,	1	Shaft No. 2,	Nanticoke.
47	do. 22,	Mike Eglass,	Laborer,	24			Stanton,	Wilkes-Barre.
48	do. 23,	Thomas Mills,	Slate-picker,	18			do.	do.
49	do. 24,	Joseph Johnson,	Miner,	57	M.,	4	Franklin,	do.
50	do. 24,	James Reagan,	Laborer,	24			Hillman vein,	do.
51	do. 25,	Joseph Johnson,	Miner,	55	M.,		Empire,	do.
52	do. 28,	William Prosser,	do.	30			Shaft No 4,	Edwardsville.
53	do. 29,	John Finnigan,	do.	37	M.,	4	Nottingham,	Plymouth.
54	do. 29,	Michael O'Donnell,	Laborer,	22			do	do.
55	March 2,	Jacob Rufus,	Driver,	15			Baltimore tunnel,	Wilkes-Barre.
56	do. 5,	Samuel Williams,	Runner,	19			Stanton,	do.
57	do. 7,	John Young,	do.	20			Lance No. 11,	Plymouth.
58	do. 9,	William Foley,	Driver,	17			Stanton,	Wilkes-Barre.
59	do. 14,	William B. Davies,	Miner,	35	M.,		Shaft No. 4,	Edwardsville.
60	do. 14,	James Martin,	do.	30			do.	do.
61	do. 15,	David G. Hughes,	do.		M.,	1	Slope No 2,	Nanticoke.
62	do. 21,	William Evans,	Runner,	28	M.,	1	Shaft No. 5,	Plymouth.
63	do 22,	Richard Lloyd,	Footman,	40			Red Ash No. 2,	Wilkes-Barre.
64	do. 24	James McGinnis,	Driver,	15			Empire,	do.
65	do. 26,	Henry Bartells,	Carpenter,		M.,	1	Gaylord,	Plymouth.
66	do. 27,	John Rotfresh,	Miner,	36	M.,	4	Shaft No. 2,	Edwardsville.
67	do. 27,	William Hankey,	do.	48	M.,	3	Parrish	Plymouth.
68	do. 28,	George Layne,	do	22	M.,	5	Nottingham,	do.
69	do. 28,	John Marzot,	Laborer,	40	M.,	6	do	do.
70	do. 30,	William W. Davies,	Miner,	36	M.,		Shaft No. 1, Forge vein,	Nanticoke.

71	April	4,	Peter Karmimski,	Headman,	20				Breaker No. 2,		do.
72	do.	6,	William C Williams,	Miner,	35	M.,		1	Stanton,		Wilkes-Barre.
73	do.	7,	Adam Savitski,	do.	26				Alden,		Newport township.
74	do.	7,	Andrew Gaust,	Laborer,	27	M.,		3	do.		do.
75	do.	9,	William P. Jones,	do.	28				Diamond,		Wilkes-Barre.
76	do.	10,	Midil Gronko,	do.	24				Slope No. 2,		Nanticoke.
77	do.	13,	Walter Thomas,	do.	25				Shaft No. 4,		Edwardsville.
78	do.	14,	Lemuel Shoemaker,	Miner,	35	M.,			Wanamie,		Newport township.
79	do.	14,	John Price,	Laborer,	24	M.,		2	Conyngham,		Wilkes-Barre.
80	do.	14,	Owen Jones,	Miner,	47	M.,		3	Shaft No. 9,		Sugar Notch.
81	do.	16,	William Williams,	Driver,	19				Conyngham,		Wilkes-Barre..
82	do.	16,	John Humphreys,	Miner,	46	M.,		6	Nottingham,		Plymouth
83	do.	21,	John M. Thomas,	do.	49	M.,		1	Red Ash No. 1,		Wilkes-Barre.
84	do.	26,	Henry Shultz,	Plane runner,	34	M.,		2	Franklin breaker,		do.
85	do.	27,	Joseph Kerlinski,	Laborer,	30	M.,		1	Shaft No. 2,		Nanticoke.
86	do.	27,	Frank Sewaski,	Runner,	20				do.		do.
87	do.	27,	Gerhart Hoskins,	Driver,	16				Newport tunnel,		Glen Lyon.
88	do.	28,	Charles O. Connell,	Rockman,	26				Shaft No. 4,		Plymouth.
89	do.	30,	John Connor,	Miner,	37	M.,		3	Conyngham,		Wilkes-Barre.
90	May	4,	Thomas Hutchings,	Laborer,	24	M.,		1	West End,		Mocanaqua.
91	do.	5,	Onuloun Victor,	do.	26				Shaft No. 2,		Nanticoke.
92	do.	14,	Lewis Mahuski,	Oiler,	17				Newport breaker,		Glen Lyon.
93	do.	16,	Edward Roderick,	Miner,	26	M.,		1	Hollenback,		Wilkes-Barre.
94	do.	17,	John Malowney,	Slate-picker,	13				Red Ash No. 1,		do.
95	do.	18,	James Knight,	Laborer,	42	M.,		6	Shaft No. 1, Forge vein,		Nanticoke.
96	do.	19,	Charles Curtis,	Miner,	29	M.,		2	do. do.		do.
97	do.	19,	David L. Williams,	Door-boy,	15				Shaft No. 2,		do.
98	do.	22,	Daniel Mulheran,	Miner,	42	M.,			Newport tunnel,		Glen Lyon.
99	do.	24,	Samuel C. Jones,	Footman,	23				Warrior Run,		Warrior Run.
100	do.	26,	Lewis Watkins,	Miner,	32	M.,		3	Shaft No. 1, Forge vein,		Nanticoke.
101	do.	29,	Walter Francis,	do.	38	M.,		4	Shaft No. 3,		Edwardsville.
102	do.	29,	George Serchina,	Brakeman,	24	M.,			do		do.
103	June	1,	John Brennen,	Driver,	20				Reynolds,		Plymouth.
104	do.	2,	Owen Owens,	Miner,	35				Lance No. 11,		do.
105	do.	6,	John Rostoski,	Laborer,	28				Slope No. 4,		Nanticoke.
106	do.	6,	Barney Gallagher,	do.	21				Diamond,		Wilkes-Barre.
107	do.	6,	Albert Downe,	Driver,	22				Lance No. 11,		Plymouth.
108	do.	7,	Charles Frank,	Miner,	38	M.,			Warrior Run,		Warrior Run.
109	do.	7,	Thomas Richards,	do.	23	M.,		4	Nottingham,		Plymouth.
110	do.	12,	Dominick Winters,	do.	40	M.,		3	Warrior Run,		Warrior Run.
111	do.	12,	William Evans,	do.	35	M.,		4	Slope No. 3,		West Nanticoke.
112	do.	12,	David Evans,	Driver,	18				do.		do. do.
113	do.	12,	Joseph Malbenski,	Laborer,	20				do.		do. do.
114	do.	15,	David Sheen,	do.	21				Shaft No. 1, Forge vein,		Nanticoke.
115	do.	15,	Richard Owen,	Miner,	38	M.,		3	Stanton,		Wilkes Barre.
116	do.	16,	Richard Lewis,	do.	33	M.,		1	Shaft No 9,		Sugar Notch.
117	do.	16,	Edward Griffiths,	Door-boy,	15				do. 8,		Glen Lyon,
118	do.	18,	Thomas Smith,	Laborer,	26				Nottingham,		Plymouth.
119	do.	19,	Henry H. Jones,	Miner,	46	M.,		5	Stanton,		Wilkes-Barre.
120	do.	20,	Thomas Laurence,	do	34				Slope No. 4		Nanticoke.
121	do.	25,	Peter Lyons,	Laborer,	60	M.,		4	Diamond breaker,		Wilkes Barre.
122	do.	25,	George Washburne,	Brakeman,	19				Breaker No. 2,		Nanticoke.

TABLE No. 5—*Continued.*

No. of accident.	Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	No. of children.	Name of Colliery.	Location—Luzerne County.
123	June 27,	Neal Monson,	Miner,	45	M.,	4	Maffet,	Sugar Notch.
124	do. 29,	Joseph Atwell,	Laborer,	34			Slope No. 3,	West Nanticoke.
125	do. 29,	Thomas P. Thomas,	Miner,		M.,	1	Avondale,	Plymouth township.
126	do. 30,	William S. Jones,	Rockman,	33	M.,	4	Alden,	Alden.
127	do 30,	Michael Devon,	Laborer,	19			do	do.
128	do. 30,	Patrick Murphy,	Miner,	26	M.,	4	Franklin,	Wilkes-Barre.
129	July 2,	Anthony Mathews,	Laborer,	45	M.,		Empire,	do.
130	do. 3,	Henry Williams,	Miner,	47	M.,		Hollenback,	do.
131	do. 3,	George W. Edwards,	Outside foreman,	30	M.,		Breaker No. 2,	Edwardsville.
132	do. 3,	Thomas Conlin,	Fireman,	22	M.,		do	do.
133	do. 7,	David Mallet,	Miner,	35	M.,	1	Reynolds,	Plymouth.
134	do. 9,	Gwilym Edwards,	General foreman,	30	M.,	3	Shaft No. 1,	Edwardsville.
135	do. 9,	William Pugh,	Mine foremen,	30	M.,	3	do.	do.
136	do. 9,	John Gittings,	Miner,	42	M.,	5	Franklin,	Wilkes-Barre.
137	do. 9,	Edward S. Jones,	do.	30			do.	do.
138	do. 10,	Joseph Kranick,	do.	35	M.,	2	Slope No. 6,	Glen Lyon.
139	do. 10,	John Trynofski,	do.	40	M.,		do. 1,	Nanticoke.
140	do. 16,	William Palmer,	do.	42	M.,	4	Hollenback,	Wilkes-Barre.
141	do. 16,	Griffith Jones,	do.	25	M.,	1	do	do.
142	do. 20,	William Jardin,	do.	47	Wid.,	3	Baltimore tunnel,	do.
143	do. 20,	James Colter,	Laborer,	25	M.,	2	do. do.	do.
144	do. 27,	Joseph Hoffmeister,	do.	24			Hollenback,	do.
145	do. 28,	Robert Shaw,	Miner,	32	M.,	3	Red Ash No. 1,	do.
146	do. 29,	William Taffa,	Rockman,	30			Baltimore Shaft, No. 2,	do.
147	do. 30,	John Slava,	Laborer,	28	M.,		Alden,	Alden.
148	do. 31,	John Korpia,	do.	20			Breaker No. 2,	Edwardsville.
149	August 8,	Frank Bintkoski,	do.	24			Slope No. 4,	Nanticoke.
150	do. 9,	Daily Mor n,	do.	64	M.,	3	Stanton,	Wilkes-Barre.
151	do. 9,	Edward Griffiths,	Miner,	32	M.,	2	Nottingham,	Plymouth.
152	do. 10,	Frank Miller,	do.	42	M.,	4	Gaylord,	do.
153	do. 14,	Andrew Soochi,	Laborer,	27			Shaft No. 2,	Edwardsville.
154	do. 14,	Bradford Corby,	Driver,	25	M.,	1	Nottingham,	Plymouth.
155	do. 18,	Patrick Ward,	do.	17			Conyngham,	Wilkes-Barre.
156	do. 20,	Andrew Carline,	Doorboy,	15			Stanton,	do.
157	do. 21,	John Rowe,	Miner,	40	M.,	4	Lance, No. 11,	Plymouth.
158	do. 22,	John Gosmer,	Laborer,	28	M.,		Shaft No. 1, Forge vein,	Nanticoke.
159	do. 24,	Samuel Gregory,	Driver,	18			Shaft No. 4,	Plymouth.

160	August	25,	Isaac Lacey,	Miner,	35	M.,	6	Tunnel No. 6,	Glen-Lyon.
161	do.	27,	Frank Sherman,	Laborer,	21	M.,	2	Shaft No. 2,	Plymouth
162	do.	28,	Julius Coates,	Miner,	60	M.,		Empire,	Wilkes-Barre.
163	do.	31,	David Morris,	do	40	M.,	5	Wanamie,	Newport township.
164	do.	31,	Albert Sepas,	Laborer,	28	M.,		do.	do.
165	September	1,	Charles Mulgavage,	Miner,	35	M.,		Lance No. 11,	Plymouth.
166	do.	1,	Lewis Stupins,	Laborer,	22			Nottingham,	do.
167	do.	3,	John Wetheridge,	Oiler,	50	M.,	5	Shaft No. 2,	Nanticoke.
168	do.	4,	John Yablusky,	Laborer,	28	S.,		do.	do
169	do.	5,	Andrew Hendreskey,	do.	29	M.,	1	do. 5,	Plymouth.
170	do.	7,	William Androsick,	do.	19			Shaft No. 1, Forge vein,	Nanticoke.
171	do.	8,	Frank Knadi,	Miner,	30	M.,		Reynolds,	Plymouth.
172	do.	8,	Mike Linn,	Laborer,	30	S.,		do.	do.
173	do.	8,	Eli Bailey.	Breakman,	18			Slope No. 4,	Nanticoke.
174	do.	10,	James Conway,	Miner,	38	M	6	Baltimore slope,	Wilkes-Barre township.
175	do.	10,	John H. James,	Fireboss,	50	Wid.,		Newport shaft,	Glen-Lyon.
176	do.	18,	Silas Morris,	Headman,	23			Shaft No. 9,	Sugar Notch.
177	do.	19,	Charles H. Tremayne,	Laborer,	19			Stanton,	Wilkes-Barre.
178	do.	19,	James Woods,	Footman,	19			Diamond,	do.
179	do.	22,	Isaac James,	Laborer,	22			Hillman vein,	do.
180	do.	22,	John Walli,	Stable-boss,	37			Shaft No. 1, Forge vein,	Nanticoke.
181	do.	22,	Joseph Novock,	Miner,	35			Shaft No. 2,	do.
182	do.	24,	Stanis Moni,	Laborer,	20			do.	do.
183	do.	24,	George Davis,	do.	20			Hollenback,	Wilkes-Barre.
184	do.	26,	Joseph Solma,	do.	22			Reynolds,	Plymouth.
185	do.	28,	George Sambolt,	do.	22			Shaft No. 4,	Edwardsville.
186	do.	28,	Cornelius Boyle,	Driver,	17			Baltimore slope,	Wilkes-Barre township.
187	do.	29,	David R Williams,	Doorboy,	15			Red Ash No. 1,	Wilkes-Barre.
188	October	1,	Josiah Hinck,	Miner,	45	M.,	5	Shaft No. 2,	Nanticoke.
189	do.	3,	James Dempsey,	do.	28	M.,	1	Parrish,	Plymouth.
190	do.	4,	William May,	do.	46	M.,	5	Grand tunnel,	West Nanticoke.
191	do.	5,	Evan Evans,	Fireboss,	29	M.,	2	Conyngham,	Wilkes-Barre.
192	do.	6,	Richard Hughes,	Miner,	34			Shaft No. 3,	Edwardsville.
193	do.	6,	Henry Andraisack,	Driver,	17			Newport shaft,	Glen-Lyon.
194	do.	8,	Jacob Muller,	Miner,	30	M.,	1	Slope No. 1,	Nanticoke.
195	do.	9,	John U hinski,	Driver,	17			Tunnel No 4,	do.
196	do.	10,	Alex. Unorkofski,	Laborer,	30	M.,		Breaker No. 5,	Plymouth
197	do.	10,	William Prosser,	Miner,	28			Shaft No 4,	Edwardsville.
198	do.	13,	James Hallick,	Slate-picker,	16			Conyngham,	Wilkes-Barre.
199	do.	22,	David Rees,	Driver,	17			Dorrance,	do.
200	do.	13,	Martin Bulsavage,	Miner,	27	M.,		Wanamie,	Newport township.
201	do.	15,	James Adams,	do.	35	M.,	3	Slope No. 4,	Nanticoke.
202	do.	19,	Peter Burns,	do.	47	M.,	4	Gaylord,	Plymouth.
203	do.	19,	Morgan Bynon,	do.	30	M.,	2	Shaft No. 2,	Nanticoke.
204	do.	19,	Edward Lewis,	Laborer,	28			Nottingham,	Plymouth.
205	do.	19,	W. G. Davies,	Miner,	33	M.,	4	do.	do.
206	do.	22,	William Rowane,	do.	45	M.,	4	Stanton,	Wilkes-Barre.
207	do.	29	James Harrison,	do.	35	M.,	5	Shaft No. 4,	Edwardsdale.
208	November	2,	Thomas Morris,	do.	38	M.,	1	do. 3,	do.
209	do.	6,	Pat McGinly.	do.	47	M.,		Wanamie,	Newport township.
210	do.	8,	Joseph Looksavage,	do.	27	M.,	2	Alden,	do.
211	do	8	Thos. Lamonski,	Laborer,	18			Gaylord,	Plymouth.

TABLE No. 5—*Continued.*

Number of accident.	Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Number of children.	Name of colliery.	Location—Luzerne county.
212	November 9,	John P. Witchell,	Miner,	34	M.,	4	Shaft No. 2,	Nanticoke.
213	do. 10,	David Griffith,	do.	25	..	...	Hillman vein,	Wilkes-Barre.
214	do. 10,	Richard Pritchard,	Laborer,	20	....	...	do.	do.
215	do. 13,	Conrad Adams,	Doorboy,	15	....		Hollenback,	do.
216	do. 14,	Adam Zocofski,	Laborer,	28	....	..	Maffett,	Hanover township.
217	do. 15,	Otto Smith,	Miner,	35	M.,	2	Slope No. 3,	West Nanticoke.
218	do. 16,	Robert J Pritchard,	do	45	M.,	..	Jersey No. 8,	Ashley.
219	do. 21,	Joseph Devilles,	Laborer,	25	....	..	Dodson,	Plymouth.
220	do. 21,	John Keeley,	Miner,	44	M.,	3	Conyngham,	Wilkes-Barre.
221	do. 22,	Peter T Reiley,	do.	32	M.,	...	Maffet,	Hanover township.
222	do. 23,	Michael Kittrick,	do.	38	M.,	...	Diamond,	Wilkes-Barre.
223	do. 24,	John Cabbage,	Driver,	18	....	..	Newport shaft,	Glen-Lyon
224	do. 26,	George Dermick,	Runner,	27	M.,	2	Breaker No. 2,	Edwardsdale.
225	do. 26,	Rees E. Davies,	Miner,	46	M.,	..	Empire,	Wilkes-Barre.
226	do. 28,	Llewellyn P. Davies,	do.	35	....	..	Shaft No. 3,	Edwardsdale.
227	do. 28,	James Cantwell,	Doorboy,	15	....	...	do.	Plymouth.
228	December 1,	Joseph Morginski,	Laborer,	38	M.,	2	Shaft No. 2,	Nanticoke.
229	do. 1,	Charles Smith,	do.	..	....	..	Empire,	Wilkes-Barre.
230	do. 3,	James Crossin,	Miner,	50	M.,	5	Jersey No. 8,	Ashley.
231	do. 5,	Job Evans,	Laborer,	25	M.,	2	Avondale,	Plymouth township.
232	do. 6,	George Rokinto,	do.	28	M.,	2	Parrish,	Plymouth.
233	do. 6,	Peter Herron,	Miner,	27	....	...	Conyngham,	Wilkes-Barre.
234	do. 7,	Thomas Rees,	Driver,	18	....	...	East End,	Newport township.
235	do. 8,	Charles Krauss,	Laborer,	42	M.,	...	Shaft No. 5,	Plymouth.
236	do. 10,	Frank Kearn,	Driver,	19	....	...	Hollenback,	Wilkes-Barre.
237	do. 10,	Peter Stein,	Miner,	25	....	...	Empire,	do.
238	do. 11,	Laven Bemott,	Laborer,	28	....	..	Nottingham,	Plymouth.
239	do. 12,	Patrick C. Dougherty,	do.	69	M.,	7	do.	do.
240	do. 14,	Lewis J. Griffiths,	Miner,	42	M.,	..	Shaft No. 4,	Edwardsdale.
241	do. 14,	Hopkin Davies,	do.	48	M.,	7	Franklin,	Wilkes-Barre.
242	do. 14,	John Bray,	do.	43	M.,	1	Shaft No. 4,	Plymouth.
243	do. 15,	John Ginlay,	Runner,	20	....	..	Shaft No. 5,	do.
244	do. 15,	Fred. Armstrong,	Miner,	26	....	...	Shaft No. 1,	Edwardsdale.
245	do. 18,	George Gardner,	do.	35	M.,	..	Baltimore slope,	Wilkes-Barre township.

246	do.	13,	John Harris,	Sinker,	45	M.,		Woodward,		Plymouth township.
247	do.	19,	William Williams,	Miner,	22	M.,		Diamond,		Wilkes-Barre.
248	do.	24,	P. J. McCone,	do.	32	M.,		Newport slope,		Newport township.
249	do.	24,	John F. Thomas,	do.	43	M.,	7	Gaylord shaft,		Plymouth.
250	do.	27,	Albert Griffith,	Laborer,	35	M.,	6	East End,		Newport township.

TABLE No. 5—*Continued.*

Number of accident.	NAME OF PERSON.	Nature and cause of accident.
1	Josiah Jenkins,	Painfully injured on head and back by a fall of coal.
2	Alf. Wilcox,	Squeezed between cars; was painfully hurt.
3	Julian Schmitz,	Jumped off the cage when it was starting up, and was caught between it and shaft; severely injured.
4	Patrick Cleary,	Crushed between a car and rib; skull was fractured and he was otherwise injured.
5	John Welsh,	Leg crushed by a fall of coal
6	Daniel Powell,	Foot crushed; caught between locomotive and car.
7	Robert R. Roberts,	Two ribs fractured; crushed between a car and rib.
8	John Fisher,	Hip dislocated and body bruised by a fall of coal.
9	Christopher Nesbit,	Ankle sprained and thumb dislocated by falling off sheave-wheel platform.
10	John Conyngham,	Body bruised and cut on head by a fall of coal.
11	Morgan Thomas,	Arm crushed by falling under a car; amputated.
12	Edward R. James,	Leg fractured in two places by falling under a car.
13	Samuel H. Jones,	Face and hands burned by an explosion of gas.
14	Michael Soady,	Both were painfully scalded by a boiler explosion.
15	Patrick Manly,	
16	Thomas S. Thomas,	Face and hands slightly burned by an explosion of gas.
17	Frank Monk,	Eye destroyed by a kick from his mule.
18	John Travester,	Leg painfully hurt by a fall of rock.
19	Milton Snyder,	Arm fractured; caught by elevator belt.
20	John T. H Jones,	Faces and hands burned and bruised by an explosion of gas. Daniel Rees, Jr., was killed at the same time.
21	Lodwick Davies,	
22	David Lloyd,	
23	Stephen Roberts,	Severely injured on spine by a premature blast.
24	Charles Savage,	Face severely bruised by a kick from a mule.
25	John Roberts,	Back badly injured and ankle dislocated by a car overturning upon him.
26	Michael Masko,	Arm crushed in cog-wheels; sleeve caught and pulled his arm in among the wheels.
27	William Brennan,	Arm broken; body bruised by falling between car and brattice.
28	Eckley Morgan,	Severely cut on hip by a fall of slate.
29	John Griffiths,	Faces and hands burned by an explosion of gas. They noticed a defection in the air current, but they worked on heedlessly until the gas accumulated and exploded.
30	Vorchick Ostroski,	
31	David S. Evans,	
32	James Gibson,	
33	John Cosgrove,	Struck on head by a piece of coal flying from a blast.
34	George Gnydes,	Arm broken; pin fell down shaft and struck him.

35	Eli Bittenbender,	One rib fractured; struck by brake-lever of car.
36	John Cubiofski,	Calf of leg severely bruised by being caught between cars.
37	Hugh Nolan,	Arm and one rib fractured by a fall of coal.
38	Isaac Sartain,	Faces and hands burned, the former slightly and the latter severely, by an explosion of gas.
39	Frank Lanezug,	
40	Frank Bray,	Leg broken in two places and body badly injured by falling under cars while riding home.
41	Merrit Frederick,	Squeezed between railroad car and shute; painfully injured.
42	Thomas Finerty,	Arm broken; caught between car and side.
43	Jacob Perry,	Leg broken by being struck by falling coal.
44	John Ball, Jr.,	Skull and arm fractured; caught by belt-gearing in the breaker.
45	Morgan J. Rowlands,	Fell from a mule's back; cut his face and head severely.
46	George F. McGinnis,	Powder exploded while being rammed into a hole; he was severely injured on abdomen, arm and side.
47	Mike Eglass,	Painfully injured; cars ran upon him on plane.
48	Thomas Mills,	Slipped on sheet-iron in shute and broke his arm.
49	Joseph Johnson,	Face and hands badly burned by an explosion of gas.
50	James Reagan,	Hand and foot severely hurt by a fall of coal.
51	Joseph Johnson,	Leg severely crushed by a premature blast.
52	William Prosser,	Leg broken and shoulder hurt by a fall of rock.
53	John Finnigan,	Wrist fractured and cut on back; caused by a fall of top coal.
54	Michael O'Donnel,	Bruised around body and knee; caused by a fall of top coal.
55	Jacob Rufus,	Kicked in the stomach by a mule.
56	Samuel Williams,	Thumb cut off at first joint; caught between cars.
57	John Young,	Hand severely cut by a fall of bony coal.
58	William Foley,	Shoulder-bone fractured; bruised and cut on face and shoulder; caught between car and pillar.
59	William B. Davies,	Hands burned; he went into an abandoned breast and fired gas.
60	James Martin,	Face and hands burned; he went into an abandoned breast and fired gas.
61	David G. Hughes,	Face, hands and arms burned by an explosion of gas.
62	William Evans,	Body severely hurt; water car fell upon him.
63	Richard Lloyd,	Severely cut on head; caught between cars while coupling them.
64	James McGinnis,	Mule fell on him and broke his thigh
65	Henry Bartells,	Collar-bone fractured; derrick pole broke and struck him.
66	John Potfresh,	Painfully hurt by rock falling and rolling upon him.
67	William Hankey,	Leg broken by coal thrown by a blast.
68	George Payne,	Left hip bruised; hurt by a fall of bony coal.
69	John Marzot,	Back bruised; hurt by a fall of bony coal.
70	William W. Davies,	Face and hands painfully burned by an explosion of powder.
71	Peter Karmunski,	Foot badly crushed by a car running over it
72	William C Williams,	Hand burned and face heated by an explosion of gas; he was frightened so that he had fits.
73	Adam Savitski,	Foot painfully bruised by a fall of coal.
74	Andrew Gaust,	Hip dislocated and back bruised by a fall of rock.
75	William P. Jones,	Shoulder-blade broken and back painfully hurt by a fall of coal.
76	Midil Gronko,	Back and hips injured by a fall of roof.
77	Walter Thomas,	Slightly burned and badly bruised by an explosion of gas.
78	Lemuel Shoemaker,	Hip dislocated by a fall of rock.
79	John Price,	Severely cut on arm by coal breaking in his hands.
80	Owen Jones,	Back of hand severely cut by a fall of coal.
81	William Williams,	Legs badly bruised by falling under cars.
82	John Humphreys,	Face and hands burned by an explosion of gas.
83	John M. Thomas,	Hand severely cut by a fall of coal.
84	Henry Shultz,	Leg broken by being struck by the friction-lines of the drum.
85	Joseph Kerliuski,	Both slightly burned on faces and hands by explosion of a small quantity of gas.
86	Frank Sewaski,	

TABLE No. 5.—*Continued.*

No. of accident.	NAME OF PERSON.	Nature and cause of accident.
87	Gerhart Hoskins,	Slipped on rail and fell under a car; arm broken and hurt about head and foot.
88	Charles O. Connell,	Severely hurt by a premature blast in rock; John Kneiss and Patrick McGill were fatally hurt by the same blast.
89	John Connor,	Bruised and cut severely by a premature blast.
90	Thomas Hu chings,	Leg broken and severe scalp wound; caused by a fall of rock.
91	Onuloun Victor,	Face and hands badly burned by an explosion of gas.
92	Lewis Mahuski,	Severely injured; caught in a revolving screen.
93	Edward Roderick,	Skull fractured; struck by a spragg which fell from somewhere above at breaker.
94	John Malowney,	Hand painfully crushed; caught in gearing of counter-screen.
95	James Knight,	Leg caught between cars; flesh severely bruised.
96	Charles Curtis,	Face, arms and hands painfully burned by an explosion of gas.
97	David L. Williams,	Leg broken by falling under a car.
98	Daniel Mulheran,	Thigh broken and hurt severely about neck and shoulder by a fall of rock.
99	Samuel C. Jones,	Leg broken by falling under cars.
100	Lewis Watkins,	Severely cut on chest by falling while running from a blast.
101	Walter Francis,	Severely injured by a fall of rock.
102	George Serchina,	Ankle dislocated and fractured; caught between switch-rod and car.
103	John Brennen,	Kicked on face by a mule; severely cut.
104	Owen Owens,	Face and hands slightly burned by an explosion of gas.
105	John Rostoski,	Face and hands slightly burned by gas feeders, which he ignited.
106	Barney Gallagher,	Leg fractured, cut on head and knee bruised by a fall of coal.
107	Albert Downe,	Small bone of leg fractured; caught in mule's harness.
108	Charles Frank,	Painfully hurt by a fall of coal.
109	Thomas Richards,	Back painfully injured by a small piece of slate falling upon him.
110	Dominick Winters,	Leg severely crushed by a fall of slate.
111	William Evans,	Severely cut on leg by a fall of top coal.
112	David Evans,	Faces, hands and backs severely burned by an explosion of gas.
113	Joseph Malbenski,	
114	David Sheen,	Small bone in foot fractured by being caught between cars.
115	Richard Owen,	Thigh broken and head bruised by a fall of coal.
116	Richard Lewis,	Severely cut on head and side of body by a premature blast.
117	Edward Griffiths,	Small bone in leg fractured; car struck the door against him.
118	Thomas Smith,	Hand severely crushed; caught under the wheel of a moving car.
119	Henry H. Jones,	Face, head and side badly bruised by a prop rolling from a car upon him.
120	Thomas Laurence,	Cut slightly on head by a small piece of rock falling upon him, affecting an old fracture of the skull.
121	Peter Lyons,	Hip disjointed and thigh fractured; gondola railroad car ran upon him.
122	George Washburne,	Run over by cars and severely injured.
123	Neal Monson,	Leg fractured and otherwise hurt by a fall of rock.
124	Joseph Atwell,	Face and hands severely burned by an explosion of gas.
125	Thomas P. Thomas,	Badly cut on chest by a fall of coal.

126	William S. Jones,	While driving a tight cartridge of dynamite into a hole it exploded, and the concussion caused a second hole, already charged, to explode. Jones' leg and hand were severely fractured, and Devon was severely burned and bruised.
127	Michael Devon,	
128	Patrick Murphy,	Arm and hip painfully bruised by coal from a blast.
129	Anthony Mathews,	Two ribs fractured by a piece of coal falling on him from side of gangway. [crushed him against a prop.
130	Henry Williams,	Three or four ribs fractured; while extinguishing a fire a piece of coal fell at face and rolled down a breast and
131	George W. Edwards,	Locomotive ran off track and down over the bank, while they were riding on it from the shaft towards the breaker. Both men were severely scalded by the steam. The engineer, Taliesin Edwards, was fatally hurt. (See list of fatal accidents.)
132	Thomas Conlin,	
133	David Mallet,	Cut on head and bruised about hips by falling under cars on slope.
134	Gwilym Edwards,	Both painfully burned on faces and hands; went into an abandoned breast with naked lights and unexpectedly found and exploded gas.
135	William Pugh,	
136	John Gittings,	Both slightly burned by an explosion of gas; it ignited from their naked lamps while putting a length of brattice up.
137	Edward S. Jones,	
138	Joseph Kranick,	Leg broken by a fall of fire clay from roof.
139	John Trynoski,	Leg broken by a fall of coal; it fell on him while he was mining it down.
140	William Palmer,	Faces and hands slightly burned by an explosion of gas; it ignited while they were careless about putting up a length of brattice.
141	Griffith Jones,	
142	Will am Jardin,	While working at face of gangway a fall of rock came upon them, injuring Jardin on back and right side, and breaking Coulter's thigh and injuring his back and ribs seriously.
143	James Colter,	
144	Joseph Hoffmeister,	Arm severely crushed by coal thrown from a blast, necessitating amputation.
145	Robert Shaw,	Severely cut on arm by rock which he was pulling down falling on him.
146	William Taffa,	Back and side painfully injured by falling off a step in the shaft.
147	John Slava,	Leg broken by a car running upon him.
148	John Korpia,	Painfully hurt; caught between screen and woodwork.
149	Frank Bintoski,	Leg broken and hips bruised by a fall of coal.
150	Derby Moran,	Severely cut on head; cars ran upon him.
151	Edward Griffiths,	Hand severely bruised by a fall of rock.
152	Frank Miller,	Shoulder-blade and one rib fractured by a fall of coal.
153	Andrew Soochi,	Ran into the cage-pit and cage descended upon him injuring him severely.
154	Bradford Corby,	Hips injured; mule kicked him causing him to fall under a car.
155	Patrick Ward,	Painfully injured by being squeezed between a car and a door.
156	Andrew Carline,	Slightly burned on hands and feet by igniting a gas blower.
157	John Rowe,	Face and hands burned and bruised by a premature blast.
158	John Gosmer,	Face and hands slightly burned by igniting a gas-feeder in bottom.
159	Samuel Gregory,	Nose fractured by a kick from a mule.
160	Isaac Lacey,	Leg broken by a fall of rock
161	Frank Sherman,	Several cuts on head; caused by a fall of bone-coal.
162	Julius Coates,	Leg fractured by a fall of coal.
163	David Morris,	Both severely burned by an explosion of powder. It fired while they were carelessly handling it at the tool-box.
164	Albert Sepas,	
165	Charles Mulgavage,	Leg broken by a lump of coal falling upon it
166	Lewis Stupins,	Leg broken by a car running over a block upon him.
167	John Wetheridge,	Severely wounded on calf of leg; caught between a car and prop.
168	John Yablusky,	Severely injured on hand, head and body by a piece of rock falling on him.
169	Andrew Hendreskey,	Leg broken; a piece of coal sliding from top of bottom bench struck him.
170	William Androsick,	Jawbone fractured by being struck by coal from a blast.
171	Frank Knadl,	Burned severely. } A spark flew from one of their lamps and ignited a keg full of powder. It occurred while
172	Mike Linn,	Burned slightly. } the miner was carelessly preparing a charge for blasting.
173	E l Bailey,	Two toes cut off; his foot slipped under the wheel of car while he was attempting to get on.
174	James Conway,	Left arm broken, ankle sprained, and slightly injured about head and back by a fall of rock.
175	Evan M. James,	Face and hands severely burned by an explosion of gas.

TABLE No. 5—Continued.

No. of accident.	NAME OF PERSON.	Nature and cause of accident.
176	Silas Morris,	Hand badly bruised; was caught between top rail of car and the roof of gangway.
177	Charles H. Tremayne,	Arm broken by slipping and falling on rail.
178	James Woods,	Hand painfully crushed by a car running over a block upon it.
179	Isaac James,	Slightly hurt on head, chest and right arm by a fall of coal
180	John Walli,	Leg broken; his foot caught between cage and side of shaft.
181	Joseph Novock,	Back and hips painfully hurt by a fall of rock.
182	Stanis Mont,	Leg broken by a fall of coal.
183	George Davis,	Back and ankle bruised by a car turning upon him.
184	Joseph Solma,	Hands and arms burned by an explosion of gas.
185	George Sambolt,	Painfully injured about his hips by a fall of rock.
186	Cornelius Boyle,	Kicked by a mule, causing him to fall under a car. Hip-bone fractured.
187	David R. Williams,	Severely burned on body and hands; his clothing took fire from his lamp.
188	Josiah Hinck,	Ankle fractured, and bruised on back and face by a fall of roof.
189	James Dempsey,	Ankle dislocated and cut on forehead by a fall of coal.
190	William May,	Hand crushed so that it had to be amputated, and one eye severely injured by a blast exploding unexpectedly in a lump of coal in the battery.
191	Evan Evans,	Foot pierced by a miner's blasting needle.
192	Richard Hughes,	Severely cut on left side and bruised on body by a fall of coal.
193	Henry Andraisack,	Small bone of leg fractured; mule kicked him till he fell under a car.
194	Jacob Muller,	Painfully bruised about body by a fall of rock
195	John Ushinski,	Squeezed between a car and timber; was painfully injured.
196	Alex Unorkofski,	Hand crushed in the cog-wheels of a crab used at the lump-coal chute.
197	William Prosser,	Leg broken by a fall of rock.
198	James Hallick,	Bone fractured in one of his legs by falling from the screen-box in the breaker.
199	David Rees,	Face and hands burned by an explosion of gas. Ben Markey was fatally burned and Thomas Benson very slightly burned at the same time.
200	Martin Bulsavage,	Severely hurt about head by a fall of top coal.
201	James Adams,	Small bone in leg fractured; coal worked loose by him fell against it.
202	Peter Burns,	Leg crushed by a fall of rock.
203	Morgan Bynon,	Small bone of leg fractured in two places; coal which he was barring down fell on him.
204	Edward Lewis,	Back and head injured by a fall of coal
205	W. G. Davies,	Back and shoulder slightly hurt by a fall of coal.
206	William Rowane,	Face and hands slightly burned by an explosion of gas.
207	James Harrison,	Severely cut about face and neck by a blast; was returning, supposing that it had missed fire.
208	Thomas Morris,	Cut badly on side and face by ramming a tight cartridge into a hole and exploding it.
209	Pat McGinly,	Leg broken by a fall of top coal.
210	Joseph Looksavage,	Back and head bruised by a fall of fire-clay.
211	Jno. P. Mitchell,	Face and hands severely burned by an explosion of gas.
212	Thos. Lamonski,	Leg broken by a fall of coal.

213	David Griffith,	Faces and hands painfully burned by an explosion of gas.
214	Richard Pritchard,	
215	Conrad Adams,	Face cut severely by falling under a car; his clothing caught in car causing him to fall.
216	Adam Zocofski,	Back painfully injured by a fall of rock.
217	Otto Smith,	Severely cut on back by a piece of coal falling and striking him.
218	Robert J Pritchard,	Sev rely injured by a f ll of rock.
219	Joseph Devilies,	Hip fractured and otherwise inj red by a fall of coal.
220	John Keeley,	Corner of eye penetrated by the point of a pick; he fell on it from a ladder.
221	Peter F. Reiley,	Face and eyes severely injured by a premature blast in rock.
222	Michael Kittrick,	Painfully hurt about head and ribs by a premature blast.
223	John Cabbage,	Leg broken; fell under car while riding on the bumper.
224	George Dermick,	Three fingers cut off; caught in link when coupling moving railroad cars.
225	Rees E Davies,	Painfully bruised by a fall of coal.
226	Llewellyn P. Davies,	Leg and back slightly hurt by a fall of coal.
227	James Cantwell,	Severe flesh bruise on leg; caught between cars while coupling them when in motion.
228	Joseph Morginski,	Thigh fractured by fall of coal
229	Charles Smith,	Back painfully bruised by a fall of coal. The miner was drilling a hole to b'ast it down at the time.
230	James Crossin,	Foot bruised; a piece of coal fell on it while he was engaged setting up a prop.
231	Job Evans,	Back and leg injured by a premature blast.
232	George Rokinto,	Ankle dislocated; trace chain caught it when the mule was pulling a car up a breast.
233	Peter Herron,	Upper lip severely cut by a kick from a mule.
234	Thomas Rees,	Foot painfully bruised; pair of timber was discharged and fell on him.
235	Charles Krauss,	Hip dislocated and cut on face by a fall of top coal
236	Frank Kearn,	Injured about hips; caught between cars while unhitching a mule.
237	Peter Stein,	Back, arm and leg painfully bruised by being struck by coal which he pulled down.
238	Laven Bemott,	Several cuts on head and body; caused by a fall of coal.
239	Patrick O. Dougherty,	Hips and shoulder hurt; caught between pea-coal cars and timber of breaker.
240	Lewis J. Griffiths,	Severely cut across instep by a piece of rock falling on his foot.
241	Hopkin Davies,	Ribs fractured by a fall of coal. Not serious.
242	John Bray,	Leg broken; he pried coal down and failed to keep out of its way.
243	John Ginlay,	While riding on front end of car he fell under and was severely hurt.
244	Fred. Armstrong,	Leg broken by a fall of slate.
245	George Cardner,	Hands, face and legs burned; while ramming a tight cartridge of powder into a hole it exploded.
246	John Harris,	Back bruised by a fall of rock.
247	William Williams,	Several cuts on head and two toes cut off by a fall of top coal.
248	P. J. McCune,	Face and hands painfully burned by an explosion of gas. Ed. Canagher was fatally burned the same time.
249	John F Thomas,	Face and hands slightly burned by an explosion of gas.
250	Albert Griffith,	Hand painfully hurt; caught between timber outside.

Recapitulation.

OCCUPATION.	Number.	Per cent.
Miners,	104	41 6
Laborers,	68	27 2
Drivers and runners,	35	14 0
D or-tenders,	6	2.4
Miscellaneous,	37	14 8
Total,	250	100.0

NATIONALITY.	Number.	Per cent.
American,	27	10 8
Welsh,	76	30 4
Irish,	43	17 2
English,	30	12 0
German,	7	2 8
Scotch,	1	0 4
Polish,	49	19 6
Hungarian,	15	6 0
Swedish,	1	0.4
Unknown,	1	0 4
Total,	250	100 0

CAUSES OF THE ACCIDENTS.	Number.	Per cent.
By explosions of gas,	43	17 2
By falls of roof and coal,	88	35 2
By falling down shafts,	1	0 4
Crushed and run over by mine cars,	41	16.4
By explosions of powder and blasts,	27	10 8
By miscellaneous causes underground,	21	8 4
By miscellaneous causes on surface,	29	11 6
Totals,	250	100.0

There were eighty-nine accidents of a very slight character reported which are not included in the above list.

FOURTH ANTHRACITE DISTRICT.

HAZLETON, PA., *March 16, 1889.*

Hon. THOMAS J. STEWART,

Secretary of Internal Affairs:

SIR: I have the honor of presenting herewith my annual report for the year 1888.

This district produced 4,892,514 tons of coal during the year, an increase of 930,920 tons over the production of 1887.

The big strike collapsed about the first day of March, but it was about the middle of the month before the mines in general resumed operations. The mines of this district being idle about two and a half months, the production will not bear favorable comparison with other more fortunate districts.

The number of fatal accidents during the year was 32, while the non-fatal accidents numbered 100.

This loss of life changed 15 cheerful wives into as many mournful widows, and 56 bright happy children into helpless orphans, most of whom must depend on charity for sustenance.

The amount of coal produced per life lost was 152,890 ton, which indeed is a good record, but not near the record of 1887, when 264,106 tons were produced per life lost.

Regarding the general condition of the mines, I take pleasure in saying that they will compare favorably with other mines similar situated.

This report contains the usual tables, with brief notes on accidents, and a condensed report of the Lattimer mine fires.

Very respectfully yours,

JAMES E. RODERICK,
Inspector of Mines.

The Total Amount of Coal Produced During the Year 1888.

	Tons.
A. Pardee & Co.,	531,161
Coxe Bros. & Co.,	1,243,824
Lehigh and Wilkes-Barre Coal Company,	452,284
Linderman & Skeer,	309,555
G. B. Markle & Co.,	446,109
Upper Lehigh Coal Company,	353,634
J. C. Haydon & Co.,	260,167
Pardee Bro. & Co.,	164,037
Miscellaneous companies,	1,131,743
Total,	4,892,514

Number of Employees, with the Average Number of Tons Mined per Employee.

	Employees.
A. Pardee & Co.,	1,515
Coxe Bros. & Co.,	3,216
Lehigh and Wilkes-Barre Coal Company,	1,585
Linderman & Skeer,	1,072
G. B. Markle & Co.,	940
Upper Lehigh Coal Company,	663
J. C. Haydon & Co.,	579
Pardee Bro. & Co.,	599
Miscellaneous companies,	3,670
Other employés,	640
Total number of employés,	14,479
Average number of tons per man, nearly	338

Number of Fatal Accidents and Amount of Coal Produced per Life Lost.

NAMES OF COMPANIES.	Number of fatal accidents.	Amount of coal produced per life lost.
A. Pardee & Co.,	3	177,054
Coxe Bros. & Co.,	9	138,203
Lehigh and Wilkes-Barre Coal Company,	2	226,142
Linderman & Skeer,	3	103,185
G. B. Markle & Co.,	3	148,703
Upper Lehigh Coal Company,		
J. C. Haydon & Co.,	1	260,167
Pardee Bro. & Co.,	1	164,037
Miscellaneous companies,	10	131,743
Total and average,	32*	152,891

* Number of widows, 15; number of orphans, 56.

Number of Fatal and Non-Fatal Accidents and the Amount of Coal Produced per Accident.

NAMES OF COMPANIES.	Number of fatal and non-fatal accidents.	Amount of coal produced per accidents.
A. Pardee & Co.,	11	48,287
Coxe Bros. & Co.,	34	36,583
Lehigh & Wilkes-Barre Coal Company,	11	41,116
Linderman & Skeer,	12	25,796
G. B. Markle & Co.,	19	23,479
Upper Lehigh Coal Company,	3	117,878
J. C. Haydon & Co.,	9	28,907
Pardee Bro. & Co.,	7	23,437
Miscellaneous companies,	26	43,528
Total and average,	132	37,064

Classification of Fatal and Non-Fatal Accidents.

CAUSE OF ACCIDENT.	Killed.	Injured.	Total.
Explosion of carbureted hydrogen gas,	. . . . .	4	4
By falls of coal, roof and sides,	15	33	48
By cars inside and outside,	6	36	42
By premature blasts and powder explosions,	3	10	13
By machinery inside and outside,	2	4	6
Miscellaneous inside and outside,	6	13	19
Totals,	32	100	132

Nationality of Persons Killed or Injured.

	Americans.	English.	Welsh.	Scotch.	Irish.	Germans.	Hungarians.	Polanders.	Italians.	Austrians.	French.	Total.
Killed or fatally injured,	8	3	1	. .	8	1	8	. .	2	1	. .	32
Injured,	20	4	5	2	31	7	20	5	4	1	1	100
Totals,	28	7	6	2	39	8	28	5	6	2	1	132

TABLE OF COMPARISON—Showing different causes of fatal accidents in the Fourth district for the years 1881, 1882, 1883, 1884, 1885, 1886, 1887 and 1888.

	Years.								Totals.
	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	
Explosion of carbureted hydrogen gas,	3	1	..	..	1	1	1	..	7
By falls of coal, roof and sides,	24	24	18	10	19	13	6	14	128
By cars inside and outside,	11	8	11	17	8	5	3	6	69
By premature blasts and powder explosions,	1	1	1	3	3	2	2	4	17
By machinery inside and outside,	4	1	2	2	3	1	1	2	16
By boiler explosions,	..	..	..	..	3	1	1	..	5
Miscellanous inside and outside,	4	5	6	8	5	12	1	6	47
Totals,	47	40	38	40	42	35	15	32	289

TABLE OF COMPARISON—Showing the number of fatal accidents per thousand persons employed in the Fourth Anthracite district for the years 1881, 1882, 1883 1884, 1885, 1886, 1887 and 1888.

Years.	Number of employés.	Number of deaths.	Ratio employed per death.	Number of deaths per 1,000 employed.
1881,	11,386	47	242.25	4.127
1882,	12,298	40	307.45	3.252
1883,	13,598	38	357.84	2.794
1884,	14,299	40	357.47	2.797
1885,	14,224	42	338.66	2.952
1886,	14,140	35	404.00	2.475
1887,	14,096	15	939.73	1.064
1888,	14,448	32	451.5	2.215
	108,489	289	375.4	2.66

TABLE OF COMPARISON—Showing the number of employés and the number of fatal accidents in each district; also the total number employed, the total number of fatal accidents, and the average fatalities per 1000 persons employed for the years 1882, 1883, 1884, 1885, 1886 and 1887:

DISTRICT.	No. employed.	Deaths.	Average death per 1000 employed.	DISTRICT.	No employed.	Deaths.	Average death per 1000 employed.
For year 1882.				*For year 1885.*			
First,	20,197	75	....	First,	19 879	54	....
*Second,	.	.	....	Second,	10 656	53	....
Third,	17 883	73	....	Third,	19.073	86	....
Fourth,	12 298	40	....	Fourth,	14 234	42	....
Fifth,	12 361	40	....	Fifth,	14, 884	53	....
Sixth,	12, 973	44	....	Sixth,	14. 62	45	....
Seventh,	6,632	20	....	Seventh,	7,616	23	....
Totals and average,	82 344	292	3.546	Totals and average,	100,534	356	3.541
For year 1883.				*For year 1886.*			
First,	21,784	66	....	First,	18 858	60	....
*Second,	.	.	....	Second,	13 207	33	....
Third,	20,977	89	....	Third,	19.156	58	....
Fourth,	13 598	33	....	Fourth,	14 140	35	....
Fifth,	13 389	47	....	Fifth,	15 194	41	....
Sixth,	14 588	64	....	Sixth,	14 414	31	....
Seventh,	7,075	19	....	Seventh,	8,075	21	....
Totals and average,	91,411	323	3.533	Totals and average,	101,044	279	2.707
For year 1884.				*For year 1887.*			
First,	25,216	81	....	First,	21 289	57	....
*Second,	.	.	....	Second,	13 420	52	....
Third,	23 997	97	....	Third,	20 154	65	....
Fourth,	14 299	40	....	Fourth,	14.096	15	....
Fifth,	14, 884	43	....	Fifth,	14 793	55	....
Sixth,	15 568	56	....	Sixth	14 608	52	....
Seventh,	7,114	15	....	Seventh,	8 207	20	....
Totals and average,	101,078	332	3.284	Totals and average,	106 547	316	2.966
Totals and average for three years, 1882, 1883 and 1884,	274,833	947	3.446	Totals and average for three years, 1885, 1886 and 1887,	310,125	951	3.066

*The Second district is included in the First and Third, as there were only six districts prior to 1885.

It will require a close examination of this table of comparison, to enable the mind to grasp the fact, that such great reduction in fatal accidents was brought about between the two periods, viz: 1882, 1883, 1884 and 1885, 1886, 1887; the first period being under the Mine law of 1870, and the second under the Mine law of 1885.

The table will show that the average fatality per one thousand persons employed in the first period was 3.446, and in the second period the average fatality per one thousand employed was 3 066.

While the decrease seems to be only a fraction, yet when it is figured out it makes a large proportionate decrease in fatality.

If the average fatality of the second period was as high as the first, the number of fatal accidents would have been much larger; thus 310,125 x 3.446 = 1,068, instead of 951, a decrease of 117 lives in favor of the second period.

I would especially call the attention of all interested parties to this great decrease in the loss of valuable lives. Indeed I feel like congratulating and thanking the employés, the employer and their officials for the

great care on their part; but above all I attribute the above results to the gradual good effect of the present law, and I think that such results could not have been achieved under the law of 1870.

TABLE OF COMPARISON—Showing the amount of coal produced, the number of lives lost, the amount of coal produced per life lost in each district, and the total amount of coal produced, the total number of lives lost, and the average amount of coal produced per life lost for the years 1882, 1883, 1884 and 1885, 1886 and 1887:

DISTRICT.	Production, tons.	Deaths.	Tons, per life lost.	DISTRICT.	Production, tons.	Deaths.	Tons, per life lost.
For year 1882.				*For year 1885.*			
First,	7,922,318	75	105,631	First,	7,258,853	54	134 423
*Second,	...	...	...	Second,	3,931,902	53	73.243
Third,	7.059 358	73	96 703	Third,	6,177.644	86	71,833
Fourth,	5,380,497	41	134 012	Fourth,	5,535 544	42	131.798
Fifth,	4 661,024	40	115 256	Fifth,	4,781.518	53	90 217
Sixth,	4,588 799	44	104,290	Sixth,	4,205.420	45	93 453
Seventh,	1,709,280	20	85,464	Seventh,	2,294 703	23	99 7 9
Totals and average,	31 301,277	292	107,196	Totals and average,	34,135,584	356	95,886
For year 1883.				*For year 1886.*			
First,	8,845,748	66	134,027	First,	7,112.295	60	118 538
*Second,	...	...	...	Second,	4.233 456	33	128 286
Third,	7,667 221	89	86.148	Third,	6 935,315	58	119.574
Fourth,	5 666 767	38	149 125	Fourth,	5.333.518	35	152 386
Fifth,	4 854 725	47	103 292	Fifth,	4.972.5 2	41	121 280
Sixth,	4.813.162	64	75,205	Sixth,	3.714,519	31	119.823
Seventh,	1,855,387	19	97,562	Seventh,	2 476,013	21	117,905
Totals and average,	33,703,008	323	104,344	Totals and average,	34 777,618	279	124,651
For year 1884.				*For year 1887.*			
First,	8,576,659	81	105,885	First,	8 527.768	57	149 610
*Second,	...	...	...	Second,	5,043,517	52	96,991
Third,	7 881,985	97	81,257	Third,	7.540,754	65	116,011
Fourth,	5 274 227	40	131,885	Fourth,	3 961.594	15	264. 06
Fifth,	4 512 500	43	104.948	Fifth,	5,396 465	55	98.117
Sixth,	4 535,051	56	80 983	Sixth,	4 737.622	52	91,108
Seventh,	1 780,621	15	118,708	Seventh,	2,436,300	20	121,814
Totals and average,	32,256,374	332	98,073	Totals and average,	37,644 020	316	119 126
Totals and average for three years, 1882, 1883 and 1884,	97,565 661	947	103,026	Totals and average for three years, 1885, 1886 and 1887,	10 ,557 223	951	112,047

*The Second district is included in the First and Third. Under the law of 1870 there were but six districts; the law of 1885 made the First and Second into three districts, viz: First, Second and Third.

This table of comparison will show the fatal results of mining anthracite coal for the last three years, under the act of 1870, and the first three years under the act of 1885, and the most prejudiced mind, after perusing the table carefully, cannot but admit that a great number of valuable lives were saved in the first period under the "new law" when compared with the last period under the "old law."

To prove the above the table will show that the total production for the years 1882, 1883 and 1884 was 97,565,661 tons; the total number of lives lost was 947, which is equal to 103,026 tons of coal produced per life lost.

The total production for the years 1885, 1886 and 1887 was 106,557,223; the total number of lives lost was 951, which is equal to 112,047 tons produced per life lost.

The increased production per life lost under the "new act" is 9,021 tons.

The increase under the "new law" can be shown thus: The increased production per life lost, multiplied by the number of lives lost equal to 9,021 tons, multiplied by 947 persons killed equal to 8,541,887; or, in other words, there were over eight and one-half million tons more coal mined under the "new" than under the "old law" for the same number of lives lost.

TABLE A exhibits the number of deaths in each class of employés, inside and outside of the mines, and the causes thereof, for the year 1888.

CAUSES—INSIDE.	Miners.	Miners' laborers.	Company men.	Door-boys and helpers.	Totals.
By falls of all kinds,	10	3	1	....	14
By mine cars,	2	....	....	1	3
By premature blasts,	2	....	....	....	2
By machinery,	....	2	....	....	2
Miscellaneous,	1	1	1	....	3
	15	6	2	1	24

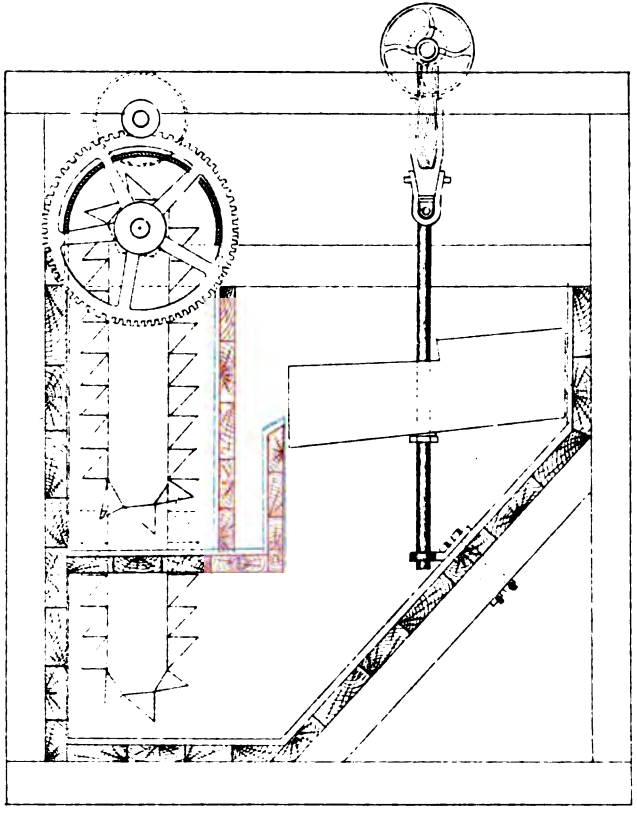
CAUSES—OUTSIDE.	Company laborers.	Totals.
By cars,	3	3
Miscellaneous,	3	3
Blasts in strippings,	2	2
	8	8

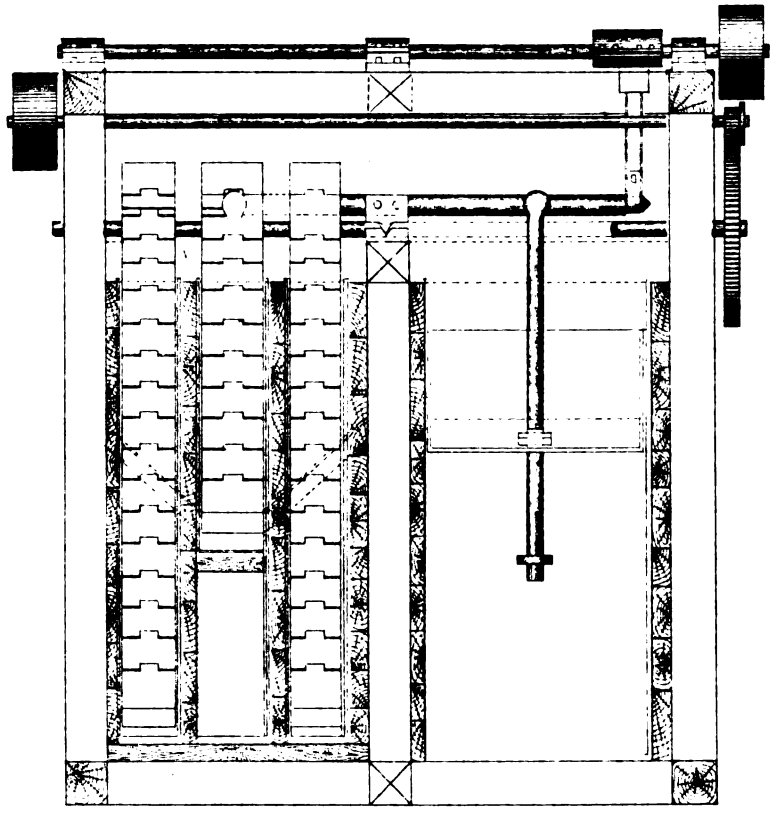
TABLE B gives the total number of each class of employés, the number of deaths in each class, and the ratio of each class employed per fatal and non-fatal accidents, inside and outside the mines, for the year 1888.

CLASSES INSIDE OF MINES.	Number of each class employed.	Number of fatal accidents in each class.	Ratio employed per death.	Number of non-fatal accidents.	Ratio employed per non-fatal accident.
Miners,	2,984	15	199	42	70
Miners' laborers,	1,416	4	354	16	88.5
Company men,	1,658	4	414.5	7	237
Drivers and runners,	654	....	....	13	50
Door-boys and helpers,	272	1	272	3	91
Mine foremen,	52	....	....	....	....
Totals and average,	7,036	24	293	81	87
Classes Outside.					
Superintendent and bookkeepers,	122	....	....	....	....
Blacksmiths and carpenters,	307	....	....	....	....
Engineers and firemen,	542	....	....	....	....
Slate-pickers and drivers,	2,751	....	....	6	458.5
Company men,	2,974	8	372	13	229
Outside foremen,	71	....	....	....	....
Totals and average,	7,412	8	926.5	19	390

TABLE OF COMPARISON, giving the nature and number of non-fatal accidents for the years 1881, 1882, 1883, 1884, 1885, 1886, 1887 and 1888.

YEARS.	NATURE OF ACCIDENT.								
	Accidents, but no bones fractured.	Collar bone fractured.	Jaw bone fractured.	Ribs fractured.	Legs fractured.	Feet fractured.	Arms fractured.	Hands fractured.	Totals.
1881, . . .	57	5	. . .	1	17	....	8	....	88
1882, . . .	97	2	1	....	19	4	7	6	136
1883, . . .	99	7	1	....	26	4	8	8	153
1884, . . .	131	3	1	9	33	9	14	7	217
1885, . . .	76	8	....	3	40	7	16	4	158
1886, . . .	66	6	4	2	27	4	14	5	124
1887, . . .	52	2	2	1	32	1	6	5	101
1888, . . .	49	....	1	....	29	4	6	11	100
	627	33	10	16	223	33	79	56	1,077





DOUBLE BRADLEY JIG
IN USE AT
BEAVER BROOK COLLIERIES.
AUDENRIED, PA.

Elmer H. Lawall
Engr.

James Roderick
Inspector

STATEMENT, showing the amount of air passing through the mines of the Fourth Anthracite district—December, 1888.

NAMES OF MINES.	Names of Companies.	Number of fans.	Number employed in the mines.	Number of spills of air.	Cubic feet of air at inlet.	Cubic feet of air at face.	Cubic feet of air at outlet.
Hazleton,	A. Pardee & Co.,	2	196	4	52,250	33,180	53,400
Number Three,	do.	1	131	5	47,900	27,400	50,200
Laurel Hill,	do.	1	130	4	41,520	28,050	42,600
Number Six,	do.	*	42	2	9,400	3,200	11,400
South Sugar Loaf,	do.	1	84	2	21,090	14,320	22,300
Cranberry,	do.	2	267	8	91,370	40,300	93,200
Drifton No. 1,	Coxe Bros & Co.,	3	553	10	140,200	84,600	142,000
Do. 2,	do.						
Eckley No. 5,	do.	2	122	3	34,600	31,250	35,400
Do. 10,	do.	1	143	6	50,300	21,200	51,400
Stockton,	do.	1	138	4	26,450	16,470	27,250
Beaver Meadow,	do.	1	129	4	67,459	30,289	68,760
Tomhicken,	do.	†	120	2	33,843	18,300	34,950
Derringer,	do.	1	574	7	76,090	54,250	77,470
Gowen,	do	1		7	34,920	24,400	35,800
Oak Dale, 1st,	G. B. Markle & Co.,	1	126	7	74,600	45,600	76,300
Do. 2d,	do.	1	125	3	33,380	29,650	34,500
Highland, 1st,	do	1	169	4	35,450	27,580	36,840
Do. 2d,	do.	1	155	4	37,400	28,940	38,950
Honey Brook No. 2,	Lehigh & Wilkes-Barre Coal Co.,	2	146	6	34,060	21,260	35,140
Do. 4,	do. do.	1	246	5	59,540	33,400	61,400
Do. 5,	do. do.	1	303	12	86,250	49,570	86,500
Upper Lehigh No. 2,	Upper Lehigh Coal company,	*	20	1	3,200	1,300	3,560
Do. 4,	do. do.	1	132	3	39,600	21,000	40,700
Do. 5,	do. do.	1	109	3	37,395	26,320	38,150
Do. 6,	do. do.	1	89	2	21,728	13,280	24,140
Do. 7,	do. do.	1	65	2	18,740	10,200	19,300
Spring Mount'n, No. 1,	J. C. Haydon & Co.,	1	113	3	33,400	19,760	33,800
Do. 4,	do.		173	3	36,250	26,400	38,900
Stockton No. 1,	Linderman & Skeer.,	1	124	5	39,000	27,450	41,000
Do. 2,	do	1	166	4	38,500	18,760	39,640
Do. 5,	do.	1	202	4	47,650	28,400	48,280
Humboldt,	do.	2	152	5	39,400	26,540	40,080
Lattimer No 2,	Pardee Bros. & Co.,	1	113	2	13,700	14,880	19,200
Do 3,	do.	1	103	5	19,600	15,400	20,250
Sandy Run,	M. S. Kemmerer & Co ,	2	189	4	88,250	39,950	89,370
Beaver Brook,	C. M. Dodson & Co.,	1	189	3	39,700	23,700	39,900
Silver Brook,	Silver Brook Coal company,	1	116	4	29,800	18,600	30,000
Mt. Pleasant, No. 2,	Pardee Sons & Co.,	2	160	6	71,600	34,700	72,100
Do. 4,	do.	1	86	2	12,600	10,200	13,000
Hollywood,		1	154	‡			
Yorktown,	G. N. Myers & Co.,	1	180	4	36,400	28,000	37,100
Coleraine,	Wm. T Carter & Co.,	2	168	4	38,450	19,700	39,200
Hazle Brook,	J. S. Wentz & Co.,	1	127	6	39,600	28,400	40,200
Pond Creek,	M. S. Kemmerer & Co.,	1	117	3	26,750	16,850	27,100
Black Ridge,	J. S. Wentz & Co ,	1	64	2	15,200	10,700	16,000
Milnesville,	The Stout Coal company,	1		2	18,700	8,750	19,050
Ebervale,	Not in operation,	1					
Harleigh,		1					
		54		191	1,900,280	1,142,339	1,943,737

* Natural ventilation. † Furnace. ‡ Robbing pillars and loading coal from stripping.

Improvements.

So long as coal is mined inventive genius will be busy in trying to improve upon coal cleaning machinery, and any success in this direction will be of interest to those engaged in the preparation of coal.

One of the most recent and noteworthy, a sketch of which is given, is the Double Bradley Jig, in use at the Beaver Brook collieries. The advantages of this improvement will be seen as soon as the principle of its operation is understood. The most important ones, are increased capacity, increased speed and reduced demand for power. The prin-

ciple is to have two pans in equilibrium, and as they are at all times equally loaded, this is secured. The cam has practically no load to raise thus, thus permitting the speed and also the capacity to be largely increased. The engineer, Mr. Elmer H. Lawall, who kindly furnished the sketches, informs me that the best results are obtained when the jig is run at a speed of about ninety revolutions per minute. This may be varied according to the nature of the coal, but is hardly ever less, and, with Buck mountain coal, may be largely increased. The labor being less, the annoyance of slipping belts is avoided. I am further informed that one difficulty often complained of, viz: that flat pieces of slate are buoyed up and passed over with the coal, is hardly ever met with.

There are two compartments, each containing a pan and reservoir, and a set of elevators. The former, instead of being attached directly to cam or crank, are attached to a walking beam or lever working upon a knife edge. This, it was thought, was the great obstacle to be overcome—that the lever would jump out of place. The intention was in that case, to place a loose link over the lever and under the pedestal of the knife edge, but that was found to be unnecessary.

The elevators are in sets of three, the two outer ones for slate, going to the bottom of the reservoir; the center one goes just below the shute, which runs at an angle of 25° from the lips of the pan.

So far as I know, these are the only jigs in operation, and, although the idea is not new, no one ventured to try the experiment for fear of failure, and the perfectors are to be congratulated on the success they have gained.

They consider the jig a complete success, and claim that they can jig twice as much coal as the single jig, and clean it well also. In the sketches the first is a side view, giving the elevators, (one set removed) gearing and pans. In the other sketch, are two half sections, one in the front part near the elevators, the other through the pans.

The wheels are geared 76 to 12.

The Duties of Mine Inspectors.

The duties are made more onerous by the law of 1885, than they were under the law of 1870.

Section seven, of article two, of the Mine law of 1885, states: He (the inspector) shall examine all the collieries in his district as often as his duties will permit, not less than four times each year, or oftener, if the exigencies of the case or the condition of the mines require it see that every precaution is taken to secure the safety of the workmen; and that the provisions of this act are observed and obeyed; attend every inquest; * * * * visit the scenes of all serious and fatal accidents, etc.

The board of commissioners, composed of six inspectors, six operators, and six intelligent miners, did not embody the words "not less

than four times each year," in the original copy of the law. This matter was discussed pro and con by the commissioners, but, after thoroughly ventilating the subject, the operators and miners of the board decided that it would be improper to designate by law the number of visits the inspectors should make to each mine or colliery, as they well knew that some mines, at some particular periods, need much more attention than others. The operators and miners on this board undoubtedly knew better what the duties of the inspectors should be than the lawmakers at Harrisburg. They decided that each inspector should be guided in the performance of his duty by circumstances and act accordingly.

Yet some demagogue at Harrisburg, to please one kind of workmen, amended the section by adding the words "not less than four times each year," as a very wise proviso, which became a law—a real panacea that would compel the inspectors to do their duty. Very few of our Representatives had any idea of the duties of mine inspectors; therefore, they depended upon the few members from the counties for their information, and thus were led into error. I doubt, were the number of inspectors trebled, whether the "four visits a year" could always be made without neglecting other more important duties.

Besides its impracticability, the "four visits a year" to each mine are not a necessity, as the law does not mean that the inspector shall act as superintendent, but rather see to the general condition and safety of the mines.

As one of the inspectors, I can say (and I believe the others can say as much) that I am making an effort to carry out the provisions of the mine law, by giving all the time to the duties of the office, examine every mine as often as my other duties will permit, etc., but do not examine all of them "four times each year." Yet I examine some of the mines six and eight times a year; others less frequently.

The mine fires of Lattimer raged from the 5th day of September until the 31st day of December, 1888, a period of one hundred and seventeen days, of which period I spent nearly sixty days of my time, caring for the lives and property of those in danger, and I am glad to say that not one person was severely injured.

By the light of past experience, I am led to believe that the words, "not less than four times each year," should be stricken out of the mine law, thus putting each and every inspector on his honor to do his duty towards carrying out the provisions of this wise act, "that provides for the health and safety of persons employed in and about the Anthracite coal mines of Pennsylvania, and for the protection and preservation of property connected therewith."

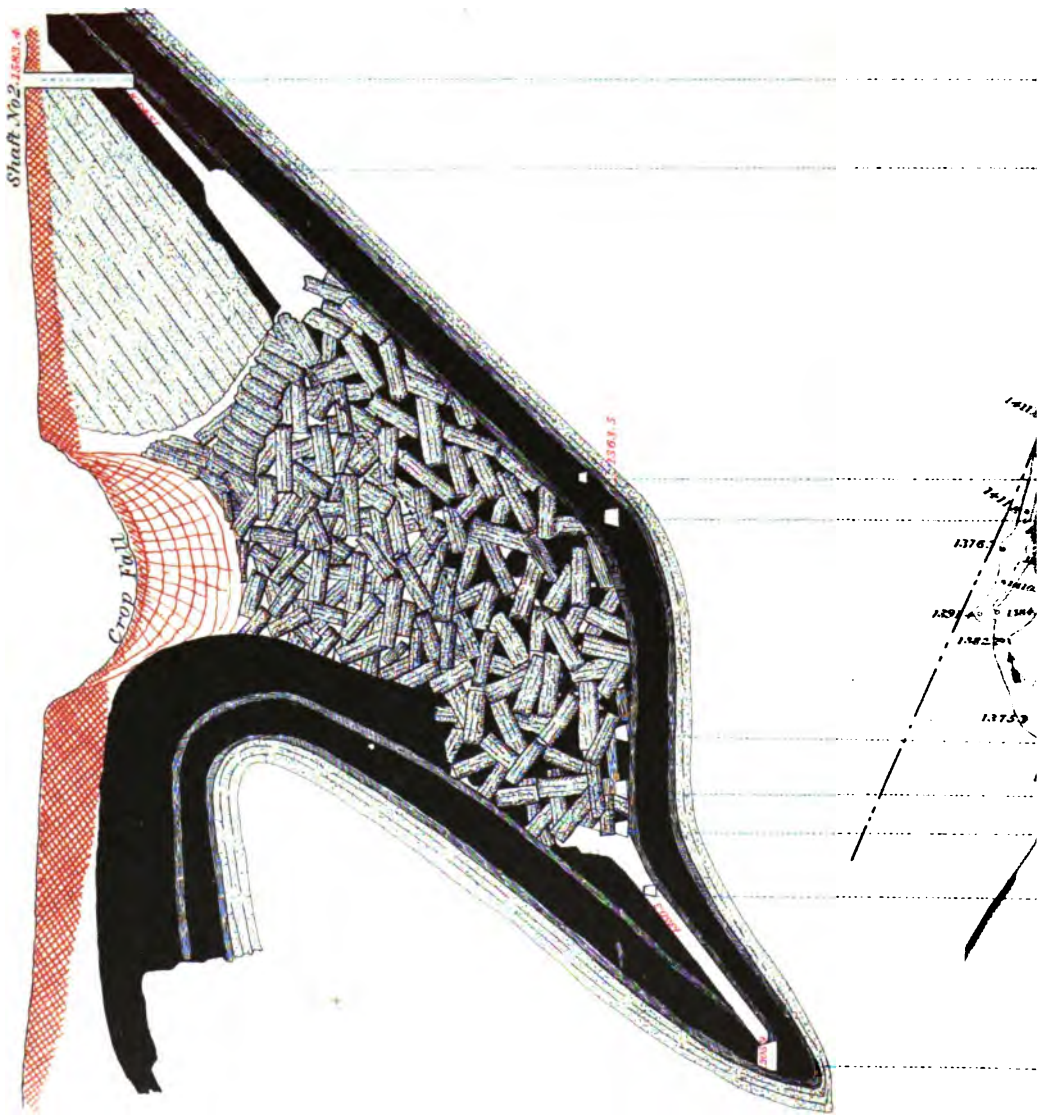
Lattimer Mine Fire.

About 2 o'clock on the 5th day of September Henry Johns and son, while returning to their work after dinner hour, encountered

smoke coming out of the west gangway of No. 2 Lattimer. They continued to their breast, No. 74, and there found the smoke was coming from some place farther inside. They notified John McGinnis, the stable boss, who hastened to notify Robert Fagan, the mine foreman, who, after being notified, telegraphed for the general superintendent, C. Pardee, and also the general mine foreman, Joseph Dixon. When Fagan reached the place he found a large volume of smoke coming out from inside of No. 74 breast, and after satisfying himself that it was safe, proceeded to breast No. 76, the last on the main gangway. He, with a few other men, went up No. 76 chute about thirty feet, from whence they could see the coal and rock burning brightly. When C. Pardee arrived and was informed that the coal was on fire, he decided at once to turn the water of the creek (the "Little Black Creek") into the cave holes immediately above where the fire was discovered, and also that a line of three inch water pipe be laid and extended to the gangway below, through the north side air-way marked * on map.

While the men on the surface were getting ready to turn the water in, general foreman Dixon, and mine foremen Fagan and Rowe, with six men, proceeded inside to load the coal and rock from No. 76 chute, as it was thought possible, if the fire had not gotten too much headway, it could be drawn out. (I might mention here that No. 76 had been abandoned about fifteen months before the fire was discovered.) After the loose stuff had been loaded out, a rush of coal, rock and clay, all in a burning mass, came down the chute, driving the men out. It was found impossible to do any work at this point on account of the heat and foul air, and the idea of drawing out the fire was abandoned for the present. It can be seen on the map that the fire took place at a point about eleven hundred and sixty yards from the bottom of No. 2 slope, and about sixty-six yards from the western boundary pillar. The No. 1 west gangway connects with the west gangway of No. 2 about eight hundred yards from the bottom, and from this junction to breast No. 62 there is only one west gangway. At breast No. 62 a gangway turns back east, which goes under breast No. 4, from where the north side air-way, before mentioned, goes to the surface.

The west gangway continues on its course to breast No. 76, where the top and bottom rock come together, having a rise of twenty-one degrees northwest. To remove the coal from this point to the boundary line a counter chute was driven in the Wharton vein at an angle of twenty-three degrees, and at a point about twenty feet from gangway breast No. 76 was commenced. The chute was extended eighty feet further and breast No. 77 was commenced, and a little below this place the fire was first discovered. About 10 o'clock P. M. of the same day the creek was turned into the mine. Notwithstanding the fact that about eight thousand gallons per minute was running in, it



SKETCH A

SHOWING THE FIRE IN THE

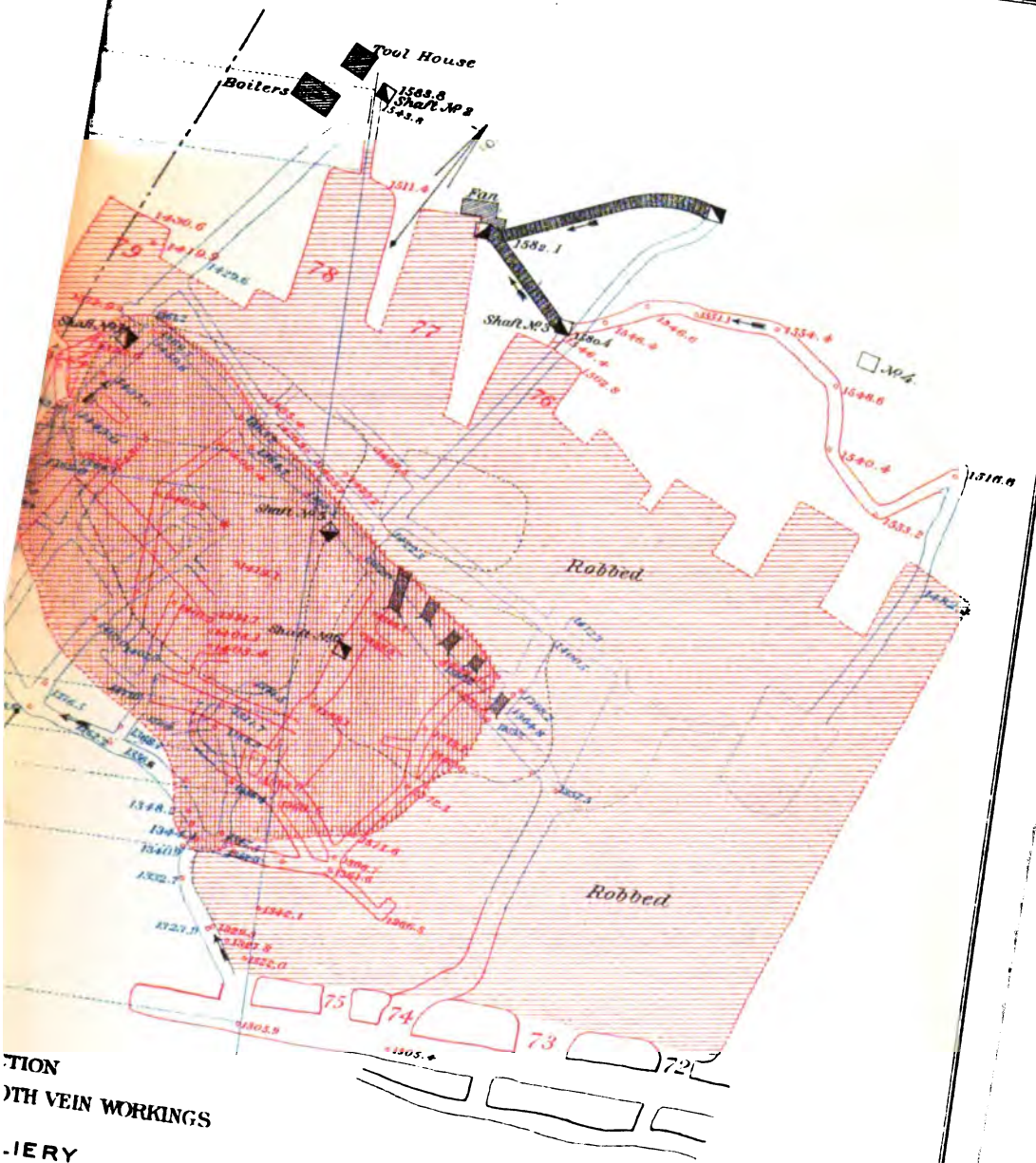
LATTIMER

Mamm

Whare

Suppos

Jas H. Totten Eng.



TION

OTH VEIN WORKINGS

-IERY

of Fire

E. Roderick Inspector.

did not reach the gang way below until 4 P. M. on the 6th, and then the temperature of the water was one hundred and eighty degrees. The steam and heat arising from the water caused a crush in the said west gangway from No. 76 to No. 62 To save it from closing it was found necessary to stand two rows of props under the collars. These props were also placed on the sills to prevent the road from heaving. The water increased in volume on the gangway, and at 10 A. M, September the 7th, the temperature of the water had increased to one hundred and ninety-five degrees. The men suffered terribly while saving this gangway from closing, and were often carried back unable to move, but "perseverance brought success." I might add here that Mr. C. Pardee had a physician stationed at the office night and day, and his services were frequently required. After the water had cooled somewhat, twelve sets of men, four men in each set, were put to work to re-timber the gangway, and by the 15th day of September the gangway was re-opened so that cars could be taken in as far as No. 74 breast. After consultation, it was decided to drive a hole to the surface from the face of breast No. 73, which would help the ventilation and would also be a second opening in case of necessity. An air compressor was placed at No. 6 Milnesville, from which a line of three-inch pipes were laid and connected with the three-inch pipes that were formerly used for water, and a line of four-inch cast iron pipes was put down through the north side airway to conduct the water to the fire.

While this work was being done inside Mr. Dixon had a large force of men engaged on the surface boring and shafting so that the water could be distributed over the fire beneath. This was difficult work, owing to the broken condition of the surface, caused by the robbing of pillars under this section. The water was still coming through No. 76 chute in large quantities, its temperature ranging from ninety to one hundred degrees. The steam and heat coming from the water penetrated the crevices of the rocks and caused a general squeeze along the chute and back, past breast No. 75, necessitating the use of large quantities of dynamite, the fumes from which, with the steam and heat, made it almost impossible for the men to work, consequently they had to be relieved every few minutes. A buggy gangway was started in the Wharton from the chute of No. 74 breast at the same elevation as the counter road that led to breast No. 79, which was the line breast. This was started to find the western limit of the fire, to connect with the counter road mentioned, and also to connect with the proposed opening from No. 77 chute. By this time the air compressor was started and the men were supplied with a limited quantity of pure air, which, indeed, proved a great relief after their terrible suffering. The No. 76 chute being re-opened and a strong battery put in, a force of men were put to load, still hoping that the fire could be drawn out through the chutes 75 and 76. After loading

about three hundred cars from these chutes it was decided to stop all loading inside, only what came from the openings, as it was feared that the fire would be drawn eastward. After a consultation the proposed hole was started, following the old No. 76 chute and by taking a scip off the western pillar; the large rock and broken timber were left undisturbed as nearly as possible, and in this way the men made good headway with their work. When this chute was opened for about sixty feet a rush of goal or gob occurred which brought with it ashes and burning hot coals. The men had to retreat until the place cooled off somewhat, and returning to their work loaded this mass of stuff, after which the fire could be seen plainly in the west pillars of No. 77 breast.

Up to this time the great trouble and suffering came from heat and steam, but now carbonic acid gas was encountered in large quantities, and often limited quantities of carbonic oxide were encountered. Even with the air and water pipes kept right up to the face the men suffered terribly. The work now was difficult and dangerous, yet it was amusing at times to see the men coming back, some laughing, others appeared in great distress, while some would enquire the way out. When the chute had reached a point supposed to be about the western pillar of No. 77 breast, a hole was driven north, hoping that it would strike into the "old buggy-way" of No. 77, but it did not reach the desired point. On the 4th day of October a rush of hot water and hot coal came, as supposed, from No. 77 breast, and caught and slightly burned two of the men before they could make their escape. On the 5th day of October, while the engineer corps of T. S. McNair were making a survey of the new buggy-way in the Wharton, the timber in the new chute ignited, the smoke of which compelled them to retreat, and so affected the men that were fighting the fire that they were unable to make any headway for days, and at times it was difficult to keep the fire from gaining on them towards the gangway. From this on every yard of hole opened had to be timbered and forepoled, which was a very tedious and slow proceeding indeed. The timber used for these holes were about six inches in diameter, the legs and collars being four feet, three inches and four feet respectively, with a mud sill under each set. These timbers were cut to the proper lengths and fitted on the surface. As no headway was made from the 5th until the 11th of October the mode of opening the chute along the edge of the fire was abandoned, and a chute (called 79 chute) was opened, bearing to the south, thus leaving a pillar between it and the fire. To continue this chute it became necessary to double brattice all the breasts from No. 72 in, which had a wholesome affect on the air, enabling the men to work half an hour at a stretch, thus making rapid headway. From the 5th day of September until the 12th day of October the water was kept steadily running into the mines at the rate of about eight thousand gallons per minute, which reduced

the temperature to its normal condition at the gangway. This water coming through in such quantities brought the gasses down, interfering greatly with the work of the men. On the 12th day of said month all the water was stopped, and all the holes but one on the surface were closed, which again helped the condition of the mine. While a large number of holes were being started through the loose goal or gob with an air pipe and water pipe in each. Andrew Lee, the master mechanic and general outside foreman, was building a seven feet diameter fan, which was placed at the top of the "old air shaft," for the purpose of drawing the heat and gasses into a central point and away from the men. This fan did great service, and from this time on the men, generally suffered less from gasses and heat, yet some of the holes were registering ninety and ninety-five, and up to one hundred and ten degrees of heat.

On the 25th day of October the "buggy-way" from No. 74 breast and "79 shute" were connected. On the following night the opening from breast No. 73 was connected with the opening from No. — shaft, and a wooden box four feet by four feet diameter was put in, connecting this shaft with the fan. These connections made a radical change in the quality and quantity of air supplied to the men, enabling the men in charge to fight the fire in a systematic way; *i. e.*, by driving holes up the pitch about thirty feet, connect them with each other at regular distances, driving north and south to top and bottom slate. These cross-cuts were intersected by holes going east and west along the top and bottom rocks, and also east and west, at regular distances, through the center of this mass of goal or gob. The distance between top and bottom, one hundred feet vertical from the gangway, was about ninety feet. Combined, these holes amounted to hundreds of yards; sometimes driven in fire, other times in baked clay and burnt rock, the temperature ranging from eighty to one hundred and five degrees, and sometimes so hot that the men were hardly able to breathe. With the fan drawing from the mine, and all the air possible forced into No. 75 shute, the men could do no work without the air compressor.

As I said before, there was a line of air and a line of water pipes in each hole, and sometimes two lines of each. Too much praise cannot be given to Mr. Lee and his able assistant for the able way the air and water was kept to the face of each place. The water was needed to put out the fire and the air so that the men could breathe. While the said work was going on inside of the mine, preparation was being made on the surface to dam the creek, building large water troughs about three feet by three feet, connecting a large number of surface holes with the creek, etc. On the 31st day of October, after ordering the men out from inside, the large flood-gates were opened, leaving about fifteen thousand gallons per minute run into the mines. This large stream was allowed to run in for forty-five minutes, then the

gates were closed for an hour, when the same operation was repeated and continued so for thirty-six hours. The water was changed from one hole to the other at stated intervals, so that it could reach every portion where the fire was supposed to be. The temperature of the water before entering the mine was forty degrees, while its temperature in the gangway below ranged from eighty to one hundred and sixteen degrees, and before it was stopped had gone down to about fifty-five degrees. When the men reëntered the mine, the airways cleaned, the ventilation restored, it was found that the temperature of the place was greatly reduced, the men starting their work with renewed courage and vigor.

Without going into any more details of the manner in which the fire was fought, suffice it to say that the holes were being driven in all directions, the fire put out wherever found, everything looking towards ultimate success, when suddenly the men were called out on the 21st day of December to fight a new fire that ignited in the pump house. Much praise is due Joseph Dixon and Robert Fagan, and also to their assistants, John Burns, Oliver Rohrbach, Archie Boyd and John Carney, for the great care they took of the hundred and twenty men that were fighting the fire on the inside; and, indeed, I congratulate them on their success, as not one person was seriously injured during the one hundred and eight days and nights that they were engaged fighting this fire. In addition to the above there were about fifty persons engaged on the surface. Mr. James F. Totten also deserves great credit for his pluck and endurance in surveying the holes and buggy-way, which can be seen on the map. I might be pardoned for saying that I spent nearly two-thirds of my time at this mine fire. Calvin Pardee was constantly on hand, giving all the benefit of his great experience. Before closing I would state that this fire could not be drowned out without drowning No. 1 and No. 2 slopes and perhaps No. 3, also endangering the Milnesville colliery.

The origin of this fire still remains a mystery. Several theories have been advanced as to the cause. The fact that the place where the fire was found had been abandoned as "robbed out" fifteen months prior to the fire, leaves me to believe that it was not an *accident*, but the work of some evil-minded person or persons.

Lattimer Mine Fire No. 2.

On the 21st day of December a fierce fire was discovered in the pump house near the bottom of No. 2 slope at Lattimer, which, in very few hours, destroyed the pump house and a large portion of the slope. No. 2 slope is connected with No. 1 slope by a gangway, which runs across the basin from the eastern end of No. 1 turnout. This gangway strikes the north pitch and from that point runs westward to the bottom of said No. 2 slope. No. 2 slope was sunk on the north pitch, in the mammoth vein, on angles varying from forty-five to

and impress on their minds that they, and they alone, are the only parties that can take the proper care of themselves.

No. 1. Hugh Anderson, a footman, was asphyxiated by carbonic oxide on the 13th day of February, and died before medical assistance could be obtained. On the day of the accident a fall of rock occurred at the point marked A on the sketch, which caused the water to run back into the mine. On the afternoon of the same day Thomas Brown, the mine foreman, and deceased went to clear the water course. They went by the way of EF, as per sketch, and back as far as A, and at once started to remove the obstruction. They worked something less than an hour, when Brown found that they had encountered some large pieces of rock, and not having the proper tools, decided to return and get more help and tools. They reached the point marked B, about seventy five yards from A. all right, but at about this point began to feel weak. At point marked C, Anderson became so weak that Brown was compelled to leave him and go for assistance. At E he met John Dunlavey, a pumpman, and instructed him, as best he could, to go and assist Anderson. Dunlavey went as far as F, became afraid to go any farther and returned. Mr. Brown was still very weak, but managed to explain to Dunlavey the danger of the case and told him to hurry outside (the mine being idle) for assistance. The first man he met was George Gissel, who went inside, and through Brown's explanation, managed to find Anderson, who was still alive. After making a great effort, he found he could not carry Anderson alone. He also returned to E. By this time Dunlavey returned with William Siewell, both of whom went in and found Anderson still alive, and brought him down to the gangway. He was taken out as quickly as possible, but died a few minutes after reaching his home. It is likely that this sad accident was caused by carbonic oxide, which came from the fire of a small portable boiler stationed at G, which was put in to supply a small pump to throw the water out of the dip. This gas was carried with the air, as indicated by the arrows on the sketch. Mr. Samuel Dunkerly, the general mine foreman, testified before the inquest that he had traveled that gangway about once a week for months immediately prior to the accident, and never felt the effects of any kind of gases; besides, the quantity of air passing, about twelve thousand cubic feet per minute, made it rather difficult in carrying light through said gangway. The mine foreman corroborated Mr. Dunkerly by saying that the current of air was very strong the day of the accident. The jury exonerated the mine foreman from all blame, and brought in a verdict of "accidental death"

No. 2. Owen Boyle, a miner, aged forty eight years, was killed inside the battery of his breast, at Lattimer No. 1, on the 23d day of March. By the testimony of the Hungarian who was working for the deceased, it appears that the battery became blocked and that the

A. *is fall of rock.*

B. *is point where effec*

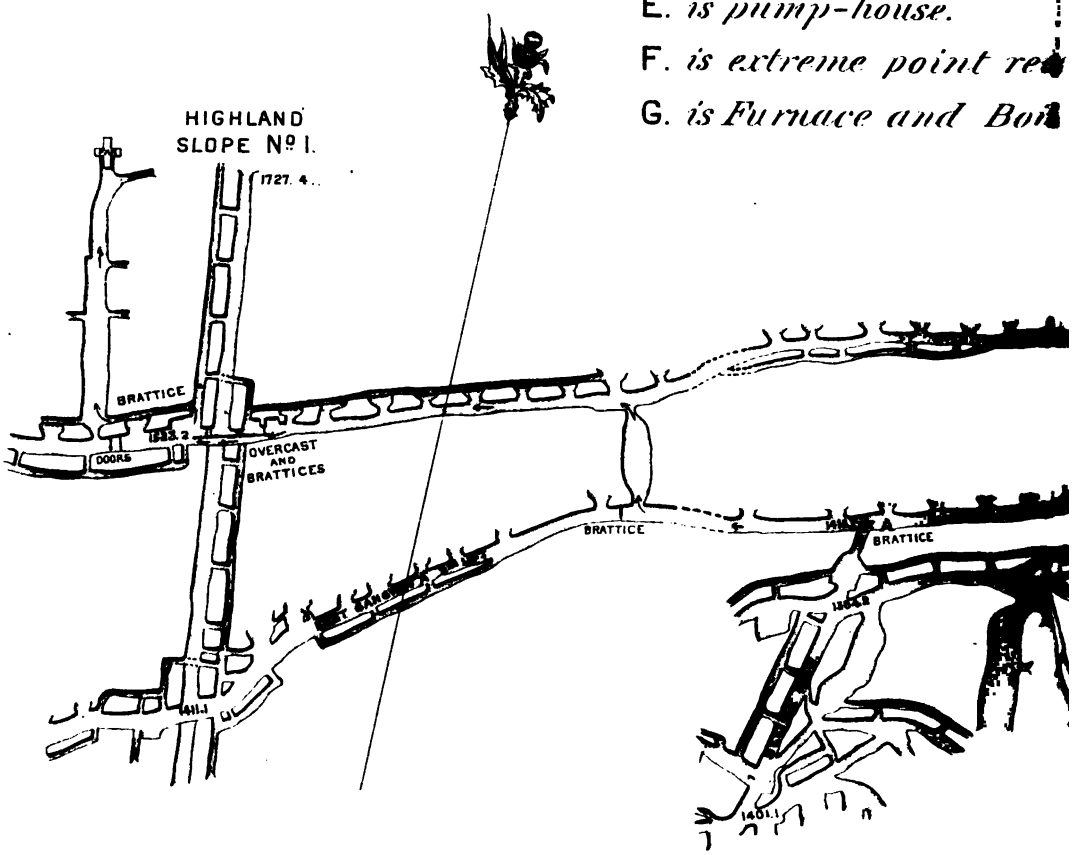
C. *is point where Brou*

D. *is point where Ande*

E. *is pump-house.*

F. *is extreme point re*

G. *is Furnace and Boi*



were first noticed.

left Anderson.

m was found.

hed by Dunlavey.

r.

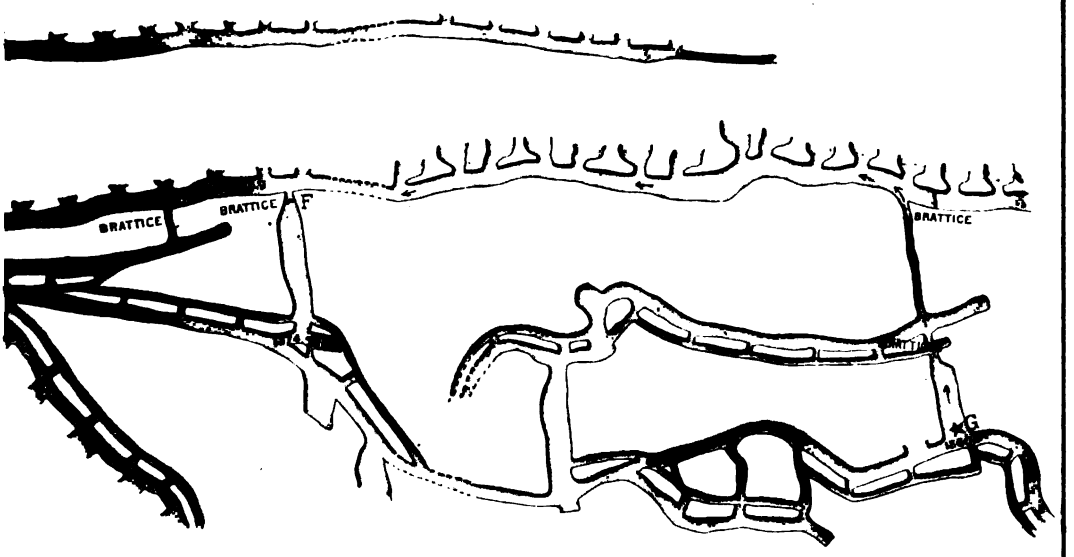
JAMES. E. RODERICK

Mine Inspector.

ARROWS SHOW DIRECTION

OF AIR CURRENT.

Scale 200 Ft. to I inch.



Hun failed to start it. He notified Boyle of the fact, who came up and said he would start it in a few minutes, and proceeded to go inside the battery. The laborer, in the meanwhile, went down to the gangway to load his car. In a little while he heard a rush of coal. When the car was loaded, he went up to the battery to fill his shute, expecting to find Boyle there; but he was not to be found there. He made up his mind that he had gone up to the gangway above through the manway, as he had done some time previous. After filling his shute, he told the other miner of the disappearance of Boyle, who at once made inquiries, and ascertained that no person had seen Boyle since he had gone inside of the battery. Mine Foreman Fagan was sent for, who, upon arriving at the place, took in the situation at once, and, after great effort and considerable risk, succeeded in finding the body of Boyle fastened between large lumps of coal. It was several hours before the body could be extricated, and several valuable lives were risked while getting at the body. I consider this accident as suicidal on the part of the deceased, who had been heretofore considered a very careful miner.

No. 3. Angelo Augustine, a laborer, twenty-four years of age, was instantly killed at Gowen, on the 26th day of March. Deceased was engaged with another Austrian miner to do some rock work. On the day of the accident, before firing a blast, he was ordered by the miner to go towards the face of the gangway and notify all parties to keep back while the miner went in the other direction for the same purpose. The blast hung fire longer than usual, when deceased was heard to call on the miner to come back as the hole had missed. The miner became somewhat alarmed and called loudly for the man to go back, and in a few minutes the blast went off. The miner returned, and to his horror found the dead body of his partner all mangled by the blast. This man's death is another evidence that no power can save the lives of these victims.

No. 4. Frank Mooney, a miner, aged forty five years, was fatally injured at Beaver Brook, on the 27th day of March. Deceased was walking up the main slope at that place, was struck by an empty car, fatally injured and died in less than a week at St. Luke's hospital, Bethlehem, Pa. The deceased had a narrow escape the day previous, while going up said slope. He was then told by the foreman if he was caught walking up the slope again he would be discharged. He did not heed this warning and paid the penalty with his life. There is a very easy traveling way made in this colliery, and all the people that care about their safety go in and out that way. Yet there are a few daring persons at this place, like at many others, that take the nearest way out, even at the risk of their lives. This man did not seem to care what would happen him, or he would not walk the slope after being nearly killed doing so the day previous.

No. 5. Mike Lovine, a jig tender, seventeen years of age, was fatally

injured at Derringer, on the 27th day of March. This was a very sad accident indeed, not being in anyway attributable to any neglect on the part of the deceased. He among others, went into the breaker a few minutes before seven A. M., but during the slackness of coal, went outside for some purpose, and while passing the side of the building a piece of shute plate fell from the roof of the breaker and struck him crushing his skull. I made searching inquiries into the cause of this accident, and found from the breaker boss, that no refuse whatever was allowed to be on the roof, and to verify his story, asked me to examine the place, yet the fact that the plate fell from the roof remained. I made inquiries among the platform men that were near the place where the plate must have fallen from, and could not glean any information. They all being Hungarians I had to talk with them through an interpreter. I went down then and requested the foreman to send for the platform men, one at a time, so that they could be examined separately. The question asked the first man was,—"Why did you throw the piece of iron that killed Mike Lovine?" He answered, "I didn't." I pretended to order him taken to jail, when he gave the name of one of the platform men, who put the piece of iron on the roof. He was then sent back to his work and the presumed guilty man sent for. He was told what the other man had said, and he readily confessed, as follows: That a couple of days before the accident one of the window panes was broken, and to stop the cold wind from coming in through the aperture, he put a piece of shute plate there, and must have forgotten to take it away, and which fell and slid down the roof with the foregoing result. I could not say much to the man, but cautioned him from putting any more iron plates or refuse on the roof of said breaker.

No. 6. Patrick Bowen, a miner, aged forty-five years, was killed at No. 2 Stockton, by a fall of rock inside of the battery on the 29th day of March. A few days previous to the accident, a fall of rock occurred in his breast. The assistant foreman was notified of the fact, went and examined the place, and ordered Bowen to stop loading the rock out of the battery, but to secure his two manways in such a way that he could get the little coal he had above, down in that way, as the breast was up the proper distance. Bowen complied with the orders, and for a few days brought the coal down the manways. It seems that there was some coal to be seen among the rocks inside of the battery, and to get at this coal he made his way inside of the battery, and while there getting out some of the loose coal, the rock settled again, caught him and squeezed his life out. Bowen was a very intelligent man, considered a careful miner, yet he lost his life by extreme recklessness.

No. 7. Wm. T. Williams, a miner, aged thirty-eight years, was killed at No. 5, Honey Brook, on the 4th day of June. Deceased, with another miner, was in charge of the robbing of pillars, in a section of

this mine. Robbing pillars is a dangerous work at best, but in this place it was extremely so. At the time of the accident they were engaged taking off a scip of a pillar about thirty yards from the gangway. Deceased, with an Italain laborer, was preparing to blast, when suddenly Williams told the Italian to jump for safety, and doing the same thing himself. The laborer escaped, while the miner was instantly killed. In my investigation, I found that Williams was specially adapted for this kind of work, being a careful and intelligent man, also that he was specially instructed by the foreman not to do any blasting, unless the place was perfectly still. He was also told by his partner, the morning of the accident, that the place was working, yet, after all, he went up the breast to do blasting and was killed.

No. 8. Thomas Daniels, a roadman, aged eighteen years, was killed while going to his work, at Drifton, No. 2, on the 6th day of June. This place has a timber slope, where all the men are lowered and hoisted, and nothing is allowed in the main slope but the hoisting of coal. Young Daniels, on the morning of the accident, said to a companion of his. "Let us go down through the old traveling way so that I can be down ahead of my partner." They both started down on a run, Daniels being in the lead, the other young man about thirty feet behind him. The latter called to deceased to wait. Having received no reply, called again; still had no reply, when he ran down and found Daniels dead on the steps. How this accident happened is only conjecture. I examined the place carefully, and must say, I think that in some unknown way his head was caught between the pump-rod catchers and a prop. All the mark on his body was a broken neck. This should be a solemn warning for young men to go to their work by the lawful and proper route provided by their employers and not risk their lives in these foolhardy practices.

No. 9. Hugh McGinley, a driver, eighteen years of age, was fatally injured on the 23d day of June, at Highland, No. 2. Deceased was engaged as a driver, on the dirt bank. On the day mentioned above, deceased and another man were sitting, one on the front end and the other on the rear end of a loaded car, which was being taken to the dirt bank, when suddenly the trestling broke from under them, precipitating the two men, car and mule to the ground below, a distance of about sixteen feet. Both men were taken from the debris badly injured. It was shown and proven by the foreman carpenter, that he had made a thorough examination of this trestling a few days before, found it all right and always considered it safe. The breaker boss testified that he had done some repairing to the road, on above trestling, where the timbers broke, a few weeks before the accident, and that one of the injured men was with him, and he did not see anything wrong with the timbers; he also qualified himself by saying that he made no special examination. The general superintendent testified

that he had personally notified these two men, that they should not ride on loaded cars, and he never heard that his orders were violated. I made an examination of the broken timbers, and found that only about one inch on the outside was solid. The substance on the inside had all rotted away. The jury brought a verdict censuring the company for neglect, etc.

No. 10. John Bell, a miner, aged twenty-three years, was fatally injured at Jeanesville, No. 4, on the 11th day of July. Deceased, with another man, was engaged in blasting rock. As it often happens, they failed to keep the hole round, which caused the dynamite cartridge to stick in the hole, and it was claimed that it could not be taken out or pushed in. By the evidence it is evident that deceased had tried to push in the cartridge, and, failing, used the iron scraper to strike at it, when the powder exploded with said sad result. This man was considered a model young man, thoroughly practical and intelligent, yet he made this fatal blunder and lost his life. The reck lessness with which some people handle high explosives is terrible to think of, and, indeed, I consider myself always in danger when nearing these reckless people. The mine law is very definite on the methods of handling high explosives, yet a large number of people handle them with extreme recklessness, and it would take more inspectors than mine foremen to enforce successfully this portion of the law.

No. 11. John Brogan, a laborer, was killed at the Silver Brook Stripping on the 23d day of July. Deceased, who was a Hungarian, was one of the drillers, while other men did the charging and blasting. An electric battery is used to fire the blasts at this place, firing sometimes eight or ten holes at once. On the day of the accident one of holes failed to explode. The battery was disconnected and the men were ordered to their work. Deceased was ordered to drill a hole near the hole that missed, and, while no person was watching him, he must have drilled out the hole that missed, as one of the Hungarians testified that he saw him pulling the wire out of the hole. When every person was working, the hole exploded, throwing the coal in every direction, killing Brogan instantly, and slightly injuring several other men. It was a miracle that no more men were killed, as at least fifty men were within fifty and a hundred feet to said hole. And so another death through recklessness, ignorance, or worse, is recorded.

No. 12. August Reinhold, a footman, aged twenty-two years, was killed on the 20th day of August, at Cranberry. The morning of the accident, a fall of rock occurring on the branch near the foot of the inside slope in the Wharton mine, deceased, and others, were called to assist in clearing away the fall; but, before they commenced, the assistant foreman examined the place and pronounced it safe. While they were all busy working, a large piece of rock, about eighteen inches wide, three feet thick, and about eight feet long, fell without any warning, crushing the life out of deceased. At the inquest the

assistant foreman testified as to his examination, and explained the mode by which he examined the place by stating that he sounded the roof overhead with a pick, and that he was sure that there was nothing loose overhead, yet he could not explain what caused the fall when everything overhead was sound. According to my view, this assistant foreman made a fatal error of judgment, and made a grave mistake in using the pick to sound the roof. I claim that he should have detected the loose piece that fell, as he could have put his hand on the piece while sounding it. The jury brought in a verdict of "accidental death."

No. 13. Mike Hodra, a laborer, aged forty years, was killed at Audenried, No. 4, on the 27th day of September. Deceased, with another laborer, was engaged with a miner, who was driving a road across the pillars. At the time of the accident the laborers were engaged in loading the car, while the miner was busy barring down some loose coal, when suddenly a large piece of coal fell, killing Hodra and injuring the other laborer somewhat, while, at the same time, the miner had a narrow escape. I say here that it was a great pity that the miner was not killed instead of the laborer, as this accident happened through his gross carelessness. The jury in this case also brought in a verdict of accidental death.

No. 14. James McGrory, a miner, aged forty years, was killed in Stockton, No. 2, on the 20th day of October. McGrory was engaged driving a counter gangway across old breasts. While engaged in getting a place ready for a set of timbers, and while putting one leg in place, a rush of coal from the side came, which knocked deceased and laborer down, at the same time putting out their lights. The laborer, who was a Hungarian, after extricating himself, called on deceased, but received no answer. He became frightened, being without a light. He made his way out as soon as possible, gave the alarm to men at the top of the slope, who ran down a small manway (the place being only about fifty feet from the surface), and, reaching the place, found McGrory dead with a few hundred pounds of coal on him. I examined the place, and, in my opinion, if the laborer had had presence of mind to have lit his lamp, he could have extricated deceased before he smothered. He was left under the coal for about half an hour, according to the evidence. Deceased was considered a good miner, and the place where he was killed was considered a comparatively safe place, as the roof and sides were in good condition and the gangway this time was being opened through a pile of loose coal about fifteen or eighteen feet high.

No. 15. Michael Burns, a pumpman, thirty-one years of age, was fatally injured at Oakdale, No. 1, on the 1st day of November. Deceased, with another man, had charge of the pumps at the bottom of No. 1 and No. 2, Oakdale. They were engaged this week on the night shift, and according to the evidence they had a practice of

putting water into a locomotive every night, so as to relieve the locomotive engineer from staying a little late after his day's work, and also from coming early in the morning. Deceased's partner told deceased that he couldn't start the injector;" he replied he would go and start it in a little while; the partner in the meantime went to his work. In a little while he heard the locomotive moving. Thinking that his partner had failed to start the injector and was running the locomotive, as he thought to the tank, he paid no more heed to the matter. In a short time afterwards the locomotive struck the loaded cars at the bottom of the slope with terrific force. He thought there was something wrong and went to see, but he could not find any trace of Burns. He went back a few hundred feet through the gangway and found Burns on the middle of the track groaning and asking to be removed. Deceased at the time was sensible but did not give any account how he came to fall off the locomotive. He died while being taken out. I made a thorough investigation into the matter, and found that deceased was never asked, nor did any of the officials know that he had been in the habit of attending to the locomotive at night, as they considered that he had enough to do to watch the pumps under his charge. He undertook to do the work to accommodate the locomotive engineer, and while doing another man's work fell in some manner from the locomotive, and was injured as stated. This is another accident that would not have occurred if deceased had attended strictly to his own duty. The jury brought in a verdict of accidental death.

No. 16. Joseph Seream was fatally injured on the 3d day of December, at Silver Brook. He, among others, was working at the strippings, and was notified to get out of the way of a blast. The other men went into safety, but deceased failed to go far enough, and was struck by a flying fragment. I know it to be a fact that it is a hard matter to get these Hungarians into a place of safety while blasting, as it seems that each of them think that they can dodge the flying missiles, but sometimes, as in this case, they make sad mistakes. This accident would not have happened if the deceased had taken the proper precaution.

No. 17. George Petrick, a laborer, aged forty years, was killed at Drifton No. 2, on the 6th day of December. Deceased, with another Hungarian, was engaged at loading company coal from old breasts, a miner named Williams being engaged to keep the batteries open. By the testimony of the miner it was learned that one of the batteries became empty, and it became his duty to go up and see where the coal was blocked in the breast. Before he went he spoke to the laborers, saying he was going up the manway, they at the time being engaged in loading a car. Williams found where the coal was blocked, made a hole through into the breast and started the coal, and hurried down to a place of safety, as he was afraid of the manway, but before

SKETCH SHOWING BREAST

WHERE ACCIDENT OCCURRED

Dec. 6th 1888.

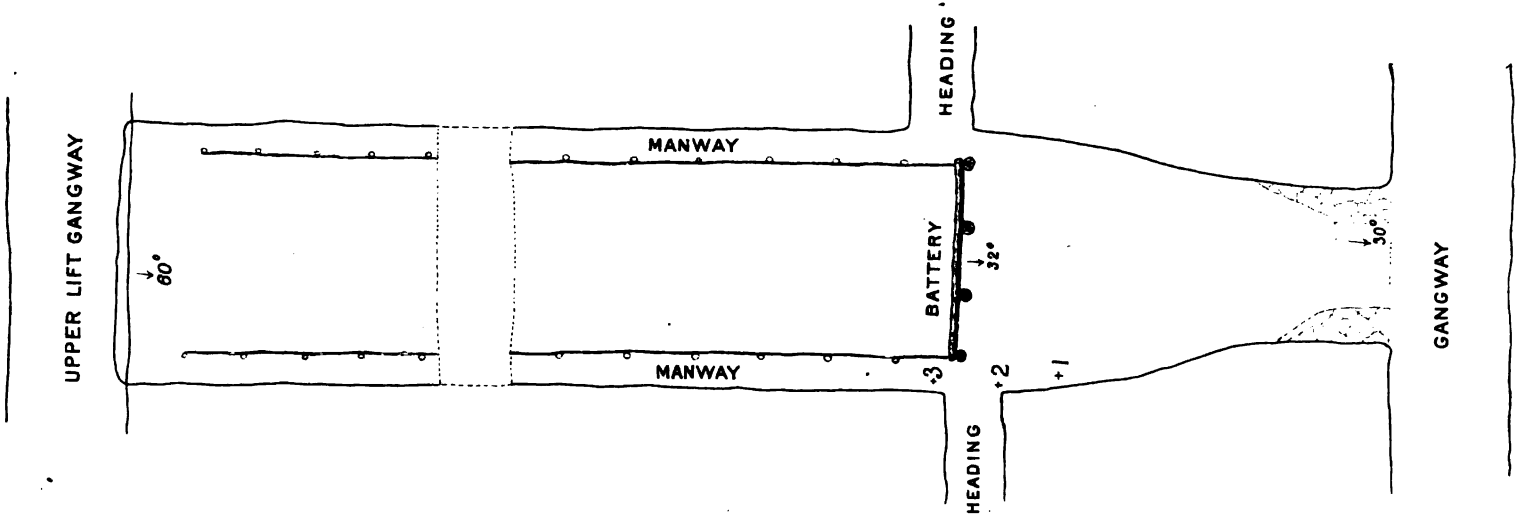
Scale 20' per inch.

No 1 *Where other laborer was found*

No 2 " *George Petrick* " "

No 3 *Where Miner was found*

Jas. E. Roderick Inspector.



he reached the cross cut he was caught and pinned fast. The mine foreman, Marley, testified that about half past twelve o'clock noon, while he was passing this place, he saw the car on the gangway overturned and the coal all around it. He knew that something had happened up the breast and called for the miners and laborers. Receiving no answer he hurried back to the foot to see if the men were at dinner. Not finding them there, he, with others, went back and up the breast, and saw, at a glance, that the battery had broken and the men could not be seen. After a careful examination they heard Williams calling. They answered him, asking where he was, and if he was injured. He replied, saying, he wasn't much injured, only that he was pinned fast. By this time they heard a groan. Knowing that it was the groan of one of the laborers, willing hands went to his rescue and succeeded in getting him out more dead than alive. He was taken to the Drifton hospital. Afterward the miner was extricated, and it was found that he was only slightly injured. The foreman inquired of him where the other laborer was; he answered he didn't know, as both were at the gangway when he (the miner) went up the manway. They hunted and moved the coal in every direction, looking for the body of the laborer. Inquiries were made of the other laborer at the hospital where they would be most likely to find the body of his comrade. He said when the rush came his partner made a jump towards the gangway, and that was the last he saw of him, and this information led the rescuers astray. It was decided then to load the coal, and in that way find the body. They commenced to load it about 5 P. M. on the 6th and loaded all night and up to 9 o'clock on Saturday morning the 8th. After a consultation with the officials it was decided to stop loading so as to do some timbering to keep the coal from running, as there were about four hundred cars in the breast and the whole mass moving down slowly. While they were getting ready to put in timbers a few men were directed to clear the coal from the pillars midway between where the miner and the other laborer were found. After working at this about half an hour the man's shoulders came in sight, but it took several hours to get him out. By the appearance of the body he was killed instantly. Accompanying this report is a sketch of the breast, showing where the deceased and the other men were found. There were four battery props in this breast, each about eighteen inches in diameter and about thirteen feet long. A manway was carried each side of the breast. This may be one of those accidents that cannot be guarded against, yet if the miner kept the battery full of coal the rush would not have broken the timbers. The verdict was "accidental death."

No. 18. James Carnew, a miner aged fifty years, was killed at Cranberry on the 11th day of December. Carnew, with another miner, was engaged at blasting down fireclay to make room for an overcast. They had fired a blast and gone back to see the result. Deceased was

considered the foreman of the shift, and he was at the time of the accident looking where he would put the next hole when his partner called his attention to the fact that there was something working. He jumped back under the timber to a safe place, then took off his hat and lamp, which he held before him to show light, and put his head outside of the timbering, and while looking up a piece fell and crushed his skull. This was a very safe place, as it was in the Wharton vein, which is only about seven feet high at this place, and with ordinary precaution this accident could not have happened, and, indeed, it was a great pity to loose such a good workman in such a place.

No. 19. Thomas McGarvey, a miner aged forty-five years, was instantly killed, and his son William, a laborer, aged eighteen years, was fatally injured at .Pond Creek on the 31st day of December. Deceased was engaged driving a gangway in the Buck Mountain vein, which was about eighteen feet wide and seven and one-half feet high. A row of props was put in, dividing the place into two compartments, one six feet wide and the other twelve, making an airway and gangway of the opening. Deceased, with his two sons as laborers, was driving this gangway, and also putting in props. The props were put in for two purposes, viz: supporting the roof and fastening brattice boards to.

In my examination of the place, I found the last prop was nineteen feet from the face—entirely too far. The immediate cause of this accident was a slip that ran up through the top tier of coal, which they should have detected, as it was to be seen running through the lower tier. I can conscientiously say that if the place had been carefully examined and properly timbered, there would have been no need of chronicling the sad death of these two men—father and son. The testimony at the inquest was very conflicting on the part of the witnesses, whose sworn evidence is as follows: Stephen Charles, the mine foreman, testified "that Thomas McGarvey, now dead, had ordered props from him on Friday, the 28th, which orders were sent out as usual, but for some reason unknown to him, they were not sent in on Saturday the 29th. He went to the face of this gangway a little after seven A. M., Monday the 31st, (the day of the accident) and called deceased's attention to the need of standing a few props. He answered that the props had not been sent in, but that he would stand them as soon as they came. Charles went out and ordered one of the assistant drivers to haul in props to McGarvey, about ten A. M., on the same day. Mr. Charlton, the general mine foreman, accompanied by said foreman, visited the face of this gangway again for the purpose of changing its course. While there they did not detect the slip in the coal. Not thinking of any danger, they gave no instructions to the men." Thomas Charles, a company man, testified "that he was at the face of said gangway on the day of the accident; saw nothing unusual that drew his attention to the place; but, on his way back, he saw a prop by

the side of the track, about one hundred feet from the face." John Fisher, a driver, testified "that on the morning of the accident, Mr. Charles, the mine foreman, ordered him to haul props to McGarvey, which he could find in a certain breast. He followed his instructions and hauled in two props, when another driver took in an empty car. Fisher asked McGarvey if he wanted more props, and was told he could bring in a couple more when he had time. He had another prop hauled part way in, waiting for the car to be loaded and taken, but before the car was loaded the roof fell." Charles White, a miner, testified "that while eating a piece, between twelve and one o'clock, he heard a call of distress, and immediately ran towards the face of the gangway, and found some men taking McGarvey out from under the coal. He then examined the roof, found it very dangerous, and afterwards, with the assistance of others, secured it, then rescued Thomas McGarvey from under the coal." Several other witnesses gave similar evidence, after which the inquest was adjourned to the 8th day of January, when the evidence of John McGarvey, son of the deceased, could be taken, as he was unable to be present on account of injuries received at the time of the accident. He testified as follows: "My father, brother and myself went to work on the Monday morning and loaded three cars of coal. The mine foreman and Mr. Charlton, the general mine foreman, came to our place about eight or nine o'clock. Afterwards the driver hauled in some props, which we stood at once. After that another empty car came in, and we commenced to load, but the fall took place before it was finished. We saw the slip in the top coal, but did not consider it dangerous. Stephen Charles, the mine foreman, on Friday ordered father to stand some props. As we had not any on hand, father ordered some props sent in, which should have been sent in on Saturday, but had not come in on the day of the accident. We would have stood more props on Monday if we had had them. After the driver had promised to take in more props we went back to the slope for dinner, expecting the driver would take them in before we went back. But he did not do so, and we commenced to load the car. The road was a good piece away from the face. Father was shoveling near the face, William in the middle, and I shoveled the coal into the car. While doing this work the top fell." In answer to questions given he said "that the driver had plenty of time to haul in more props, and that they did not expect the props from the outside, but from some adjoining breasts."

ABLE 1—Showing Location of Collieries in the Fourth Anthracite District.

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of Superintendent.	Post-office Address.
Hazleton mine,	A. Pardee & Co.,	Hazleton, Luzerne Co.,	Frank Pardee,	Hazleton, Pa.
Laurel Hill,	do. do.	do. do.	do. do.	do. do.
Number three,	do. do.	do. do.	do. do.	do. do.
Number six,	do. do.	do. do.	do. do.	do. do.
South Sugar Loaf,	do. do.	do. do.	do. do.	do. do.
Cranberry,	do. do.	do. do.	do. do.	do. do.
Drifton No. 1,	Coxe, Bros. & Co.,	Drifton, Luzerne Co.,	Hon. E. B. Coxe,	Drifton, Pa.
Drifton No. 2,	do. do.	do. do.	do. do.	do. do.
Eckley No. 5,	do. do.	Eckley, Luzerne Co.,	do. do.	do. do.
Eckley No. 10,	do. do.	do. do.	do. do.	do. do.
Stockton,	do. do.	Stockton, Luzerne Co.,	do. do	do. do.
Beaver Meadow,	do. do.	Beaver Meadow, Carbon Co.,	do. do.	do. do.
Tomhicken,	do. do.	Tomhicken, Luzerne Co.,	do. do.	do. do.
Deringer,	do. do.	Deringer, Luzerne Co.,	do. do.	do do.
Gowen,	do. do.	Gowen, Luzerne Co.,	do. do.	do. do.
Oneida,	do. do.	Oneida, Schuylkill Co.,	do. do.	do. do.
Oak Dale No. 1,	G. B Markle & Co.,	Oak Dale, Luzerne Co.,	John Markle,	Jeddo, Pa.
Oak Dale No. 2,	do. do.	do. do.	do. do.	do. do.
Highland No. 1,	do. do.	Highland, Luzerne Co.,	do. do.	do. do.
Highland No. 2,	do. do.	do do.	do. do.	do. do.
Honey Brook No. 2,	Lehigh & Wilkes-Barre Coal Co.,	Audenried, Schuylkill Co.,	Jed I. Hollenback,	Audenried, Pa.
Honey Brook No. 4,	do. do.	do. do.	do. do.	do. do.
Honey Brook No. 5,	do. do.	do. do.	do. do.	do. do.
Stockton No. 1,	Linderman & Skeer,	Stockton, Luzerne Co.,	S. D. Kynor,	Stockton, Pa.
Stockton No. 2,	do. do.	do. do.	do. do.	do. do.
Stockton No. 5,	do. do.	do. do.	do. do.	do. do.
Stockton No. 6,	do. do.	do. do.	do. do.	do. do.
Humboldt,	do. do.	Humboldt, Luzerne Co.,	do. do.	do. do.
Upper Lehigh No. 2,	Upper Lehigh Coal Company,	Upper Lehigh, Luzerne Co.,	Albert Leisening,	Upper Lehigh, Pa.
Upper Lehigh No. 4,	do. do.	do. do.	do. do.	do. do.
Upper Lehigh No 5,	do. do.	do. ko.	do. do.	do. do.
Upper Lehigh No 6,	do. do.	do. do.	do. do.	do. do.
Upper Lehigh No. 7,	do. do.	do. do.	do. do.	do. do.
Spring Mountain No. 1,	J. C. Haydon & Co.,	Jeanesville, Luzerne Co.,	J. C. Haydon,	Jeanesville, Pa.
Spring Mountain No. 4,	do. do.	do. do.	do. do.	do. do.
Spring Mountain No. 7,	do. do.	do. do.	do. do.	do. do.
Lattimer No 1,	Pardee Bros. & Co.,	Lattimer, Luzerne Co.,	Calvin Pardee,	Hazleton, Pa.
Lattimer No. 2,	do. do.	do. do.	do. do.	do. do.
Lattimer No. 3,	do. do.	do. do.	do. do.	do. do.

Mt Pleasant No. 2,	Pardee Sons & Co.,	Mt. Pleasant, Luzerne Co.,	Calvin Pardee,	Hazleton, Pa.
Mt. Pleasant No. 4	do. do.	do. do.	do. do.	do. do.
Mt. Pleasant No 5,	do. do.	do. do.	do. do.	do. do.
Hollywood, No. 1,	C. Pardee & Co.,	Hollywood, Luzerne Co.,	do. do.	do. do.
Hollywood, No. 2,	do. do.	do. do.	do. do.	do. do.
Sandy Run,	M. S. Kemmerer & Co.,	Sandy Run, Luzerne Co.,	Walter Leisenring,	Sandy Run, Pa.
Pond Creek,	do. do.	do do.	do. do.	do. do.
Yorktown No. 5,	G. H. Myers & Co.,	Yorktown, Carbon Co.,	George John,	Audenreid, Pa.
Yorktown No. 11,	do. do.	do. do.	do. do.	do. do.
Coleraine No. 1,	W. T. Carter & Co.,	Beaver Meadow, Carbon Co.,	John Wear,	Beaver Meadow, Pa.
Coleraine No. 2,	do. do.	do. do.	do. do.	do. do.
Ebervale No. 1,	Ebervale Coal Company,	Ebervale, Luzerne Co.,	Has been idle all the year,	Ebervale, Pa.
Ebervale No. 2,	do. do.	do. do.	do. do.	do. do.
Ebervale No. 3,	do. do.	do. do.	do. do.	do do.
Beaver Brook,	C. M. Dodson & Co.,	Beaver Brook, Carbon Co ,	E. L. Bullock,	Audenried, Pa
Silver Brook,	Silver Brook Coal Company,	Silver Brook, Schuylkill Co.,	W. J. Harris,	Silver Brook, Pa.
Hazel Brook,	J. S. Wentz & Co ,	Hazle Brook, Luzerne Co.,	J. S. Wentz,	Mauch Chunk, Pa.
Black Ridge,	J. S. Wentz & Co.,	Black Ridge, Luzerne Co.,	J. S. Wentz,	Mauch Chunk, Pa.
Milnesville,	S out Coal Company,	Milnesville, Luzerne Co.,	John A. Mason,	Milnesville, Pa.
Harleigh,	M. S. Kemmerer & Co.,	Harleigh, Luzerne Co.,	Has been idle all the year,	Mauch Chunk, Pa.

TABLE No. 2.—Giving the total number of tons of coal mined in each colliery, number of days worked, number of employés, number of persons killed and injured, number of kegs of powder used, etc., in the Fourth Anthracite District, for the year ending December 31, 1888.

NAME OF COLLIERY.	Location.	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.
A. Pardee & Co.											
Hazleton Mine,	Hazleton,	123,269	114 061.12	252 7	337		3	1.655	36	46	1
No. 3.	do.	55 506	49 671.19	224	223	. .	2	1,566	30	22	
Laurel Hill,	do.	106 496	93.608 02	239.6	248	. .	1	870	44	28	1
No 6,	do.	57 437	54.067.05	188.3	132		. .	610	10	17	
South Sugar Loaf,	do.	54 752	51 512 10	208 7	145	1	.	1,500	24	23	
Cranberry,	do.	133 761	124 514 17	219	430	2	2	2,945	52	48	2
		531,161	492,456.05	218 5	1,515	3	8	9,146	196	190	4
Coxe Bros. & Co.											
Drifton No 1,	Drifton,	361,253	332,500 09	290	835	3	5	8 003	42	110	6
Drifton No 2,							6				
Eckley No 5,	Eckley,	105,559	97.277 11	234	237		3	1 856	18	66	1
Eckley No. 10,	do.	125.434	110 389 01	247	292			2,366	19		
Stockton,	Stockton,	44.344	36.395	196	256		1	307	32	12	1
Beaver Meadow,	Beaver Meadow,	165 663	150.773.04	238	473	1	2	841	24	30	1
Tomhicken,	Tomhicken,	60,407	54 450 02	209	210			1,946	5	31	1
Deringer,	Deringer,	381,163	357 537 08	621	915	1	5	9 280	18	101	2
Gowen,	Gowen,					4	2				
Oneida,							1	459	10	2	2
		1,243,823	1,139,322.15	254 3	3,216	9	25	25 053	159	330	14
G. B. Markle & Co.											
Oak Dale 1st,	Jeddo,	80 558	74 591 15	197	222	1	2	1 062	37	52	2
Oak Dale 2d,	do.	116,254	107,642 13	206	223	1	3	1 701	30	44	1

Highland 1st,	Highland,	118 140	108 230 04	210	245	1	3	2,164	21	62	
Highland 2,	do.	131,157	121,442.08	182	240	..	8	2 359	18	44	
		446.109	411,903 00	198 7	940	3	16	7.298	96	202	3
Lehigh and Wilkes-Barre Coal Co.											
Honey Brook 2,	Honey Brook,	110,460	92 704 01	193 5	399	..	.	1,951	36	34	1
Honey Brook 4,	do.	148 681	135 427	198 6	427	1	2	2.701	24	38	1
Honey Brook 5,	do.	193 143	175,340.16	200 2	765	1	7	3,011	56	46	2
		452.284	403 471.14	197.4	1,595	2	9	7,653	116	118	4
Upper Lehigh Coal Co.											
Upper Lehigh No. 2,	Upper Lehigh,	208.647	181 559 03	215 5	439		1	5 090	48	54	3
Upper Lehigh No. 4,	do.	146 987	138,973.03	206 8	224	.	2	2,445	16	39	1
		353 634	320,532 06	211	663	..	3	7 535	64	93	4
Linderman & Skeer.											
West No. 1,	Stockton,	69 843	64 617 07	225.4	201		1	794	18	13	
No. 2,	do.	70.603	66.607 03	200 4	255	2	2	1.269	23	15	1
Nos 5 and 6,	do.	86.039	79 282.18	221	323	..	4	1,550	44	19	2
Humboldt,	Humboldt,	83 057	76 905 05	221 5	258	1	2	2,111	31	28	1
		309,555	287,412 13	217	1,037	3	9	5,723	116	75	4
J. C. Haydon & Co.											
Spring Mountain No. 1,	Jeanesville,	121.693	111 240 03	190	253	.	4	1 500	37	32	1
Spring Mountain No. 4,	do.	138,472	120.872.09	195	322	1	4	2,160	33	46	
		260,167	232,112.12	192.5	574	1	8	3,660	70	78	1
Pardee Bros. & Co.											
Lattimer Nos. 1 and 2,	Lattimer,	57,700	45 572	144	293	1	4	1,055	34	40	3
Lattimer No. 3,	do.	106,337	97.077	200	310		2	730	18	18	
		164 037	142 649	172	603	1	6	1,785	52	58	3
Miscellaneous Companies.											
Sandy Run,	Sandy Run,	153.36	142 101.14	212.5	353	2	3	2 357	30	61	1
Beaver Brook,	Beaver Brook,	152 000	139 934.18	161	407	2	1	3 480	44	32	1
Silver Brook,	Silver Brook,	149 215	137,451 06	222	406	3		3 776	28	23	1
Mt Pleasant,	Mt Pleasant,	96.567	89 217 14	194	419	.	4	3 014	52	40	1
Hollywood,	Hollywood,	119.924	108 924.09	193	430	..	2	2 854	32	46	1
Yorktown,	Yorktown,	108.700	99 336 15	158	337	..	..	1 761	34	32	1
Coleraine,	Coleraine,	99 471	87 791	211	301		2	2,088	30	31	2
Hazel Brook,	Hazle Brook,	72 051	66.696 03	200	242		2	1,690	16	18	1
Pond Creek,	Pond Creek,	40,233	37 956.05	212.5	180	2	..	1,380	6	13	1
Black Ridge,	Black Ridge,	19,286	17,849.13	155	128			2 5	12	8	1
Milnesville,	Milnesville,	122,956	113,849.03	208 5	459	1	2	2,316	34	29	2
		1,131,743	1,041,105	194 8	3,670	10	16	24,981	316	333	13

TABLE No. 2.—Recapitulation.

NAMES OF COMPANIES.	Location.	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs of powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.
A Pardee & Co.,	Hazleton,	531.161	492 456 05	218 5	1 515	3	8	9 148	196	190	4
Coxe Bros & Co.,	Drifton,	1 243 324	1,139 322 15	254 3	3 216	9	25	25 058	159	350	14
G B. Markle & Co.,	Jeddo,	446 109	411 908	198 7	940	3	16	7.296	96	202	3
Lehigh and Wilkes-Barre Coal Company,	Honey Brook,	452.284	403.471 14	197 4	1 585	2	9	7.663	116	118	4
Upper Lehigh Coal Company,	Upper Lehigh,	353 634	320 552.06	211	663		3	7 536	64	9	4
Linderman & Skeer,	Stockton,	309 555	287.412 13	217	1,037	3	9	5.723	116	75	4
J. C Haydon & Co.,	Jeanesville,	260 167	232 112.12	192.5	574	1	3	3 680	70	78	1
Pardee Bros. & Co ,	Lattimer,	164 037	142.649	172	603	1	6	1 785	52	58	3
Miscellaneous companies,		1,131,743	1,041,109	194 8	3,670	10	16	24 981	316	333	13
Men at general work, but not producing coal,					640						
		4,892,514	4,470 974 03	206	14,443	32	100	92,848	1,185	1,497	50

TABLE No. 3.—Showing the number of each class of employés at each colliery in the Fourth Anthracite District during the year 1888.

NAMES OF COLLIERIES.	NAMES OF PERSONS EMPLOYED INSIDE.							NAMES OF PERSONS EMPLOYED OUTSIDE.							
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, book-keepers and clerks.	Total outside.	Grand total inside and outside.
A. Pardee & Co.															
Hazleton Mine,	2	112	25	27	19	11	196	1	5	15	61	49		141	337
Number Three,	1	76	27	14	9	4	131	1	4	11	52	24		92	223
Laurel Hill,	1	74	24	13	15	3	130	1	3	19	54	36	10	118	248
Number Six,	1	8	22	2	8	1	42	1	3	4	63	19		90	132
South Sugar Loaf,	1	55	7	4	12	5	84	1	3	3	33	16		61	145
Cranberry,	1	166	38	26	30	6	267	1	9	21	72	50		163	430
	7	491	148	86	93	30	850	6	32	78	335	204	10	665	1,515
Coxe Bros & Co.															
Drifton No. 1,	4	278	71	141	34	25	553	6	17	27	123	103	6	282	835
Do. No. 2,															
Eckley, 5,	1	36	32	35	12	6	122	3	7	6	65	33	1	115	237
Do. 10,	1	58	40	39	8	2	148	4	12	10	81	34	1	142	290
Stockton,	2	14	18	103	6	..	138	3	8	11	65	30	1	118	256
Beaver Meadow,	1	24	14	70	17	3	129	3	10	16	105	209	1	344	473
Tomhicken,	1	60	11	38	7	3	120	3	8	11	36	31	1	90	210
Deringer.	2	314	82	111	39	26	574	8	24	20	201	86	2	341	915
Gowen,															
	12	784	263	537	123	65	1,784	30	86	101	676	526	13	1,432	3 216
G. B. Markle & Co.															
Oak Dale, 1st,	1	46	10	26	22	11	126	1	3	7	40	50	5	106	232
Do. 2d,	1	57	16	13	17	11	125	1	3	6	43	40	5	98	223
Highland, 1st,	1	72	33	15	23	15	169	1	3	6	23	38	5	76	245
Do. 2d,	1	60	49	11	13	11	155	1	3	6	33	37	5	85	240
	4	235	108	65	75	48	575	4	12	25	139	165	20	365	940
Lehigh and Wilkes-Barre Coal Company															
Honey Brook, 2,	1	34	14	78	17	2	146	1	9	18	48	57		133	279
Do. 4,	1	87	35	84	24	15	246	1	9	13	91	42	6	156	402
Do. 5,	1	67	12	137	34	2	363	1	14	24	114	103		262	565
Do. strippings, 2,	..	..	..	..	..	..	..	..	..	..	..	114	..	114	114

TABLE 3—*Continued.*

NAMES OF COLLIERIES.	NAMES OF PERSONS EMPLOYED INSIDE.							NAMES OF PERSONS EMPLOYED OUTSIDE.							Grand total inside and outside.
	Inside foreman.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foreman.	Blacksmiths and carpenters	Engineer and firemen.	Slate picker.	All other company men.	Superintendents, book-keepers and clerks.	Total outside.	
Honey Brook shippings, 4,	....	...	....	....	....	....	....	....	....	...	...	25	...	25	25
Do. Do. 5,	....	..	.	....	...	..	....	....	....	..	...	200	...	200	200
	3	188	61	349	75	19	695	3	32	55	253	541	6	890	1,585
Upper Lehigh Coal Company.															
No. 2, Slope No. 2,	1	8	4	3	3	1	20	1	6	8	77	32	11	135	155
Slope No 5,	1	39	36	14	16	3	109	....	2	7	...	...	..	9	118
Slope No. 6,	1	33	37	4	12	2	89	....	2	5	...	....	....	7	96
Slope No. 7,	1	28	26	2	5	3	65	...	1	4	..	..	...	5	70
No. 4,	1	47	59	6	12	7	132	1	4	11	61	15	...	92	224
	5	155	162	29	48	16	415	2	15	35	138	47	11	248	663
Linderman & Skeer.															
Stockton No. 1,	1	42	21	41	14	5	124	1	3	7	37	29	5	77	201
Do. 2,	1	84	15	50	12	4	166	1	3	10	40	35		94	260
Do. 5 and 6,	1	101	32	49	16	3	202	2	5	18	40	86		151	353
Humboldt,	1	58	66	14	10	3	152	1	6	15	41	41	2	106	258
	4	285	134	154	52	15	644	5	17	50	158	191	7	428	1 072
J. C. Haydon & Co.															
Spring Mountain, No. 1,	1	42	36	9	18	7	113	1	5	11	47	75	5	144	.
Do. 4,	1	51	55	33	21	9	173	1	7	11	59	71		149	. .
	2	93	91	42	42	16	286	2	12	22	106	146	5	293	579
Pardee Bros. & Co.															
Lattimer No. 1,	...	11	3	4	2	..	20	..	4	7	.	15	4	26	46
Do. No. 2,	1	44	8	24	12	4	93	2	4	6	69	69		154	247
Do. 3,	1	35	39	15	8	5	103	2	6	7	85	107		207	310
	2	90	50	43	22	9	216	4	14	20	154	191	4	387	603
Miscellaneous Companies.															
Sandy Run,	1	66	61	33	13	15	189	1	10	10	93	45	4	163	352
Beaver Brook,	1	74	80	15	12	7	189	1	6	16	90	100	5	218	407

Silver Brook,	1	48	34	22	6	5	116	2	8	10	86	187	2	290	406
Mt. Pleasant,	2	126	56	38	15	9	246	1	15	20	87	42	7	172	419
Hollywood,	1	27	..	106	20	...	154	1	14	20	110	137	3	285	439
Yorktown,	1	55	32	84	6	2	180	1	10	16	63	113	5	207	387
Coleraine,	2	61	62	19	20	3	148	2	4	15	60	46	6	133	301
Hazle Brook,	1	70	19	15	16	5	127	1	3	7	56	42	6	115	242
Pond Creek,	1	60	38	4	8	6	117	1	....	4	..	8	....	13	130
Black Ridge,	1	42	9	8	4	...	64	1	3	9	31	16	4	64	128
Milnesville,	1	24	8	7	4	2	56	3	14	29	121	232	4	403	459
	13	663	399	353	124	54	1,606	15	87	156	792	963	46	2 064	3,670

Recapitulation.

A. Pardee & Co.,	7	491	148	86	93	30	850	6	32	78	335	204	10	665	1.515
Coxe Bros & Co.,	12	734	263	537	123	65	1,784	30	86	101	676	526	13	1.432	3 216
G. B. Markle & Co.,	4	235	108	65	75	48	575	4	12	25	139	165	20	365	940
Lehigh and Wilkes-Barre Coal company,	3	188	61	349	75	19	695	3	32	55	253	541	6	890	1 585
Upper Lehigh Coal company,	5	155	162	29	48	16	415	2	15	35	138	47	11	248	663
Linderman & Skeer,	4	285	134	154	52	15	644	5	17	50	158	191	7	428	1 072
J. C. Haydon & Co.,	2	93	91	42	42	16	286	2	12	22	106	146	5	293	579
Pardee Sons & Co.,	2	90	50	43	22	9	216	4	14	20	154	191	4	387	603
Miscellaneous companies,	13	663	399	353	124	54	1,606	15	87	156	792	963	46	2,064	3.670
Men at general work, but not producing coal,	...	..	...		....	...	..	....	..	..	..	..	..	640	640
	52	2,984	1,416	1,658	654	272	7,036	71	307	542	2,751	2,974	122	7,412	14,448

TABLE No. 4.—List of fatal accidents occurring in the mines of the Fourth Anthracite District for the year ending December 31, 1888.

Date of accident.	Name of Person.	Occupation.	Age.	Widow.	Number of orphans.	Name of Colliery.	Location—County.	Nature and cause of accident.
February 4	Stephen Fagetta,	Loader,	26			Gowen,	Luzerne,	Was killed by being caught between railroad car and shute at breaker.
do. 13,	Frank Anderson,	Footman,	33	1	5	Highland 2d,	do.	Was suffocated by carbonic oxide gas.
March 23,	Owen Boyle,	Miner,	48	1	7	Lattimer, 1st,	do.	Killed by a rush of coal inside of battery.
do. 26,	Angelo Angustine,	Laborer,	24			Gowen,	do.	Was killed by a premature blast.
do. 27,	Frank Cannon,	Helper,	16			South Sugar Loaf,	do.	Fatally injured; was caught between cars.
do. 27,	Frank Mooney,	Miner,	45			Beaver Brook,	do.	Fatally injured by cars on slope.
do. 27,	Mike Looine,	Jig tender,	17			Deringer,	do.	Fatally injured; was struck on head by a piece of shute slate that fell from top of breaker.
April 27,	John W. Airey,	Company man,	46	1	4	Humboldt,	do.	Was killed by a fall of rock.
do. 28,	Patrick Bowen,	Miner,	45	1	7	Stockton, 2d,	do.	Killed by a rush of coal inside of battery.
June 4,	Wm. T. Williams,	do	38	1	5	Honey Brook,	Schuylkill,	Was killed by a fall of coal in breast.
do. 5,	Thomas McConnell,	Helper,	16			Silver Brook,	do.	Was fatally injured by being caught by a gunboat on breaker plane; died the following week.
do. 6,	Thomas Daniels,	Roadman,	18			Drifton 2,	Luzerne,	Was killed by a pump rod while going to his work.
do. 8,	Daniel Brennan,	Miner,	35	1	2	Sandy Run,	do.	Fatally injured by a fall of clod; died next day.
do. 21,	Andrew Grakowsky,	Laborer,	40	1	2	Gowen,	do.	Killed by a fall of rock while securing it.
do. 22,	Hugh McGinley,	Driver,	18			Highland 2,	do.	Fatally injured by falling through trestling near breaker; died in about a week.
July 11,	John Bell,	Miner,	23			Jeanesville 4,	do.	Fatally injured by a premature explosion.
do. 12,	Anthony Meneely,	do.	26	1		Sandy Run,	do.	Fatally injured; was caught between cars.
do. 23,	John Brogan,	Laborer,	23			Silver Brook,	Schuylkill,	Was killed by a premature blast.
August 20,	August Reinold,	Footman,	22	1		Cranberry,	Luzerne,	Was killed by a fall of rock on branch.
do. 22,	John Ward,	Miner,	30			Drifton 2,	do.	Was fatally injured by a fall of coal in breast.
September 20,	Mike Hoininick,	Loader,	20			Gowen breaker,	do.	Fatally injured; was caught between car and platform.
do. 27,	Mike Hodra,	Laborer,	40	1	2	Audenried No. 4,	Schuylkill,	Fatally injured by a fall of coal in breast.
October 20,	James McGrory,	Miner,	40	1	5	Stockton 2d,	Luzerne,	Killed by a rush of coal from side of gangway.
do. 28,	David Kite,	Topman,	24			Milnesville,	do.	Fatally injured; fell under mine car.

November 1,	Michael Burns,	Pumpman,	31	1	4	Oak Dale 1st,	do.			Fatally injured; thrown or fell from locomotive.
do. 15,	John Gerakn,	Laborer,	19			Beaver Brook,	do.			Fatally injured by a fall of coal after a blast.
December 2,	Joseph Seream,	Laborer,	40	1	4	Silver Brook,	Schuylkill,			Fatally injured; was struck by a piece of coal from blast.
do. 6,	George Fetrick,	do.	28			Drifton 2,	Luzerne,			Was killed by a rush of coal in breast.
do. 11,	James Cavnen,	Miner,	50			Cranberry,	do.			Killed by a fall of fire-clay.
do. 12,	Joseph Furban,	Laborer,	45	1	4	Leaver Meadow,	Carbon,			Fatally injured by fall of clay at stripping.
do. 31,	Thomas McGarvey,	Miner,	45	1	5	Pond Creek,	Luzerne,			Killed by a fall of coal at face of gangway.
	William McGarvey,	Laborer,	18			do.	do.			Fatally injured by same fall.

12 MINES.

TABLE No. 5.—List of Non-Fatal Accidents occurring in the Mines of the Fourth Anthracite District for the year ending December 31, 1888.

Date of accident.	Name of Person.	Occupation.	Age.	Name of colliery.	Location—county.	Nature and cause of accident.
January 17,	John Sznecs,	Door tender,	26	Deringer.	Luzerne,	Leg fractured; struck by a loaded car.
do. 27,	Andrew Shinser,	Laborer,	22	Milnesville,	do.	Leg fractured; fell under mine cars.
February 4,	Samuel Schlanch,	do.	50	Deringer,	do.	Injured about head and shoulders by a fall of fireclay.
do. 27,	George Nicholas,	Topman,	24	Gowen,	do.	Leg fractured; was caught between empty cars.
March 9,	Adam Kodnar,	Miner,	27	do.	do.	Foot fractured by a fall of coal.
do. 15,	Samuel Weimer,	Company man,	29	Mt. Pleasant,	do.	Leg fractured; fell under mine car.
do. 16,	James Mulherrin,	Miner,	30	Stockton 5,	do.	Slightly injured by cars while going to his work.
do. 18,	Peter Volka,	Laborer,	25	Jeanesville 1,	do.	Seriously injured by a rush of coal in breast.
do. 19,	Girard Angelin,	do.	30	Lattimer,	do.	Three fingers fractured; was caught between rope and sheave.
do. 19,	Andrew Dragan,	do.	29	Jeanesville 1,	do.	Leg fractured; caused by a fall of slate.
do. 20,	Patrick McCaull,	do.	28	do. 4,	do.	Leg and arm fractured by a fall of slate at face of gangway.
do. 20,	James Gafney,	Doorboy,	15	Eckley 5,	do.	Head injured; was caught between car and door frame.
do. 27,	Stephen Gearhardt,	Driver,	18	Deringer,	do.	Leg fractured; fell under mine cars.
April 2,	John Laville,	Laborer,	21	Lattimer 3,	do.	Thumb cut off; caught in wheel while spragging.
do. 2,	Wm. Gallagher,	Driver,	17	Upper Lehigh 4,	do.	Leg fractured; was caught between car and door.
do. 4,	Michael Slavin,	do.	18	Audenried 5,	Schuylkill,	Injured on back and shoulder by falling off a car.
do. 6,	Philip Smith,	Miner,	48	Jeanesville 4,	Luzerne,	Leg fractured by a fall of slate.
do. 7,	Edward Gallagher,	do.	35	Drifton 1,	do.	Fingers fractured; was struck by a piece of coal.
do. 9,	John McHugh,	do.	30	do. 2,	do.	Slightly burned by an explosion of gas.
do. 13,	Casper Freiling,	do.	55	Eckley 5,	do.	Seriously injured; was caught between car and gate near top of slope.
do. 24,	Julius Fox,	do.	28	Hazle Brook,	do.	Severely injured by a premature blast.
do. 27,	Casper Oycocak,	do.	30	Stockton 2,	do.	do. do. do.
do. 28,	Samuel Conley,	Pumpman,	59	Oneida,	Schuylkill,	Left leg fractured; was caught under mine car.
do. 28,	Knapp Clark,	Runner,	18	Deringer,	Luzerne,	Both legs fractured; was caught between car and locomotive.
May 2,	Edward Mathews,	Miner,	35	Stockton 3,	do.	Leg fractured by a fall of rock.
do. 4,	Patrick Kelly,	Driver,	20	Coleraine,	Carbon,	Severely injured by mine cars.
do. 4,	Andrew Kostevia,	Runner,	22	Deringer,	Luzerne,	do. do. do.
do. 4,	John McHugh,	Hitcher,	28	Highland 2,	do.	Seriously injured by mine cars.
do. 7,	Daniel McLaughlin,	Miner,	50	Beaver Meadow,	Carbon,	Severely injured by a fall of coal.
do. 22,	William Gallagher,	do.	47	Hazleton Mine,	Luzerne,	Seriously burned by an explosion of powder while making a cartridge.
do. 22,	Chas. Loerke,	Laborer,	28	Hazleton 3,	do.	Was struck by a piece of coal from blast and seriously injured.
do. 23,	John T. Kinney,	Driver,	30	Mt. Pleasant,	do.	Was caught between cars and severely injured.
do. 28,	John Malchitzy,	do.	20	Oak Dale 2,	do.	Squeezed between a mule and car, and severely injured.
do. 23,	Frank Fricl,	Miner,	26	Audenried 5,	Schuylkill,	Right thigh badly cut by a piece of coal from blast.
do. 28,	James O. Brieen,	do.	38	Jeanesville, 4,	Luzerne,	Back and head badly injured by a fall of clod.

June	7,	Albert Having,	Slate picker,	17	Stockton 5,	do.	Had his arm cut off by rollers cog wheels.
do.	15,	James Delatt,	Laborer,	24	Milnesville,	do.	Thigh fractured; was struck by mine car.
do.	16,	John F. Yeager,	Miner,	50	Hazleton 8,	do.	Seriously injured; was caught under car on gangway while going to work.
do.	16,	Augustus Sherman,	Helper,	15	Laurel Hill,	do.	Leg fractured; fell under car while attempting to sprag it.
do.	18,	Richard Harvey,	Miner,	24	Stockton 5,	do.	Slightly burned by an explosion of gas.
do.	23,	William Martin,	Driver,	52	Mt Pleasant,	do.	Arm fractured; caught under mine car.
do.	23,	Peter Crouse,	Laborer,	57	Highland, 2	do.	Seriously injured; fell through a broken trestling.
July	9,	George Longstaff,	Laborer,	27	Hazleton Mine,	do.	Was cut on head and bruised on hip by a fall of coal.
do.	11,	Michael McCloskey,	do.	28	Jeanesville 4,	do.	Badly cut about head and on hand by a premature explosion.
do.	16,	James McFadden,	Miner,	31	Honey Brook 5,	Schuylkill,	Leg fractured by a piece of rock rolling on it.
do.	16,	Cyrus Winters,	Roadman,	33	Drifton, 1	Luzerne,	Leg fractured slipped near bottom of slope.
do.	17,	Richard Hooper,	Pumpboy,	16	Hazleton Mine,	do.	Thumb crushed while coupling cars for another boy.
do.	18,	David Davies,	Miner,	52	Drifton 2,	do.	Injured on back and otherwise by a fall of coal.
do.	18,	Christopher Burns,	Driver,	18	Sandy Run,	do.	Seriously injured, fell under mine cars.
do.	21,	Andrew Fackho,	Loader,	22	Upper Lehigh 4,	do.	Severely injured; was caught between railroad car and chute.
do.	26,	Thomas Brown,	Foreman,	37	Highland 1,	do.	Fell from a scaffold and severely injured.
do.	26,	Thomas Slattery,	Driver,	22	do.	do.	Was kicked in the forehead by a mule and painfully injured.
August	2,	John Brown,	Helper,	16	Beaver Brook,	do.	Arm cut off by a car running over it.
do.	3,	Stephen Halletta,	Laborer,	23	Mt. Pleasant,	do.	Head and arm badly cut by a fall of slate.
do.	3,	John Antolich,	do.	24	Highland 2,	do.	Leg fractured; slipped while escaping from a rush of coal.
do.	3,	George Harvey,	Hitcher,	28	do. 1,	do.	Hand badly cut by a piece of coal rolling down slope.
do.	6,	Thomas McElwee,	Laborer,	40	Audenried 4,	Schuylkill,	Badly injured by a fall of coal while in the act of securing the place.
do.	7,	Andrew Jacob,	Miner,	25	Pond Creek,	Luzerne,	Leg fractured by a fall of coal.
do.	15,	John Woozinger,	Laborer,	40	Hollywood,	do.	Seriously injured; was struck by a loaded car.
do.	21,	William Jones,	Miner,	40	Drifton 2,	do.	Lost three fingers; hand was caught between lumps of coal.
do.	24,	Peter Flaim,	do.	33	do. 1,	do.	Burnt about face and hands by explosion of dynamite.
do.	27,	Stephen Wisda,	do.	27	Oak Dale 2,	do.	Leg fractured by a piece of coal falling against it.
do.	29,	Peter Robertson,	Stable boss,	60	Stockton 5,	do.	Leg fractured; was struck by a piece of coal that rolled down slope.
September	7,	Theordore Thomas,	Jig runner,	14	Oak Dale 1,	do.	Leg fractured; fell from railroad cars near breaker.
do.	7,	Anthony Mattick,	Miner,	35	Beaver Meadow,	Carbon,	Badly cut about head and body by a fall of slate.
do.	8,	John Dulbina,	Oiler,	15	do.	do.	Two fingers cut off; they were caught between rope and pulley.
do.	11,	Patrick Carr,	Miner,	35	Drifton 2,	Luzerne,	Face and hands burned by an explosion of gas.
do.	11,	James Benzley,	Driver,	20	Audenried 5,	Schuylkill,	Jaw fractured; he was kicked by a mule he was driving.
do.	18,	James H Boyle,	Miner,	38	Highland 2,	Luzerne,	Hand fractured by a fall of slate.
do.	27,	John Maloney,	do.	50	do.	do.	Severely injured; was struck by a falling prop.
do.	28,	Richard Lee,	Driver,	53	Jeanesville 1,	do.	Severely queezed between mine cars and timbers.
do.	28,	Henry Roger,	do.	18	Stockton 1,	do.	Foot crushed between guide rail and car wheel.
October	2,	John Cumming,	Slate picker,	16	Jeanesville 4,	do.	Hand badly mangled; was caught in jig cog wheels.
do.	3,	Edward King,	Miner,	26	Lattimer 1,	do.	Shoulder and back badly bruised by a fall of slate.
do.	4,	Charles Givens,	do	27	do.	do.	Both these persons were severely burned by a rush of fire from a breast
do.	4,	Philip Gittman,	Laborer,	24	do.	do.	while engaged in fighting the mine fire.
do.	9,	Patrick Maloy,	do.	41	Oak Dale 1,	do.	Injured about body by rolling coal.
do.	9,	John Lucus,	Hitcher,	22	Upper Lehigh 4,	do.	Leg fractured; caught between mine cars.
do.	20,	George H. Bushko,	Laborer,	45	Stockton 2,	do.	Severely injured.
do.	21,	Albert Koshisky,	do.	23	Hazle Brook,	do.	Seriously injured by mine cars at stripping.
do.	22,	William Gorman,	Miner,	30	Coleraine,	Carbon,	Seriously injured by a fall of coal after a blast.
November	6,	Gustino Cocco,	Laborer,	52	Honey Brook 5,	Schuylkill,	Head badly cut by a piece of coal from blast at stripping.
do.	14,	Frank Dalisan,	do.	24	Lattimer 1,	do.	Struck on head by the handle of windlass and severely injured.

TABLE No. 5—*Continued.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Name of colliery.	Location—county.	Nature and cause of accident.
November 11,	Dennis O. Donnel,	Miner,	29	Drifton 1,	Luzerne,	Leg fractured while dumping a buggy.
do. 13,	Charles McShea,	Driver,	20	Honey Brook 5,	Schuylkill,	Finger cut off; caught by harness while unhitching his mule.
do. 15,	Thomas Burke,	Miner,	28	Highland 1,	Luzerne,	Severely burned by an explosion of gas.
do. 21,	James Dever,	do.	33	Audenried 5,	Schuylkill,	Leg fractured by a fall of coal.
do. 22,	Dan. M Cauly,	Laborer,	19	do. 4,	do.	Ankle fractured; was caught under mine cars.
December 3,	John Brady,	Miner,	39	Drifton 1,	Luzerne,	Was slightly burned by an explosion of gas.
do. 3,	John Kotch,	Laborer,	27	Highland 2,	do.	Skull fractured; was struck by a piece of coal.
do. 6,	George Yonovitzy,	do.	25	do.	do.	Leg fractured; fell under mine car.
do. 6,	Peter Schlotzy,	Miner,	36	Oak Dale 2,	do.	Back severely injured by a fall of coal.
do. 6,	John Shavinsky,	Laborer,	24	Drifton 2,	do.	Was seriously injured by a rush of coal.
do. 6,	Thomas Williams,	Miner,	55	do.	do.	Was slightly injured by a rush of coal in breast.
do. 15,	William Gardener,	do.	50	Cranberry,	do.	Seriously injured by explosion of dynamite; his hand was amputated.
do. 18,	Mike Opash,	Laborer,	40	Hollywood,	do.	Was severely injured by a premature blast.
do. 21,	John O'Dounel,	Miner,	40	Eckley 5,	do.	Leg fractured and otherwise injured by a fall of coal.
do. 24,	James Carpenter,	do.	30	Humboldt,	do.	Shoulder blade fractured by a fall of coal.
do. 29,	Herman Minick,	Foreman,	50	Cranberry,	do.	Ribs fractured and otherwise injured while unloading timber.
do. 31,	John McGarvey,	Laborer,	22	Pond Creek,	do.	Seriously injured by a fall of coal at face of gangway.

FIFTH ANTHRACITE DISTRICT.

OFFICE OF INSPECTOR OF MINES,
FIFTH DISTRICT, ANTHRACITE COAL FIELD,
SHENANDOAH, PA., *March 6, 1889.*

Hon. THOMAS J. STEWART,
Secretary of Internal Affairs:

SIR: In compliance with the requirements of the act of Assembly, approved June 30, 1885, I have the honor of submitting to you my fourth annual report as Inspector of Mines of the Fifth Anthracite District for the year 1888.

The tables accompanying this report give the number of accidents (fatal and non-fatal) and their causes, compared with the year 1887, and also the amount of coal produced per life lost. In '888 we have forty-four (44) fatal and one hundred and twelve (112) non-fatal accidents, being a decrease of eleven (11) fatal and an increase of seven (7) non-fatal, as compared with the year 1887. Reference to Table four (4) shows the number of widows and orphans to be twenty-one (21) and fifty-nine (59), respectively.

While this report shows twenty (20) per cent. less fatal accidents than in 1887, yet I am sorry to say that sixty-one (61) per cent. of them are directly attributable to the carelessness of the workmen themselves or to those with whom they worked. Sometimes the law is said not to be a good law, simply because it is not properly observed by those for whose benefit it has been enacted. The principal causes of fatal accidents in my district are from falls of top and sides, and from being crushed by mine cars, which is sixty-eight (68) per cent. of the total for the year, and that of non-fatal accidents from falls of top and sides, being crushed by mine cars, and explosions of fire damp, which is sixty-five (65) per cent. of the total for the year 1888.

Throughout my term of office I have frequently urged upon our miners working in "gangways" to timber as they advance, so as to prevent accidents, yet my appeals pass unheeded until a life is sacrificed through the negligence of the miner not properly securing his

work with timber. Nor is the mine foreman free from blame in not compelling his workmen to put the timber in place as soon as the necessary room is made. Men losing their lives at this class of mining are under the care of our most practical miners, while, at the same time, it must be admitted, we least expect an accident at this class of work.

I am fully satisfied that if our miners would cease to take unnecessary risks, and our mine foremen exercise a stricter discipline in the discharge of their duties, we would have very few accidents to record.

WILLIAM STEIN,
Mine Inspector.

TABLE No. 1, showing comparative statement of fatal casualties for the years 1887 and 1888.

	YEARS.	
	1887.	1888.
Explosions of fire-damp,	2	1
Explosions of blasting material,	1	1
Premature explosions,	1	3
Falls of coal and roof,	31	22
Crushed by mine cars,	9	8
By machinery on surface,	2	2
Falling down shafts and slopes,	1	1
Explosions of boilers,	....	....
Miscellaneous,	8	6
Totals,	55	44

Number of fatal accidents and amount of coal produced per life lost.

	No. of fatal accidents.	Tons of coal produced per fatal accident.
Philadelphia and Reading Coal and Iron Company,	25	145,737.4
Lehigh Valley Coal Company,	8	70,034.76
Lentz, Lilly & Co.,	3	107,666.6
Individual firms,	8	105,937.5

TABLE No. 2, showing comparative statement of non-fatal casualties for the years 1887 and 1888.

	YEARS.	
	1887.	1888.
Explosions of fire-damp,	8	20
Explosions of blasting material,	6	5
Premature explosions,	2	6
By coal flying from shots,	2	6
Falls of coal and roof,	41	30
Crushed by mine cars,	22	23
By machinery on surface,	2	....
Falling down shafts and slopes,	4	....
Explosions of boilers,	1	....
Miscellaneous,	17	22
Totals,	105	112

TABLE No. 3, showing the amount of coal produced and shipped during the years 1887 and 1888, respectively.

	YEARS.	
	1887.	1888.
Amount of coal produced,	5,396,465.04	5,375,185.06
Amount of coal shipped,	5,005,857.12	4,962,331

TABLE No. 4.—Comparative table between the years 1887 and 1888.

	YEARS.	
	1887.	1888.
Number of persons employed,	14,608	14,498
Tons of coal produced per life lost,	98,117	122,163+
Ratio of employés per life lost,	265.6	355½
Number of tons of coal mined per each personal injury,	33,727⅔	34,456+
Average number of tons mined per employé,	369.4	343.41
Ratio of employés per each personal injury,	91.3	100.33

TABLE No. 5.—Taking the death rate per thousand as a basis of comparison between the different companies and individual operators we have the following ratio for the year 1888:

	Number of employés.	Number of deaths.	Death rate per thousand.
Philadelphia and Reading Coal and Iron Company,	9,501	25	2.63
Lehigh Valley Coal Company,	1,779	8	4.49
Lentz, Lilly & Co.,	1,154	3	2.68
Individual firms,	3,218	8	2.48
Totals,	15,652	44	2.82

TABLE No. 6.—Comparative statement of fatal and non-fatal casualties, and their causes, for five years.

FATAL CASUALTIES.	YEARS.					Total for 5 years.
	1884.	1885.	1886.	1887.	1888.	
Explosions of fire-damp,	2	4	1	2	1	10
Explosions of blasting material,	6	5	3	1	1	16
Premature explosions,			2	1	3	6
By coal flying from shots,		1				1
Falls of coal and roof,	20	25	21	31	22	119
Crushed by mine cars,	8	4	6	9	8	35
By machinery on surface,	1	1		2	2	6
Falling down shafts and slopes,	4	3	1	1	1	10
Explosions of boilers,		2	1			3
Miscellaneous,	2	8	6	8	6	30
Totals of the respective years,	43	53	41	55	44	236
Non-fatal Casualties.						
Explosions of fire-damp,	26	9	3	8	20	66
Explosions of blasting material,		7	6	6	5	24
Premature explosions,	11	2	4	2	6	25
By coal flying from shots,		4	1	2	6	13
Falls of coal and roof,	47	29	30	41	30	177
Crushed by mine cars,	23	17	25	22	23	110
By machinery on surface,	3	3	3	2		11
Falling down shafts and slopes,	7	2	1	4		14
Explosions of boilers,	1	2		1		4
Miscellaneous,	20	35	28	17	22	122
Totals of the respective years,	138	105	101	105	112	566

TABLE No. 7.—Comparative statement of casualties, tonnage and employés for five years.

	Killed.	Injured.	Total.	Total number of employés.	Number of employés to each casualty.	Number of tons of coal mined to each fatal casualty.	Total number of tons of coal mined.	Number of tons of coal mined to each non-fatal casualty.	Ratio of tons of coal to each casualty.	Number of tons of coal mined to each employé.
1884,	43	138	181	14,881	82.30	104,948.18	4,512,800.07	32,701.09	24,997.06	303.04
1885,	53	105	158	15,151	95.90	90,217.30	4,781,517.14	45,538.20	30,262.70	315.59
1886,	41	101	142	15,191	106.97	121,280.10	4,972,502.07	49,232.60	35,017.00	320.66
1887,	55	105	160	14,608	91.3	98,117.00	5,396,445.04	51,394.07	33,727.75	369.04
1888,	44	112	156	15,652	100.3	122,163+	5,375,185.05	47,992.72	34,456+	343.41
Totals,	236	561	797	75,483	476.83	536,725.58	25,038,449.37	226,858.68	158,449.90	1,651.74
Average,	47⅕	112⅗	159⅖	15,096⅗	95.36	107,345.11	5,007,689.87	45,371.73	31,689.90	330.34+

The shipments to market from my inspection district, for the year 1888, amount to 4,962,331 tons, a decrease of 40,854 tons as compared with the year 1887, which is due to the protracted strike in the beginning of the year. The following is the number of tons of coal shipped from the respective districts belonging to the Philadelphia and Reading Coal and Iron Company, Lehigh Valley Coal Company, Lentz, Lily & Co. and the individual firms, with their percentages of all the tons shipped from the Fifth Inspection district for the current year:

	Tons.	*Per cent.*
From the Shenandoah district, operated by the Philadelphia and Reading Coal and Iron Company, Mr. John L. Williams, superintendent, .	1,641,908	33 +
From the Mahanoy district, operated by the Philadelphia and Reading Coal and Iron Company, Mr. George Scott, superintendent, ...	1,052,352	21½+
From the Girardville district, operated by the Philadelphia and Reading Coal and Iron Company, Mr. Elijah Gregory, superintendent, . .	316,815	6½+
From the Lehigh Valley Coal Company's collieries, Colonel D. P. Brown, superintendent, ...	513,584	13½+
From Lentz, Lilly & Co.'s collieries, Mr. Edward Reese, superintendent, ...	303,224	6½+
From the individual firms' collieries, ...	1,063,180	21½+
From the Girard Mammoth colliery, operated by the Philadelphia and Reading Coal and Iron Company, Mr. John Carl, superintendent, Mt. Carmel, ...	71,268	
Total, ...	4,962,331	

The number of tons of coal produced per life lost from the Philadelphia and Reading Coal and Iron Company's collieries far exceeds the other companies or individual firms. This company produced 145,737 tons per life lost. The Lehigh Valley Coal Company produced 70,034 tons per life lost. The collieries of Lentz, Lilly & Co. produced 107,666 tons per life lost, and the collieries of the individual firms produced 103,937 tons per life lost.

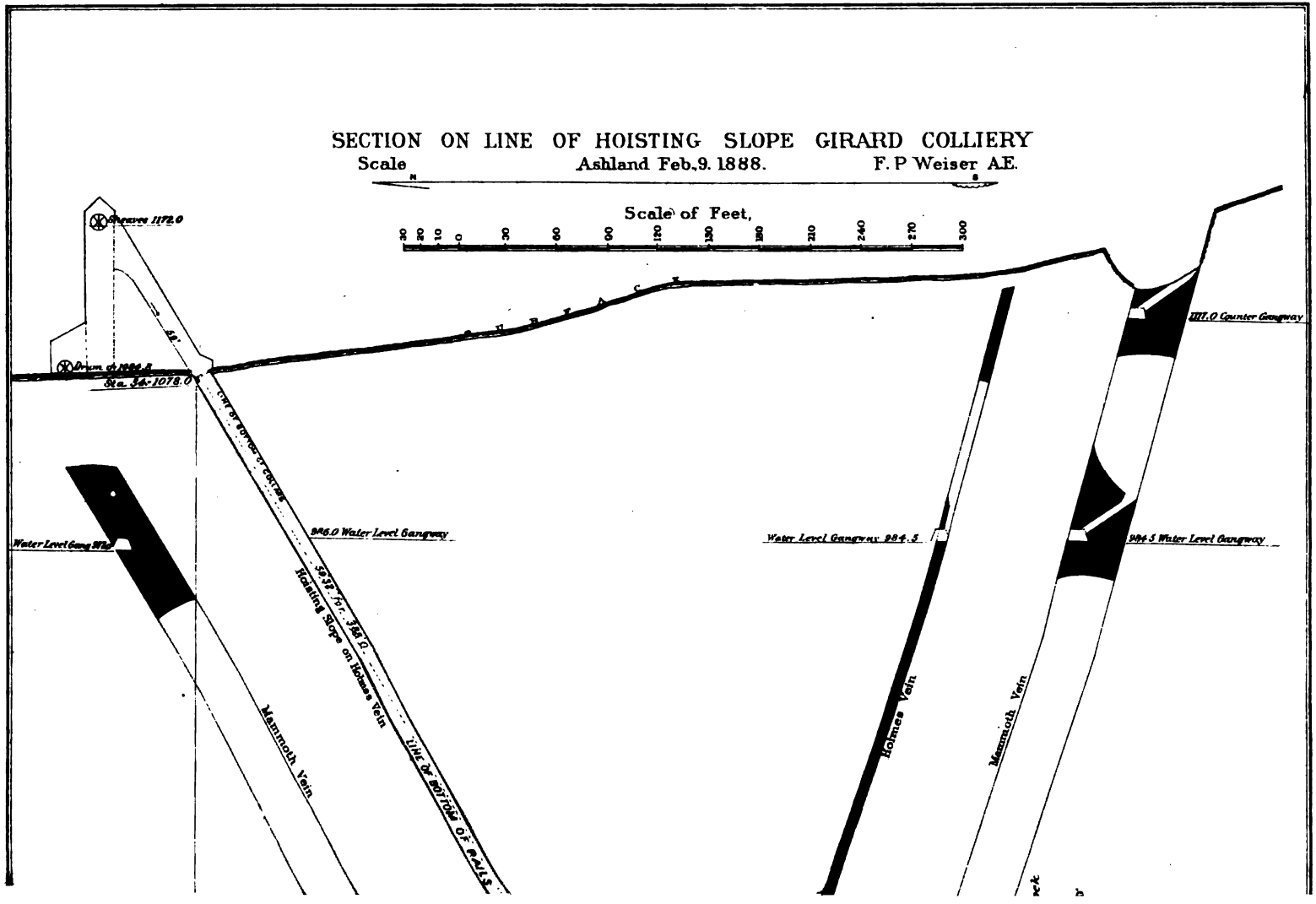
General Condition of Collieries.

The general condition of the collieries in my district has been much improved during the year with few exceptions. The greatest difficulty we have had to contend with, was in getting some of our mine foremen to effect a proper distribution of air through the working faces, but, I am pleased to say, that this is now being better attended to. William Penn colliery is worthy of special mention in this report as being the best ventilated colliery in the Fifth Inspection district. Mr. Richard

Datum Line 300 Feet above Tide
Hard Slate
Leader 3'6"
Soft Slate
Leader 0'4"
Skidmore Vein
Hard Rock
Sand Rock
Conglomerate Rock
Leader
Soft Slate
Hard Slate
Soft Slate
Sand Rock
Conglomerate Rock
Sand Rock
Hard Slate
Soft Slate
Conglomerate Rock
Hard Slate
Skidmore Vein 6'
Soft Slate
Leader 3'0"
Hard Slate
Sand Rock

SECTION ON LINE OF HOISTING SLOPE GIRARD COLLIERY

Scale Ashland Feb. 9. 1888. F. P Weiser A.E.



Palmer, the inside foreman, makes it a special study to have the air distributed so that every working face has a sufficient supply at all times. Four veins are being worked at this colliery and are ventilated by four separate fans. Mr. William H. Lewis, the superintendent, informed me, some time ago, that he had proved, by having a fan on the separate veins, that it was the most economical method of ventilating his colliery. Our shafts and slopes are in good condition. Some have been retimbered recently; additional outlets, apart from those that are required by the mine laws, have been driven to connect with the upper lifts and surface where practical.

Our hoisting and pumping machinery, head gearing, boilers with their connections, ropes and chains, are all constructed from the best material and of sufficient strength.

Our mining is conducted on the most improved methods and under the direct daily supervision of some of the best mechanical and mining engineers in the country, and I, therefore, would say that it is not the fault of those having the theoretical work to attend to, in connection with our collieries, that so many accidents occur in and about them, for we seldom or ever have an accident to record through the incorrect computations of either our mechanical or mining engineering departments, and again reiterate what has been already said, that, if those practically engaged in and about our mines would observe the laws that have been enacted for their benefit, and our mine foremen would also compel their workmen to comply with the provisions of the law, we would have comparatively few accidents.

Improvements Made, and in Course of Construction Throughout My District.

At William Penn colliery an additional pump has been put in at a cost of $3,700. A tunnel has been driven in the east water-level drift, from bottom slate of Mammoth to Buck Mountain vein, a distance of 480 feet, and continued to bottom slate of Lykens vein, a distance of 143 feet, making a total distance of 623 feet. Dip of measure 15°.

SECTION OF LYKENS VEIN.

	Ft.	*In.*
Slate (top),		3
Bone,		6
Slate,		6
Coal,	1	11
Slate,		1
Coal,		5
Slate,		3
Coal,		6
Slate,		1
Bone,		2
Total thickness,	4	8

At Girard colliery several tunnels have been driven at intervals, amounting in the aggregate to 291 yards.

The Hammond slope has been sunk another lift, 100⅔ yards on the Mammoth vein, and a tunnel is now in course of being driven to the top split. Tunnels will then be driven to the "Holmes vein" overlying, and Buck Mountain underlying.

At Shenandoah City colliery a shaft is being sunk and is now down 110 feet; total depth to be 270 feet. This shaft is to take the place of present hoisting slope. which has been considered for some time a very expensive opening to maintain, and not safe for a permanent opening. The sinking of this shaft will also enable the company to get a great quantity of coal they would otherwise lose.

A shaft is to be sunk at Maple Hill, between Ellangowan and Suffolk colleries. It is now down a short distance, and the necessary machinery is being put in place for the sinking operations. Total depth of this shaft will be about 660 feet. A new breaker will also be erected to prepare the coal from this shaft.

A new breaker is being built on the site of the old St. Nicholas breaker, and will prepare the coal from Suffolk and St. Nicholas slopes. Capacity will be 250 cars per day.

At No. 2 slope, north dip, Park No. 2 colliery, belonging to Lentz, Lilly & Co., a bore-hole has been put down a depth of 252 feet, and a duplex pump with eight working barrels, forces the water through it. Diameter of plungers, 6 inches; length of stroke, 3 feet; running 20 strokes per minute; pressure of steam, 50 pounds; cylinder, 20 inches diameter. A rope haulage plant has also been put in. The length of haulage is about 3,000 feet, and is giving great satisfaction. This is the only one in my district.

At No 3 slope, south dip, in connection with Park No. 2 colliery, a bore-hole has also been sunk a depth of 219 feet to pump the water through. This bore-hole was put down 8 inches in diameter and afterwards increased to 16 inches. A Salkeld pump, built in Mauch Chunk, is in operation at this hole. Diameter of plunger, 16 inches; length of stroke, 6 feet; diameter of cylinder, 34 inches; running 12 strokes per minute with 50 pounds pressure of steam. Preparations are being made to sink No. 3 slope to the basin, a distance of 700 feet.

At Kohinoor colliery, Shenandoah City, a slope has been sunk two lifts on the seven-foot vein, and a tunnel driven north from the first lift, east gangway to Buck Mountain, and tunnels have been driven in most of the collieries for the purpose of keeping up future shipments.

In the Mahanoy district of collieries one tunnel has been driven in Schuylkill colliery, four in North Mahanoy, three in Suffolk, one in Tunnel Ridge, two in Elmwood, one in Boston Run, three in Bear Run and one in Gilberton colliery, making the total number of yards of tunnel driven in these eight collieries, 320.

TABLE No. 2.—Gives the total number of tons of coal mined in each colliery, number of days worked, number of employés, number of persons killed and injured, number of kegs of powder used, etc., in the Fifth Anthracite District for the year ending December 31, 1888.

NAMES OF COLLIERIES.	Location—Schuylkill County.	Total production in tons of coal.	Total shipments in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number of steam boilers.	Number of horses and mules.	Number pounds dynamite.
Boston Run,	St. Nicholas,	117 617	107 617	210 9	312		4	3 125	24	80	
Bear Run,	do.	124 545	123 762	124 4	459	1		4,125	20	37	
Buck Mountain,	Mahanoy City,	77 391.04	71 689 04	146 25	401	2	1	3 524	22	23	
Cambridge,	Shenandoah,	9,5.6 17	9 5.6 17	190	35			300	2	8	
Draper,	Gilberton,	170.784 16	154 460 16	240 2	470	2	1	3 230	34	38	
Kilaugowan,	Maple Dale,	438 545	407 545	245 2	577	3	8	9 800	30	34	
Elmwood,	Mahanoy City,	130 903	119 803	249	315	2	4	3,175	6	20	
Furnace,	Gilberton,	12 547 04	11 .14 09	223	48			4 5	1	4	500
Girard,	Girardville,	1 094	804	15	84	1	3	225	16	14	
Girard Mammoth,	Raven Run,	77 204	71 261	227 6	275	2	2	1 925	2	27	
Gilberton,	Gilberton,	140 2.9	126 219	242 5	527	4	2	4 100	30	42	
Glendon,	Mahanoy City,	119 342.19	105 128 19	231 9	350	1	6	5 172	24	38	4 500
Hammond,	Girardville,	179 404	156 404	241 7	384	1	3	3 6.5	24	62	
Indian Ridge,	Shenandoah,	245 827	230 827	243 2	635		4	7 600	32	70	
Knickerbocker,	Yeatesville,	241 637	229 641	222 4	776	1		7 2.0	34	52	
Kohinoor,	Shenandoah,	235 731	220 552	230 4	783	2	7	6 795	30	57	
Kehley's Run,	do.	124 123 16	119 902.16	261	317	1	2	5 175	18	36	
Lawerence,	Mahanoy Plane,	102 044	102 044	291 75	332	1	1	6.5	36	33	9,500
Mahanoy City,	Mahanoy City,	177 354	152 457	225 6	379		1	3 850	24	37	
North Mahanoy,	do.	143 871	133 871	252 7	470		1	5 800	16	42	
North Laurel Ridge,	Gilberton,	14 980 19	12 743 09	151	82			2.5	5	6	
Packer No 2,	Lost Creek,	81 4 7 16	67 595.16	167 50	327	1	3	1 362	22	19	
Packer No. 3,	Brownsville,	163 530 02	16. 247.02	210.60	467	3	10	3 373	24	31	
Packer No 4,	Lost Creek,	161 229 06	148 751 06	175 25	457	3	7	3 596	30	39	
Packer No 5,	Rappahannock,	145 111.09	120 513 09	188 2	528	1	3	4 810	28	33	
Park No. 2,	Lark Place,	293 710.09	231 373 09	244.1	805	3	4	8 801	43	39	
Primrose,	Mahanoy City,	130 331 07	124,361.07	256	801		6	3 600	18	21	
St Nicholas,	St Nicholas,				22	1	1		16	5	
Schuylkill,	Mahanoy City,	112 007	107 007	243 7	290		6	3 400	20	24	
Suffolk,	St. Nicholas,	179,068	165,068	291 9	539	1	3	5,200	15	35	

Shenandoah City,	Shenandoah,	223 630	224 428	251	617	8	7	4,975	12	64			
Stanton,	Maleville,	1 640	1 140	7 7	41			50	24	4			
South Laurel Ridge,	Gilberton,	21 880 12	21 686 12	193	178			175	13	5			
Springdale,	Park Place,	24 290	21, 851	14 55	249		1	211	25	52			
South Shenandoah,	Shenandoah,	496 09		210	6			20	1	3			
Turkey Run,	do.	187 845	173 997	240 1	497	8	2	4 000	11	43			
Tunnel Ridge,	Mahanoy City,	141 174	122 174	67 6	850		1	3 7 5	24	28			
West Shenandoah,	Shenandoah,	166 208	156 638	243	418		2	3,673	26	48			
West Bear Ridge,	Mahanoy Plane,	38 156	10 138	72 7	345	2	1	270	20	33			
William Penn,	Shaft P. O.,	250 000	290 000	265 25	700	1	6	5 000	46	60			
Mahanoy Jig House,	Mahanoy City,				88				10				

TABLE No. 3.—Showing the number of each class of employés at each colliery in the Fifth Anthracite District, during the year 1888.

Names of Collieries.	Names of Persons Employed Inside.							Names of Persons Employed Outside.							Grand total inside and outside.
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, book-keepers and clerks.	Total outside.	
Boston Run,	1	87	22	71	10	4	195	1	4	10	57	45	. . .	117	312
Bear Run,	2	125	108	45	24	3	305	1	4	12	80	57	. .	154	459
Buck Mountain,	1	189	38	36	15	7	286	1	7	8	83	34	2	135	421
Camb idge,	1	16	3	1	2	. . .	23	1	. . . .	1	5	4	1	12	35
Drap r,	1	175	45	93	20	12	286	1	9	12	102	57	3	184	470
Hlangowan,	2	296	59	93	38	18	506	2	9	15	232	113	. . . .	371	877
Elmwood,	1	83	25	63	12	7	193	1	5	10	66	40	. . . .	122	315
Girard,	1	15	13	9	. .	. . .	38	1	7	19	. .	23	. . . .	50	88
Girard Mammoth,	2	55	30	40	16	2	146	1	4	10	73	41	. . . .	129	275
Gilberton,	2	126	64	130	15	14	351	1	6	21	83	60	. . . .	176	527
Glendon,	1	129	34	51	12	8	235	1	7	7	60	37	3	115	350
Furnace,	1	15	4	2	3	. . .	25	1	. . .	1	14	6	1	23	48
Hammond,	1	87	19	53	23	5	188	1	5	15	97	78	. . . .	196	384
Indian Ridge,	2	173	89	81	57	10	412	2	7	24	152	58	. . . .	243	655
Knickerbocker,	3	194	103	57	10	9	376	2	9	22	256	101	. . . .	400	776
Kohinoor,	2	206	191	77	22	5	503	1	9	27	155	93	. . . .	285	788
Kehley's Run,	1	96	44	11	16	8	176	1	6	8	71	52	3	141	317
Lawrence,	1	55	60	82	10	8	216	1	7	28	80	50	2	168	384
Mahanoy City,	1	98	43	64	13	10	229	1	2	16	83	36	. . . .	138	379
North Mahanoy,	2	150	76	41	35	9	313	1	4	11	103	38	. . . .	157	470
North Laurel Ridge,	1	14	5	14	2	. . . .	36	1	2	2	24	16	1	45	82
Packer No. 1,	. . . .	. . . .	. . . .	. . . .	. . . .	. .	. .	. . . .	. . . .	. . . .	. .	. .	. . . .	. . .	. . .
Packer No. 2,	4	77	24	66	10	11	201	1	5	12	57	50	1	126	327
Packer No. 3,	3	142	53	89	13	8	308	1	7	12	71	65	2	158	466
Packer No. 4,	4	143	25	94	14	2	282	1	6	15	98	54	1	175	457
Packer No. 5,	6	131	71	106	11	4	329	1	9	15	104	69	1	197	526
Park No. 2,	2	302	61	108	42	17	527	1	15	29	177	51	5	278	805
Primrose,	2	99	28	11	22	4	166	2	5	6	77	42	3	135	301
St Nicholas,	. . .	. .	. .	. .	. .	. .	. .	. .	. .	7	. .	15	. . . .	22	22
Schuylkill,	1	64	32	49	17	8	171	1	4	9	83	31	. . . .	128	299
Suffolk,	1	183	81	79	20	12	378	1	4	10	90	56	. . . .	161	539
Shenandoah City,	2	124	62	77	28	20	313	1	8	18	184	93	. . . .	304	617
Stanton,	. . . .	.	. .	10	. .	.	10	. .	2	15	.	14	. . . .	31	41
South Laurel Ridge,	1	14	4	29	10	2	60	1	2	4	40	16	1	66	126

South Shenandoah,	1	2	1	....	..	....	4	...	...	....	1	1	....	2	6
Springdale,	1	87	27	39	22	10	186	1	7	15	86	51	3	163	349
Turkey Run,	1	134	76	56	32	9	308	1	7	9	115	57	...	189	497
Tunnel Ridge,	2	98	27	69	12	7	215	1	4	13	68	51	....	185	350
West Shenandoah,	1	121	44	45	23	7	241	1	6	15	127	68	...	217	458
West Bear Ridge,	2	87	13	57	17	4	130	1	5	17	94	108	...	225	355
William Penn,	3	120	80	40	40	20	303	1	25	20	250	96	5	387	700
Mahanoy Jig House,	....	....	....	....	....	....	....	1	2	2	58	30	1	88	88

* The coal from this mine is now prepared at No. 5 breaker.

13 MINES.

TABLE No. 4—List of fatal accidents occurring in the mines of the Fifth Anthracite District for the year ending December 31, 1883.

Date of accident.	NAME OF PERSON INJURED.	Age.	Married.	Number of orphans.	Name of colliery.	Location—Schuylkill County.
February 9,	John Parry,	50	Yes,	.	Park No. 2,	Park Place
February 20,	Peter Umlauf,	43	Yes,	8	Packer No. 5,	Rappahannock.
March 3,	John Petchis,	23	No,	. .	Ellangowan,	Maple Dale.
April 4,	Napoleon Selliski,	21	No,	. .	Packer No. 4,	Lost Creek.
April 6,	Joseph Unybavitch,	39	Yes,		Shenandoah City,	Shenandoah.
April 6,	Charles Metzinger,	53	Yes,	4	Glendon,	Mahanoy City.
April 23,	Patrick Burns,	42	Yes,	5	Elmwood,	Mahanoy City.
June 2,	Patrick Conly,	21	No,	. .	Hammond,	Girardville.
June 13,	Anthony Belloskie,	23	No,	. .	Shenandoah City,	Shenandoah.
June 28,	Joseph Budrovich,	39	Yes,	. .	Turkey Run,	Shenandoah.
June 29,	William Richardson,	18	No,	. .	Draper,	Gilberton.
July 10,	John Terucavage,	30	No,	. .	Turkey Run,	Shenandoah.
July 16,	Michael Right,	35	Yes,	1	Park No. 2,	Park Place.
July 17,	John Minikavig,	23	No,	. .	Lawrence,	Mahanoy Plane.
July 31,	Lewis Lenhart,	37	Yes,	3	Knickerbocker,	Yatesville.
August 3,	Andrew Engle,	20	No.		Suffolk,	St Nicholas.
August 4,	James Connors,	45	Yes,	4	Elmwood,	Mahanoy City.
August 6,	John Horan,	40	No.	.	Draper,	Gilberton.
August 6,	Thomas Carey,	35	Yes,	2	Park No. 2,	Park Place.
August 13,	Selvester Smith,	30	No,	. .	Gilberton,	Gilberton.
August 30,	Isaac Mettress,	35	Yes,	2	Girard,	Girardville.
September 3,	Benjamin Matthias,	21	No,	. .	Bear Run,	St. Nicholas.
September 15,	Charles White,	21	No,		Kohinoor,	Shenandoah.
September 20,	Albert Everhart,	17	No,	.	Kehley's Run,	Shenandoah.
September 29,	John Boskiss,	35	Yes,	1	Packer No. 3,	Brownsville.
October 5,	William Francis,	39	Yes,	1	Gilberton,	Gilberton.
October 14,	Joseph Ayers,	21	No,	. .	Girard Mammoth,	Raven Run.
October 15,	Henry Hamberger,	24	Yes,	1	St. Nicholas,	St Nicholas.
October 15,	Thomas Neary,	32	Yes,	3	Shenandoah City,	Shenandoah.
October 20,	Edward Long,	38	Yes,	2	Packer No. 4,	Lost Creek.
October 26,	John Dubonisky,	32	Yes,	2	Buck Mountain,	Mahanoy City.
November 2,	Christ Bolinski,	33	Yes,	3	Packer No. 3,	Brownsville.
November 7,	Peter Tracey,	45	Yes,		Girard Mammoth,	Raven Run.
November 8,	Andrew Rench,	30	Yes,	3	Ellangowan,	Maple Dale.
November 9,	John Chambers,	25	No	. .	Buck Mountain,	Mahanoy City.
November 15,	Patrick Joyce,	16	No,	. .	West Bear Ridge,	Mahanoy Plane.

November 16,	William Jones,	20	No,	Gilberton,		Gilberton.
November 20,	Stephen Skulski,	30	No,	William Penn,		Shaft P. O.
November 22,	Martin Lasuskey,	28	No,	Turkey Run,		Shenandoah.
November 29,	Joseph Goodrick,	22	Yes,	Gilberton,	3	Gilberton.
December 1,	Michael Garvey,	20	No,	Packer No. 2,		Lost Creek.
December 6,	Joseph Matuli,	22	No,	Packer No. 3,		Brownsville.
December 10,	William Evans,	48	Yes,	Packer No. 4,	7	Lost Creek.
December 24,	eorge Helgily,	30	Yes,	Kohinoor,	2	Shenandoah.

TABLE No. 4.—*Continued.*

Date of Investigation.	NAME OF PERSON INJURED.	Nature and Cause of Accident in Brief.
February 10, ...	John Parry.	Killed by fall of coal. [have been shut off first.
February 21, ...	Peter Umlauf, ...	Fatally scalded with steam; died the 23d; was tightening a steam joint when the pipe burst; the steam should
March 3, ...	John Petchis, ...	Fatally injured by fall of coal; died in the Miners' hospital 28th of July.
April 6.	Napoleon Sell. ki, ...	Fatally injured by fall of top slate in gangway; died in Miners' hospital, June 4; caused by the miner not properly securing the top and sides with timber
April 7, ...	Joseph Unybavitch, ...	Killed between car and timber; this man had no right to stand where he did when killed.
April 9, ...	Charles Metzinger, ...	Killed by fall of top slate; Metzinger knew the slate was loose, and yet took the risk to work under it.
April 26, ...	Patrick Burns, ...	Fatally injured by the explosion of a charge of dynamite which he was boring out with hammer and jumper; died in Miners' hospital May 16; he was the tunnel contractor. [standing on the platform
June 3, ...	Patrick Conly, ...	Killed in rock shute between a large rock and brake stick; he got over the side plank into shute, instead of
June 13, ...	Anthony Belloski, ...	Killed by fall of coal at what is called final "robbing;" a notch was cut in the collar to place dynamite in for the purpose of blasting it down; the miner went back for the dynamite and Belloskie cut the collar through bringing the fall on himself.
June 28, ...	Joseph Rudrovich, ...	Killed by fall of coal. [stumbled under the cars.
June 29, ...	William Richardson, ...	Fatally injured by being run over with cars; he was coming out of the gangway with his trip and jumped off and
July 11, ...	John Terucavage, ...	Killed by fall of coal; his death was caused by his own carelessness [coming.
July 17, ...	Michael Right, ...	Killed between "rib" of breast and car; he attempted to cross the track notwithstanding that he saw the car
July 17, ...	John Minikavig, ...	Killed between cars at bottom of slope; he stood at the car in front of him until the other came on him; he had plenty of room to have escaped.
August 1, ...	Lewis Lenhart, ...	Gangway miner. Fatally injured; died same day in Miners' hospital. The boss visited this gangway one hour before the accident, and told Lenhart to put up timber; he promised to do so but failed to fulfil his promise which cost him his life [18th of September.
August 3, ...	Andrew Engle, ...	Fatally injured by falling in front of his trip of cars; he was dragged along the track; died in Miners' hospital,
August 7, ...	James Connors, ...	Fatally injured by fall of top slate; lived four hours after accident. Connors and partner fired a few shots and did not return to dress off face; had they done so, instead of working sixty feet back from face of breast putting coal in their manway shutes, this accident would not have occurred
August 7, ...	John Horan, ...	Fatally injured by falling down breast; died in Miners' hospital 23d inst. This man was "stripping" pillars, and in order to get an extra number of cars loaded, caused the loader to pull the coal too far down in the breast. He cut steps in the floor which has an angle of 45°, and while drilling a hole he overbalanced himself and fell a distance of seventy feet.
August 7, ...	Thomas Carey	Killed, he was going back to a shot thinking the squib had missed.
August 13, ...	Selvesten Smith, ...	Fatally injured; he went back to a shot; died in Miners' hospital 18th inst. He lit two shots, one exploded, and he did not give sufficent time for the other to explode, but went to renew the squib which resulted in the loss of his life.
August 30, ...	Isaac Mettress, ...	Fatally injured; back broken by fall of slate in "monkey;" died 16th September.
September 4, ...	Benjamin Matthias, ...	Killed by fall of top coal.

September 15, ...	Charles White, ...	Killed by fall of coal.
September 18, . . .	Albert Everhart, ...	Killed by being drawn into elevator machinery.
October 1, ...	John Boskiss, ...	Killed by fall of top coal.
October 5, ...	William Francis, ...	Fatally injured; died same day; fell down slope; he was crossing from west to east side of slope and must have overbalanced himself; he was a fire boss.
October 16, ...	Joseph Ayers, ...	Killed by fall of top coal in "monkey" while working with his father.
October 17, ...	Henry Hamberger, ...	Killed by being struck by a water tank in slope; he was engaged emptying water tank at upper lift.
October 17, ...	Thomas Neary, ...	Fatally burned by explosion of gas and died same day; he and his partner went into a neighboring breast which had been squeezing and falling for a few days, and to find out the extent of the fall they crept up on the loose coal and ignited the gas.
October 24, ...	Edward Long, ...	Fatally injured by loose coal rolling down the breast upon him; died in Miners' hospital 22 1.
October 26, ...	John Duboniski, ...	Fatally injured by fall of coal and died 6th of November, in Miners' hospital.
November 3, . . .	Christ. Bolinski, ...	Killed by fall of coal; was dressing off some loose coal preparatory to drilling a hole; he stood in front of the loose coal instead of standing at the side.
November 12, ...	Peter Tracey, ...	Fatally injured by fall of coal; died on the 11th.
November 9, ...	Andrew Reuch, ...	Killed between car and shute; he attempted to uncouple a car on high side of gangway. Shute miner.
November 9, ...	John Chambers, ...	Killed by a car becoming uncoupled in a slope, and running down killing him on the third lift bottom.
November 15, ...	Patrick Joyce, ...	Killed by being dragged into cog wheels by the chain belt.
November 17, ...	William Jones, ...	Killed by a fall of top slate while he was drilling a hole in pillar of an empty breast. The verdict of the jury was that he came to his death through the neglect of Edward Edwards, contractor, not constructing a manway to make a retreat from face of "strip."
November 22, ...	Stephen Skulski, ...	Killed by fall of coal.
November 28, ...	Martin Lasuskey, ...	Fatally burned with powder; he was filling a cartridge with his lamp on his head; a spark fell from his lamp into the keg of powder; died in Miners' hospital 1st December.
November 29, ...	Joseph Goodrick, ...	Gangway miner Killed by fall of coal.
December 4, ...	Michael Garvey, ...	Fatally injured in attempting to get on a moving trip of cars. He fell under the cars; died on the 2d.
December 6, ...	Joseph Matulis, ...	Killed by a fall of coal.
December 11, ...	William Evans, ...	Drowned with water and mud; he was engaged driving a narrow opening from face of No. 4 breast, second lift through a water lodgment. Evans was told by James Heaton, inside foreman, who was specially attending to this piece of work, not to work any more until he should get a long drill. Evans, however continued working until he holed through, liberating the water and mud which washed him a distance of one hundred and eighty-two feet down the breast and against the battery.
December 28, ...	George Heiptly, ...	Killed by fall of top slate.

TABLE No. 5.—List of Non-Fatal Accidents occurring in the Mines of the Fifth Anthracite District for the year ending December 31, 1888.

Date of accident.	Name of Person Injured.	Age.	Married.	Number of children	Name of colliery.	Location—County of Schuylkill.	Date of investigation.
January 22,	Michael Durkin,	19	No,		Kohinoor,	Shenandoah,	January 22.
February 8,	John Bitler,	28	Yes,		West Shenandoah,	do.	February 8.
do. 24,	Michael Chedlock,	24	No,		Elengowan,	Maple Dale,	do. 24.
do. 25,	Isaac Lewis,				Primrose,	Mahanoy city,	do. 25
do. 23,	Isaac Davis,				do.	do.	
do. 28,	Charles Dress,	57	Yes,		Ind an Ridge,	Shenandoah,	do. 28.
March 2,	Michael Burns,				Packer No. 5,	Rappahannock,	March 2.
do. 7,	Joseph Cooper,	24	Yes,		Turkey Run,	Shenandoah,	do. 7.
do. 7,	Michael Carragher,	28	Yes,	1	Springdale,	Park Place,	do. 8.
do. 8,	Frank Vasinsky,	30	Yes,		Suffolk,	St. Nicholas,	do. 10.
do. 8,	Morris Scanlan,	54	Yes,	5	Hammond,	Girardville,	do. 10.
do. 9,	David McCaughlin,	13			Turkey Run,	Shenandoah,	do. 10.
do. 9,	John Bobel,				Gilberton,	Gilberton,	do. 10.
do. 9,	John Williams,	35	Yes,		Kohinoor,	Shenandoah,	
do. 12,	Michael O'Brien,	28	No,		Schuylkill,	Mahanoy city,	do. 14.
do. 12,	Joseph McColliff,	26	Yes,		do.	do.	do. 14
do. 16,	John Cullen,				Mahanoy city,	do.	do. 17.
do. 22,	Frederick Dovey,	31	Yes,		Shenandoah city,	Shenandoah,	do. 24.
do. 24	William Giles,	17	No,		Kohinoor,	do	do. 24.
do. 27,	Thomas Kenny,	20	No,		Hammond,	Girardville,	do. 29.
do. 29,	Julius Barrmum,	27	No,		Shenandoah city,	Shenandoah,	do. 29
April 7,	Charles Heffron,	17	No,		Boston Run,	St. Nicholas,	April 12.
do. 12,	Robert Potter,	40	Yes,		Suffolk,	do	do. 12.
do. 12,	John R Lewis,	20	No,		Glendon,	Mahanoy city,	do. 15.
do. 17,	Philip Delaney,	21	No,		West Shenandoah,	Shenandoah,	do. 18.
do. 18,	Philip Jones,	50	Yes,		William Penn,	Shaft P. O.,	do. 20.
do. 18,	Daniel Phillips,	19	No,		Elmwood,	Mahanoy city,	do. 21.
do. 23,	Patrick Carrol,				Boston Run,	St Nicholas,	do. 25.
do. 25,	Terrance McGinty,				do	do.	do. 23.
May 2,	John Kostlicy,	28	No,		Packer No. 3,	Brownville,	May 3
do. 4,	Matthew Potcheuski,	28	Yes,		Ellangowan,	Maple Dale,	do. 7
do. 7,	Lew. Ambrose,	43	Yes,		do.	do.	do. 7.

do.	7,	Andrew Whitecavage,	26	Yes,	..	do.	do.	do.	7.
do.	8,	Anthony Beans,	21	No,	..	Indian Ridge,	Shenandoah,	do.	10.
do.	8,	Edmund Watkins,	49	Yes,	6	Park No. 2,	Park Place,	do.	8.
do.	17,	Richard Spruce,	25	No,	..	Tunnel Ridge,	Mahanoy city,	do.	18
do.	17,	Adam Lutson,	22	No,	..	Schuylkill,	do.	do.	18.
do.	22,	William Trimball,	16	No,	..	Glen Ion,	do	do.	28
do.	22,	J. P. McLaughlin,	28	Yes,	..	Girard,	Girardville,	do.	28.
do.	24,	Thomas Craven,	26	No,	..	do.	do.		
do.	25,	Patrick Daley,	38	Yes,	..	Girard Mammoth,	Raven Run,		
June	1,	James McGreary,	32	Yes,	..	Elmwood,	Mahanoy city,		
do.	2,	William Bohanna,	16	No,	..	Hammond,	Girardville,		
do.	9,	George Jones,	28	No,	..	Park No. 2,	Park Place,	June	9.
do.	9,	John Carcosky,	32	No,	..	do.	do.	do.	9.
do.	11,	John Warsing,	30	Yes,	..	Schuylkill,	Mahanoy city,	do.	11.
do.	24,	Thomas Philip,	54	Yes,	5	Lawerence,	Mahanoy Plane,	do.	26.
do.	28,	Peter Glavey,	40	Yes,		Girard Mammoth,	Raven Run,	do.	28.
do.	16,	William H Price,	45	Yes,	8	Packer No. 2,	Lost Creek,	July	16
July	19,	Michael Pembrick,	45	No,	..	Indian Ridge,	Shenandoah,	do.	19.
do.	19,	Ben. Reese,	15		..	Kohinoor,	do.	do.	19.
do.	20,	William Mallisere,	53	Yes,	..	Glendon,	Mahanoy city,		
do.	25,	Michael Deane,	23	No,	..	Packer No. 3,	Brownsville,		
do.	27,	James Blew,	30	Yes.		Park No. 2,	Park Place,		
do.	28,	George Davis,	32	Yes,	1	William Penn,	Shaft P. O.,		
August	2,	Edward Long,	39	Yes,	5	Packer No. 4,	Lost Creek,	August	4.
do.	4,	Andrew Freese,	24	No,		Packer No. 3,	Brownsville,	do.	4.
do.	7,	William Fink,	32	Yes,	3	Glendon,	Mahanoy city,		
do.	7,	Paul Duda,	26	No,	..	do.	do.		
August	11,	Thomas Delowrey,	37	Yes,	4	Shenandoah city,	Shenandoah,		
do.	20,	William Rice,	27	No,	..	Boston Run,	St. Nicholas,		
do.	20,	Mynn Margroff,	30	Yes,	..	North Mahanoy,	Mahanoy city,		
do.	21,	Charles Waudlass,	17	No,	..	Packer No. 5,	Rappahannock,		
do.	21,	Martin Maguire,	23	No,	..	Packer No. 2	Lost Creek,		
do.	23,	Patrick Reddy,	17	No,	..	Shenandoah city,	Shenandoah,		
do.	23,	Patrick Lynch,	23	No,	..	Schuylkill,	Mahanoy city,		
do.	24,	James L. Morgan,	32	Yes,	..	Kohinoor,	Shenandoah,		
do.	25,	John Morris,	27	No,	..	Wm. Penn,	Shaft P. O.,		
do.	25,	Charles Concavagee,	25	No,	..	Packer No. 4,	Lost Creek,		
do.	27,	William Maley,	25	No,	..	Buck Mountain,	Mahanoy city,		
do.	30,	Henry Britton,	35	Yes,	6	Primrose,	do		
September	3,	John Burns,	..		..	Packer No. 3,	Brownsville,		
do.	3,	Anthony Shaw,	..	..	..	do.	do.		
do.	3,	Martin Burns,		..	..	do.	do.		
do.	3,	George Shlack,	..	..	..	do.	do.		
do.	3,	Joseph Bozemis,				do	do.		
do.	6,	Thomas Sodard,	26	Yes,	1	Primrose,	Mahanoy city,		
do.	6,	Thomas Tracey,	34	Yes,		Ellangowan,	Maple Dale,		
do.	10,	Thomas Haughney,	42	Yes,	7	Elmwood,	Mahanoy city,		
do.	13,	Anthony Ouster,	29	Yes,		Kohinoor,	Shenandoah,		
do.	13,	John Nowzumos,	25	No,	..	Packer No. 4,	Lost Creek,		
do.	14	Henry Bemer,	19	No,	..	Elmwood,	Mahanoy city,		
do.	17,	John McDonald,	27	No,	..	Packer No. 4	Lost Creek,		
do.	21,	John O'Brien,				Indian Ridge,	Shenandoah,		
do.	24,	John Makley,	28	Yes,	2	Kehley's Run,	do.		

TABLE No. 5—*Continued.*

Date of accident.	NAME OF PERSON INJURED.	Age.	Married or single.	Number of children.	Name of colliery.	Location—county of Schuylkill.	Date of investigation.
September 25,	Adam Shod,	45	Yes,	8	Primrose,	Mahanoy,	3rd October.
do. 27,	Peter Hute,	24	Yes,		Ellangowan,	Maple Dale,	
do. 30,	William Parfitt,	38	Yes,	3	Packer No 4,	Lost Creek,	
October 3,	Anthony Goginski,	..	..	..	William Penn,	Shaft P. O.,	
do. 5,	Daniel Crick,	40	Yes,		Gilberton,	Gilberton,	
do. 8,	John Percival,	35	Yes,		Glendon,	Mahanoy city,	
do. 12,	William Koraneski,	25	Yes,		Kehley's Run,	Shenandoah,	
do. 13,	John Semod,	20	No,	..	Packer No 3,	Brownsville,	
do. 15,	John Sweeney,	40	Yes,	2	Shenandoah city,	Shenandoah.	October 17.
do. 19,	Thomas Condron,	18	No,		Packer No. 3,	Brownsville,	
November 2,	John Burch,	24	No,	..	Schuylkill,	Mahanoy city,	
do. 6,	George Meyrick,	50	Yes,	7	Shenandoah city,	Shenandoah,	
do. 20,	William Monaghan,	36	Yes,	4	Packer No. 5,	Rappahannock,	
do. 20,	Septimus Edmundson,	24	No,	..	William Penn,	Shaft P. O.,	
do. 20,	Arthur Onwim,			..	do.	do.	
do. 21,	William Brieshin,	28	No,	..	Packer No. 4,	Lost Creek,	
do. 21,	Thomas Sobey,			..	do.	do.	
do. 25,	John Sykes,	19	No,	..	Girard,	Girardville,	
do. 29,	Patrick McGrath,	20	No,	..	Kohinoor,	Shenandoah,	
do. 30,	George Burns,	40	Yes,	6	Ellangowan,	Maple Dale,	
do. 30,	Peter Early,				do	do.	
December 10,	William Hounicker,	25	Yes,	6	St Nicholas,	St. Nicholas,	
do. 12,	William Watkins,	18	No,	..	Suffolk,	do.	
do. 12,	Joseph Shuppel,	35	Yes,	4	Shenandoah city,	Shenandoah,	
do. 17,	Richard Shapple,	54	Yes,	6	West Bear Ridge,	Mahanoy Plane,	
do. 27,	John Price,	30	Yes,	2	Draper,	Gilberton,	
do. 28,	Frank Roony,	..	..		Primrose,	Mahanoy city,	

TABLE No. 5—*Continued.*

NAME OF PERSON INJURED.	Nature and cause of accident.
Michael Durkin,	Hip dislocated; while loading a car a piece of frozen debris fell on him.
John Ritler,	Hand broken; kicked by a mule.
Michael Chedlock,	Miner. Leg broken; coal rolled on him while he was barring down slate.
Isaac Lewis,	Miner. Face and hands burned with gas; went up the breast with naked lamp.
Isaac Davis,	Miner. Face and hands burned at same time and place with Lewis.
Charles Dress,	Slate-picker. Arm fractured; was lifting slate out of shute and the coal rushed on him.
Michael Burns,	Miner. Neck and hands slightly burned with gas
Joseph Cooper,	Miner. Wrist broken; was standing on gangway with his arm against a prop, when a car came along and struck him.
Michael Carragher,	Starter. Skull fractured; a piece of coal struck him while starting battery.
Frank Vasinsky,	Miner. Neck and forehead cut and ankle dislocated by fall of coal.
Morris Scanlan,	Miner. Arm fractured; coal from shot rolled down the manway on him.
David McCaughlin,	Slate-picker. Arm broken; fell from car loaders' platform.
John Bobel,	Miner. Leg broken by fall of coal.
John Williams,	Outside laborer. Ruptured lifting a piece of coal.
Michael O'Brien,	Miners. Hands and face burned with gas; went up to working place with their naked lamps after firing a shot.
Joseph McColliff,	
John Cullen,	Miner. Knee fractured; struck it against the bumper of a car.
Frederick Dovey,	Miner. Ruptured while running from shot.
William Giles,	Switch-boy. Thigh bone broken; while jumping on cars he fell under a car.
Thomas Kenny,	Top-man. Thigh bone broken; while uncoupling cars the rope caught the front one, throwing it off the track, jamming him against the timbers.
Julius Burrmum,	Miner. Elbow fractured; while barring a piece of coal down it struck him.
Charles Heffron,	Driver. Ankle dislocated; car jumped the track; his foot was caught under the bumper, twisting his ankle
Robert Potter,	Locomotive engineer. Sinew of arm cut and burned; car jumped the track and bumped against locomotive, pressing his arm against throttle-valve.
John R. Lewis,	Miner. Face cut by fall of "clod."
Philip Delaney,	Top man. Body and legs bruised by falling under car while unhitching.
Philip Jones,	Fire-boss. Burned by an explosion of gas; went up in shute to measure, and ignited the gas.
Daniel Phillips,	Driver. Large toe cut off; caught between rope and sheave-pulley.
Patrick Carrol,	Miners. Face and hands burned with gas; they went up to their working place and unscrewed the gauze from the oil- up, causing an explosion.
Terrance McGinty,	
John Kostilcy,	Car-loader. Body seriously bruised between cars.
Matthew Patcheuski,	Miner. Leg broken by fall of coal.
Low. Ambrose,	Miner. Burned on face and hands with powder, by his own carelessness.
Andrew Whitecavage,	Miner. Burned on face and hands with powder at same time and place as Ambrose.
Anthony Beans,	Runner. Arm broken; fell from mule.
Edmund Watkins,	Miner. Ribs broken and otherwise seriously injured; gangway collar fell on him.
Richard Spruce,	Door-tender. Arm broken. This is rather an old age for a door-boy; however, his age is correctly given.

TABLE No. 5—*Continued*

NAME OF PERSON INJURED.	Nature and cause of accident.
Adam Lutson,	Laborer. Leg broken by fall of coal.
William Trimball,	Outside driver. Leg broken; while getting off mule his leg caught in the harness, and the mule ran off, dragging him some distance
J. P. McLaughlin,	Outside laborer. Leg broken by a piece of timber rolling on him.
Thomas Craven,	Laborer. Shoulder bone and one rib broken; fell under mine car.
Patrick Daley,	Miner. Arm broken; struck with a piece of coal.
James McGreary,	Miner. Ankle bone broken by a fall of coal.
William Bohauna,	Spragger outside. Arm broken; fell while running to sprag a car.
George Jones,	Miner. Seriously injured by fall of coal.
John Carcosky,	Miner. Seriously injured at same time and place with Jones.
John Warsing,	Miner. Cut on face, head and hands; he shortened his squib, which caused his shot to fire before he reached a place of safety.
Thomas Philip,	Miner. Collar bone broken; while timbering old gangway a rush of fine debris came on him.
Peter Glavey,	Miner. Leg broken by fall of coal.
William H Price,	Fire-boss. Face and hands burned by an explosion of gas; took his naked lamp into breast.
Michal Pembrick,	Miner. Leg fractured by a fall of coal
Ben. Reese,	Door-boy. Leg broken by being caught between car and door.
William Mallisere,	Miner. Arm broken in two places and head cut by a premature blast; caused by his own carelessness.
Michael Deane,	Miner. Struck with a piece of coal from blast; did not retreat far enough into heading.
James Blew,	Outside laborer. Legs badly cut and one ankle dislocated by railroad car running over him; his hearing was bad.
George Davis,	Miner. Slightly burned on face and hands; he had fired a shot and returned to work without his safety lamp.
Edward Long,	Miner. Cut about face and breast by premature explosion.
Andrew Frecae,	Laborer. Squeezed about back by fall of coal.
William Flail,	Miner. Arm broken and loss of one eye by explosion of dynamite; he was hammering it into the hole.
Paul Duda,	Laborer for Flail. Cut about the head by explosion of dynamite.
Thomas Delowrey,	Miner. Struck with "Barney" and car while repairing slope; both collar bones and ribs broken.
William Rice,	Miner. Leg broken by fall of coal.
Mynn Margroff,	Miner. Shoulder back and ribs severely bruised by a fall of coal.
Charles Waudlass,	Jig boy. Leg broken; he undertook at the dinner hour to jump a distance of 14 feet on sheet iron and slipped from breaker roof to ground.
Martin Maguire,	Stanter. Slightly burned by an explosion of gas going up to battery with a naked lamp.
Patrick Reddy,	Driver. Arm broken; mule squeezed him against a car.
Patrick Lynch,	Laborer. Leg broken by a fall of coal
James L. Morgan,	Miner. Head and body severely cut by premature explosion of blast.
John Morris,	Laborer. Leg broken by a fall of top slate
Charles Concavagee,	Loader. Leg broken; struck by a piece of coal rolling down the shute.
William Maley,	Miner Hip bone fractured by a fall of coal.
Henry Britton,	Miner. Leg broken; struck with a piece of coal from shot. He did not retreat far enough.
John Burns,	Miner. Seriously burned about face and hands by an explosion of gas. He is now well.
Anthony Shaw,	Slightly burned at same time. All are now well.
Martin Burns,	
George Shiack,	
Joseph Bozemis,	

Thomas Sodard,	Miner. Seriously hurt on back by fall of coal.
Thomas Tracey,	Miner. Leg broken by a fall of coal.
Thomas Haughney,	Miner. Hip dislocated and three ribs broken by fall of coal.
Anthony Ouster,	Miner. Head and body bruised by fall of coal.
John Nowzumos,	Laborer. Arm broken and body bruised; squeezed between car and high side of gangway.
Henry Benner,	Car-runner. Arm broken; the socket of rope broke while in the act of uncoupling car, causing the car to strike him.
John McDonald,	Miner. Leg broken; struck with coal flying from shot; he lighted two shots together.
John O'Brien,	Miner. Clavicle fractured by a fall of coal.
John Makley,	Miner. Lost the sight of one eye; was driving spike and it flew out, striking him in the eye.
Adam Shod,	Miner. Loss of one eye and seriously hurt about head and face; the miner next breast to him fired a shot in heading which blew through. Shod had no warning that a shot was to be fired.
Peter Hute,	Laborer. Leg broken by fall of top rock.
William Parfitt,	Miner. Scalp wound; loss of one eye; nose fractured by fall of coal while standing timber.
Anthony Goginski,	Laborer. Slightly burned by an explosion of gas; went into shute with a naked lamp.
Daniel Crick,	Miner. Leg broken; fell going down manway.
John Percival,	Miner. Leg broken by fall of coal.
William Koraneski,	Miner. Leg broken by fall of coal.
John Semod,	Outside laborer. Leg broken. He was wheeling out dirt and came so near the railroad that the car struck him.
John Sweeney,	Miner. Slightly burned by an explosion of gas. The breast next to him had been finished and the top coal had been falling for a few days; he and his "Butty" went to see the extent of fall and fired the gas. His "Butty," Thomas Neary, died same day.
Thomas Condron,	Driver. Foot crushed between car and "rib."
John Burch,	Loader. Leg broken. The miner fired a shot and did not warn him to get off the platform where he was working.
George Meyrick,	Outside laborer. Head injured while unloading a car; a piece of old timber rolled down on his head.
William Monaghan,	Laborer. Leg broken; a piece of coal rolled on him.
Septimus Edmundson,	Miner. Seriously injured about face and eyes; was pushing powder into hole with tamper, which caused a premature explosion.
Arthur Onwin,	Laborer. Slightly hurt at same time.
William Brieshin,	Miner. Slightly burned with gas.
Thomas Sobey,	Miner. Slightly burned with gas.
John Sykes,	Outside laborer. Leg broken; the dumper fell back on him.
Patrick McGrath,	Outside laborer. Skull fractured, struck with a piece of gas pipe.
George Burns,	Miner. Both collar bones broken and ribs fractured, and seriously injured about head and body by fall of coal. Will recover.
Peter Early,	Miner. Head, leg and arm hurt at same time with Burns. Coal fell on them while in the act of securing the same.
William Hounicker,	Carpenter. Leg broken; a post fell on him.
William Watkins,	Laborer. Collar bone broken by being caught between cars and air brattice.
Joseph Shuppel,	Repairman. Slightly burned with gas; went into breast with naked lamp. The fire-boss, William Mitchell, had warned him not to go there until he (Mitchell) returned.
Richard Shapple,	Miner. Leg broken, back and head bruised by fall of coal. This man has the contract for "robbing back."
Joseph Price,	Laborer. Hand partly blown off by an explosion of dynamite. A hole had been bored into a stone 6 inches deep and charged with dynamite, which failed to explode. He withdrew the charge, as he supposed, and proceeded to put a wedge in the hole to break it up. The first blow of the hammer caused an explosion.
Frank Roony,	Miner. Face and hand slightly burned with gas; went up to face of breast with his naked lamp.

SIXTH ANTHRACITE DISTRICT.

OFFICE OF THE INSPECTOR OF MINES,
ASHLAND, PA., *March 1, 1889.*

Hon. THOMAS J. STEWART,
Secretary of Internal Affairs:

SIR: I have the honor herewith of presenting to you my first annual report of the Sixth Inspection District, comprising parts of Schuylkill, Northumberland, Columbia and Dauphin counties.

Accompanying this report are tables containing statements showing the number of employés, tons of coal mined and shipped, number of accidents and their causes, for the year 1888, and comparisons with the year 1887. In arranging these tables I have shown comparisons between the different companies operating in my district.

I regret to say that there has been an increase in the number of fatal and non-fatal accidents. Investigation shows conclusively that a large number of these were due to carelessness and incompetency on the part of the workmen, while some of them might have been prevented, had the foreman in charge used stricter discipline in compelling the workmen to keep their places properly timbered. Some of the accidents from explosions of gas are distinctly traceable to loose management on the part of the foreman in charge.

The following persons appeared before the examining board, and, after passing successful examinations, have been given certificates of qualification for mine foremen: Wm. Howells, Shamokin; Frederick K. Shieffler, Mt. Carmel; David Fulton and David Davis, Ashland.

Very respectfully yours,

WILLIAM MCMURTRIE,
Inspector of Mines.

Accidents.

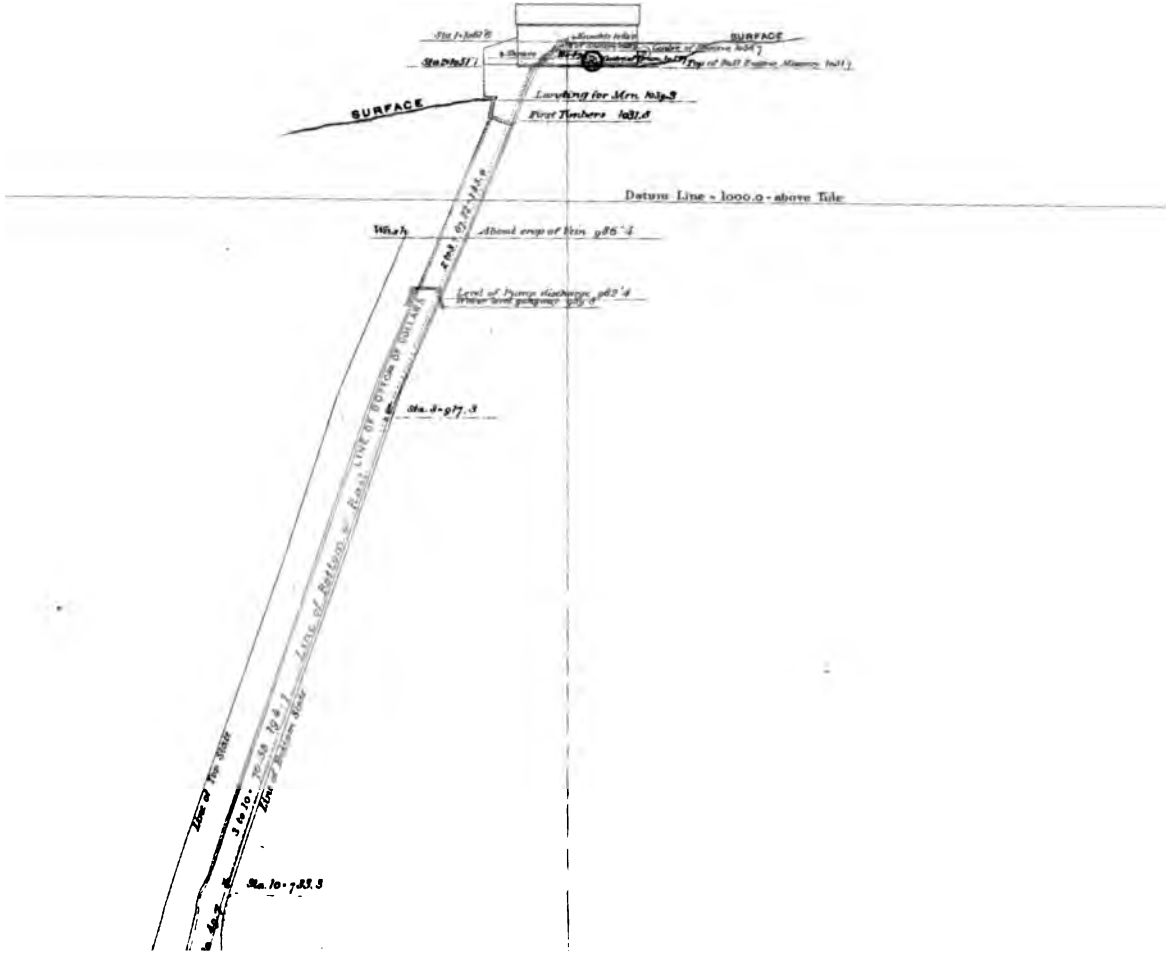
I will give at some length an account of several of the accidents that have occurred during the year.

On the 6th of September, at Monitor colliery, James O'Brien, a door tender in the East Skidman gangway, was attending to his usual duties, when Charles Biecker, the assistant boss, and John O'Neil, a

repairman, went up a breast near his door. They had gone up the breast but a short distance, when Biecker returned and sent young O'Brien to the foot of the slope for a safety lamp. He did not wait for the boy's return, but started up the breast with O'Neil. They had gone but a short distance above the first heading, when one of their lamps ignited the gas, burning Biecker and O'Neil. Unfortunately O'Brien had returned by this time and was standing on the gangway. The force of the explosion threw him some distance, and also loosened a collar, which fell on his head, fracturing his skull, from the effects of which he died the same day.

On the 18th of September, at Big Mountain colliery. John Harris, a repairman, was at work putting up a door which was intended to turn the air into a pipe that was to carry it into a shute that William Zenders was driving up. The fire-boss had found some gas in it in the morning, and had told Yenders that he should not work in the shute until the air was coming through the pipe. Contrary to these suggestions Yenders went to work and brushed the gas out. While doing this, it came in contact with a naked light on the gangway, causing an explosion that threw the door on Harris, breaking his ribs and collar bone and otherwise injuring him, from the effects of which he died on the 2d of October.

On the 3d of November, at Preston, No. 3 colliery, Richard Thompson and James Duddy, miners, were killed in the pump slope. They were engaged in sinking a new lift and had it down eighty feet. At this point the vein was found to be pitching eighty-five degrees. The slope was stopped and a trial hole was sunk to find whether this steep pitch would continue. When the trial hole was down forty feet, it was decided to go back and continue sinking the slope. As a skip had to be taken from both sides of the trial hole and full-sized timber set, a battery was built over the mouth of the trial hole, and the first set of timbers had been put in. The battery was lowered and work commenced for the second set of timbers. The men, working on the day shift, had cut some coal which was lying on the battery, when Thompson and Duddy started to work at 3 o'clock P. M. Thompson was at work on the first rib, while Duddy was standing on the center of the battery putting in fore poles to prevent the top from falling. Francis Conway, a laborer, was on the east side of the slope drilling a hole. Suddenly, and without a moment's notice, an explosion occurred, blowing out the battery and precipitating Duddy to the bottom of the trial hole, where he was found dead a few minutes later. Thompson was found where he had been working, badly injured, and died shortly after reaching home. Conway was found lying over one of the skids that the platform was built upon. He was not seriously injured. Accompanying the report is a profile of the slope. On this, the point at which the accident occurred, and where Thompsom was found, is marked "A," and the foot of trial hole, or where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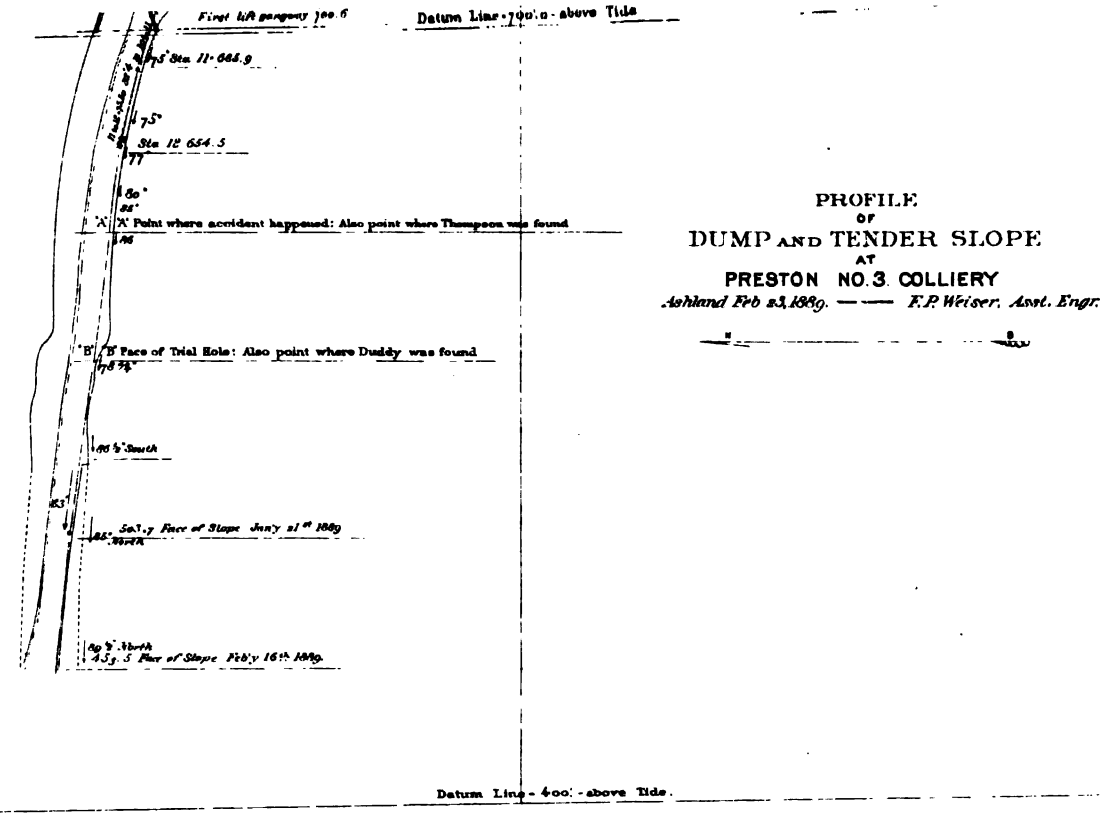
Sta. 9+97.3
Sta. 10+33.3



PROFILE
OF
DUMP AND TENDER SLOPE
AT
PRESTON NO. 3. COLLIERY
Ashland Feb 23, 1889. —— F.P. Weiser, Asst. Engr.

Duddy was found, "B." I ordered an inquest to he held, and a number of witnesses were examined, amongst them Francis Conway. We failed to find out the cause of the explosion. The jury, after considering all possible theories, gave as their verdict that "Richard Thompson and James Duddy were killed by the explosion of some material to the jury unknown, but believed it was neither gas nor compressed air." My own impression is that the accident was caused by an explosion of dynamite, left carelessly there by some one working in the slope. I am confident that it was not caused by gas, as the men were not burned, nor could any after damp be detected, or any other evidence to show that gas had been exploded.

TABLE No 1.—Comparative statement of fatal casualties from different causes occurring during the years 1887 and 1888.

CAUSES OF ACCIDENTS.	1887.	1888.
Explosion of fire-damp,	1	4
Falls of coal and roof,	16	34
Mine cars and machinery,	11	17
Falling down slopes,	.....	3
Breaking of ropes and chains,	.....	1
Explosions of blasting materials,	3	3
Miscellaneous causes,	11	2
Suffocated by mine gases,	10	.....
Total,	52	64

TABLE No. 2—Showing the number of tons of coal mined by each company, number of deaths, and number of tons of coal mined per death.

NAME OF COMPANY.	Tons mined.	Deaths.	Tons mined per death.
Philadelphia and Reading Coal and Iron Co.,	2,077,479.54	24	86,570
Mineral Railroad and Mining Company,	353,279.00	3	117,760
Summit Branch Railroad Company,	334,680.00	2	167,340
Lykens Valley Coal Company,	245,261.00	5	49,052
Union Coal Company,	442,022.00	10	44,200
L. A. Reilly & Co.,	348,942.00	6	58,157
Individual colleries,	908,351.00	14	64,882
Total,	4,710,014.54	64	75,141

TABLE No. 3.—Showing comparison of non-fatal accidents occurring from different causes during the years 1887 and 1888.

CAUSES OF ACCIDENTS.	1887.	1888.
Falls of coal and roof,	41	55
Explosions of fire-damp,	20	24
Mine cars and machinery,	27	28
Explosions of powder,	13	8
Kicked by mules,	2	3
Miscellaneous,	31	23
Total,	134	141

TABLE No. 4.—Showing comparison of amount of coal shipped, the estimated amount used and sold at colleries, and the total production for the years 1887 and 1888.

	1887.	1888.
Amount of coal shipped,	4,359,230.16	4,459,960.00
Amount of coal used at collieries,	378,391.95	250,054.54
Total number of tons produced,	4,737,622.11	4,710,014.54

TABLE No. 5 —Showing a general comparison between the years 1887 and 1888.

	1887.	1888.
Number of persons employed,	14,793	16,918
Number of tons of coal mined per life lost,	91,108	75,141
Ratio of employés per life lost,	284 25/52	233 3/52
Number of tons of coal mined per person injured,	35,355	33,404
Tons of coal mined per employé,	327	278 1/2

TABLE No. 6.—Showing the number of persons employed by the several companies and number of deaths.

NAME OF COMPANY.	Number of deaths.	Number of employés.
Philadelphia and Reading Coal and Iron Company,	24	7,139
Mineral Railroad and Mining Company,	3	1,606
Summit Branch Railroad Company,	2	1,115
Lykens Valley Coal Company,	5	1,025
Union Coal Company,	10	1,645
L. A. Reilly & Co.,	6	978
Individual operators,	14	3,414
Total,	64	16,918

TABLE No. 1.—Showing location of collieries in the Sixth Anthracite District.

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of Sup't.	P. O. Address.
Alaska,	Philadelphia and Reading Coal and Iron Company,	Mt. Carmel township, Northumberland county,	John Veith,	Pottsville, Pa.
Reliance,	do. do.	do. do.	do.	do.
North Ashland,	do. do.	Conyngham township, Columbia county,	do.	do.
East,	do. do.	Big Mine Run, Schuylkill county,	do.	do.
Tunnel,	do. do.	Ashland, Schuylkill county,	do.	do.
Keystone,	do. do.	Locust Dale, Schuylkill county,	do.	do.
Potts,	do. do.	do. do.	do.	do.
Merriam,	do. do.	Mt. Carmel township, Northumberland county,	do.	do.
Monitor,	do. do.	do. do.	do.	do.
Locust Gap,	do. do.	do. do.	do.	do.
Locust Spring,	do. do.	do. do.	do.	do.
Buck Ridge,	do. do.	Coal township, Northumberland county,	do.	do.
Big Mountain,	do. do.	do. do.	do.	do.
Peerless,	do. do.	do. do.	do.	do.
Henry Clay,	do. do.	do. do.	do.	do.
Sterling,	do. do.	do. do.	do.	do.
Burnside,	do. do.	do. do.	do.	do.
Bear Valley,	do. do.	do. do.	do.	do.
North Franklin No. 2,	do. do.	do. do.	do.	do.
Preston No. 2,	do. do.	Preston Hill, Schuylkill county,	do.	do.
Preston No. 3,	do. do.	Girardville, Schuylkill county,	do.	do.
Pennsylvania,	Union Coal Company,	Coal township, Northumberland county,	Holden Chester,	Shamokin, Pa.
Hickory Swamp,	do.	do. do.	do.	do.
Hickory Ridge,	do.	do. do.	do.	do.
Excelsior,	Excelsior Coal Company,	do. do.	A. Robertson,	do.
Corbin,	do.	do. do.	do.	do.
Enterprise,	Enterprise Coal Company,	do. do.	F. J. Morgan,	Excelsior.
Mt. Carmel,	Thomas M. Righter & Co.,	Mt. Carmel township, Northumberland county,	Thomas M. Righter,	Mt. Carmel, Pa.
Logan,	Lewis A. Riley & Co.,	Centralia, Columbia county,	Edward Reese,	Centralia, Pa.
Centralia,	do. do.	do. do.	do.	do.
Morris Ridge,	May, Troutman & Co.,	Conyngham township, Columbia county,	James May,	Shamokin, Pa.
Bellemore,	S. S. Bickel & Co.,	do. do.	Tobias Bickel,	Mt Carmel, Pa.
Continental,	Lehigh Valley Coal Company,	do. do.	D. P. Brown,	Lost Creek, Pa.
Williamstown,	Summit Branch Railroad Company,	Williamstown, Dauphin county,	T. M. Williams,	Lykens, Pa.
Short Mountain,	Lykens Valley Coal Company,	Wiconisco, Dauphin county,	do.	do.
Cameron,	Mineral Railroad and Mining Company,	Shamokin, Northumberland county,	Edwin Ludlow,	Shamokin, Pa.
Luke Fiddler,	do. do.	do. do.	do.	do.
Garfield,	Garfield Coal Company (Limited),	Coal township, Northumberland county,	Joseph H. Hoskins,	do.
Royal Oak,	Tillett & Bro.,	Shamokin, Northumberland county,	Jona. Tillet,	do.
Neilson,	J. Langdon & Co.,	do. do.	A. H. Storrs,	do.
Lancaster,	Smith & Keiser,	Coal township, Northumberland county,	William Smith,	do.
Big Mine Run,	J. Taylor estate,	Big Mine Run, Schuylkill county,	William Mo gans,	Ashland, Pa
Black Diamond,	Llewelyn, Nagle & Co,	Mt. Carmel township, Northumberland county,	William Llewellyn,	Shamokin, Pa.

TABLE No. 2—Giving the total number of tons of coal mined in each colliery, number of days worked, number of employés, number of persons killed and injured, number of kegs of powder used, etc., in the Sixth Anthracite District, for the year ending December 31, 1888.

NAMES OF COLLIERIES.	LOCATION.	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used	Number steam boilers.	Number horses and mules.	Number mine locomotives.
North Ashland,	Conyngham township, Columbia county,	173 051.38	163 256	247 9/10	459		2	3 300	24	44	1
Bast,	Ashland, Schuylkill county,	74 284.84	70 080	197 5/10	386		1	1,170	23	45	..
Tunnel,	do do.	94.587.40	88 290	218 3/10	286	2	1	175	26	32	..
Keystone,	Locust Dale, Schuylkill county,	96 208 70	90,763	156 1/10	279		3	120	16	34	..
*Potts,	do do				52				21	2	..
Merriam,	Locust Summit, Northumberland county,	155 469 14	146.669	217 2/10	548	2		2 800	26	55	
Monitor,	Locust Gap, Northumberland county,	120 422 54	113.869	251 1/10	329	1	4	1 950	16	46	
Locust Gap,	do. do.	172 971 36	115.256	220 7/10	323	1		2 210	16	33	1
Locust Springs,	do. do.	179 184.64	168.244	248 5/10	559	2	2	5 400	20	58	1
Alaska,	Alaska, Northumberland county,	207 868 12	196 102	241 1/10	596	3	8	4 900	33	70	1
Reliance,	Mount Carmel, Northumberland county,	93 670 08	88 328	231 2/10	295	2	1	2 400	16	34	..
Buck Ridge,	Coal township, Northumberland county,	21 120.50	19,925	124 1/10	211		1	825	16	13	..
†Big Mountain,	do. do.				621	6	14	5,400	12		..
†Sterling,	do. do.				200		6	995	6	..	..
†Peerless,	do. do.				209	1				..	..
Henry Clay,	do. do.	336,154 62	317.127	287 4/10	491	1	5	3 095	32	175	3
Burnside,	do. do.	106 392.52	100,842	225	452	1	4	3 750	14	46	
Bear Valley,	do. do.	124 681 44	117 624	253 8/10	308	..	2	2 175	22	44	
North Franklin No. 2,	Trevorton, Northumberland county,	94, 289 12	88 952	183 6/10	294		6	2 565	12	44	2
*Preston No. 2,	Preston Hill, Schuylkill county,		2		39		1		14	5	
Preston No. 3,	Girardville, Schuylkill county,	76,623 16	72,286	235 3/10	241	2	4	300	22	39	1
*Locust Run,	Ashland, Schuylkill county,				17				15		
Big Mine Run,	do. do.	131 321	127 543	222 3/4	441	4	8	2 595	25	70	2
Cameron,	Shamokin, Northumberland county,	145 924	128 989	162 8/10	955	1	4	5,936	40	81	..
Luke Fiddler,	do. do.	207 355	193 756	232 7/10	651	2	3	4 811	22	68	1
Enterprise,	Excelsior, Northumberland county,	127,027	123 972	267 1/4	657	1	1	2 860	35	44	2
Morris Ridge,	Conyngham township, Columbia county,	85 693	82 093	266 3/4	238		2	2 142	14	26	..
Bellmore,	do. do.	105.135	104 152	203	397	1	1	2 821	15	22	..
Excelsior,	Coal township, Northumberland county,	181 833	181 833	272 1/10	426	4	4	5,988	27	51	..
‡Corbin,	do. do.										..
Pennsylvania,	Mount Carmel township, Northumberland Co.,	227 291	227,535	213	785	4	9	6,677	40	106	1

Hickory Ridge,	Coal township, Northumberland county,	105 476	99,038	$240\frac{1}{4}$	520	2	2	3,302	26	33	.
Hickory Swamp,	do. do.	59,255	98,270	$41\frac{1}{4}$	340	4	5	2,412	15	39	. .
Mount Carmel,	Mount Carmel township, Northumberland co.,	130,953	124 718	$230\frac{7}{10}$	354	2	4	4 357	21	43	1
Williamstown,	Williamstown, Dauphin county,	334,680	327 743	$302\frac{3}{4}$	1,115	2	9	10 516	80	121	4
Short Mountain,	Wiconisco Dauphin county,	245 261	236,129	292	1,021	5	8	4,148	81	134	5
Lancaster,	Coal township, Northumberland county,	22 683	21,795	227	85	. .	. .	923	3	12	. . .
Neilson,	Shamokin, Northumberland county,	86,889	71,289	1 9	566	2	11	3,666	18	38	.
Centralia,	Centralia, Columbia county,	179 720	168 343	$219\frac{3}{10}$	504	4	2	5 708	28	53	1
Logan,	do. do.	169,222	154,699	$233\frac{7}{10}$	474	2	2	5,985	32	46	1
*Continental,	Conyngham township, Columbia county,	. . . .	. . .	. . .	15	. . .	. .	. .	22	1	
Garfield,	Coal township, Northumberland county,	30,7 1	30,332	$235\frac{3}{10}$	114	. . .	1	1,203	10	14	. . .
Royal Oak,	Shamokin, Northumberland county,	157	157	. .	8	. . .	. . .	40	2	2	. . .
Black Diamond,	Mount Carmel, Northumberland county,	6,009	4,975	90	117	. . .	. . .	200	6	9	. . .
Totals,		4,710,014 54	4,459,960	205.26	16,918	64	141	119,518	968	1,823	28

*Collieries pumping water during the year. † Big Mountain, Sterling and Peerless coal is taken to Henry Clay breaker. ‡ Corbin colliery coal included in Excelsior.

TABLE No. 3.—Showing the number of each class of employés at each Colliery in the Sixth Anthracite District, during the year 1888.

NAME OF COLLIERIES.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand totals—inside and outside.
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door-boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintend't, bookkeepers and clerks.	Total outside.	
North Ashland,	1	89	18	91	19	9	225	1	10	18	187	68	....	284	459
East,	2	51	26	84	10	12	185	1	6	20	78	61	....	161	346
Tunnel,	1	17	....	82	13	11	124	1	5	20	69	47	....	142	266
Keystone,	1	41	4	49	10	10	115	1	5	11	93	55	....	164	279
Potts,	1	....	....	24	....	....	25	1	4	4	....	18	....	27	53
Merriam,	2	143	19	141	27	18	350	1	5	24	110	58	....	198	548
Monitor,	2	84	27	59	19	3	194	1	4	9	82	39	....	135	329
Locust Gap,	1	76	29	54	14	7	181	1	4	13	74	50	....	142	323
Locust Spring,	1	210	66	47	31	8	363	1	7	12	107	69	....	196	559
Alaska,	2	189	35	25	70	14	335	1	8	17	163	72	....	261	596
Reliance,	1	97	8	18	24	4	152	1	4	9	92	37	....	143	295
Buck Ridge,	1	75	5	24	4	3	112	1	5	14	28	56	....	99	211
Big Mountain,	5	273	72	105	59	19	533	1	4	15	....	68	....	88	621
Henry Clay,	1	3	12	7	....	....	23	1	5	23	312	128	....	468	491
Sterling,	1	62	34	51	10	5	163	1	3	8	....	25	....	37	200
Peerless,	....	115	33	46	10	3	207	....	....	2	....	....	....	2	209
Burnside,	2	177	25	27	21	10	262	1	6	13	111	60	....	190	452
Bear Valley,	1	59	8	84	14	3	169	1	5	14	66	53	....	139	308
North Franklin, No. 2,	1	57	12	47	21	4	142	1	6	6	76	63	....	152	294
Preston, No. 2,	....	....	....	21	....	....	21	....	2	7	....	9	....	18	39
do. 3,	1	18	....	69	12	3	104	1	4	14	63	55	....	137	241
Locust Run,	....	....	....	....	....	....	....	1	....	9	..	7	....	17	17
Garfield,	1	46	7	10	4	2	70	1	2	4	20	16	1	44	114
Logan,	2	104	40	85	16	10	257	1	12	21	109	70	4	217	474
Centralia,	2	120	50	91	17	8	288	1	10	21	105	75	4	216	504
Neilson,	5	193	18	145	16	14	396	1	7	17	90	51	4	170	566
Lancaster,	1	40	4	6	6	....	57	1	1	2	14	10	....	28	85
Williamstown,	6	270	170	188	115	88	787	2	17	42	150	114	3	328	1,115
Short Mountain,	4	230	182	130	73	30	649	3	23	31	174	188	3	372	1,021
Pennsylvania,	1	300	100	90	50	24	565	1	7	20	90	100	2	220	785
Hickory Ridge,	1	200	25	90	29	7	343	1	3	11	100	60	2	177	520
Hickory Swamp,	1	95	30	50	20	4	200	1	5	8	54	70	2	140	340
Mount Carmel,	1	110	40	51	19	9	230	1	5	14	62	38	4	124	354
Excelsior and Corbin,	2	165	....	82	20	3	272	2	5	10	72	61	4	154	426
Bellmore,	2	139	41	73	12	7	274	1	4	14	45	54	5	123	397

Morris Ridge,	1	62	85	80	7	6	141	1	8	7	47	86	8	97	236
Enterprise,	1	170	50	166	84	7	428	1	4	17	115	87	5	229	657
Cameron,	8	818	68	196	40	20	640	1	16	21	121	151	5	815	955
Luke Fiddler,	8	175	67	124	42	21	432	1	11	15	79	106	5	219	651
Big Mine Run,	1	118	40	59	18	12	238	1	4	11	185	49	8	203	441
Royal Oak,	1	4	1	....	....	....	6	1	....	....	1	....	....	2	8
Black Diamond,	1	40	10	16	2	1	70	1	6	6	20	14	....	47	117
Continental,	....	....	....	....	....	....	4	....	....	....	....	....	....	11	15
Total,	68	4,785	1,401	2,840	915	369	10,882	44	247	572	8,253	2,400	59	6,586	16,918

TABLE No 4.—List of fatal accidents occurring in the mines of the Sixth Anthracite District, for the year ending December 31, 1888.

Date of accident.	NAME OF PERSON INJURED.	Occupation.	Age.	Married or single.	Number of orphans.	Name of Colliery	Location—County.	Nature and Cause of Accident in Brief.
January 6,	Edward Carey,		59	M.,	8	Hazle Dell,	Columbia,	Killed by being struck by an empty mine car at bottom of the slope. The coupling became unhooked while the cars were coming down the slope. Date of investigation—January 6th.
January 16,	Lewis Taylor,		16	S.,		Henry Clay,	Northumberland,	Killed by being run over by a dirt dumper.
January 26,	John Hane,		25	S.,		Logan,	Columbia,	Killed by a fall of slate at the gangway in the No. 5 slope.
Febru'y 8,	Thomas Munchen,		23	S.,		do.	do.	Killed by a fall of coal in the No. 3 slope, east gangway.
Febru'y 16,	John Edmunds,	Miner,	57	M.,	6	Luke Fidler,	Northumberland,	Killed by a fall of top slate.
Febru'y 17,	Michael Morgan,	do.	30	M.,	2	Mount Carmel,	do.	Hurt by a fall of rock on the 13th; died from the effects on the 17th.
Febru'y 17,	Michael Foley,	Repairman,	34	M.,	6	Centralia,	Columbia,	Burned by an explosion of gas on the 15th; died on the 17th. He went into an empty breast with a naked lamp.
Febru'y 28,	John Fermonach,	Miner,	35	M.,	3	Alaska,	Northumberland,	Hurt on the 27th by a fall of top coal, and died on the 28th.
Febru'y 29,	Christ Horn,	Engineer,	39	M.,	5	Big Mine Run,	Schuylkill,	Killed by being struck by flying pieces of cylinder cap of dirt plane engine.
March 1,	Owen Graham,	Laborer,	47	M.,	9	Alaska,	Northumberland,	Killed by being struck by cage while crossing bottom of shaft.
March 2,	William E. Zacker,	Driver,	17	S.,		Short Mountain,	Dauphin,	Killed by being caught between the side hooks of mine car.
March 28,	August Berich,	Miner,	31	M.,		Merriam,	Northumberland,	Killed by a fall of bone coal.
April 5,	Hugh Jones,	do.	28	M.,	1	Pennsylvania,	do.	Fatally injured by a fall of coal on the 4th, and died on the 5th.
April 5,	William Costello,	do.	28	M.,		do.	do.	Fatally injured at same time as Jones, and died on the 5th.
April 12,	Andrew Wita,	do.	30	M.,	3	Enterprise,	do.	Killed by a rush of coal; was squeezed between it and breast pillar.
April 15,	Patrick Corcoran,	Engineer,	55	M.,	6	Tunnel,	Schuylkill,	Killed; cylinder cap of bull engine was blown off and fell on him.
April 24,	William Fowler,	Miner,	29	M.,	2	Williamstown,	Dauphin,	Killed by a fall of top slate.
April 24,	Milton Moll,	Laborer,	19	M.,		Neilson,	Northumberland,	Killed by being caught between gun-boat and head frame at dirt plane.
April 18,	Thomas Defraha,	do.	18	S.,		Alaska,	do.	Killed by being run over by railroad cars at breaker.
May 2,	William Aubrey,	Miner,	43	M.,	4	Burnside,	do.	Killed by a fall of slate while undermining it.
May 2,	John Britt,	Repairman,		M.,		Tunnel,	Schuylkill,	Fatally injured March 29th; died May 2d.
May 14,	John C. Zimmerman,	Laborer,	51	M.,	4	Short Mountain,	Dauphin,	Killed by being run over by mine cars on the gravity plane inside
May 17,	Owen Reilly,	Miner,	32	M.,	4	Hickory Swamp,	Northumberland,	Killed by a fall of loose coal and timber. He did not timber his working place properly.

May 17,	James Cashman,	Laborer,	24	S.,		do	do.	Killed by same fall as Reilly.
May 17,	John Stanislaus,	do.	21	S.,		Pennsylvania,	do.	Killed by being caught between mine wagon and shute-platform.
May 17,	Peter Bradley,	Miner,	67	W.,	4	Big Mine Run,	Schuylkill,	Killed by a fall of coal while stripping pillar.
May 19,	John Ytuati,	do.	35	M.,		Big Mountain,	Northumberland,	Killed by a fall of top slate in breast.
June 12,	John Skercavish,	do.	45	M.,	1	Excelsior,	do	Killed by a fall of top coal in breast
June 23,	John Shuak,	Fan-boy,	20	S.,		Nellson shaft,	do.	Fatally injured by an explosion of fire-damp
June 23,	Albert Volkel,	Miner,	34	M.,	4	Merriam,	do.	Fatally injured; struck by a piece of coal while crossing breast after firing blast; died June 28th.
June 26,	Simon Gavin,	do.	22	S.,		Excelsior,	do.	Killed by a piece of slate falling on him at shute heading.
July 7,	Isaac Clouser,	do.	46	M.,		Reliance,	do.	Killed by a fall of coal and bone in breast.
July 10,	Theodore Stein	do.	39	M.,	3	Locust Gap,	do.	Killed by a fall of coal from corner of pillar heading.
July 12,	Harvey Umholtz,	Laborer,	23	S.,		ShortMountain,	Dauphin,	Killed by a fall of rock in No. 1 drift, "White's vein," east gangway.
July 14,	John Ansalavage,	Miner,	25	S.,		Lake Fidler,	Northumberland,	Killed by a fall of rock in breast, in No 9 vein.
August 1,	Matthew Broduski,	Bottom-man,	30	M.,	4	Reliance,	do.	Killed by being struck by runaway wagons at foot of slope.
August 2,	Thomas Dudinski,	Miner,	22	S.,		Cameron,	do.	Killed by a fall of top coal in breast, No 7 vein.
August 8	Matthew Morganavage,	do.	35	M.,	1	Pennsylvania,	do.	Killed by a fall of rock in gangway while making room for timber.
August 8	John Padrick,	Loader,	24	S.,		Hickory Ridge,	do	Killed by being run over by empty mine wagons on slope.
August 13,	William Murray,	Driver,	16	S.,		Centralia	Columbia,	Killed by falling down hoisting slope.
August 14,	Lewis Bartles,	Laborer,	22	S.,		Big Mine Run,	Schuylkil,	Killed by a fall of coal in shute.
August 25,	John Warfield,	Assistant boss,				Big Mountain,	Northumberland,	Squeezed between mine cars on June 25th; died August 25 h
Sept. 3,	George Matt,	Loader,	40	M.,		Bellmore,	Columbia.	Killed by being crushed between mine wagons
Sept. 6,	James O'Brien,	Door-boy,	15	S.,		Monitor,	Northumberland,	Killed by gangway timbers falling on him that were blown out by exposion carbureted hydrogen gas.
Sept. 12,	John Farrid,	Miner,	22	S.,		HickorySwamp,	do.	Killed by an explosion of dynamite while preparing a charge.
Sept. 12,	George Orndorf,	do.	23	M.,	2	Short Mountain,	Dauphin,	Killed by a fall of coal in breast, in White's vein.
Sept. 13,	Henry Eyster,	do	45	M.,	6	Hickory Ridge,	Northumberland,	Fatally injured on the 11th by falling down the south dip slope. Died on the 17th.
Sept. 14,	John Kabola,	do.	36	M.,	1	Mount Carmel,	do.	Killed by a fall of top coal in breast.
Sept 21,	Elias Esterline,	do.	29	M.,	7	Short Mountain,	Dauphin	Killed by a fall of rock in White's vein.
Sept. 29,	John Madden,	Headman,	21	S.,		HickorySwamp,	Northumberland,	Killed by being crushed between a wagon that had jumped the track and the foundation wall of engine house.
October 1,	Michael Breeny,	Door-boy,	15	S.,		Big Mountain,	do.	Fatally injured by a fall of rock on September 29th, and died October 1st.
October 2	John Harris,	Repairman,	37	M.,	5	do.	do.	Fatally injured September 18th by an explosion of carbureted hydrogen gas; died October 2d.
October 10	Thomas Baranski,	Slate picker,	15	S.,		Locust Spring,	do.	Killed by being caught by his clothing on the line shaft in breaker and strangled.
October 13,	Peter Sharchan,	Laborer,	25	S.,		Big Mountain,	do.	Killed. While attempting to get on a moving wagon, he fell down the slope.
October 13	Andrew Weir,	do.	22	S.,		Williamstown,	Dauphin,	Killed by being run over by mine cars on hoisting slope
October 13,	Peter Bogdon,	do.	25	S.,		Corbin,	Northumberland,	Killed by the premature explosion of a blast.
Nov. 3,	Richard Thompson,	Miner,	35	M.,	3	Preston No. 3,	Schuylkill,	Killed by an explosion in new slope.
Nov. 3,	James Duddy,	do.	32	M.,	5	do.	do.	Killed by an explosion in new slope at same time as Thompson.
Nov. 26,	John Hennessy,	do.	48	M.,	5	Hazle Dell,	Columbia,	Killed by a fall of top coal in breasts.
Nov. 27,	John Harvey,	do.	43	M.,	3	Locust Spring,	Northumberland,	Fatally injured November 27th by a fall of top slate; died December 3d.

TABLE 4.—*Continued.*

Date of accident.	NAME OF PERSON INJURED.	Occupation.	Age.	Married or single.	Number of orphans.	Name of Colliery.	Location—County.	Nature and Cause of Accident in Brief.
Nov. 28,	Thomas Rhoads, ...	Laborer, ...	21	S.,	. .	Peerless, . . .	Northumberland, .	Killed by a fall of bone coal and slate.
Dec 4, .	Michael Savinski, ...	Miner, ...	49	M.,	2	Excelsior, . . .	do. .	Killed by being struck by pieces of coal thrown out by blast.
Dec 15, . .	Frederick Brown, ...	do.	32	M.,	3	Big Mine Run,	Schuylkill, . .	Killed by a fall of top rock while taking out pillars.
Dec. 29, . .	Jacob Dungalairtch, ...	do.	25	S ,	. .	Big Mountain,	Northumberland, .	Killed by being struck by pieces of coal thrown from a blast.

TABLE No. 5.—List of non-fatal accidents occurring in the mines of the Sixth Anthracite District for the year ending December 31, 1888.

Date of accident.	NAME OF PERSON INJURED.	Name of colliery.	Location—county.	Nature and cause of accident in brief.
January 16,	Daniel Werntz, blacksmith,	Henry Clay,	Northumberland,	Lower part of abdomen injured by being kicked by a mule.
do. 19,	Thomas Gammill, miner,	Neilson,	do.	Burned by an explosion of gas.
do. 25,	Charles Foronk, driver,	Short Mountain,	Dauphin,	Arm and wrist broken by falling under mine cars.
do. 31,	John Webster, miner,	Hazle Dell,	Columbia,	Leg broken by a fall of coal
February 2,	Joseph Miller, miner,	Keystone,	Schuylkill,	Ribs broken by falling on the ice.
do. 8,	James Redman, miner,	Luke Fiddler,	Northumberland,	Leg bruised by a fall of top slate.
do. 13,	Paul Olernock, miner,	Mount Carmel,	Columbia,	Face and back bruised by fall of top slate.
do. 20,	John Toohey, driver,	Keystone,	Schuylkill,	Leg bruised by being run over by the dirt dumper.
do. 28,	William Umberger, starter,	Williamstown,	Dauphin,	Back and sides bruised by battery starting on him.
do. 28,	Charles W. Haines, laborer,	North Franklin, No. 2,	Northumberland,	Knee caps broken by being struck by a lever while putting on a wagon.
March 3,	Francis Manner, slate picker,	Henry Clay,	do.	Arm broken by falling down breaker steps
do. 7,	William Persing, miner,	Williamstown,	Dauphin,	Head and shoulder bruised by being struck by locomotive.
do. 4,	Dominick Hart miner,	Big Mine Run,	Schuylkill,	Small bone of leg broken by a fall of coal.
do. 9,	William Hodge, miner,	Locust spring,	Northumberland,	Small bone of arm broken by fall of coal
do. 13,	Arthur McAndrew, cartman,	Preston, No. 2,	Schuylkill,	Leg bruised by being struck by piece of dirt rolling from bank while loading cart.
do. 19,	Peter Feberg, miner,	Sterling,	Northumberland,	Leg broken in two places by fall of rock.
do. 29,	Andrew Shotes, laborer,	Morris Ridge,	Columbia,	Head cut by a fall of rock.
do. 29,	Anthony Anza, miner,	Pennsylvania,	Northumberland,	Leg broken by being struck by a piece of coal.
do. 30,	Frank Frey, miner,	Monitor,	do.	Leg broken and both hips fractured by fall of coal.
do. 30,	C. H. Miller, miner,	Big Mountain,	do.	Back and side hurt by fall of coal.
do. 31,	Charles Machamer, miner,	Williamstown,	Dauphin,	Hands and face burned by an explosion of gas.
do. 31,	John Wagner, miner,	do.	do.	do do. do.
do. 31,	John Pickering, chopper,	North Franklin, No. 2,	Northumberland,	Leg badly cut by being struck by an axe he was using while chopping in the woods.
April 27,	Joseph Mouska, miner,	Burnside,	do.	Hurt by a fall of coal.
do. 27,	Christ Shaeffer, miner,	Alaska,	do.	Ribs fractured by falling on a box inside the mine.
do. 30,	Edward Donelly spraguer,	Preston, No. 2,	Schuylkill,	Back sprained by striking it against a plank while jumping off a wagon.
do. 30,	Samuel Walters miner,	Big mountain,	Northumberland,	Arm broken by a fall of coal.
May 14,	John Dipnock, miner,	Mount Carmel,	Columbia,	Leg broken by a fall of coal.
do. 14,	Patrick Carrel, miner,	do.	do.	Head and body bruised by a fall of coal.
do. 15,	Fred. Woodward, laborer,	Luke Fiddler,	Northumberland,	Arm crushed by being run over by a mine wagon.
do. 18,	John Toussint, miner,	Pennsylvania,	do.	Hip fractured and head cut by a fall of coal.
do. 18,	Bernard Kievatski, miner,	do.	do.	Hurt by a fall of coal.
do. 22,	Oscar Reed, miner,	Henry Clay,	do.	Leg broken by being struck by a mine wagon.
do. 23,	Andrew F. Carr, miner,	Bear Valley,	do.	Head and body bruised by falling down manway.
do. 25,	John Hoduc, laborer,	Cameron,	do.	Arm broken and body bruised by being caught between mine wagon and prop.
do. 25,	Jacob Wudle, repairman,	Williamstown,	Dauphin,	Body bruised by being caught between car and gangway props.
June 5,	Ben. Hocking, miner,	Buck Ridge,	Northumberland,	Ankle broken by mine car running over it.
do. 6,	Chas. Egling, slate picker,	Big Mine Run,	Schuylkill,	Arm broken by falling in dirt shute.
do. 6,	John Farr, doorboy,	Big Mountain,	Northumberland,	Collar bone broken; caught between mine car and door frame.
do. 7,	James Sullivan, driver,	Henry Clay,	do.	Leg broken by a fall of coal.
do. 8,	Anthony Krosinski, miner,	Mount Carmel,	do.	Leg bruised by being struck by a piece of coal thrown by a blast.

TABLE No. 5—*Continued.*

Date of accident.		NAME OF PERSON INJURED.	Name of colliery.	Location—county.	Nature and cause of accident in brief.
do.	14,	Thomas Sawb, miner,	Logan,	Columbia,	Hurt by a fall of coal.
do.	16,	John Shannon, miner,	Hickory Swamp,	Northumberland,	Hurt by a fall of slate.
do.	19,	John Horn, miner,	Big Mountain,	do.	Leg broken by a fall of coal.
do.	19,	John Murray, miner,	Morris Ridge,	Columbia,	Back bruised by a fall of slate.
do.	20,	Thomas Linn, laborer,	Pennsylvania,	Northumberland,	Legs and body bruised by being caught between car and timber on hoisting slope.
do.	20,	George Shauck, fanboy,	Neilson,	do.	Slightly burned by an explosion of gas.
do.	20,	Kieran Curran, repairman,	do.	do.	do. do. do.
do.	20,	William Kelly, driver,	do.	do.	do. do. do.
do.	22,	Gately Valentine, miner,	Hickory swamp,	do.	Face and hands burned and bruised by the premature explosion of a blast.
do.	22,	George W. Holing, miner,	do.	do.	Body bruised by a fall of top slate.
do.	25,	William Brown, laborer,	Tunnel.	Schuylkill,	Body bruised by being caught between mine cars.
do.	28,	John Kelly, driver,	Preston, No. 3,	do.	Face cut by being kicked by a mule.
do.	26,	Chas Kutanavage, miner,	Excelsior,	Northumberland,	Burned by the premature explosion of a blast.
do.	27,	A. S. Farnsworth, shute boss,	Henry Clay,	do.	Abdomen bruised by being run over by a wagon.
do.	29,	Joseph Dooda, laborer,	Short Mountain,	Dauphin,	Head and shoulders bruised by a fall of slate.
July	9,	Peter Lucoski, miner,	Excelsior,	Northumberland,	Foot bruised by fall of slate.
do.	11,	Robert Weir, miner,	Pennsylvania,	do.	Slightly burned by an explosion of gas.
do	12,	John Bosha car loader,	Alaska.	do.	Arm broken by being caught between car bumpers.
do.	12,	Daniel Furhman, miner,	Burnside.	do.	Ruptured by falling on sheet iron while pushing coal.
do.	13,	John Coults, miner,	Big Mountain,	do.	Slightly burned by an explosion of gas.
do.	18,	James McHale, miner,	Big Mine Run,	Schuylkill,	Leg broken and body bruised by a fall of slate
do.	20,	August Haupt, driver,	Neilson	Northumberland,	Leg broken by being caught between wagon on turnout.
do.	21,	John Forbes, miner,	Cameron.	do.	Body bruised by falling down manway.
do.	23	Harris Friehly, driver,	Big Mountain,	do.	Leg and back bruised by falling under mine wagon.
do.	25,	John Juduski miner,	Excelsior,	do.	Leg and body bruised by fall of coal.
do.	26,	Daniel H. Pamanini, miner,	Pennsylvania,	do.	Leg broken by a fall of rock.
do.	27	Emanuel Henenger miner,	Burnside,	do.	Arm broken; caught between wagon and top rock.
do.	27,	William Stitzer, miner,	Big Mine Run,	Schuylkill,	Leg broken by a fall of coal.
do.	28,	Jacob Keneski, miner,	Big Mountain,	Northumberland,	Back, head and face bruised by being caught in the traces and dragged by the mule
August	3,	Frank Umlor, miner,	Monitor,	do.	Skull fractured, head cut and injured internally by a fall of coal.
do.	4,	John Reitz sprague,	North Ashland,	Columbia,	Arm cut off by being run over by mine car.
do.	6,	Andrew Seduski, miner,	Reliance,	Northumberland,	Ribs broken and back bruised by a fall of coal
do.	6,	William Wyatt, slate-picker,	Keystone,	Schuylkill,	Hand bruised, necessitating amputation, by being caught in breaker machinery.
do.	9,	James Haley miner,	Cameron,	Northumberland,	Leg broken by a fall of slate.
do.	10,	William Martin, driver,	Sterling.	do.	Arm broken by being caught between mine wagons.
do.	13,	Joseph Sezasko, miner,	Hickory Ridge,	do.	Body bruised and cut by the premature explosion of a blast.
do.	17,	Dennis Monaghan driver,	Cameron.	do.	Leg broken by being caught between mine cars.
do.	20,	John Driscoll miner,	Short Mountain,	Dauphin,	Leg broken by being struck by piece of coal thrown from shot.
do	24,	Henry Rabeck, driver,	Pennsylvania,	Northumberland,	Body bruised; fell under mine cars inside.
do.	29,	Michael Glancy, miner,	Big Mountain,	do.	Ribs broken; caught between mine cars.

do.	29, . .	John Dropeski jig boy, . .	Alaska, ...	do. .	Arm broken by being caught between belt pulley and jig wheel.
September	2,	William Miller, carpenter, .	Sterling, ...	do. .	Leg broken by belt pulley falling on it
do.	3, . .	Frank Seramio, driver, . .	Big Mountain, ...	do. .	Leg broken; mule fell on him while he was taking it to the stable.
do.	6, . .	August Youcoufski, miner, .	Bellmore, ...	Columbia. . .	Hand bruised and finger cut off by a fall of slate.
do.	9, . .	John Brennan, miner, ...	Sterling, ...	Northumberland, .	Burned by an explosion of gas.
do.	9, . .	Michael Lantz, laborer, . .	do.	do. .	do. do.
do.	9, .	Albert Watioski, miner, . .	Alaska, ...	do. .	Leg broken, face and hands cut by the premature explosion of a blast.
do.	10,	John J. Welsh, sprague, . .	Sterling, ...	do. .	Injured internally by being squeezed between mine cars.
do.	11, . .	Henry Kane, driver. . .	Monitor, ...	do. .	Hand crushed by being run over by mine cars; had to be amputated.
do.	11, . .	Victor Bradman, miner, . .	North Franklin, No. 2, .	do. .	Face and hands burned by an explosion of powder.
do.	11. . .	Dennis Downey. miner, . .	Logan.	Columbia, . .	Head and back bruised by a fall of coal.
do.	12,	George Davis, miner, . . .	Hickory Ridge, ...	Northumberland, .	Back sprained by falling down the slope.
do.	17,	Frank Consavage, miner, . .	Pennsylvania, ...	do. .	Slightly burned by an explosion of gas.
do.	17, . .	George Picking, miner, .	do. . . .	do. .	do. do.
do.	18, . .	Clinton E. Miller, carpenter,	North Franklin, No. 2, .	do. .	Shoulder and ribs fractured by falling into an air hole while moving timber.
do.	18. . .	William Zenders, miner, . .	Big Mountain, ...	do. .	Slightly burned by an explosion of gas.
do.	25. . .	Elijah Johns miner. . .	do.	do. .	Leg broken by a fall of coal.
do.	27,	John Sabo, jig coal dumper,	Alaska.	do. .	Leg broken by falling under dumper.
do.	28,	David Taylor, blacksmith, .	Williamstown, ...	Dauphin, ...	Head bruised by being struck by rope while crossing hoisting slope.
October	2, . .	Henry Pope, miner, ...	Big Mine Run, ...	Schuylkill, ...	Slightly burned by an explosion of gas.
do.	3, . .	Peter Bockus, miner	do.	do. . . .	do. do. do.
do.	4 . .	John Zambona miner, ...	Pennsylvania, ...	Northumberland, .	Leg bruised by a fall of coal.
do.	8, .	Lewis Keen miner. . . .	Hazle Dell, ...	Columbia, ...	Hip and leg bruised by a fall of coal.
do.	10.	Thomas J. Snyder, miner, . .	North Franklin, No. 2, .	Northumberland, .	Arm broken and leg and side bruised by a fall of slate.
do.	10, . .	John Veniski, laborer, . .	Sterling, ...	do. .	Slightly burned by an explosion of gas.
do.	11, . .	John Gerelski, miner, . . .	Excelsior, ...	do. .	Body bruised by a fall of coal
do.	12. . .	Anthony Rumkey, miner, .	Neilson.	do. .	Slightly burned by an explosion of gas.
do.	12. . .	Daniel L. Hoffman, miner, .	Williamstown, ...	Dauphin, ...	Head and legs bruised by a fall of rock.
do.	12, . .	Moses Hain, miner, ...	do.	do.	Fell on rail and sprained his back.
do.	16. .	William Dane, miner, ...	Neilson, ...	Northumberland, .	Burned by an explosion of gas.
do.	16, . .	George Steel, miner, ...	do.	do. .	do. do.
do.	16, .	Michael Carey. miner, ...	do.	do. .	do. do.
do.	16.	John Decavy, laborer, . . .	do.	do. .	do. do.
do.	19 . .	Morgan Harrison, miner, . .	Garfield, ...	do. .	Back broken by a fall of coal.
do.	22, . .	John Horley, miner, ...	Short Mountain, ...	Dauphin, ...	Leg broken and face burned by the premature explosion of a blast
do.	22, .	William Faust, miner. . . .	do.	do	do. do. do.
do.	24, . .	Patrick Dougherty, miner, .	Big Mine Run, ...	Schuylkill, ...	Leg broken by a fall of coal.
do.	27, . .	Patrick McNellis miner, . .	Williamstown, ...	Dauphin, ...	Body bruised by a fall of slate.
do.	27, . .	Henry Kenna, slate-picker, .	Alaska, ...	Northumberland, .	Concussion of brain; caused by falling in shute.
November	3, . .	Joseph Cosloski, miner, . . .	Enterprise, ...	do. .	Head and breast cut by a fall of coal
do.	3. . .	Frank Conway, laborer, . . .	Preston, No. 3.	Schuylkill, . .	Head, face and hands burned by an explosion.
do.	3. . .	Joseph Donavan driver, . .	North Franklin, No. 2, .	Northumberland, .	Collar bone broken; caught between wagon and gangway rib.
do.	5, . .	Alex Fasilla, miner, ...	Luke Fiddler, ...	do. .	Burned by an explosion of gas.
do.	8. . .	John Aderly, miner, ...	Big Mountain, ...	do. .	Leg broken by a fall of coal.
do.	10, . .	John Gaughen, driver, ...	Bast, ...	Schuylkill, . .	Wrist broken; caught in wheel while spragging.
do.	19, . .	Stony Rietz, Laborer, . . .	Hickory Swamp, ...	Northumberland, .	Leg broken by a piece of timber falling on it.
do.	21. . .	Enock Kenotski, miner, . . .	Alaska.	do. .	Leg broken by a piece of coal rolling against it
do.	23, .	James Harper, driver, ...	Burnside, ...	do .	Back bruised and hurt internally by falling under dirt dumper.
do.	26. . .	J. C. Morgan, miner, ...	Alaska, ...	do. .	Arm and collar bone broken by a piece of coal falling on him while passing under a shute.
do.	27, . .	Morris Downey, miner, . . .	Hickory Swamp, ...	do. .	Leg broken by a fall of coal.

TABLE No. 5—*Continued.*

Date of accident.	NAME OF PERSON INJURED.	Name of colliery.	Location—county.	Nature and cause of accident in brief.
November 27, . .	L. F. Nolan, miner, ...	Short Mountain, ...	Dauphin, ...	Leg broken by a piece of slate rolling against it.
December 5, . .	John Wolff, starter, ...	Bear Valley, ...	Northumberland, .	Hand shattered and head and face cut by the premature explosion of dynamite.
do. 12, . .	Patrick Reddy, starter, . . .	North Ashland, ...	Columbia, ...	Arm broken by being struck by a piece of coal while starting battery.
do. 12 . .	William Evans, repairman, .	Preston No. 3, ...	Schuylkill, ...	Hurt by a fall of coal, producing inflammation of kidneys.
do. 12, . .	Thomas Beggs, miner, ...	Big Mountain, ...	Northumberland, .	Ribs fractured by a fall of coal.
do. 17, . .	August Berger, miner, ...	Monitor, ...	do. .	Arm broken by a fall of coal.
do. 27, . .	William H. Shoop, miner, . .	Short Mountain, ...	Dauphin, . .	Back and hips bruised by a fall of coal.
do. 28 . .	Hugh Breslin, miner, ...	Locust Spring, ...	Northumberland, .	Leg broken by a fall of coal.
do. 29, . .	William Moore, slate-picker,	Neilson, ...	do. .	Nose broken and leg sprained by falling in shute.
do. 29, . .	Lucius D. Sowick, repairman,	Big Mountain, ...	do. .	Hand, arm and back hurt by a fall of coal.

SEVENTH ANTHRACITE DISTRICT.

SEVENTH ANTHRACITE DISTRICT,
OFFICE OF INSPECTOR OF MINES,
POTTSVILLE, PA., *March 12, 1889.*

HON. THOMAS J. STEWART,
Secretary of Internal Affairs:

Sir: I have the honor of presenting herewith my annual report as Inspector of Coal Mines of the Seventh Anthracite district, for the year ending December 31, 1888.

It contains the usual tables, which show that 2,687,362 tons of coal were mined, against 2,436,299 the preceding year; an increase of 251,063 tons. The number of fatal accidents was twenty-one, leaving seven women widows and sixteen children orphans. The number of non-fatal accidents reported to us was forty-three. Without a doubt many of these were of a very serious character. It is with much regret we say that a number of these accidents (fatal and non-fatal) were attributable to the carelessness of the unfortunate victims themselves. Again, we are of the opinion that were those in charge of many of the collieries more careful in regard to having their orders carried into effect, it would, without a doubt, reduce the number of accidents very considerably. As a general rule, those in charge of our mining operations are honest and reliable men, but we regret to say that there are cases wherein some of them lack the executive ability necessary to impress upon the minds of the employés under their charge, that when they issue an order they intend to have it strictly complied with; or, in other words, they believe that their responsibility ends when they give the order. In one sense it does, so far as direct responsibility is concerned, but we are of the opinion that, in some instances, they are morally responsible, for many of the accidents that occurred might have been avoided had those in charge seen to it that their orders were obeyed.

The following tables show the amount of coal produced, number of employés above and below ground; also the number of fatal and non-fatal accidents.

SAMUEL GAY,
Inspector of Mines.

TABLE No. 1.—Comparative statement of fatal casualties that occurred during the years 1887 and 1888.

CAUSE OF ACCIDENTS.	1887.	1888.
Explosions of fire-damp,	1	2
Falls of roof and coal,	11	5
Crushed by mine cars,	1	1
By machinery on the surface,	1	2
By machinery under ground,		
Falling down shafts,		1
Falling down slopes,		
By blasting material,	3	3
Miscellaneous,	3	7
Totals,	20	21

TABLE No. 2.—Showing number of fatal accidents and amount of coal produced per life lost by the different companies.

	No. of deaths.	Tons of coal produced per life lost.
Philadelphia and Reading Coal and Iron Company,	5	214,6[illegible]
Lehigh Coal and Navigation Company,	[illegible]	[illegible],911.66
Individual firms,	4	[illegible],525.75
Average,		[illegible],900

TABLE No. 3.—Comparative statement of non-fatal casualties occurring during the years 1887 and 1888.

CAUSE OF ACCIDENTS.	1887.	1888.
Explosions of fire-damp,	7	[illegible]
Falls of roof and coal,	24	20
Crushed by mine cars,	[illegible]	14
By machinery on the surface,	[illegible]	2
By machinery under ground,	[illegible]	1
Falling down shafts,		
Falling down slopes,		
By blasting material,	[illegible]	4
Miscellaneous,	[illegible]	9
Totals,	[illegible]	[illegible]

TABLE No. 4.—Showing amount of coal shipped and estimated amount used and sold at the mines.

	1887.	1888.
Amount of coal shipped,	[illegible]	[illegible]
Amount used at the collieries,	[illegible]	[illegible]
Total production,	[illegible]	[illegible]

TABLE No. 5.—Showing a comparison between the years 1887 and 1888.

	1887.	1888.
Number of persons employed,	8,027	10,648
Number of tons of coal mined per life lost,	121,814	126,609
Ratio of employé per life lost,	384	507
Number of tons mined per each person seriously injured,	58,077	55,391
Tons of coal produced per each employé,	296.75	249.709

	No. of persons employed.	No. of deaths.	No. of persons employed to each death.
Philadelphia and Reading Coal and Iron Company,	4,424	5	884.9
Lehigh Coal and Navigation Company,	4,328	12	360.666
Individual firms,	1,876	4	469
Average,	....	....	509

Improvements.

Under this head there are quite a number of new collieries being opened; also a number of others are under consideration. It appears from the large number of capitalists, generally from the Lehigh and the Eastern Wyoming coal fields, investing and seeking investments in coal lands and coal leases in the Southern Schuylkill coal field, that the day is near at hand when the Schuylkill Valley, from Tamaqua on the east to Tower City on the west, must be a very important factor in furnishing the required annual increase in the production; also in governing the prices of that very important commodity, anthracite coal. In fact the inquiries have been so numerous and competition so great, to buy lands, or to get leases on them, that the prices of these lands have advanced in some instances from one to five hundred dollars per acre. It is evident from the fact that the persons making these purchases, also securing leases and opening new collieries, are coal men from the upper anthracite coal fields, which is sufficient evidence to show that after nearly twenty-five years the tide has turned again in favor of the southern coal field.

This shifting of capital from the northern to the southern coal field has been brought about in consequence of the small area of the Lehigh coal field, which is nearly all taken up, and without doubt has reached its maximum output. Hence the exodus of the coal men from the one region to the other is readily accounted for. Therefore, we say that the future increase in the output must eventually come

from the Schuylkill and Wilkes-Barre districts. Since the Philadelphia & Reading Coal and Iron Company own and control over seventy per cent. of the total coal area of the southern Schuylkill coal lands, it is evident that the great resources of this company will be much more important factors in the future, than they have ever been in the past. It may be unfortunate for speculators and the anthracite coal carrying companies in general, that these large bodies of land should be controlled by the one corporation. Notwithstanding this, should this company continue to treat its employés as liberally in the future as they have in the past, the workingmen in general will have no just grounds for complaint. It is true that the promoters of this gigantic enterprise, viz: securing these lands, have been very much criticised by professional men and others. Notwithstanding this, these lands are increasing in value at a far greater ratio than the coal taken from them, has reduced their market value up to the present time, and we say, without fear of any adverse opinions, that these lands, within the next ten years, will have a market value greater than the lands and the whole Reading system combined had at the time the purchases were made.

The Philadelphia & Reading Coal and Iron Company is making a number of improvements under its new manager, R. C. Luther. The management is making strenuous efforts to recover the lost prestige of the company. In regard to the annual increase in the output of anthracite coal, it is a well known fact that the company for several years, in consequence of its financial difficulties, has not kept pace with the rival mining and carrying companies. In fact whilst its rivals have rapidly been opening up new and extensive collieries, the Philadelphia & Reading Coal and Iron Company has allowed many of theirs to fill with water, which in many instances with the expenditure of reasonable sums of money, could have been made into large producing collieries. However, as will be seen by the following, the condition of things is considerably changed. In place of pulling down they are now building up, and to begin with, they are sinking two new slopes in the western end of the southern coal field near Tremont. The production of the mines will be prepared over one large breaker. A new slope has been sunk on what is known as the White's vein and another underground slope is under way on the No. 5 vein at the West Brookside colliery. The old East Franklin colliery, that was abandoned several years ago, has been resurrected and bids fair to be a productive colliery above water level for many years yet. The Old Pine Forest colliery is undergoing similar treatment. The old water level tunnel being extended from the Skidmore to the Buck Mountain vein, which when completed will open a very large body of coal of six lifts of one hundred yards each, and an unlimited run on the strike of the vein east and west. A new slope is also being sunk on the Primrose vein. From this vein the Holmes and Orchard veins

will be opened by tunnels. The production of the water level openings and slope will be prepared with the present breaker. The company is also making preparations to sink a new shaft at Silver Creek. A bore hole has already been put down, cutting the Orchard, Primrose, Holmes, Seven Foot and Mammoth veins, the latter in two divisions and in fine condition. The total thickness of these seams, as shown by the diamond drill, is from fifty to sixty feet of good coal. It will require a shaft about eight hundred feet to cut through the Mammoth vein.

The Dodson Coal Company from the Lehigh coal field has opened a new colliery west of the New Boston colliery, and in the same basin. The veins are large and in good condition. The machinery and outside improvements are first-class, and are calculated to handle fifteen hundred tons per day.

E. B. Leisenring & Co., also from the Lehigh region, have opened up the old Oak Hill colliery, located about one mile north of Minersville. The outside improvements are very extensive and are calculated to handle one thousand tons of coal per day.

About nine miles west of Pottsville, and about three miles east of Tremont, Mr. Pardee, another Lehigh gentleman, has bought a large body of land, and is now opening a new colliery on the land purchased. The new opening will consist of a water level tunnel thirty-six hundred feet long, probably the longest mine tunnel in the Anthracite coal region. In addition to this opening, two other tunnels, one on the east, the other on the west of the new tunnel, are being enlarged. However, the coal from the three openings will be manufactured by the one breaker.

Outbursts of Gas.

The source of danger from this cause appears to be increasing, from the fact that outbursts have been more frequent during the past year than they have been in any previous one. This element of danger, however, appears to be confined to that section of the southern coal field lying between Branchdale on the east, and East Franklin on the west. We do not desire to convey the idea that this is the only section wherein outbursts of gas occur, but we are of the opinion that the occurrences are more frequent and burst forth with much greater force, than elsewhere in the southern coal field.

These outbursts have been quite frequent during the past year in the section above mentioned. Fortunately the workmen had succeeding in escaping with their lives, until the 11th of December, when an outburst occurred, catching its victim underneath the mass of material thrown from the face of a shute, burying him alive. The unfortunate victim, William Menich, and his brother were the only persons engaged in that section of the colliery on the night of the ac-

cident, they being employed in opening shutes. These openings are about six feet wide and six feet high. However, at the time the accident occurred the men had just commenced to open the shute from the gangway. The deceased was standing with one foot resting on the top rail of the car, the other on the platform of the shute, whilst the other brother stood on the gangway holding the two safety lamps to show his brother light. In his testimony, he stated, that up to the time of the outburst there were no indications whatever, of any disturbance that would warn them of the danger, but with the suddenness of an explosion, the face of the shute burst out, with a terrific noise, extinguishing the lights, and he barely escaped with his life. It was several hours before the outburst exhausted itself sufficiently to allow the workmen to make search for the body of the victim. However, when they reached the point of outburst, they found the gangway filled with material and the body beneath it. Another outburst occurred at the same colliery, but in a different section of the mines on the 26th of January, causing the death of two miners. On the above date we visited the Otto colliery and examined the West Primrose gangway where an outburst had that night occurred, but fortunately the workmen escaped. But the force had been so great, that the material from the face of the gangway had been thrown back in the gangway for a distance of twenty-five feet, filling the opening full of material, much more compact than a workman could have done it with a shovel.

These outbursts are a much more serious element of danger to life and property than any other element the miners are surrounded with, by reason of their uncontrollable nature when pent up in the cavities or pores of the strata under a great pressure, causing it to burst forth often with great violence, not only endangering the lives of the workmen engaged in its immediate proximity, but of all the employés in the mine, from the fact that these large volumes of explosive matter suddenly thrown off, have to circulate through portions of the mine wherein other workmen are employed. Hence, should a reckless workman remove the gauze from his safety lamp; or, should one of their number be in the act of firing a blast about the time one of these outbursts occur, in either case it is more than probable that a fearful explosion would be the result.

Condition of Collieries.

The best evidence, in our opinion, that we can produce relating to the above subject, and to show whether we are advancing or retrograding in the methods of mining, particularly that bearing on the safety of those employed in and about our coal mines, are the records of the mine inspectors' reports, which show the number of accidents, number of persons employed, and the annual output of coal since the year 1870, when the mine law went into operation fully. If we should

be allowed to make a comparison between two periods, taking the first two years (1870 and 1871), and the last two years (1887 and 1888), such a comparison would make a very favorable showing. For instance, we take the three southern inspection districts, viz: Pottsville, Shenandoah and Shamokin; and, by comparison, we find the following results during the two extreme periods:

1870. Number of fatal accidents, 129; non fatal, 298.

1871. Number of fatal accidents, 129; non-fatal, 406.

Amount of coal produced in the two years, 11,509,222 tons.

1887. Number of fatal accidents, 128; non-fatal, 281.

1888. Number of fatal accidents, 129; non-fatal, 296.

Amount of coal produced in the two years, 24,230,520.

Hence it will be seen that the output has more than doubled itself during the period under consideration, yet the fatal accidents are shown to be nearly the same number.

Water Bursting in.

One of the most deplorable accidents we have to report, by which two unfortunate men lost their lives, occurred at Nesqehoning No. 3 shaft, on December 10th, caused by a body of water bursting into the shaft-workings from an old mine that had been abandoned and filled with water for a period of over twenty years. About two years previous to the accident the gangway that was advancing toward the old mine was stopped, leaving a barrier-pillar of two hundred feet between the shaft-workings and those of the old abandoned Heckelburnie colliery. In consequence of a large body of coal that still remained in the old colliery, it was considered advisable to remove the water from the old mine. After due deliberation, the company officials determined on tapping the water from the shaft-workings. The accompanying sketch "H H" represents the plan adopted. This method was taken because it was considered to be the safest, for the following reasons:

First. The Mammoth vein, being very thick, and the character of the coal very changeable, frequently becoming soft and shelly, hence a body of water passing through a bore-hole, under a great pressure, was liable to cut the soft coal away and allow a larger body of water to be liberated than they were capable of handling.

Second. There was some doubt as to the correctness of the old map.

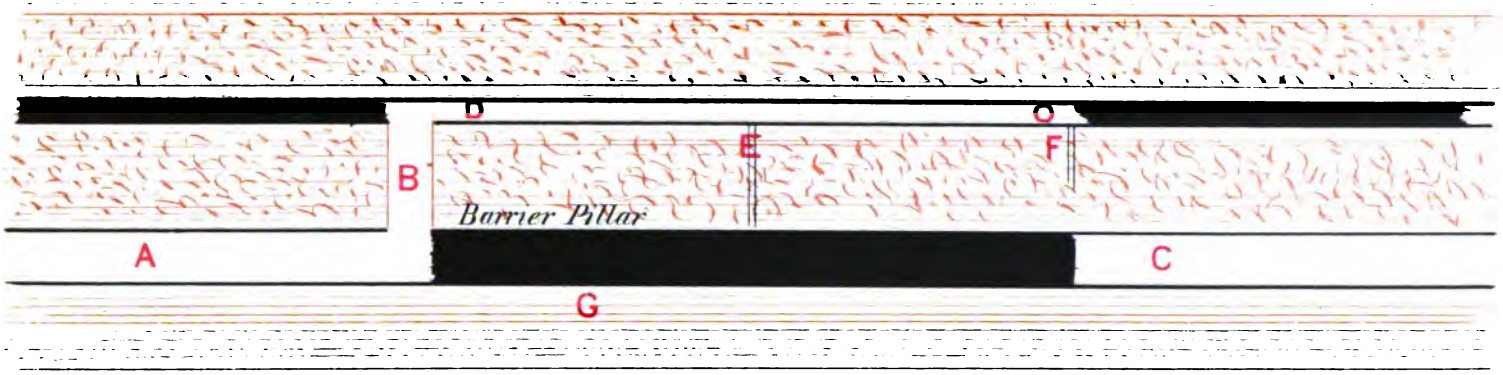
After carefully considering these two important points, it was determined to drive a tunnel to a small vein of coal that ran parallel with the Mammoth, the object being to have the water tapped by the bore hole through rock in place of the coal. In accordance with the proposed plan, the tunnel "B" was driven, proving the strata between the two veins to be thirty feet thick. The water drift "D D" was driven one hundred feet, at which point a test bore-hole was drilled for the purpose of ascertaining the condition of the dividing

measures between the two veins at this point. This test-hole proving satisfactory, the water drift was extended one hundred feet further to the point indicated on the old map—to be far enough past the barrier-pillar for the bore-hole when it passed through the dividing strata to enter the old works. Up to this time the projected work had been successfully carried out without any mishap, and the bore-hole to tap the water had penetrated the rock thirteen feet, when suddenly the water burst through, carrying one of the unfortunate men before it several hundred yards, where his body was found almost in a nude state. Although every effort has been made, yet, up to the present writing, the body of the other man has not been found.

As yet the explorations are not far enough advanced to determine the exact position of the old workings as they stood in relation to the new, but the indications are that the old map was nearly correct, as far as the horizontal distances were concerned, but it appears that there is some difference in the elevations. The old workings being the lowest, it is more than probable, from the developments already made, that the strata between the two seams had suddenly terminated and the two veins had come together. In fact, we are now of the opinion that the hole that was being bored to tap the water, in place of being bored toward the old workings, as expected, was being drilled nearly at right angles to the face. It is quite evident now, that had the water-drift been driven a few feet further, it would have cut the old workings direct. As it was, there was a thin barrier left between the face of the new and the old openings, and the indications are that the barrier gave away, causing the accident as we have stated.

SKETCH H H

Representing plan Adopted to tap the water in the old Heckleburnie Mine.



A *Shaft Gangway*
B *Crosscut from Mammoth to Crack vein*
C *The old Heckleburnie Gangway*
D *The water Drift*
E *Bore Hole to test the thickness of the Strata*
F *Bore Hole inlended to tap the water*
G *Barrier Pillar Between the old and new borings*
O *Traveling way out to the Surface*

TABLE 1.—Showing location of collieries in the Seventh Anthracite Mine District.

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of super'n'd't.	Post-office Address.
Brookside,	Philadelphia & Reading Coal and Iron Company,	Tower City, Schuylkill county,	R. C. Luthur,	Pottsville.
Kalmia,	do. do.	do. do.	do.	do.
East Franklin,	do.	Upper Raush Creek, Schuylkill county,	do.	do.
Middle Creek shaft,	do.	Mindle Creek,	do.	do.
Otten,	do.	Bronchdale,	do.	do.
Phœnix Park No. 3,	do.	Phœnix Park,	do.	do.
Beachwood,	do.	Mount Laffe,	do.	do.
Glendower,	do.	Taylorsville,	do.	do.
Taylorsville,	do.	do.	do.	do.
Eagle,	do.	St. Clair,	do.	do.
Eagle Hill,	do.	Eagle Hill,	do.	do.
Pine Forrest,	do.	St Clair,	do.	do.
Richardson,	do.	Glen Carbon,	do.	do.
Thomastown,	do.	Thomaston,	do.	do.
Old Lincoln,	do, do.	Lorbery,	do.	do.
Good Spring,				
Lehigh No. 8,	Lehigh Coal and Navigation Company,	Carbon county,	W. D. Zehner,	Lansford.
Lehigh No 12,	do. do.	do.	do.	do.
Lehigh No. 10,	do. do.	do.	do.	do.
Lehigh No 11,	do. do.	do.	do.	do.
Lehigh No. 9,	do. do.	do.	do.	do.
Lehigh No. 4,	do. do.	do.	do.	do.
Lehigh No. 5 and 6,	do. do.	do.	do.	do.
Room Run No. 3,	do. do.	do.	do.	do.
Room Run No. 2,	do. do.	do.	do.	do.
Kaska William,	do. do.	Middleport, Schuylkill county,	do.	do.
Polmer Vein,	do. do.	New Philadelphia, Schuylkill county,	do.	do.
New Boston,	Mill Creek Coal Company,	New Boston, Schuylkill county,	T. D. Jones,	New Boston.
Morea,	Dodson Coal Company,	do. do.	—— Bullock,	do.
New Lincoln,	Miller, Groff & Co.,	Lo. Keffers, Schuylkill county,	D. I. Lewes,	Fremont.
Herbene,	J. K. Segfried,	Forrestville,	J. K. Segfried,	Pottsville.
Ellsworth.	John R. Davis,	New Castle,	John R. Davis,	New Castle.
Crystal,	Jacob Souders,	do.	John H. Davis,	do.
Schuylkill,	Quinn & Wemms,	do.	John Quinn.	do.
Vulcan,	George Johns & Co.,	Wadesville,	Wm. L. Williams,	Pottsville.
Monitor,	Wm. Dennings & Bros.,	do.	Jos. Dennings,	St. Clair.
Hocker,	Maurey & Rolhermell,	St. Clair,	Wm. Maurey,	do.
Chamberlin,	Thompson Hiatt & Co.,	do	Daniel Thompson,	do.
New Town,	F. Kendrick & Co.,	New Town,	Frank P. Kendrick,	Tremont.
Kickline,	P. O. Connors,	Thomaston,	P. O. Connors,	Heckscherville.
Green Wood No. 13,	Thomas Oliver,	Tamaqua,	Thomas Oliver,	Tamaqua.
East Lehigh,	Jos. Mitchell,	do.	Jos. Mitchell,	do.
West Lehigh,	Peter Young & Co.,	do.	Peter Young,	do.
Altomont,	Pennsylvania Coal Company,	Frackville,	George Spencer,	Frackville.

TABLE No. 2.—Giving the total number of tons of coal mined in each colliery, number of days worked, number of employés, number of persons killed and injured, number of kegs of powder used, etc., in the Seventh Anthracite District, for the year ending December 31, 1888.

NAME OF COLLIERIES.	Location.	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number kegs powder used.	Number horses and mules.	Number mine locomotives.
Brookside,	Tower City,	249,971	235 663	297	794	1	2,000	104	. . .
Kalmia,	do.	530	500	. .	.	.	2,000	. . .	. . .
East Franklin,	Upper Kaush creek,	1,357	1,290	35	65		300	5	.
Middle Creek shaft,	Middle creek,	100,051	95 077	228	497	3	3 000	44	. .
Otto,	Branchdale,	56 514	53 316	156	450	1	725	43	. . .
Phœnix Park No. 8,	Phœnix Park,	65 036	61. 355	240	215		680	29	. . .
Beachwood,	Mount Laffe,	49 278	46 459	214	213		929	25	. .
Glendower,	Taylorsville,	36,738	34.565	122	333	. . .	1,850	41	. . .
Taylorsville,	do.	. . .		. .					
Eagle,	St. Clair,	28 234	26 634	197	108		530	11	. . .
Eagle Hill,	Eagle Hill,	184.794	174 334	249	597		2 825	52	. .
Pine Forrest,	St Clair,	. .	.		66	. . .	37	4	. .
Richardson,	Glencarlon,	56 991	53.766	167	145		530	24	. .
Thomaston,	Thomaston,	125, 498	118, 395	193	495		4, 100	72	. .
Old Lincoln,	Lorbery,	117 984	111, 306	287	471		3,750	55	.
Morea,	New Boston,	New opening.			100		125		.
Blackwood,	New Town,	do			125	. .		. . .	. . .
Oak Hill,	Minersville,	do.			100				. .
Lehigh No. 8,	Coal Dale,	122.108	115.197	212	415	3	240	51	. .
Lehigh No. 12,	do.	88 453	83 447	211	256		1 740	32	. . .
Lehigh No. 10,	do.	151 072	142, 521	188	420		1.440	64	1
Lehigh No 11,	do.	90 879	85.650	211	351	2	900	54	3
Lehigh No. 9,	do.	152 512	143.880	219	462	1	490	63	3
Lehigh No 4,	Lensferd,	106 949	110 330	200	304		60	71	
Lehigh No 3,	Nesquehoning,	161,103	151 984	239	456	3	2.400	60	5
Lehigh No. 5,	do	52 122	49 172	116	321		360	32	2
Kaska William,	Middleport,	129 722	123 390	202	503	4	2 070	46	1
Palmer Vein,	New Philadelphia,	14.111	13 313	52	98		400	28	
New Boston,	New Boston,	243,801	234 718	245	553	3	6,357	60	

New Lincoln,	Keffer,	79 046	73 629	210	255	1 580	20	...	
Herbine,	Minersville,	46 367	43.743	297	148	1 900	10	...	
Ellsworth,	New Castle,	9 729	9 248	255	27	278	5	...	
Crystal,	do.	8 193	7.730	200	30	200	6	...	
Schuylkill,	do.	4 254	4 014	200	20	170	2	...	
Flowery Field,	Wadesville,	17 262	16 285	240	63	900	6		
Vulcan Reserve,	do.	5 509	5.198	240	24	212	4	..	
Hoocker,	St Clair,	21 269	20 066	214	98	380	10	.	
Chamberlin,	do.	17.177	16 206	187	87	600	2		
Feger Ridge,	New Town,	6 640	6.265	149	51	127	3	..	
Kickline,	Thomaston,	3 858	3, 640	225	16	300	5	.	
Rue Dole,	Middleport,	Abandoned.	...	...	...	...	...	...	
Melford,	do.	...	...	...	...	...	...	...	
Diamond,	Minersville,	...	1.425	200	10	40	2	...	
Greenwood No. 12,	Tamaqua,	30 737	29. 99	243	70	405	14	...	
East Lehigh,	do.	7.086	6 685	220	27	288	4	...	
West Lehigh,	do.	27, 175	25, 637	238	[1]70	390	5		
Totals,	...	2, 653, 803	2, 508, 305	...	10, 773	34, 466	.	..	

[1] Estimated.

TABLE No. 8.—Showing the number of each class of employés at each colliery in the Seventh Anthracite District during the year 1888.

NAMES OF COLLIERIES.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand totals—inside and outside.
	Inside foreman or mine boss.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Doorboys and helpers.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Brookside,	14	138	57	228	60	10	497	1	13	36	100	147	....	297	794
Kalmia,	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
East Franklin,	1	12	9	13	1	....	36	1	2	5	5	16	....	29	65
Middle Creek shaft,	1	155	48	67	19	19	309	1	4	14	8	59	....	158	467
Otto,	2	120	63	77	9	9	280	1	7	24	66	72	....	170	450
Phœnix Park No. 3,	1	79	10	19	24	4	136	1	4	12	40	22	....	79	215
Beachwood,	1	65	13	48	13	11	151	1	3	11	28	24	....	62	213
Glendower,	2	109	12	48	20	8	199	1	4	18	57	54	....	134	333
Taylorsville,	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Eagle,	2	28	1	24	4	4	63	1	2	3	21	18	....	45	108
Eagle Hill,	2	187	42	121	20	13	385	1	7	19	121	64	....	212	597
Pine Forest,	2	20	6	10	2	....	40	1	2	....	....	....	....	24	64
Richardson,	1	21	9	9	6	1	47	1	3	16	51	27	....	98	145
Thomaston,	2	172	28	80	30	12	304	1	7	14	106	63	....	191	495
Old Lincoln,	2	145	51	86	24	7	315	1	5	17	87	46	....	156	471
Good Spring,	....	....	....	....	....	....	....	....	....	....	....	....	....	....	50
Lehigh No. 8,	3	30	40	160	21	7	261	1	6	12	55	80	....	154	415
do. 12,	1	60	31	86	15	9	202	1	1	6	41	13	....	64	266
do. 10,	1	70	6	119	20	14	230	1	3	15	100	71	....	190	420
do. 11,	2	46	8	109	14	11	190	1	5	12	80	63	....	161	351
do. 9,	2	72	30	178	28	2	310	1	5	9	74	63	....	152	462
do. 4,	1	46	....	98	25	10	180	1	2	16	68	47	....	134	314
do. 5,	3	25	24	103	21	1	177	1	7	13	56	65	....	144	321
Nesquehoning 3,	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
do. 2,	2	113	20	66	28	20	249	1	7	30	84	83	3	207	456
Kaska William,	2	112	94	96	12	11	320	1	6	15	103	57	1	183	503
Palmer Vein,	2	12	33	64	12	6	232	1	4	16	56	56	1	136	368
Miscellaneous,	....	....	....	....	....	....	....	....	....	....	....	....	....	....	452
New Boston,	2	280	60	21	30	10	383	1	10	15	89	47	7	169	550
Morea,	1	9	18	28	....	2	58	1	4	5	....	28	4	62	100
New Lincoln,	1	50	24	33	7	....	116	1	4	10	80	39	4	138	255
Herbine,	1	51	20	....	6	4	91	1	3	2	23	20	....	52	143

Ellsworth Creek,		10	8		8		16	1	2	1	7	2		22	38
Crystal,															40
Schuylkill,															20
Vulcan Flowery Field,	1	30	10		8		44	1	1	2	10	8		22	66
Monitor,							12							12	24
Hoocker,	1	30		18	6	14	69	1	1	1	20	8		31	100
Chamberlin,	1	36		15	1	8	55	1	1	2	21			32	55
New Town Feger Ridge,	1	25		3	8		33	1	1	1	12	5	1	21	54
Kickline,															16
Greenwood No. 13,	1	22		11	4		37	1	1		23	8		33	87
East Lehigh,		9		4	1		14							13	27
West Lehigh,		20		4	2		26	1	4	2	27			27	83
Altamont															100
Black Wood,															125
Oak Hill,															100
Totals,							6,856							8,917	10,773

TABLE No. 4.—List of Fatal Accidents occurring in the mines of the Seventh Anthracite District for the year ending December 31, 1888.

Date of accident.	NAME OF PERSON INJURED.	Age.	Married or single.	Number of orphans.	Name of Colliery.	Location—County.	Nature and Cause of Accident in Brief.
March 2,	John Dimeco,	..	...	..	New Boston,	Schuylkill Co.,	Died from injuries received from the explosion of powder that he ignited whilst filling a cartridge.
March 12,	John Cheppa,	25	...	..	New Boston,	do.	Killed by a fall of coal. [from the cage.
March 19,	George Wilson,	16	...	..	Kaska William,	do.	Killed by falling down the shaft; whilst ascending he fell
.	James George,	33		..	Flowery Field,	do.	Burned to death; caused by his igniting two kegs of powder.
April 26,	George Kowollaick,	35	M.,		Kaska William,	do.	Killed by a fall of coal whilst robbing pillars.
May 8,	John L. Hughes,	16	...		L. C. & N. Co., No. 9,	do.	Died from injuries received by falling from a mule.
May 28,	John Pluck,	16	...	..	L. C. & N. Co., No. 11,	do.	Killed; his coat was caught by a revolving shaft, carrying the unfortunate boy around with it.
June 9,	Joseph Lawler,	26	S.,	..	Middle Creek shaft,	do.	Killed by a fall of coal in a breast.
July 6,	Wm. J. Arner,	17			Nesquehoning,	Carbon county,	Killed by an explosion of gas.
July 14,	Mcl. McMarrah,	33	M.,	3	New Boston,	Schuylkill Co.,	Killed by a fall of coal in breast.
August 11,	Thomas Flemming,	38	M.,	..	Middle Creek shaft,	do.	Killed by a premature explosion of a blast.
August 21,	James Symons,	34	M.,	3	L. C. & N. Co., No. 8,	do.	Killed on a temporary timber plane; the two men recklessly rode down the plane on the lumber truck, knowing there was nothing to control the speed of the truck but the weight of the rope on the other track.
August 21,	Daniel McDavit,	..	...	..	....	.....	
August 17,	John Bixler,	35	M.,	6	West Brookside,	do.	Killed by a prop falling on him.
September 24,	Mannis Boner,	..	...	..	L. C & N. Co., No. 11,	do.	Killed by an explosion of gas; the victim was the assistant boss, having charge of the mine on the night shift. It is more than probable that in examining the place to ascertain if it was free from gas, he had either to gotten that his open lamp was lighted or he ventured too far before extinguishing the open light.
October 6,	Edward Curran,	55	.	..	Kaska William,	do.	Crushed to death by mine cars.
October 16,	Michael Roach,		...	..	Otto,	do.	Killed by a fall of coal.
October 28,	Joseph Miller,	16	...	..	Kaska William,	do.	Killed by being caught in scraper gearing under the breaker.
December 10,	Phillip Strouescand,	30	M.,	1	Nesquehoning shaft,	Carbon county,	Killed by the breaking in of a body of water from the old abandoned workings of Heckleborne mine.
December 10,	Wm. Eastoin,	25	M.,	..	Nesquehoning shaft,	do.	
.....	Wm. Menich,	55	M.,	..	Middle Creek shaft,	Schuylkill Co.,	Smothered by an outburst of gas.

TABLE No. 5.—List of non-fatal accidents occurring in the mines of Seventh Anthracite District for the year ending December 31, 1888.

Date of accident.	Name of Person Injured.	Occupation.	Age.	Name of Colliery.	Location—Schuylkill Co.	Nature and Cause of Accident in Brief.
Jan. 3,	George Deshel,	Driver,	17	New Boston,	New Boston,	Crushed between a car and door frame. Date of investigation—January 4.
Jan. 6,	Charles Sherar,	Slate-picker,	15	Brookside,	Tower City,	Arm injured; caught in screen.
Feb 3	John Clemens,	Miner,		Morea,	New Boston,	Arm broken and cut on head by fall of coal.
April 3,	Wm. Jewel,	do.		Room Run shaft,	Nesquehoning,	Leg broken by a fall of coal.
April 5,	Patrick Mulligan,	do.		do.	do.	Slightly burned by an explosion of gas.
April 11,	Wm. O'Donnell,	do.		Kaska William,	Middleport,	Burned by an explosion of gas.
April 11,	Patrick Devlin,	do.		do.	do.	do do.
April 11,	Edward Kane,	do.		Eagle Hill,	Eagle Hill,	Shoulder dislocated.
April 21,	George Kepner,	Teamster,		Brookside,	Tower City,	Small bone of leg broken by being struck by a piece of timber.
May 12,	John Brady,	Miner,		Phœnix Park No. 3,	Phœnix Park,	Rib fractured by falling against a prop.
June 2,	Bernard Buckner,	do.		Kaska William,	Middleport,	Face injured by premature explosion of a blast.
June 1,	John Whalen,	do.		do.	do.	Leg injured by premature explosion of a blast.
June 18,	George McCarroa,			do.	do.	Spine injured; dumper fell back on him
June 20,	Hugh Duffy and Philip Youst,			Eagle Hill,		Severely injured by a car door opening, whilst descending the slope the car passing over them
June 27,	Edward Stewart,		16	Old Lincoln,		Leg cut off by falling under dir dumper.
July 11,	Thomas Sharp,			Palmer Vein,		Severely bruised and cut; caught by a car; caused by the engineer starting without a signal having been given.
July 11,	Thomas Ryan,			Eagle Hill,		Leg broken and ankle injured by a car.
July 13,	Wm. Davis,			Flowery Field,		Back injured by a fall of slate
July 17,	Emanuel Siler,			Old Lincoln,		Leg broken by a piece of coal from a shot.
July 19,	Pat Quirk,			Eagle		Legs and body injured by a fall of coal.
July 25,	Edward Keenan,			Thomaston,		Arm broken by being caught by a dirt dumper.
Aug. 1,	John Masitus,			New Boston,		Arm broken and injured about the head by the premature explosion of a blast.
Aug. 4,	George Reese,			Thomaston,		Injured about the body by being caught by a dirt dumper on dirt plane.
Aug 23,	John Kelly and John Fogerty,			Beachwood,		Burned by an explosion of gas.
Aug. 10,	John Gaven,			Middle Creek,		Collar bone broken by a fall of slate.
Aug. 18,	Thomas Fitzpatrick,			Glendower,		Arm dislocated by being caught by rope on the underground plane.
Aug. 18,	Frank Burlie,			Eagle Hill,		Leg broken and body injured by a premature blast.
Aug. 27,	Christ Stone,			Flowery Field,		Thigh fractured and arm dislocated by a fall of slate.
Sept. 3,	Moses Snider,			East Franklin,		Arm broken by being struck by a hammer.
Sept. 5,	John Hunchan,			Morea,		Leg broken by a prop falling on him.
Oct. 9,	James Mulkall,			Thomaston,		Burned by an explosion of gas.
Oct. 9.	Wm. McHale,			do.		do do.
Oct. 10,	Hugh Freel,			New Boston,		Three ribs fractured by a prop falling on him.

TABLE No. 5—*Continued.*

Date of accident.	NAME OF PERSON INJURED.	Occupation.	Age.	Name of Colliery.	Location—Schuylkill Co.	Nature and Cause of Accident in Brief.
Oct. 10,	James Flanigan,			Palmer Vein,		Leg injured by being caught between belt and pulley.
Oct. 13,	Wm. Price,			Ellsworth,		Injured by being caught between two mine cars.
Oct 18	Wm. Reilly,			Eagle Hill,		Arm broken by being caught between car and shute.
Oct 24,	Frank Lasarage,			New Boston,		Foot injured by a fall of slate.
Oct 30,	August Belhouse,			Room Run,		Burned by a explosion of gas.
Nov 27,	J. M. Enterline,			Brookside,		Collar bone fractured by being caught by a mine car.
Nov. 30.	James Schollenburger,			Old Lincoln,		Leg broken by a fall of coal.
Dec. 5,	Henry Ossmann and Andrew McGovern,			Middle Creek,		Burned by an explosion of gas, caused by their taking the gauze off their lamp.
Dec. 8,	Audro Smith,			Palmer Vein,		Burned by an explosion of gas.
Dec. 14,	Daniel Byerly,			Beackwood,		Collar bone fractured and bruised about the body by being caught between a mine car and a cribbing.
Dec. 14,	Maxwell Derby,			L. C. & N. Co., No. 5,		Leg fractured by falling under a mine car
Dec 20,	Wm. Flinn,			Palmer Vein,		Injured by a fall of slate.
Dec. 29,	Thomas Noon,			Eagle Hill,		Leg broken by being struck by a lump of coal.

FIRST BITUMINOUS DISTRICT.

HON. THOMAS J. STEWART,
Secretary of Internal Affairs:

SIR: I have the honor to herewith present my fourth annual report as inspector of mines for the First Bituminous coal district for the year ending December 31, 1888, being in conformity with section ten of an act, entitled "An act relating to bituminous coal mines, and providing for the lives, health, safety and welfare of persons employed therein," approved June 30, 1885.

In this report, besides the usual tables, will be found, under the proper head, a short description of the mines, showing the mode of working, their condition as regards ventilation and drainage, as well as other matters of interest connected therewith.

There was a total of fifty-eight accidents during the year, thirteen of them proving fatal. This is an increase of *seven* over last year. In another part of this report I have given the results of my investigation of those fatal casualties, and, by perusal, it will be readily seen that some of them would not have happened if proper care had been exercised by the unfortunate men themselves. At a meeting (November 15) of the bituminous mine inspectors it was resolved to suggest the following amendments to the act of June 30, 1885: That the first section should be so amended that the owner, operator or superintendent of a mine, shall deposit with the inspector of mines of the district where the mine is located, a true copy of the said coal mine on tracing muslin, and this map or plan to be extended by the owner, operator or superintendent so as to conform with the plan of the excavations made in the mine during the preceding six months. The said excavations shall be placed on the inspector's map and returned to the inspector within three months from date of the last survey.

Section four says in reference to fire-damp: "That every working place, and all other places where gas exists, or is supposed to exist, shall be carefully examined by the fire-boss, with a safety lamp, immediately before each shift commences work." The part "*supposed* to exist" should be stricken out, so as to include all working places.

Section five should be amended so that all entries, air courses, and other narrow work being driven into the solid coal shall have the air current as near the face of them as in the judgment of the inspector may be deemed requisite, but in no case shall it be more than fifty yards.

The part of the section requiring the inspector to make four visits

to each mine in his district during the year should be stricken out; for it is evident that there will be times when some mines in his district will require the attention of the inspector more than others, so that the number of visits made to any one mine should be governed by the condition of mines as regards the lives, health, safety and welfare of persons employed therein.

The penalty clause of section twenty-one should be so amended that the fine would grade from five dollars and upwards, according to the gravity of the offence, and jurisdiction be given justices of the peace in most offences. A provision should be added to the above-named act, regulating the use and storage of explosives in the mines.

I insert the following article on roads in mines, which may be of interest to some:

"**Iron vs. Wooden Roads in Rooms.**

"An estimate of the difference of cost and the advantages between iron and wooden roads in rooms in a mine where the output is two million bushels or over per annum for a period of ten years. Allowing a wooden road to last for the driving up of two rooms, which it seldom averages, a wooden road for a decade would cost $5,940, at a price of $18 per M. Cost of 12-pound T iron, at $35 per ton, for a mine of the above capacity, would cost $5,050, an advantage in cost over the wooden road for a period of ten years of $890, while, with proper care, the iron would last another decade or more. The present advantages would be that drivers could haul more coal in a given time and *one-half* easier on the mules. Further, you could use your old and partly worn out iron that would be unfit for headings, where a train of cars necessarily passes over it. It would answer for rooms when but a single car would pass over it at a time, which would greatly diminish the first cost of the *iron road.*"

The above article is from the pen of Mr. Hugh Craig, mine boss of the Old Eagle mines.

In accordance with section five of the act of June 30, 1885, there is adopted a code of rules and regulations defining the duties of all persons in or about the mines, but I am sorry to say that they are often violated by the very persons whom they were framed to protect. This is done through ignorance in some cases and in others carelessness is manifested in regard to them. I think it would have a beneficial effect if those rules, etc., were printed in pamphlet form and a copy given to each person employed in and about the mines, so that each one could familiarize himself with the efforts made for his welfare. Who should have this done I am not prepared to say.

The following table has been compiled to show the number and causes of accidents in this district during the year:

	Fatal.	Non-fatal.
By falls of slate,	9	12
By falls of coal,	1	3
By fire damp,	1	. . . . .
By mine cars,	1	10
By a lump of coal,	. . . . .	. . . . .
Falling from tipple,	1	. . . . .
By falling coal and slate,	. . . . .	2
By powder,	. . . . .	1
By "dilly" trip,	. . . . .	1
By premature shot,	. . . . .	1
By gas from petroleum,	. . . . .	1
By capstan and line,	. . . . .	1
By a drill,	. . . . .	1
By a slate post,	. . . . .	1
Other causes,	. . . . .	11
Total,	13	45

Number of mines in the district,	72
Number of mines in the district operated during the year,	57
Number of persons employed inside,	5,309
Number of persons employed outside,	457
Total number employed inside and outside,	5,766
Increase of persons employed over the year 1887,	548
Number of coke ovens in the district,	28
Number of tons of coke produced,	1,600
Number of mules employed,	307
Tons of lump and nut coal produced,	2,313,957
Tons of lump and nut coal shipped,	2,313,817
Number of fatal accidents,	13
Number of non-fatal accidents,	45
Number of tons produced per fatal accident,	179,996+
Number of tons produced per non fatal accident,	51,421+
Number of persons employed per fatal accident,	443+
Number of persons employed per non-fatal accident,	128+
Average number of days worked during the year (as reported by circular),	146+
Number of kegs of powder used,	6,225

The general condition of the mines in this district is good, with a few exceptions, and the managers of those are hard at work to remove the cause of complaint.

With this report, I send a map of the Acme mine, kindly furnished me by General Manager Braznell, of the Stockdale Coal Company.

All of which is respectfully submitted.

HENRY LOUTTIT.

MONONGAHELA CITY, *February 11, 1889.*

Mines on the Monongahela River.

Carondelet Mine.—Located about a mile above Fayette City, E. C. Furlong & Son, operators. Mine is worked on the double entry system and is ventilated by a furnace and grate surface, the former in the "Old" hill, and the latter in the "New." The present workings are in the second hills, the front hills being all worked out with the exception of the tunnel through which the coal is conveyed to the tipple from working faces. Number of persons employed, forty-five. Condition of mine, fair.

Caledonia Mine.—Located near "Woods Run," T. J. Wood, operator. Worked on the double entry system, and ventilated by furnace power. The entries are driven eight feet wide and seven and one-half feet in height. Butt headings are driven in pairs with fifty feet of solid coal between them. The rooms are started off those entries nine feet wide, driven in this width twenty feet, and then widened out to twenty-six feet, worked up eighty yards and then abandoned. When visited in November, they were employing eighty-eight miners, five boys, six drivers and twelve other persons. Air measurements taken showed a volume of 16,800 cubic feet at inlet. In general, this mine is in fair condition.

Coal Bluff Mine.—Located at Coal Bluff. Operators, Monongahela & Peters' Creek Gas Coal Company. This mine is worked in two divisions known as the "Wet" entry and "Hill" districts, respectively. Ventilation is produced by a furnace, with separate inlets, the "Wet" entry by a shaft and the "Hill" district by an opening to daylight from entry thirteen. The main entry and air course is to the raise of sixty-four feet, in a distance of 1,300 yards to the mouth of entry thirteen, and from this point, the latter entry raises one hundred feet in the same (1,300 yards) distance, making a total raise of one hundred and sixty-four feet between pit mouth and the head of thirteen entry. The mine consists of fifteen butts and eight face headings. Air measurements taken December 26, showed a volume of 19,680 cubic feet, entering the inlets. In some parts of the mine the ventilation should be increased. Other conditions, fair.

Climax Mine.—Located near Brownsville. Operators, Climax Coal Company. Worked on the double entry system. Ventilation produced by exhaust steam from pump. This mine was completely flooded during the July freshet, doing a great amount of damage to the interior of the same. On my visit to this mine in November, they were employing twenty-two miners, one boy, one driver and four other persons. The condition of the mine as regards ventilation, was fair, but the drainage needed improvement.

Knob Mine.—Located near West Brownsville. Knob Coal Company, operators. During the high water in July last, the tipple was carried away but was subsequently rebuilt, during the same time the mine had a narrow escape from being flooded, the river having swelled

till it compelled the putting in of a "bulkhead" in the entrance to the slope to prevent the water entering it. If this precaution had not been used, great damage would have been done to the inside of the mine, for the workings all lay some thirty feet below low water mark. On my last visit to this mine they were only driving a few entries and doing some repairing inside. Air measurements showed a velocity of three hundred and sixty feet; sectional area forty-five square feet at inlet. Ventilation and drainage in a few places require improvement.

Umpire Mine.—Located near Brownsville. C. L. Snowdon & Co., operators. In operation one hundred and eighty days last year. During the year the company put in a stationary engine, wire line and the necessary appliances for haulage. This mine gives employment to seventy six miners, seven boys, six drivers and six other persons. Drainage fair, but the ventilation requires improvement in parts of the mine.

Albany Mine.—Located a short distance northwest of the Umpire mine. Snowdon & Hogg, operators. It is worked on the double entry system and ventilated by furnace power. This mine was also damaged somewhat by the flood of July. Air measurements taken November 30, showed a volume of 14,500 cubic feet at the inlet.

Cedar Hill Mine.—Located nearly opposite California. Operators, Bradford, Lynch & Co. A drift opening and worked on the single entry system. Ventilated by a "grate surface." When visited in November, they were employing thirty-five miners, six boys, four drivers and four other persons. Ventilation and drainage was unsatisfactory in parts of the mine.

Stony Hill Mine.—Located a short distance southeast of the Cedar Hill mine Operator, John N. Dixon. In operation two hundred days during the year. The mine consists of four butts and two face headings. Ventilation produced by furnace. Air measurements taken on my last visit showed a velocity of two hundred and fifty feet; sectional area, forty-five and four tenths square feet. Drainage fair. Ventilation inadequate at the face of a few entries that were being driven.

Germania Mine.—Located opposite Stockdale station. Joseph Turnbull & Son, operators. The mine was formerly operated by John Hall & Son. The present operators took charge of it in July last. In my report for the year 1887, I stated that the main entry was effected by a "squeeze." It has since entirely closed for quite a distance near the slope, and for the purpose of mining the coal unmined, but shut off by the cave-in, entries are now being driven. In November they were employing forty-six miners, two boys, four drivers and five other persons. General condition of mine, fair.

Cincinnati Mine.—Situated a short distance north of Courtney sta-

tion. Operator, J. S. Neel. Mine worked on the double entry system and ventilated by a furnace placed at the bottom of a shaft two hundred and eight feet in depth. This mine generates fire-damp copiously, especially the workings in the immediate vicinity of the shaft.

On the morning of the 25th of September, as the men were going to work, they discovered that the ventilating currents were moving at a terrific velocity, and, knowing that there was something wrong, they reported to the officials of the mine, who found the whole bottom of the shaft, and part of the workings leading to it, on fire, and, owing to the great heat from the fire, they could not work directly on it, so stoppings were put on all (except one, and this would fill up with water and exclude the air) entries leading to the fire, as well as the top of the shaft, for the purpose of smothering it out by excluding the air. Water was also run down the shaft by a natural syphon, for the purpose of keeping the fire confined to a small area and to help extinguish it. These methods proved a success, for, when they opened the place some four weeks afterwards, the fire was extinguished.

Various theories are advanced as to how this fire originated, and, in the opinion of the writer, the following is the most plausible; but, before I speak of it, a few preliminary remarks will be necessary to give the reader an intelligent idea of it: On an entry, for something like seventy feet, immediately next to the furnace, as well as up the shaft for nearly forty feet, fire-damp feeders were numerous. On the evening preceding the discovery of the fire the mine boss "damped" the furnace fire, and left it as he usually did, expecting that all was right. So it was, but some time during the night an atmospheric disturbance took place, which reversed the currents, sending them down the shaft, and on to the furnace, the fire-damp already mentioned causing a slight explosion, which communicated to the feeders on the entry, and they in turn set the coal on fire. To avoid a similar trouble they are making arrangements to put in a fan for ventilating purposes.

Columbia Mine.—Located near Webster. J. T. Jones, operator. This mine tipple was carried away by the high water in July last and has not been rebuilt.

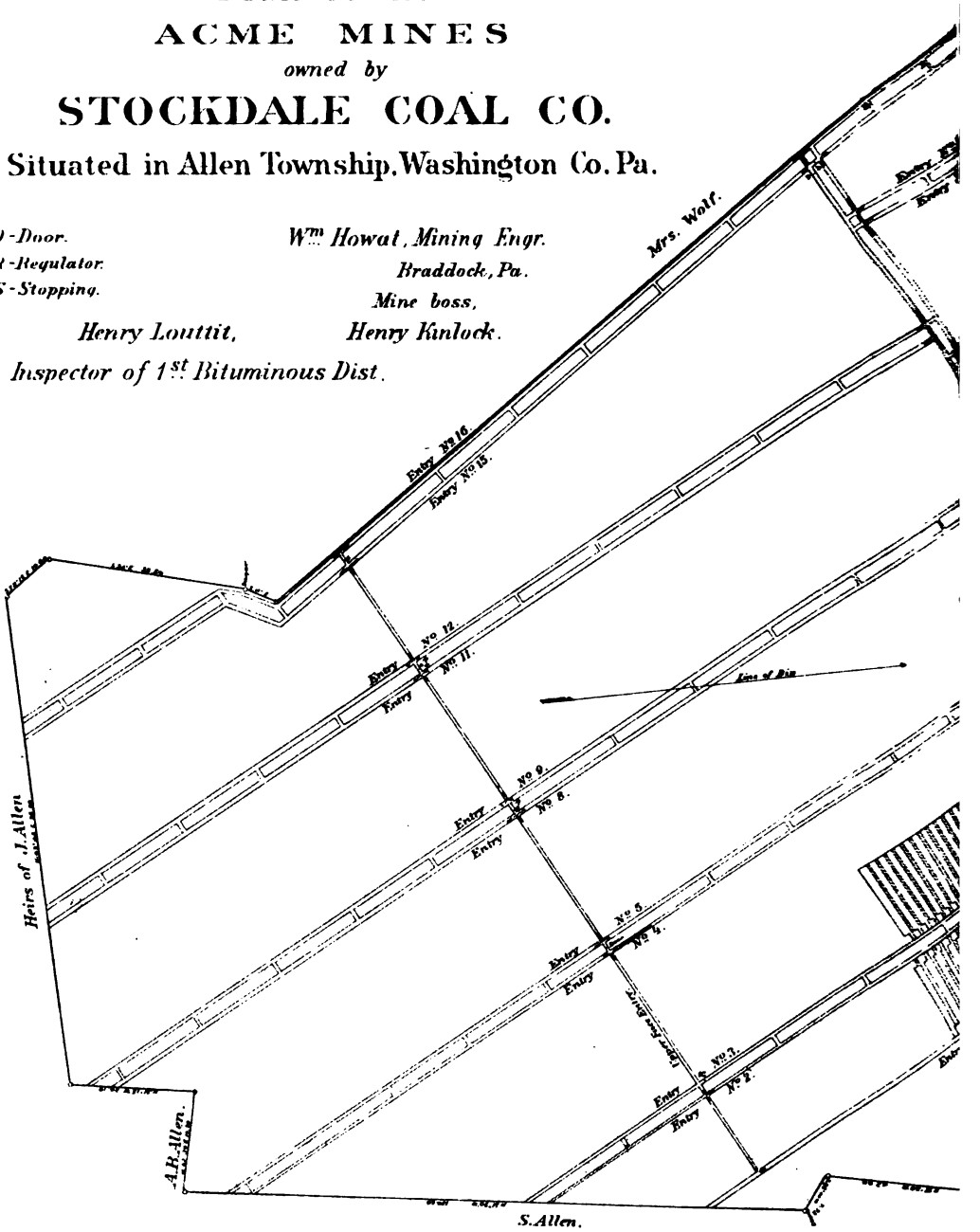
American Mine.—Located near Lucyville. Washington Coal Company, operators. Mine worked on the double-entry system and ventilated by furnace power. Mine in operation one hundred and forty-nine days during the year. In November they were employing sixty-three miners, eleven boys, six drivers, and six other persons. Air measurements taken at inlets showed a velocity of two hundred and thirty feet; sectional area, forty-two square feet; condition of mine as regards drainage, fair; ventilation at the face of some of the headings, not up to the requirements.

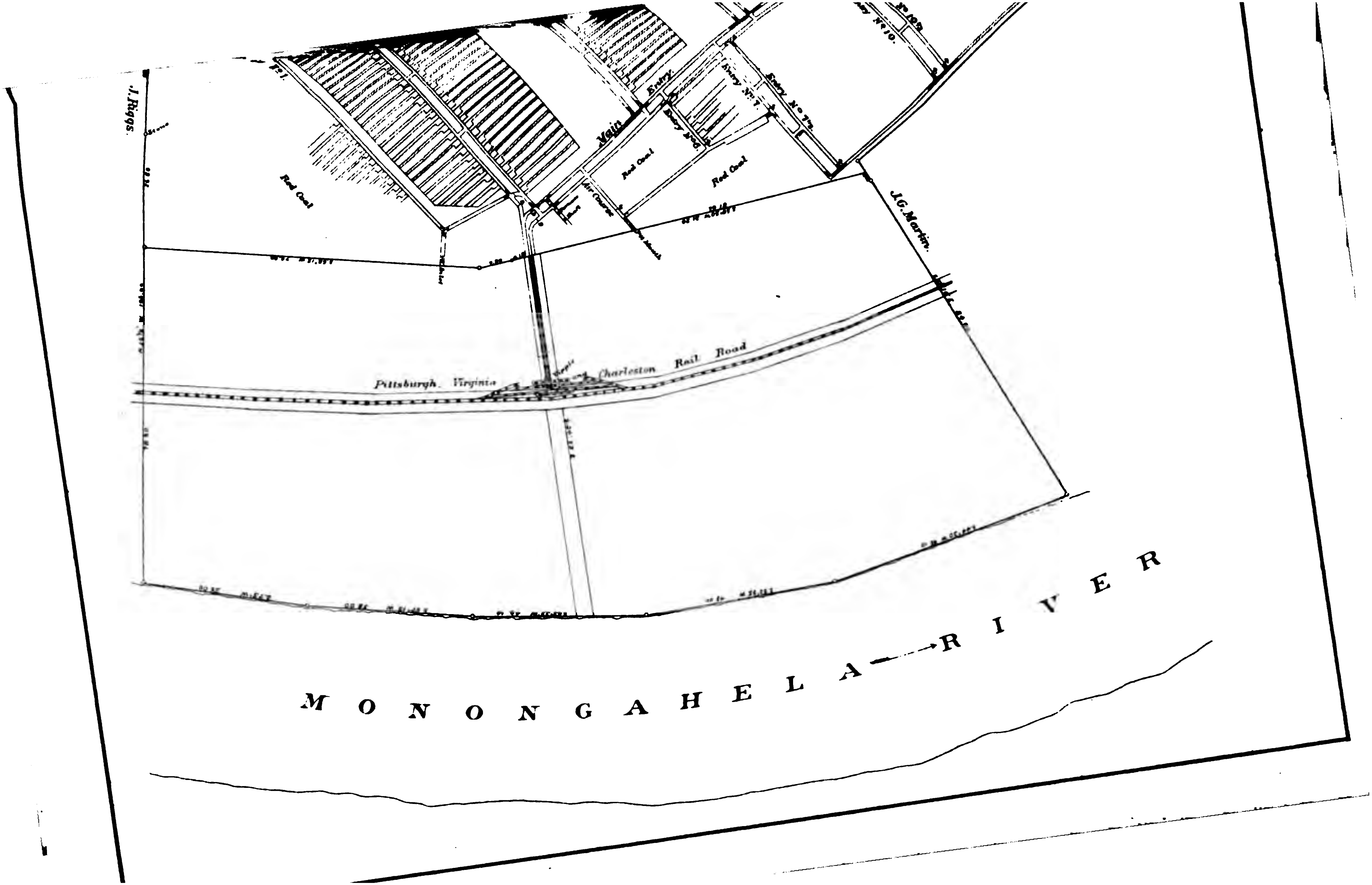
Clipper Mine.—Located at Allenport. Allenport Coal Company, operators. The mine consists of five butts and two face headings. When I made my last visit (November 20) to this mine the ventila-

Plan of the
ACME MINES
owned by
STOCKDALE COAL CO.
Situated in Allen Township, Washington Co. Pa.

D - Door.
R - Regulator.
S - Stopping.

Wm Howat, Mining Engr.
Braddock, Pa.
Mine boss,
Henry Louttit, *Henry Kinlock.*
Inspector of 1st Bituminous Dist.




J. Riggs.
J.G. Martin.
Red Coal
Red Coal
Red Coal
Main Entry
Entry No. 7.
Entry No. 7½.
Entry No. 10.
Air Course
Pittsburgh Virginia and Charleston Rail Road
MONONGAHELA RIVER

tion was inadequate for the number of persons employed, but they were driving an entry to daylight, which, when completed, would shorten the air route and make the inlet near the face of the workings, thereby giving the workmen plenty of fresh air. Drainage, fair.

Ivil Mine.—Situated in the First ward, Monongahela city. James Jones, operator. Worked on the double-entry system and ventilated by exhaust steam from a pump. The main entry and air course are driven parallel, and from pit mouth to the mouth of nine entry, a distance of five hundred yards, there has been very little solid coal left between them. This oversight of the parties who opened the mine has given the present operator a great amount of trouble to prevent the roof from falling and causing accidents. During the year the ventilation has been, at times, very unsatisfactory in parts of the mine. The prime cause of this is the inadequacy of the ventilating apparatus to produce the necessary supply of air for the number of persons employed and extent of workings. Air measurements taken in November showed a velocity of three hundred and ten feet; sectional area, forty five square feet.

Hilldale Mine.—Located at Hilldale station. Hilldale Coal Company, operators. In operation two hundred and ninety-five days during the year. They employ eighty miners, twelve boys, five drivers, and thirteen other persons. This mine is in fair condition as regards ventilation and drainage.

Little Redstone and *Merchant Mines* are small openings and do not come under the provisions of the law only at times.

Banner Mine.—Situated at Shire Oaks. J. M. Risher, operator. A drift opening, worked on the double-entry system and ventilated by a furnace. During the year a stationary engine, wire line, and necessary appliances have been put in this mine for haulage. They have also made another opening to daylight for the purpose of getting the fresh air nearer to the face of the workings. This mine is in fair condition as regards drainage. Ventilation satisfactory, with the exception of a few entries which had been driven, and at the time of my visit were ahead of the air a short distance.

Stockdale Mine—Situated at Baird station. John Crombie, operator. This mine was only in operation seventy-eight days during the year. On my visit to this mine it was in pretty fair condition.

Garfield, Cliff, Greenfield and *Abe Hays Mines.*—These mines are all in fair condition as regards ventilation and drainage.

Gilmore Mine.—Located at Webster. W. Molesberger, operator. During the year an air shaft has been sunk, which has increased the volume of air in circulation and will prevent any cause of complaint as far as ventilation is concerned, if the air currents are properly distributed. The drainage of the mine has also been looked after, and, taken as a whole, the mine is in a better condition than it has been for some time.

Webster Mine.—Located at Webster. Thomas Fawcett & Sons, operators. In operation during the year 150 days. They employ 140 miners, 16 boys, 9 drivers and 22 other persons. Air measurements taken showed a velocity of 800 feet; sectional area, 32 square feet. The mine is in fair condition.

Fayette City Mine.—Situated at Fayette city. Operator, Samuel O'Neil, attorney. Operated 204 days during the year. This mine consists of 5 butts and 2 face headings. Ventilation is produced by a "grate surface" placed at the bottom of a shallow shaft. When I last visited this mine it was in pretty fair condition, with the exception of a few entries, which were being driven in advance of the air current. The volume of air as measured showed that there were 17,220 cubic feet entering the mine.

Little Pittsburgh Mine.—Has not been in operation during the entire year. Natural gas is now being used at the company's glass works, where products of this mine were consumed.

Globe Mine.—Situated near Coal Centre. Globe Coal Company, operators. In operation 180 days during the year. When visited in October the mine was in fair condition as regards drainage, but the ventilation was inadequate in some parts owing to places being driven in advance of the air current. To remedy this they were preparing to make "break-throughs" between the places complained of. When this is done it will course the ventilation nearer the face of the workings.

Eclipse Mine.—Was only in operation 135 days during the year. Mr. J. S. Neel, who operated the mine last, has given it up, and at present the mine is idle.

Champion Mine.—Located at Woods' Run. Operator, T. J. Wood. The mine consists of 4 butts and 2 face headings. When I made my last visit to this mine there were employed 66 miners, 4 boys, 4 drivers and 10 other persons. Air measurements taken showed a volume of 11,500 cubic feet in circulation.

Tremont Mine—Located at Belle Vernon. John A. Wood & Sons, operators. In operation 112 days during the year. A new tipple is being built at this mine, which, when completed, will have every facility for handling a large daily output of coal.

Wood's Run Mine.—Situated at Wood's Run. Operator, T. J. Wood. Number of persons employed, 42; number of entries, 6; condition of mine—drainage, fair; ventilation, satisfactory, except at the head of entry 16; quantity of air in circulation, 11,824 cubic feet.

Black Diamond Mine.—Located at Black Diamond. W. H. Brown's Sons operators. In operation 178 days during the year. The mine consists of 6 butts and 5 face headings, worked on the double entry system, with the exception of part of one entry, which is opened on a modified form of Long Wall. Twelve-foot places are driven into the solid coal at intervals of 25 yards. When those are worked up to

the middle of the block, a distance of about 75 yards, the face is cut over to the next twelve-foot place and the body of coal between is then brought back. The general outcome of this mode of working will be watched with interest, as this is the first attempt which has been made to work the river coal by this system, and is only done here as a experiment. If this proves a success more large coal can be won from an acre than by the method now in use. In Long Wall work there is less waste, less timber and less narrow work to be driven than by the Pillar and Stall method, but the dead work is very heavy. On the other hand we get about 14 per cent. more large coal and from 10 to 25 per cent. more coal to the acre. The condition of the mine as regards drainage is fair, but the ventilation is somewhat defective in some places, owing to the propelling power (a furnace) not being able to overcome the frictional resistance that the air-currents meet on their route through the mine. To remedy this an entry is being driven, to which a shaft will be sunk. After this is done the inlet will be near the face of the workings, thereby giving the workmen the air fresh from the outside. Air measurements taken November 1 showed a volume of 14,458 cubic feet at inlet.

Catsburgh Mine.—Located in First ward, Monongahela city. Lewis Staib, operator. In operation 228 days during the year. They give employment to 136 miners, 12 boys, 12 drivers and 11 other persons. Volume of air passing in mine November 13 was 18,965 cubic feet. General condition of mine, fair.

Mines Located on the Pittsburgh and Wheeling Division of the Baltimore and Ohio Railroad.

Venetia Mine.—Situated at Venetia station. Operator, D. M. Anderson. The mine is worked both on the single and double entry systems. They have seven butts and two face headings. These entries are driven seven and one-half feet wide and five and three-fourth feet in height. Rooms are turned off the butt headings every thirty-three feet, being eight feet wide from entry driven in this width for twenty-one feet and then widened out to twenty-one. When those rooms are worked up to eighty yards they are considered up their distance, the rib is then cut over at the proper time and brought back within twenty-one feet of the entry. This is done with all of the rooms and pillars, then the entry stumps are attacked. The ventilation is produced by a "grate surface" made of twelve lb. "T" iron placed horizontally and about two inches apart. The sides are of thirty five lb. "T" iron crossed, making it about sixteen inches in height. This unique ventilator is placed in a chamber cut into the coal, etc., into which a shaft some sixty feet in depth is sunk. Owing to the numerous rolls met with in the mine the drainage is very difficult to control. At the present time all water (except from old Nos. 1 and 2 entries which drain outside), must be raised by a steam pump placed near the foot of 5 entry. They are now

driving an entry from 5 to daylight to drain the latter entry, which will do away with the steam pump.

Eclipse Mine.—Located near Venetia. Operators, Osborne, Saeger & Co. Worked both on the single and double entry systems. The mine consists of five butts and two face headings. This mine is somewhat troubled with local swamps, which make the drainage of the mine very troublesome. The entries, etc., are driven somewhat similar to the Venetia mine. During the early part of the year the air current in the mine was inadequate for the number of persons employed, but the company has since built a furnace and if the ventilation is properly distributed there will be no cause for complaint in this particular.

Nottingham Mine.—Situated about one-half mile east of the Eclipse mine. This mine has not been in operation since February last, and at the present time is idle with no immediate prospects of resumption as far as the writer can learn.

Union Valley Mine—Located about three-fourths of a mile northwest of Finleyville. Henry Florsheim, operator. Mine worked both on the single and double entry systems. Ventilation is produced in the "Old" hill by a fire basket, while a small furnace is used in the "New" one. The ventilation has been inadequate in parts of the "New" hill owing to the ventilator being entirely too small for the amount of work that is opened up in this part of the mine. I have called the attention of the management to this, and suggested the remedy for it, viz: to put in a fan or a larger furnace to ventilate the mine with. There are one hundred and eleven miners, twelve boys, six drivers and nine other persons employed at this mine.

Gastonville Mine.—Located at Gastonville. Owned and operated by the Pittsburgh & Chicago Gas Coal Company. The mine is worked both on the single and double entry systems. The butt entries which are driven single, are one hundred and fifty yards apart, while those driven in pairs, have a pillar of twenty four feet left between them. From main entry to first room on a butt entry, there is a "stump" left of twenty-four feet, and from this point every thirty-three feet there is a room turned off; these rooms are started off the entry seven feet in width, driven in this width for eighteen feet, and then widened out to twenty-one. Ventilation is produced by furnace power. Air measurements taken October 3, showed a volume of 15,596 cubic feet passing the inlet. Condition of mine, fair.

Mines on the Pittsburgh, Cincinnati & St. Louis Railroad. (Pan Handle Route.)

Keystone Mine.—Located at Hamlin station. Mines not in operation at present.

Walnut Hill Mine.—Not in operation at present. Flooded with water.

Midway Mine.—Located at Midway. T. B. Robbins, operator

Worked on the single entry system, and ventilated by fire basket. In operation two hundred days during the year. In the early part of the year while finishing the improvements which were begun the previous year, the products of the mine were run over the Primrose mine tipple. The mine consists of four butts and one face heading, and was employing in October, ninety-five miners, twelve boys, eight drivers and twelve other persons. Air measurements taken on the above date showed a velocity of two hundred and fifty feet at inlet. Sectional area forty-one square feet. The condition of the mine as regards drainage was satisfactory, but the ventilation was not up to the requirements of the law.

Primrose Mine.—Located near Primrose station. T. B. Robbins, operator. During the last year the mine was in operation three hundred days. The whole product was used in coaling the locomotives. General condition of the mine, fair.

Black Diamond Mine.—Located a short distance southeast of the Midway Mine. Thomas Taylor, operator. A drift opening. Worked on the single entry system and ventilated by a fire-basket. When this mine was visited in October there were employed 39 miners, 2 boys and 3 other persons inside. Amount of air passing in at inlet, 8,000 cubic feet. Condition of mine, fair.

Jumbo Mine.—Jumbo Coal and Coke Company, operators. Located near McDonald. There are employed at this mine 205 persons as follows: 108 miners, 17 boys, 11 drivers, 5 trappers, 24 daymen and 40 machine men. Clay veins and "Black jack" are frequently met with in the mine. The writer saw one clay vein which was nearly three feet thick, and had run nearly parallel with the main entry for forty yards. Air measurements taken October 24 showed a volume of 35,580 cubic feet entering the mine. General condition of the mine was fair, with the exception of a few places which were being driven in advance of the air current.

Briar Hill Mine.—Located at McDonald. Patterson & Sauter, operator. The mine consists of 12 butts and 2 face headings. The entries are driven 8 feet wide and 6 feet in height. Rooms are turned off the butt headings every 33 feet, being cut off the entry 8 feet in width and driven in this width for 15 feet, and then widened out to 21, leaving a pillar of 12 feet to bring back when the room is worked up. The butt headings are driven in pairs with 12 yards of solid coal between them. Clay veins are quite numerous in the mine. In one entry there are three large ones in a space of 35 yards. One hundred and forty miners, 7 boys, 6 drivers and 17 other persons are employed. On October 25 there were 35,100 cubic feet of air in circulation. Condition of mine—drainage, fair. Ventilation unsatisfactory at the face of some of the entries which were being driven.

Nickel Plate Mine.—Situated at McDonald. J. D. Sauter, operator. A drift opening. Worked on the double entry system, and venti-

lated by an exhaust fan. The coal is conveyed from the working faces to the pit mouth by mule power and from thence to the tipple by a stationary engine and wire line, working as an "engine plane." In October there were employed at this mine 86 miners, 5 boys, 5 drivers and 9 other persons. General condition of mine, fair.

Mines on the Chartiers Valley Railroad.

Enterprise Mine.—This is a shaft opening and located about two and a-half miles northwest of Washington The product of the mine is conveyed over an outside track some 1,540 yards in length, connecting with the Chartiers Valley Railroad at ——— station. Each trip consists of 7 cars of 2 tons each. A trip is made every thirty minutes, but as this coal had to be screened (having been screened at mine previously) again made it very expensive, and they were compelled to abandon the shaft. The company is now opening a slope close to the railroad, so that the coal can be won from this point.

Allison Mine.—Located at Allison station. Hon. Jonathan Allison, owner and operator. Worked on the single entry system and ventilated by a fire-basket. The present workings are opened up in the second hill, the front hill being all worked out with the exception of the tunnel. The coal is transported from the working faces by the "gatherers" to a double parting located a short distance from the second hill pit mouth, and from thence to the tipple, a distance 1,138 yards by two parting drivers, who have it so arranged that while one of them is moving his full trip to tipple, the other one is moving his empty one in, so that they have very little lost time The entries are driven 8 feet wide and 5½ in height. The butt entries are 152 yards apart and rooms are turned off them to the right and left. The mine gives employment to 40 miners, 2 boys, 4 drivers and 7 other persons. When visited in December the mine was in fair condition, with the exception of a few entries which were being driven ahead of the air currents.

Boon Mine.—Located at Canonsburgh. Operators, Canonsburgh Coal Company, Limited. Worked on the single-entry system, and ventilated by furnace power. Some time ago there was tried at this mine, as an experiment, the "double" room system. They are driven twelve yards wide, with a pillar six yards on either side; a track was also laid on either side of the room from the entry in. Th ee rows of posts were put up in the middle of the room, between the tracks, and the "gob" was thrown in and packed up tight against the roof. These rooms were successful as far as it went, but as the superintendent informed me, there was no particular advantage in this kind of room, other than it gives the men a larger open face to work on, and gives a road on both sides of the rib to bring it out on if necessary.

Cook's Mine.—Located at Canonsburgh. J. V. H. Cook & Son, operators. This is a small opening. This mine has not been in

operation since the July freshet, which flooded the mine and carried away the bridge which spanned the Chartiers creek at this point, over which the product of the mine was conveyed.

Mines on the Pittsburgh, McKeesport and Youghiogheny Railroad.

West Newton Mine.—Located at West Newton. West Newton Coal Company, operators. Worked on the double-entry system. Ventilation produced by furnace power. Ninety miners, six boys, four drivers and seventeen other persons are given employment. When visited in October the ventilation was not satisfactory in some parts of the mine. The present ventilator is inadequate to produce the air currents required for a mine of this size and the number of persons employed inside. I called the attention of the management to this, and recommended the erection of a ventilating fan of sufficient capacity as to produce the required ventilation to keep the mine in a good sanitary condition. Air measurements taken showed a volume of 24,000 cubic feet passing the furnace. Drainage, fair.

Port Royal Mine.—Located at Port Royal. Operators, Port Royal Coal and Coke Company. Worked on the double entry system, and ventilated by a twenty foot fan. The mine consists of ten butts and two face headings. There are forty-eight miners, six drivers and fourteen other persons employed. Improvements made during the year consist of sinking a shaft one hundred and sixty feet in depth, and the erection of the ventilating fan. When visited in October, the general condition of the mine was fair. Air measurements showed a volume of 63,120 cubic feet entering the mine.

Greene County Mines.

Slippy Rock Mine.—Located near Waynesburgh, on Ten Mile Run. Johnson & Leonard, operators. This is a small opening. The coal worked here is known as the Waynesburgh "bed." It is about fifty-three inches thick and showed two benches, which are separated by a clay parting some seventeen inches in thickness, which gives the miner a great amount of extra work for which he receives no compensation, he being only paid for the amount of coal he mines and runs out in the small cars used at the mine. The entries are driven eight feet wide and rooms twenty-one feet. The product of the mine is hauled away in teams to supply Waynesburgh and vicinity.

Camp Hill Mine.—Located on Ingram Run. Thomas Flowers, operator. This also is a small opening, and only employs some nine persons inside. This is about the same as Slippy Rock mine in the system of working.

Waynesburgh Shaft.—This mine has not been in operation for some time. I am informed that part of the interior of the mine has fallen in, and that a great quantity of water is in it.

There are a few more mines near Waynesburgh which are worked

by from *two* to *six* persons, but none of them in consequence comes under the provisions of the law.

Mines on the Redstone Branch of the Pennsylvania Railroad.

Hanna Mine.—Located near Lynn Station. Hanna Bros., operators. Is a small opening and worked on the single-entry system. Ventilation is produced by natural forces. The mine consists of two butts and one face heading. When visited in November, they were employing ten persons inside and two outside. General condition of mine, fair.

The Redstone Coal, Coke and Oil Company is sinking a shaft and grading for side tracks, etc., at Grindstone Station. The shaft is an ellipse 16½x22½ feet. At the time of my visit, December 21, it was down some thirty-five feet. They expected to reach the coal at about two hundred and sixty-five feet.

Mines on the Monongahela Division of the Pennsylvania Railroad.

The mines shipping their products over the above named road are Bowman, Acme, Courtney and Buffalo; located at West Brownsville, Stockdale and Courtney. The condition of those mines is fair, with the exception of the Buffalo, which is somewhat retarded by water. The mine is not in operation at present, and the only work that is being done is pumping to keep the mine from being flooded.

TABLE 1.—Showing location of collieries in the First Bituminous Mine District.

Name of Colliery.	Name of operator.	Location—County.	Name of superintendent.	Post-office address.
Albany,	Snowdon & Hogg.	Fayette,	F. T. Hogg,	Brownsville.
American,	Washington Coal Company,	Washington,	T. S. Brigge,	Roscoe P. O.
Acme,	Stockdale Coal Company,	do.	Andrew Braynell,	do.
Allison,	Jonathan Allison,	do.	Jonathan Allison,	Washington, Pa.
Abe Hays,	W. S B Hays,	do.	T. S. Hutchinson,	Monongahela city.
Anderson,	D. M Anderson,	do.	D. M. Anderson,	Venitia P. O.
Banner,	J. M. Risher,	do.	J. M. Risher,	Shire Oaks.
Black Diamond,	W. H. Brown Sons,	do.	James Louttit,	Monongahela city.
do.	Thomas Taylor,	do.	Thomas Taylor,	Midway P. O.
Black Hawk,	Black Hawk Coal Company,	do.		Fredericktown.
Bowman,	Eli Leonard,	do.	Eli Leonard,	Brownsville, Fayette county.
Boon,	Canonsburgh Coal Company,	do.	E. A. Upstill,	Canonsburgh.
Brier Hill,	Patterson & Santers,	do.	J. D Santers,	McDonald P. O.
Buffalo,	Youghiogheny Coal Company,	do.	James Dewar,	Courtney.
Catsburgh,	Lewis Staib,	do.	Adam Keil,	Monongahela city.
Cincinnati,	J. S. Neel.	do.	W H. Flint,	Courtney
Caldonia,	T J. Wood,	do.	T. J. Wood,	Woods Run.
Courtney,	Courtney Coal Company.	do.	W. A. Kennedy,	Courtney.
Cliff,	J. M. Risher,	do.	J. M. Risher,	Shire Oaks.
Clipper,	Allenport Coal Company,	do.	Robert Jack,	Allenport
Cook,	J. V. H. Cook,	do.	J V. H. Cook,	Canonsburgh.
Champion,	T. J. Wood.	do	T. J. Wood,	Woods Run.
Coal Bluff,	Monongahela and Peters' Creek Gas Coal Company,	do.	Thomas Watkins,	Coal Bluff.
Cedar Hill,	Lynch & Smiser.	do.	Terence Lynch,	California, Fayette county.
Candalet,	E C. Furlong & Son,	Fayette,	John Furlong,	Fayette city.
Climax,	Climax Coal Company,	do.	Thomas Niel,	Coal Centre, Washington county.
Columbia,	J. T. Jones,	Westmoreland,	J T. Jones,	Webster.
Camp Hill,	Thomas Flowers,	Greene,	Thomas Flowers,	Waynesburgh.
Eclipse,	J. S. Neel,	Washington,	P. J. Forsythe,	Coal Centre.
do.	Osborne, Saeger & Co,	do.	A. W. Osborne,	Venitia.
Enterprise,	J. V H. Cook,	do.	J V. H Cook,	Canonsburgh.
Fayette City,	Samuel O'Niel, attorney,	Fayette,	James O'Niel,	Fayette city.
Greenfield,	J. S Neel,	Washington,	P. J. Forsythe,	Coal Centre.
Garfield,	do	do.	W. H. Flint,	Courtney.
Gastonville,	Pittsburgh and Chicago Gas Coal Company.	do.	D W. Van Eman,	Gastonville.
Globe,	Globe Coal Company,	do.	R. J. Gregg,	Coal Centre.
Gilmore,	W. Molesberger.	Westmoreland,	W. Molesberger,	Webster.
Germania,	Joseph Turnbull & Son,	Fayette,	William Herbertson,	Fayette city.
Hilldale,	Hilldale Coal Company,	Washington,	I. N. McNoulton,	Shire Oaks.
Hanna,	Hanna Brothers,	Fayette,	C. W. Hanna,	Upper Middletown.
Hanlin,	Keystone Coal Company,	Washington,	S. S. Davidson,	Hanlin station.
Ivil.	James Jones,	do.	John H. Jones,	Monongahela city.
Ingram,	Isaac Chapman,	Greene,	Isaac Chapman,	Waynesburgh
Iron City,	Phillips & Mettenywie,	Westmoreland,		Webster.
Jumbo,	Jumbo Coal and Coke Company,	Washington,	F. L Robbins,	Midway.
Knob,	Knob Coal Company,	do.	Samuel Piersoll,	Brownsville, Fayette county.

TABLE 1.—*Continued.*

NAME OF COLLIERY.	Name of operator.	Location—County.	Name of superintendent.	Post-office address.
Little Pittsburgh,	R. E. Schrmetz & Co.,	Fayette,	John A. Reavan,	Belle Vernon.
Little Redstone,	James Redstone,	do.	James Rutherford,	Fayette City
Little Alps,	John Underwood,	do.	John Underwood,	California, Washington county.
Midway,	T. B. Robbins.	Washington,	T. B. Robbins,	Midway.
Merchant,	David Bowdler,	Fayette,	David Bowdler,	Coal Centre, Washington county.
Nottingham,	Nottingham Coal Company,	Washington.		
New Eagle,	James H. Hopkins,	do.		
Nickel Plate,	J. D. Sauters,	do.	J. D. Sauters,	McDonald.
Primrose,	T. B. Robbins,	do.	T. B. Robbins,	Midway.
Port Royal,	Port Royal Coal Company,	Westmoreland,	Isaac Brown,	Fitz Henry.
Peacock,	Jonas Crothers,	Washington,	Jonas Crothers,	Coal Centre.
Rostraver,	William Schrader,	Westmoreland,	William Schrader.	
Rea,	Bank of Commerce,	do.		Pittsburgh.
Rinehart,	Frank Rinehart,	Greene,	Frank Rinehart,	Waynesburgh.
Slippery Rock,	Johnson & Leonard,	do.	J. D. Johnson,	do.
Stewart,	Clark & Stewart,	do.		do.
Stony Hill,	John N. Dixon,	Fayette,	John N. Dixon,	California, Washington county.
Snow Hill,	Alps Coal Company,	do.	Joseph Underwood,	Roscoe, Washington county.
Stockdale,	John Crombie,	Washington,	John Crombie,	Webster, Westmoreland county.
Tremont,	John A. Wood & Son,	Fayette,	S. B. Graham,	Belle Vernon.
Traytown,		do.		
Umpire,	C. L. Snowdon & Co.,	do.	John Simpson,	Brownsville.
Union Valley,	Henry Florsheim.	Washington,	M. G. Gibson,	Finleyville.
Webster,	Thomas Fawcett & Son,	Westmoreland,	Thomas Carrick,	Webster.
West Newton,	West Newton Coal Company,	do.	A. W. Osborne,	West Newton.
Walnut Hill,		Washington.		
Waynesburg,	Samuel Luce,	Greene,		Waynesburg.
Woods Run,	T. J. Wood,	Washington,	T. J. Wood,	Woods Run.

TABLE No. 2.—Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employés, number of persons killed and injured, number of kegs of powder used, etc., in the First Bituminous Mining District, for the year ending December 31, 1888.

NAMES OF COLLERIES.	Location.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Albany,	Fayette county,	52 974	..	52,974	206	130		2	325	1	7		.
American,	Washington county,	35 000	..	35 000	149	79	1	1	262	.	6	...	
Allison,	do.	28 500	..	28 500	220	66		..	..	...	4	..	4
Abe Hays,	do.	22 956	..	22 956	136	71	1	...		.	4	..	
Acme,	do.	74 997	..	74 997	220	108		..	448	.	5	..	.
And rson,	do.	16.617	..	16 617	221	88	..		..		6	..	...
Bowman,	do.	5 269	.	5 120	.	22				1	2	..	....
Black Dia nond,	do.	58 492	....	58.492	178	187	...	.	360	1	7		....
Black Diamond,	do.	25 500	...	25 500	200	39		1	15	1	2	..	....
Banner,	do.	63.924	.	63.924	175	184	.	2	200	1	8	...	....
Boon,	do.	31.000	..	31,000	225	74	.	4	80	1	4	..	....
Buffalo,	do.	22 14	.	22 140	. .	114		. .	160	2	12	..	....
Brier Hill,	do.	88.994	..	88 994	261	166		1	....	2	6	...	....
Catsburgh,	do.	65.089	.	65 089	228	174	1	5		2	12	..	....
Cliff,	do.	31 063	..	31 063	145	152			125	1	6	..	.
*Cook,	do.	2 721	....	2 720	.	12	.	...		.	2	..	.
Cedar Hill,	Fayette county,	15 000	..	15 000		52			80	.	4		....
Courtney,	Wash ington county,	35 757	.	35 757	109	94		2	...	1	5	.	..
Carondalet,	Fayette county,	22 800	.	22 800		81		..		.	5	..	..
Clipper,	Washington county.	47,500	...	47 500	191	106	1		375	1	8	..	....
Columbia,	Westm o eland county,	18 259	....	18,259	69	71		.		.	3	..	.
Climax,	Fayette county.	11,486	..	11, 486	124	31	1	1	55	1	2		....
Champion,	Washington county,	47 580		47 580	160	128		2	300		7	..	....
Coal Bluff,	do.	61 679	...	61 679	166	163		4	500	1	7		....
Cincinnati,	do.	29 740	..	29 740	112	121	1		125		8	..	..
Calidonia,	do	68 975	....	68 975	165	162		2	500	.	10	..	.
Camp Ground,	Greene county,	2,300	..	2,300		9		..	15			..	.
Eclipse,	Washington county,	44 857	.	44 857	135	121	1		75	.	6		.
Eclips ,	do.	24 583	....	24,583	141	68	.	...	42		4		.
Enterprise,	do.	2,270	....	2,270	136	20	..	...	6	2	1	..	....

TABLE No. 2—*Continued.*

NAMES OF COLLIERIES.	Location.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Fayette City,	Fayette county,	62 204	. .	62 204	204	165			.	. . .	6	. .	. .
Garfield,	Washington county,†	22 683	. .	22 683	118	114		.	100	. . .	3		. .
Gilmore,	Westmoreland county,	25 473	. .	25 473	168	122	1		21	. . .	6	. .	. .
Globe,	Washington county,	33 128	. .	33,128	180	130	. .	. .	480	. . .	7	. .	. .
Gastonville,	do.	52 400	. .	52,400	119	138	. .	. .	124		6	. .	
Greenfield,	do.	24 853	. .	24 853	110	114		. .	40	1	5		. .
†Germania,	Fayette county,	4 519	. .	4 519	33	53	. .	. .	15	. .	4		. .
Hilldale,	Washington county,	50 627	. .	50 627	295	111	1	1	. .	. . .	5	. .	. .
Hanna,	Fayette county,	5 000	. .	5,000	.	12	. .	.	. . .	. . .	1	. .	. .
Ivil,	Washington county,	72 000		72.000	260	122			. .	3	5		8
Jumbo,	do.	136 335	800	136 335	250	263	1	5	125	8	12		. .
Knob,	do.	71, 287	. .	71, 287	190	105	1	2	. .	2	10	. .	. .
Little Redstone,	Fayette county,	5, 333	. .	5 333	200	9			. . .	. .	2		. .
Midway,	Washington county,	53 535	. . .	53, 535	200	120			. . .	2	6		. .
Merchant,	Fayette county,	152	. .	152	. .	6		. .	. .	. .	1		. .
Nickel Plate,	Washington county,	43 613	. . .	43, 613	182	105	. . .	1		1	5		. .
Primrose,	do	18 387	. .	18. 387	300	31			. .	2	3		. .
Port Royal,	Westmoreland county,	74 153	. . .	74 153	241	91	1	2	707	2	6		. .
Stockdale,	Washington county,	9, 784	. .	9 784	78	45	. .		30	. .	3		. .
Stony Hill	Fayette county,	45 000	. . .	45, 000	200	68		1	190	1	3		. .
Slippery Rock,	Greene county,	2 704	. . .	2 704	. .	10		. .	. .	. .	.		. .
Snow Hill,	Fayette county,	70, 453	. . .	70 453	191	130			220	2	6		. .
Tremont,	do.	21 829	. .	21 829	112	136					3		. .
Umpire,	do.	40 169	. .	40 169	140	97	1	1	130	2	6		19
Union Valley,	Washington county,	82 970	. .	82 970	286	194		2	240	1	5	1	. .
Woods Run.	do.	28, 174	. .	28 174	96	66	. . .		. .	. .	4		. .
West Newton,	Westmoreland county,	180 000	. . .	180 000	250	147	. . .		6		4		. .
Webster,	do.	50, 000	. . .	50 000	130	165	. . .	2		1	9		. .
Total,		2, 313, 957	1 600	2 313, 817	8 332	5 766	13	45	6, 225	48	307	1	31

* Estimated. † Could not get production of former operator. Mine changed hands.

TABLE No. 3.—Showing the number of each class of employés at each colliery in the First Bituminous Mine District, during the year 1888.

NAMES OF COLLIERIES.	Location—county.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.					Grand totals—inside and outside.
		Inside foreman or mine boss	Miners.	Miners' laborers.	All company men	Drivers and runners	Doorboys and help rs.	Total inside.	Blacksmiths and carpenters.	Engineers and firemen.	All company men.	Superintendent, bookkeepers and clerks.	Total outside.	
Albany,	Fayette,	1	95	12	3	7	3	121	1	1	5	2	9	130
American,	Washington,	1	60	7	...	6	1	75	1	.....	...	3	4	79
Allison,	do.	1	40	10	2	2	1	57	2	1	5	1	9	66
Abe Hayes,	do.	1	57	...	3	4	2	67	...	..	3	1	4	71
Acme,	do.	1	85	6	...	5	..	97	1	..	6	4	11	108
Anderson,	do.	1	66	8	1	4	2	82	1	1	4	...	6	88
Bowman,	do.	1	12	3	2	2		20	1	1	.....	...	2	22
Black Diamond,	do.	1	150	10	4	7	3	175	3	1	6	2	12	187
do.	do.	1	25	2	..	2	...	30	1	1	5	2	9	39
Banner,	do.	1	150	7	1	8	1	168	3	2	9	2	16	184
Boon,	do.	1	60	5	...	3	...	69	1	1	3	1	5	74
Buffalo,	do.	1	80	7	2	8	2	100	2	2	7	3	14	114
Brier Hill,	do.	1	135	...	5	5	1	147	2	2	12	3	19	166
Catsburgh,	do.	1	138	12	2	12	...	163	.....	1	7	3	11	174
Clift,	do.	1	125	5	5	6	..	142	2	1	5	2	10	152
Cook,	do.	1	9	...	..	1	...	11	.....	..	1	...	1	12
Cedar Hill,	Fayette,	1	35	7	1	4		48	1	...	2	1	4	52
Courtney,	Washington,	1	55	20	1	5	3	85	1	1	6	1	9	94
Carondalet,	Fayette,	1	55	8	5	5	..	74	.....	...	5	2	7	81
Clipper,	Washington,	1	75	16	....	8	2	102	1	.....	2	1	4	106
Columbia,	Westmoreland,	1	54	7	1	3	...	66	1	.....	3	1	5	71
Climax,	Fayette,	1	18	4	1	2		26	....	1	3	1	5	31
Champion,	Washington,	1	90	20	1	6	2	120	1	....	6	1	8	128
Coal Bluff,	do.	1	120	15	2	6	5	149	2	1	8	3	14	163
Cincinnati,	do.	1	92	14	1	7	...	115	1	...	4	1	6	121
Calidonia,	do.	1	125	15	1	8	2	152	1	.....	8	1	10	162
Camp Ground,	Greene,		9	..	..	..	..	9	.....	...	...	...	....	9
Eclipse,	Washington,	1	85	15	1	6	4	112	1	....	7	1	9	121
do.	do.	1	50	4	1	3	2	61	1	1	3	2	7	68
Enterprise,	do.	1	14	..	..	1	.	15	1	....	2	1	4	20
Fayette City,	Fayette,	1	140	9	1	5	1	157	1	....	6	1	8	165
Germania,	do.	1	45	2	...	4	..	52	.....	1	1	.....	2	54

TABLE No. 3—*Continued.*

NAMES OF COLLIERIES.	Location—county.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.					Grand totals—inside and outside.
		Inside foreman or mine boss.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Doorboys and helpers.	Total inside.	Blacksmiths and carpenters.	Engineers and firemen	All company men.	Superintendent, bookkeepers and clerks.	Total outside.	
Gastonville,	Washington,	1	100	20	2	5	2	130	1	...	5	2	8	138
Garfield,	do.	1	85	15	1	7		109	1	1	4	1	7	116
Greenfield,	do.	1	75	20	1	5	4	106	1	1	5	1	8	114
Gilmore,	Westmoreland,	1	90	12	1	6	1	111	1	1	7	2	11	122
Globe,	Washington,	1	108	3	1	7	2	122	1	...	6	1	8	130
Hilldale,	do.	1	80	12	2	5	2	102	1	1	5	2	9	111
Hanna,	Fayette,	1	9	....	1	..	.	11	...	...	1	.....	1	12
Ivil,	Washington,	1	100	4	2	5	2	114	1	1	6	1	9	123
Jumbo,	do.	1	200	25	3	12	5	246	3	4	7	3	17	263
Knob,	do.	1	80	5	1	5	1	93	2	2	5	3	12	105
Little Redstone,	Fayette,	1	5	1	....	1		8	...		1	....	1	9
Midway,	Washington,	1	90	10	2	6	1	110	1	1	5	3	10	120
Merchant	Fayette,	1	3	..	....	1	..	5	...	..	1	....	1	6
Nickel Plate,	Washington,	1	80	....	1	5	2	89	1	1	12	2	16	105
Port Royal,	Westmoreland,	1	60	3	5	6	5	80	1	2	6	2	11	91
Primrose,	Washington,	1	20	2	1	2	...	26	1	1	2	1	5	31
Stockdale,	do.	1	35	3	...	3	...	42	..	..	2	1	3	45
Slippery Rock,	Greene,	1	8	....	....	....	..	9	...	....	1	....	1	10
Stony Hill,	Fayette,	1	50	8	...	3	1	63	1	1	3	....	5	68
Snow Hill,	do.	1	95	18	1	6	1	122	1	1	4	2	8	130
Tremont,	do.	1	110	7	1	8	1	128	...	...	7	1	8	136
Umpire,	do.	1	76	7	1	6	1	92	2	1	1	1	5	97
Union Valley,	Washington,	1	150	20	2	5	2	180	1	1	10	2	14	194
Woolf's Run,	do.	1	50	2	1	4	2	60	1	....	4	1	6	66
West Newton,	Westmoreland,	1	109	5	4	8	3	130	2	4	9	2	17	147
Webster,	do.	1	140	..	3	9		153	4	1	5	2	12	165
Total,		57	4,355	452	84	286	75	5,309	62	45	267	83	457	5,766

TABLE No. 4.—List of fatal accidents occurring in and about the mines of the First Bituminous Mine District, for the year ending December 31, 1888.

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	Number of orphans.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
Feb. 20,	John Harrison, ...	Miner, ...	28	. . .	1	American, . . .	Washington, . .	Fatally injured by falling slate. Died some three hours afterwards.
Mar. 19,	George Thomas, ...	Roadsman, . .		M.,	4	Gilmore, ...	Westmoreland, .	Fatally burnt by fire-damp. Died April 1.
Mar. 26,	Alexander Jones, . .	Miner, ...	. .	M.,	3	Abe Hays, ...	Washington, . .	Fatally injured by falling slate. Lived about eight hours after being hurt.
April 5,	Nicholas Schlender,	do. . . .		S.,		Catsburgh, . . .	do. .	Instantly killed by falling slate.
April 11,	Andrew Mouser, ...	do. . . .	33	S.,	. .	Climax, ...	Fayette, ...	Fatally injured by falling coal. Died three hours after being hurt.
May 4,	Joseph McQuire, ...	do.		S.,	.	Port Royal, . . .	Westmoreland, .	Killed almost instantly by fall of slate
June 7,	Edward S. Davis, ...	do. . . .	16	S.,		Eclipse, ...	Washington, . .	Killed instanlty by a fall of slate.
June 12,	Peter Wesman, ...	Driver, . . .	18	S.,	. .	Cincinnati, . . .	do. .	Killed instantly by coal car.
June 20,	Owen Donone, ...	Laborer, . .	. .		. .	Jumbo, ...	do. . .	Fatally injured by falling slate. Died on the 22d
July 2,	Andrew Waitman, . .	Miner, . .	31	S.,		Hilldale, ...	do. . .	Instantly killed by falling slate.
Sept. 24.	Joseph Hen'on, ...	do.		S.,	. .	Knob, ...	do . .	Fatally injured by falling slate. Died on the 25th.
Oct. 3,	George Levingston, .	Riverman, .	30	M.,	2	Umpire, ...	Fayette, . .	Instantly killed by a lump of coal falling off tipple.
Dec. 1,	James Matthews, ...	Mine-boss, . .	24	M.,	. .	Clipper, . . .	Washington, . .	Instantly killed by falling slate.

TABLE No. 5.—List of non-fatal accidents occurring in and about the mines of the First Bituminous Mine District, for the year ending December 31, 1888.

Date of accident.	Name of Person.	Occupation.	Age.	Married.	Name of Colliery.	Location—County.	Nature and Cause of Accident
Jan. 4,	George W. Darey,	Miner,	30	M.,	Ivil,	Washington,	Leg broken by car.
Jan. 16,	Frederick Nece,	do.		M.,	Black Diamond,	do.	Toe injured by falling coal and slate.
Feb. 11,	John Wherry,	do.		S.,	do.	do.	Hip dislocated by being caught between cars.
Feb. 16,	John Sullivan,	do.		S.,	do.	do.	Foot injured by cars.
Feb. 22,	William Boyd,	do.		S.,	do.	do.	Side and back hurt by falling slate.
Feb. 26,	James Light,	do.		M.,	Albany,	Fayette,	Leg broken by falling slate.
Mar. 7,	William Smith,	do.		S.,	Black Diamond,	Washington,	Eye injured by piece of coal.
Mar. 9,	George Pierce,	do.		M.,	Umpire,	Fayette,	Toe broken by cars running over it.
Mar. 13,	Joseph Hall,	do.			Albany,	do.	Hip and thigh injured by falling coal.
Mar. 19,	Claybone Harvey,	do.			Catsburgh,	Washington,	Injured about the back by the dilly trip striking him.
Mar. 20,	Robert Hartman,	do.			do.	do.	Thumb injured by falling slate.
Mar. 21,	Jonathan Couthrey,	do.		M.,	do.	do.	Foot hurt by falling coal.
Mar. 23,	Martin Sewar,	do.			do.	do.	Back hurt by falling slate.
April —,	Eli Webb,	do.		M.,	Ivil,	do.	Fingers broke by falling slate.
April 5,	E. J. Glover,	do.		M.,	Midway,	do.	Head and side hurt by a premature shot.
April 12,	Hugh Haney,	do.		M.,	Globe,	do.	Arm broken by a fall.
April —,	Jefferson Hartman,	do.			do.	do.	Drill run through his foot.
April 18,	William Reid,	do.		S.,	Calidonia,	do.	Seriously injured by being struck by a slate post.
April 25,	I. D. Keller,	do.			Catsburgh,	do.	Painfully hurt about the small of the back by falling slate.
June 4,	Robert E. Sickler,	do.			Columbia,	Westmoreland,	Leg broken by falling coal.
June 7,	George Barringer,	Driver,			Ivil,	Washington,	Jaw broken by being caught between cars.
June 11,	John White,	Miner,			Catsburgh,	do.	Painfully injured by being caught between car and rib.
June 27,	John Civil,				Climax,	Fayette,	Leg broken by a runaway car down slope; leg since amputated.
June 28,	William Richards,	Miner,			Jumbo,	Washington,	Injured by falling slate.
June 30,	Thomas Gray,	do.			Nickel Plate,	do.	Slightly injured by falling slate.
July 14,	W. M. McBride,	Engineer,		M.,	Briar Hill,	do.	Burned severely by gas from crude petroleum. He was inside of the boiler saturating the same; after finishing the work he prepared to get out, and just as he was going through the manhole the gas came in contact with a light he had on the outside, causing an explosion with the result above stated.
July 28,	Robert Reid,	Driver,			Globe,	do.	Severely hurt by being kicked by a mule.
Sept. 10,	Samuel Beck,	Miner,		M.,	Ivil,	do.	Severely bruised by falling slate.
Sept. 13,	Samuel Roberts,	do.		M.,	do.	do.	Seriously hurt by falling coal and slate.
Sept. 29,	John Stephenson,	do.		M.,	do.	do.	Painfully hurt by being caught between car and rib.

Sept. —,	Samuel Stewart, ...	Driver, ...	. .	S.,	Banner, ...	do. . .	Severely hurt by being caught between car and rib
Oct. 10,	J. C. Lowstutter, ...	d i. . . .	. .	S.,	Umpire, ...	Fayette, ...	Ankle injured by being caught between two cars
Oct. 11,	Patrick McBryde, ...	Miner, . . .	. .	M.,	Banner, ...	Washington, . .	Severely injured about the face by a cartridge exploding while tamping a shot.
Oct. 15,	Lucien Sparmont, ...	do.	. .	S.,	Briar Hill, ...	do. . .	Hurt slightly by falling slate.

Fatal Accidents.

John Harrison, aged twenty-eight years, was fatally injured in the American mine, by falling slate, February 20, and died some three hours afterwards. He had fired a shot in the "tight" end and had filled part of it out and was at the time of the accident clearing the remaining coal of slate, when a piece of slate measuring 1½ feet in length, 3¾ feet in breadth, and some 10 inches thick fell on him with the result as stated above. The deceased was considered a very careful man amongst his fellow workman. but in this case he was deceived by the numerous slips that were in the slate. He was a widower and leaves a little girl about two years of age.

George Thomas, a roadman, aged —— years, was fatally burned by fire damp, in Gilmore mine, March 19; died twelve days afterwards. This unfortunate man rode in with a driver for the purpose of lifting a "parting" switch from the mouth of room No. 9 on 8 entry. Having got out of the trip at this point, it was not many minutes until the driver, (who was then up quite a distance) heard him making a noise, as if in pain, and he inquired the cause. Thomas replied, "I am burned and the gas fired within nine feet of the entry." On investigating the particulars of this fatality, I found the room had fallen in some 40 feet from entry, and that fire-damp would still show itself in a safety lamp on top of the fall. At this fall the deceased's lamp and cap were found, the former by the writer and the latter by the mine boss (Mr. Arthur Hawthorne). A few hours previous to the burning of Mr. Thomas, a miner named Soloman Crow, was in this room and went up near the fall with a naked light. From this it is evident that no fire-damp existed between "fall" and the entry or it would without doubt have fired on Crow. After thoroughly informing myself of all the circumstances connected with this case, I came to the conclusion that the deceased was on the "fall" when the gas fired on him, instead of nine feet from entry, as he stated, which statement was made under great excitement and pain. Some days previous to his death he was asked what he was doing when he was burned, and he said, "I will tell you all about it when I get well." Fire-damp was not known to exist on falls in this mine, and only small traces were seen sometimes in the new cut faces. Mr. Thomas being well acquainted with this fact, no doubt thought that there was no fire-damp anywhere in the mine. Inquest held, and a verdict of accidental death rendered.

Alexander Jores, a miner; injured fatally by falling slate in Abe Hays mine, March 26; died on the 27. He lived some eight hours after being hurt. The deceased had fired a "tight" end shot, but it did not knock the coal down, but only loosened it, and he started to shear it next to the rib, when a piece of coal fell, and in its descent it struck a post which was under the slate and dislodged it, and simulta-

neously the slate fell, catching Jores as above stated. Deceased leaves a wife and four children in Germany.

Nicholas Scheinder, a miner, aged 22 years, was instantly killed by falling slate in Catsburgh, April 5. From appearance of the place and from information received from the workmen who took the body from under the slate, it seems as if he was knocking coal when the slate fell on him. The mine boss visited the deceased the day before he was killed and ordered him to take down the slate, which he promised to do, but neglected it, and forfeited his life through disobedience of orders.

Andrew Monser, aged 33 years, was so badly injured in Climax mine, April 11, by falling coal, that he died some three hours after being hurt. He had fired a middle shot, but it did not throw all the coal, but shattered it in such a way as to make it extremely dangerous to work under it. Monser, not being aware of this, he started to undermine it deeper, when the coal fell, with the above stated result. He was a single man. Inquest held and a verdict returned of accidental death.

Joseph McQuire, aged 27, fatally injured on May 4, in Port Royal mine, by falling slate. Lived about fifteen minutes after being hurt. Deceased and another man, named Schultz, worked in entry 11, room 14, and on the evening preceding the death of McQuire they wedged at the slate for an hour or more, putting no less than three iron wedges over it as well as a cap piece. Failing to get it down they left it and went home. The next morning they started to work without taking the slate down or putting the necessary safe-guards under it, Schultz to load out a car and the deceased to knock some coal for same. While doing this he loosed the slate and it fell on him with the result as stated above. The reader is at liberty to draw his own conclusion.

Edward S Davis, aged 16 years, was instantly killed in Eclipse mine, by falling slate, on June 7. The deceased and an elder brother, aged 19, were working together finishing a room, and as a consequence kept up a great deal of slate, so that they would not have to move it. The brothers at the time of the accident were loading a car under the slate, working on either side of the car, the elder one on the left and the deceased on the right. While the latter was fixing the lumps on the side of the car next to him the slate fell, catching the deceased between it and the car, resulting as above stated. Inquest held and a verdict of accidental death rendered.

Peter Wesman, a driver, aged 18 years, was instantly killed in Cincinnati mine, by being run over by coal car, June 11. It seems that on the day of the accident, Wesman was following another driver out with a trip of nine cars. In the first car of this trip he had a sprag. The deceased not appearing in a reasonable time search was made for him, when his body was found under the second car of his trip, his hand grasping the aforesaid sprag. Where this sprag should have

been taken out, there was ample room, but it is supposed that he had forgotten about it till he had passed this point, then attempted to remove the sprag, but unfortunately there was no room at this time, and he was caught and dragged by the trip till life was extinct.

Owen Honer, laborer, aged 21 years, was fatally injured by a fall of slate in Jumbo mines, June 20; died June 22. Deceased and another man named Maurice Lynch were filling coal out of a room, and having some slate which was somewhat loose, Lynch started after a post to put under it, telling Honer at the same time not to go under the slate, but he disobeyed the order and it fell on him with the result as above stated.

Andrew Waitman, miner, aged 31 years, was killed by a fall of slate in Hilldale mine, July 2. Waitman, at the time of the accident, was slating the "brick" coal, when a piece of slate measuring 4 feet in length, 2¾ feet in width and 10 inches in thickness fell on him, killing him instantly.

Joseph Henton, miner, was injured on September 24, at Knob mine, by a fall of slate, and died some fifteen hours afterward. On the day of the accident, deceased and an elder brother were working together, and while the former was filling some coal into a car from under the slate, it fell, striking the deceased, inflicting the injuries from which he died.

George Levingston, riverman, aged 30 years, was instantly killed by a lump of coal falling off Umpire "tipple" October 3. It appears that the deceased was tying a line immediately below the "tipp," when the lump of coal fell off the car, rolled into an aperature which is used for the back balance weights to come through and fell some 34 feet, striking the deceased on the head.

James Matthews, mine boss, aged 24 years, was instantly killed by a fall of slate in Clipper mine, December 3. This accident occurred in entry 20, and on examination of the place, I found some 90 feet of slate up, and making inquiry in regard to this large amount of slate being left up, I was informed that it was the deceased's orders to keep it up as long as it was safe to work under, as they wanted to hole this entry to daylight, and didn't want to haul it such a long distance to the "tipple," but when the entry was holed the slate could be taken the other way. It appears that this entry was being driven day and night, and on the day of the accident the day shift was preparing to go home, when the deceased came along and said to the entrymen, "I'll measure your entry for you," and to do so he gave one of the entrymen the end of the tape line, keeping the "reel" himself, and started toward the entry face, when within about eleven yards of it a piece of slate 10 feet long, 2½ feet in breanth and some ten inches in thickness fell on him.

SECOND BITUMINOUS DISTRICT.

Hon. THOMAS J. STEWART,
Secretary of Internal Affairs:

SIR: I have the honor to submit to you my fourth annual report as inspector of mines for the Second Bituminous district of Pennsylvania for the year ending December 31, 1888.

In many respects this has been a remarkable year, and, in a brief reference to the leading features of this report, perhaps something may be suggested for your consideration. During the year the fatal accidents numbered seventeen, being eight less than during 1887. There were forty-eight non fatal accidents, an increase of two over 1887. The causes of these accidents appear in the following table:

CAUSES OF ACCIDENTS.	Fatal.	Non-fatal.
Falling slate,	9	20
Falling coal,	4	5
Roof falls,	2	. . .
Smothered with gases,	1	. . .
Premature blast,	1	. . .
Mine wagons,	. . . .	17
Cage,	. . . .	2
Post,	. . . .	2
Kicked by mule,	. . . .	2
Total,	17	48

Widows by fatalities,	9
Orphans by fatalities,	32

In looking over the causes of the accidents, I find that a large majority of them resulted from carelessness on the part of the victims themselves. This very thing has caused me much annoyance. I have warned men time and again in the mines to exercise more caution. A careless miner is the worst enemy to his fellow workmen. But what shall we do to remedy the evil? It is a great hardship to a man's family to discharge him, and he may just go off somewhere else and be killed. It seems to me that the mine bosses could rectify this mat-

ter to some extent. They must exhibit more nerve. They have the power, and they have a good code of regulations at all our mines, and they should insist, in no uncertain manner, upon a thorough acquaintance and conformity with these rules. When visiting the miners' places, they should see that all loose slate is taken down, and that all strong slate is well posted. They should enforce strict rules with reference to powder, and allow no man to work in danger, no matter what his experience or his excuse may be. See by the table the large number of deaths and non-fatal accidents from this carelessness with slate, and compare with it our experience with that most treacherous and fatal enemy of the mines—"fire-damp." It gives me great pleasure to say that, although fifty per cent., or about forty of the mines in my district, generate explosive "fire-damp," some of them in large quantities, yet not a single accident has happened from this source during the year.

The production of the Second Bituminous district is the largest ever known, exceeding that of last year by the startling amount of 792,19'½ tons. Standard No. 2 alone produced 435,597 tons of coal. One other produced more than 300,000, while five more, exceeded 200,000 tons. These large plants are all located in Westmoreland county, which, by the way, is the largest bituminous coal-producing county in the State. This fact seems to have been overlooked by the commissioners appointed recently to locate miners' hospitals. May we hope that the county will not meet the same fate should the Legislature, in its wisdom, decide to establish mining schools throughout the Commonwealth?

The following statistics are a summary of accurate reports from all the mines, as set out in the tables:

Mines in the district,	79
Mines in the district operated,	70
Mines opened during the year,	2
Number of persons employed in the mines,	7,439
Number of persons employed outside,	2,793
Total number of persons employed,	10.232
Tons of coal mined,	6,228,117
Tons of coal shipped,	3.391,631½
Tons of coke manufactured,	1,915,795
Average number of days worked,	206
Tons of coal to each fatal accident,	366,360
Tons of coal to each non-fatal accident,	129,794
Number of employés to each fatal accident,	602
Number of employés to each non-fatal accident,	213.17
Number of mules in use,	821

Number of coke ovens operated,	5,297
Number of stationery engines for hoisting and hauling coal,	52
Number of pumps in use,	69

The question of ventilation in the mines has been with me a very important one, and I have tried, in every instance, to give the miners a good, healthful place in which to work. The new mines that have been opened during my term of office have all been supplied with the most modern and efficient appliances for ventilation. In the mines which have been operated for some years, improvements of much value have been secured. During the last four years, at those mines, thirteen fans, fifteen furnaces, and four baskets have been erected, where the means of ventilation before were wholly inadequate. At present there are in the district, nineteen fans, thirty four furnaces, five fire baskets, and four steam exhausts, making in all sixty-two appliances for producing ventilation. There are, indeed, only seven small mines in the district that are not furnished with air by some mechanical means, and several of these come within the provisions of the law only in the winter season.

The pernicious practice among some of the mine bosses of turning rooms ahead of the air current had become so strongly rooted that they have occasionally persisted in it, notwithstanding my strenuous efforts to stop it. I sincerely hope that this practice will be wholly discontinued. My experience is, that the fan exceeds anything else as a ventilating agent, and is the most economical.

I feel like cordially congratulating the employers and employed in this district over the fact that there has not been a single strike dur ing the year. There may have been local asperities of short duration, but the great coal industry in general has been swinging gracefully along, and the result is a year of unparalleled prosperity. It is certainly to be hoped that good judgment and toleration and the spirit of mutual concession will continue and give us the continued boon of peace and prosperity.

The good effects of the laws passed in the interest of coal miners in this State are becoming more patent every day. The laws, especially requiring mine bosses to be well equipped for their positions, have set scores and hundreds of miners to reading and studying, and the result will be that coming years will see in this calling, a large class of intelligent and well informed men. On every hand we see young men seeking for knowledge to fit themselves for the higher positions in the mining industry, and it will bring to the front some of the ablest men in the State. Great men may come from the mine as readily as from the farm.

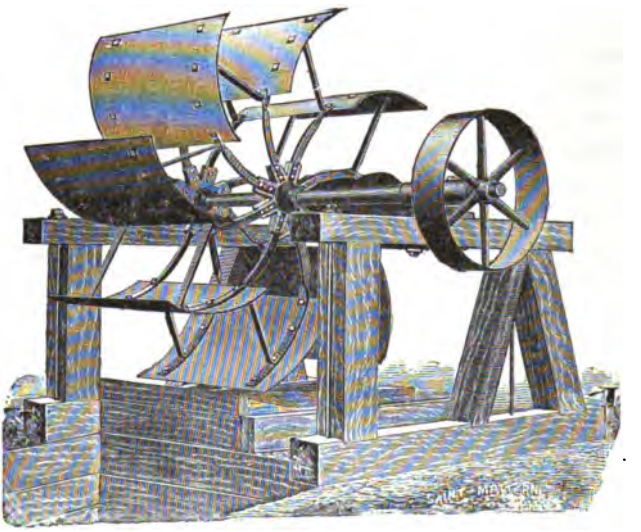
In closing this report I desire to thank the mine officials and operators for the universal courtesy I have received at their hands; also,

to commend the spirit of improvement they have continued to manifest. The usual tables accompany this report and also photographs of the tipple and hoisting engine at Standard No. 2 and a cut of the ventilating fan at the Carbon mines.

All of which is respectfully submitted.

WILLIAM JENKINS,
Inspector.

IRWIN, *February 7, 1889.*



Description of Mines and Mine Improvements in the Second Bituminous District.

Alexandria.—This mine has an average of 12,509 cubic feet of air in circulation per minute fairly distributed through the mine. The drainage has been fair. The tail rope system of haulage is now being introduced and will soon be in operation, the length of haul being 5,000 feet. The new part of this mine will be ventilated by a furnace to be erected in the near future. Mine boss, Daniel Campbell.

Alice.—The average amount of air in circulation in this mine is 31,927 cubic feet per minute, and it is well distributed to the face of the headings. Drainage, fair. Mine boss, James Eaton.

Amieville.—The average amount of air in circulation in this mine is 12.600 cubic feet, fairly distributed through it. The drainage has been reasonably good, but at the time of my last visit the face of the main entry and the lower end of butt 9 were under water, owing, as the mine boss informed me, to the fact that the pump was not started early enough in the morning. Mine boss, William H. Ambler.

Alpsville.—Under the circumstances it has been difficult to keep

this mine in good condition. It was opened on the single-entry system, and it is a hard matter to keep it properly ventilated when drawing the entry stumps back. The water course had fallen in and the drainage was not good. Mine boss, John Duncan.

Buckeye.—Average air circulation 8,081 cubic feet per minute, fairly distributed in the mine. Drainage in a reasonable condition. Mine boss, James Allen.

Central.—A highly satisfactory improvement at this mine was the erection of a twelve-foot fan during the year. On December 6, 1888, I measured 40,800 cubic feet of air passing out per minute, and it was well distributed through the mine. Drainage, good. Mine boss, John C. Menoher.

Calumet.—This mine has been opened during the year. It is a shaft opening located on the Sewickley branch of the South West Pennsylvania railway, in Westmoreland county. It is operated by the "Calumet Coal and Coke Company." The shaft is 190 feet in depth, 12 by 24 feet, well timbered all through with 8x10 inch timber and lagged with two inch plank. It is divided into three compartments, two for cageways, the other for air and pumping. Three pumps are used to drain the mine, and the ventilation is by exhaust steam. Air measurement showed 7,200 cubic feet passing out. The mine is opened on the double-entry system. The outside improvements consist of a pair of first motion engines, coupled at right angles; cylinder, 20x36 inches; cone drum, 6x8 feet; sheaves, 8 feet in diameter; steel wire rope, 1⅛ inches. One hundred and five coke ovens and twenty-three houses have been built, as well as other necessary outbuildings. Mine boss, David Young.

Carbon —This is also a new mine since my last report. It is located on a branch of the South West Pennsylvania railway, about a mile southwest of Greensburg, in Westmoreland county, and is operated by the Carbon Coal and Coke Company. It is a slope opening 243 feet in length, on a grade of one in three, is 13 feet in width from top to bottom, and has a double track. It is timbered with double 8″x8″ timber. The mine is opened on the double-entry system, and has four main entries on each side of the slope, which are driven in the basin of the coal. Butt entries will be turned on both sides. The two middle entries will be used for air-courses. The air will be conducted from the butt entries by means of overcasts, thus doing away with doors on the main hauling roads. At present the air is split into four divisions at the downcast and is well conducted to the face of the headings. The ventilation is produced by a 10x5 foot fan, a modification of the Guibal pattern. The fan was built by the Novelty Manufacturing Company, Irwin, Pa., from plans made by Mr. A N. Humphreys, mining engineer. The motive power is furnished by a 10″x 12″ engine, connected by belt. This fan gives very good results. On 16th July, 1888, I measured 63,432 cubic feet per minute going in at

the inlet. The drainage is by two Cameron pumps, Nos. 9 and 11. The outside improvements are good and substantial. This work has been done under the supervision of Frank J. Kimball, mining engineer. Mine boss, John Pratt.

Duquesne.—In the early part of August, 1888, this mine took fire from a small basket-furnace that was used to ventilate it. The mine boss and other employés were endeavoring to seal up the mine and extinguish the fire, but with indifferent success. On September 11 the mine boss, William Horner, went down in a shaft to stop a leak and was smothered. I was called to the mine, and after investigating this accident entered upon the work of extinguishing the fire. The headway it had gained made it quite formidable, for it had now been burning fiercely for more than a month. My first effort was to cut around the fire. This was soon found impracticable, and as the mine could not be flooded, I determined to seal it up air-tight. The large amount of work standing open, the ribs and entry stumps having been imperfectly worked out, and the fact that the map of the mine had been burned up, and no one had much knowledge of the plan, all conspired to make this method exceedingly difficult. Finally, however, we succeeded in getting the mine sealed up completely, and it has been sealed up partly ever since. It is of great importance that these fires be attacked at once by practical men. Many lives and much property would be saved. In the open part of this mine 20,000 cubic feet of air is in circulation, and it is well distributed to the face of the headings. Drainage, good. Mine boss, Thomas H. Jones.

Dilworth.—A furnace, with fire-bed of 48 square feet, is one of the improvements at this mine. An average of 11,870 cubic feet of air circulates in this mine, and is well distributed. Mine boss, Thomas Whiteman.

Emma.—This mine is in a favorable condition, with an average of 6,330 cubic feet of air in circulation per minute. Distribution, good. Mine boss, Adam Whitehead.

Eureka.—This mine has a well distributed air circulation of 11,522 cubic feet per minute. Mine-boss, A. J. Cook.

Frankstown.—The old mine here is about worked out, and they are making a new opening. It comes within the provisions of the law only in the winter season. It is in a reasonably good condition. Mine-boss, Theodore Heilman.

Greensburg.—The average circulation of air is 16,305 cubic feet per minute, and its distribution is well attended to. Mine-boss, John McIntire.

Hampton.—This mine is in a good, safe condition with an average of 18,297 cubic feet of air circulating well throughout. At the time of my last visit the drainage was not good in the new hill. Mine-boss, Edgar Thompson.

Hecla Shaft.—There has been a decided improvement in the ven-

tilation of this mine since my last report, and one half more air is conducted to the face of the headings. The average amount of air in circulation is 23,610 cubic feet per minute. The drainage is good. Mine boss, William Dean.

Hempfield.—This mine has been kept in very fair condition during the last year, and has an average of 14,328 cubic feet of air in circulation. The drainage was very good up to the time of my last visit, when I thought the mine had been somewhat neglected. I have been informed that since my visit its condition has been greatly improved. Mining-boss, Levi Ludwick.

Manor Shaft.—I measured 17,490 cubic feet of air per minute going in at the inlet, and the distribution was very good. Drainage. fair. Mine-boss, Samuel Ferguson.

Mutual Nos. 1, 2 and 3.—The ventilation of these mines is not what it should be. The current is produced by natural means, the average amount being 6,181 cubic feet per minute. No. 1 mine is nearly worked out, and at the other two, air shafts have been sunk, the purpose being to erect furnaces in the early spring. This will of course remedy the defect. The drainage is all right. Mine-boss, William M. Hart.

Mammoth Nos. 1 and 2.—The condition of these mines is good. An average of 47,327 cubic feet of air, circulates well throughout the workings. The drainage is in first rate condition. Mining-boss, Jacob Peffer.

Manor Valley.—In opening the coal to the dip in this mine, they have had a great deal of water to contend with. They were compelled to haul water the until they got to a certain point, but now they have drilled an eight-inch hole, and a pump will be used. The main entries dip about seven feet to the hundred. The rope haul has been extended 1,400 feet. The mine is kept in very fair condition, with an average of 18,624 cubic feet of air in circulation per minute, well distributed. Mine-boss, Joseph Weightman.

McClure & Co. Mines.

Bessemer and Rising Sun.—At Bessemer the air did not reach the face of the headings properly, because the furnace was too far away. A new shaft was sunk near the face, and a new furnace with thirty-six square feet fire-bed built, thus making the ventilation excellent. The drainage is also good. Mine-boss, John Narey. The ventilation at Rising Sun was formerly by natural means, and was very defective in summer. A shaft has, however, been sunk, and a furnace will be erected early in the spring, and then the ventilation will be all right. I measured 9,520 cubic feet passing out at the shaft. Mine-boss, John Narey.

Donnelly Nos. 1 and 2.—Mine No. 1 is kept up to the requirements of the law in every respect. The average amount of air in circulation

through the mine being 12,514 cubic feet per minute. Mine No. 2 is not so good. At the time of my last visit I measured 5,600 cubic feet of air going out per minute. This was scarcely sufficient to keep the mine in a healthful condition. When the new furnace is in operation there will not be any difficulty about air. Mining-boss, Andrew Niesh.

Enterprise.—This mine is in a favorable condition, with an average of 7,443 cubic feet of air in circulation, and fairly well distributed through the headings. Mining-boss, Daniel Craig.

Hazlett Nos. 1 and 2.—Mine No. 1 has not been in operation this year. In mine No. 2 the ventilation is not sufficient. It has been produced by steam exhaust. An air shaft has been sunk and a furnace will be erected as soon as possible. The average amount of air in circulation is 7,440 cubic feet per minute. Drainage, fair. Mine-boss, J. J. Maloney.

Mullin.—This mine is kept up to the requirements of the mine law, with an average circulation of 11,660 cubic feet of air, well distributed through the mine. Mine-boss, Alexander Davenport.

Mayfield.—This mine is well looked after, and the average circulation is 7,685 cubic feet per minute. The face of the headings is well aired. Mine-boss, Andrew Neish.

Union.—This is not a large mine, and it has been kept in reasonably good order. The air circulation is 5,290 cubic feet per minute. At my last visit the air course was nearly lost by a squeeze, and for that reason the ventilation was somewhat affected. Mining-boss, Peter P. Glenn.

New York and Cleveland Gas Coal Company.

This company has the following four mines in the district:

Graver.—The coal from part of this mine is taken out through Sandy Creek mine, and for that reason this mine has been idle.

Oak Hill No. 4.—This mine is kept in a healthful condition, with an average of 28,770 cubic feet of air in circulation per minute, and the distribution is well attended to. Drainage, good. Mine boss, William P. Owens.

Plum Creek.—The drainage and ventilation of this mine are both good. The average amount of air in circulation per minute is 18,032 cubic feet, and it is well distributed. Mine boss, William W. Carter.

Sandy Creek.—Here they have made an opening into a new field of coal during the year. A trestle 640 feet long and 34 feet high has been built to connect the new mine with the old one. The mine is in a good condition with 20,520 cubic feet of air circulating fairly through the mine. Mining boss, Joseph Corbitt.

Osceola.—This mine has a new opening at the face of the workings, and this makes the ventilation quite good. There is an average of 18,199 cubic feet of air per minute. The drainage is good. Mine boss, H. D. Penman.

Ohio & Pennsylvania Shaft.—There has been a second opening made at this mine the last year. There is an average of 16,680 cubic feet of air in circulation per minute, while the distribution is reasonably well looked after. Mine boss, James Watkins.

Ocean No. 1.—This mine has always been kept in fair condition, but when I was there last the drainage was defective. The average amount of air in circulation is 27,897 cubic feet per minute, which is fairly distributed through the mine. Mine boss, John Matthews.

Penn Gas Coal Company.

This company has seven mines in the district, and four of them have been in operation during the year.

Shaft No. 1.—The condition of this mine during the year has been very good, with an average of 32,769 cubic feet of air in circulation. This air is separated into different splits and fairly distributed throughout the mine. There have been a number of improvements made in this mine during the year. Two air crossings have been built to carry the foul air into the return air course. The tail rope system of haulage has also been introduced and it works satisfactorily. Length of haul 9,000 feet. A down grade of 2½ in 100 feet. The engine is placed outside. Engine cylinders are 12′ x 14′. Steam pressure, 70 pounds; 70 horse power. The tail and main rope are ¾ inch. They haul seventy-three wagons each trip, and make ten or eleven trips each day. It required sixteen mules to do this work before this system was introduced. Mine boss, John Bolam.

Shaft No. 2.—I have always found this mine fully up to the requirements of the law, with an average of 43,281 cubic feet of air in circulation per minute. The air is in two splits and is well conducted to the face of the headings. Mine boss, Michael Cauley.

Mine No. 4.—This mine has been kept in favorable condition, with an average of 27,000 cubic feet of air in circulation per minute. The air is in two divisions. The distribution at the time of my last two visits was not what it should have been. The tail rope system of haulage has also been introducad in this mine during the year. Length of haul 6,000 feet. There is an out-grade of 1 in 100 feet. They are grading in order to run the rope 2,000 feet into one of the butt entries. Size of engine cylinders 10′ x 12′. Steam pressure 90 pounds; 50 horse power; size of tail rope ⅝; main rope ¾. They haul forty wagons a trip and thus do the work formerly done by 12 mules, and make a great saving on the road. Mine boss, Samuel Stone.

Coal Run.—This mine is always found fully up to the requirements of the mining act, with an average of 23,475 cubic feet of air in circulation per minute, well distributed through the mine. Mine boss, William Rodgers.

Port Royal Shaft.—This mine has been in fair condition at the

times of all my visits. The average amount of air in circulation per minute was 23,364 cubic feet, and it was fairly distributed through the headings. Mine boss, John Simpson.

Republic.—This mine as regards its ventilation has been in fair condition with 6,480 cubic feet of air in circulation, fairly distributed. At the time of my last visit, the water had broken in and flooded their roads so that they could not work. Mine boss, James W. Shields.

Spring Hill, Nos. 1 and 2.—Mine No. 2 is in reasonably good condition. A furnace has been built during the year which gives good results. This mine is not run to its full capacity. The average amount of air in circulation per minute is 9,100 cubic feet. This is sufficient to keep the mine in a healthful condition. Mine boss, William S. Gibson.

Smithton, Nos. 1 and 2.—At the beginning of the year there was a current of only 9,520 cubic feet in No. 1 mine. I notified the superintendent that this was not sufficient to keep the mine in a proper condition. The return air course was cleaned up and it increased the volume to 16,395 cubic feet. The mine is now reasonably good, both as regards drainage and ventilation. Mine boss, George Moore.

Mine No. 2.—This mine is in fair condition, both as to its drainage and ventilation. The average circulation of air is 14,280 cubic feet per minute fairly distributed. Mine boss, George Moore, assistant, Thos. Parkins.

South West Coal and Coke Company.

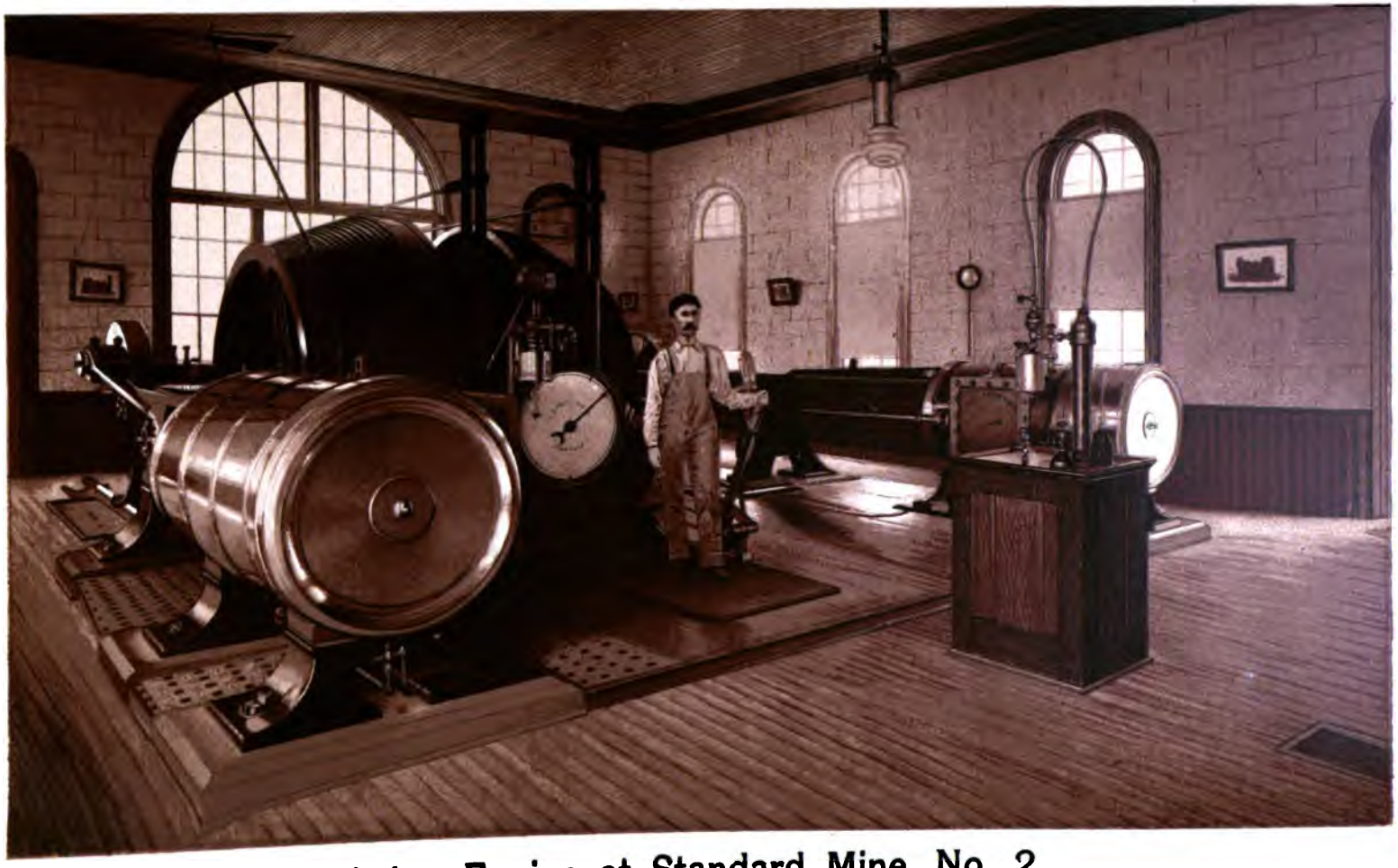
No. 1 "*A*."—This mine is in good condition, well drained and well ventilated. The average amount of air in circulation is 55,640 cubic feet per minute. This is carried to the face of the headings in several divisions. Mine boss, William S. Ramsey.

No. 1 "*B*."—This mine is connected with the preceding one and ventilated by the same means. The average amount of air in circulation is 30,240 cubic feet, which is abundant. Mine boss, William S. Ramsey. James Wardley is assistant mine boss in these mines.

Nos. 2 and 3.—These two mines are in very good condition in ventilation and drainage. The average amount of air in circulation is 21,033 cubic feet per minute, and it is well distributed. Mine boss, William Kooser.

No. 4.—This mine is kept up to the requirements of the law, with an average of 12,000 cubic feet of air in circulation per minute. Mine boss, Robert Morris.

Standard.—This plant consists of shafts Nos. 1 and 2, and slope. Shaft No. 1, in which the fire occurred, which was fully described in my last report, has been cleaned out and refitted for use as an air-shaft. A fan 25 feet in diameter, with nine-foot face, has been placed on top of this shaft to force air into the mines. This is the largest fan in the Connellsville coke region. It is operated by a 20"x36" hori-



Hoisting Engine at Standard Mine, No. 2.

Output of Coal, 1888:

August, . . .	55,607.5 Tons.
September, . . .	52,442.5 "
October, . . .	55,765. "
	163,815 "

Shaft No. 2, H. C. Frick Coke Company.

ROBT. RAMSAY, Superintendent and Engineer.

zontal engine, connected directly with the shaft of the fan. It has a maximum capacity of 230,000 cubic feet per minute. The engine and boiler-house are both brick. In shaft No. 2 a fire-brick arch has been built at the bottom. Its length on the loaded side is 110 feet, and on the empty side 65 feet. It is 18 feet in the clear and 14 feet high. This shaft bottom is illuminated with 6 gas lights. The three mines are drained to this shaft and the water is pumped to the surface, 300 feet, by two direct acting pumps with steam cylinders 26"x48"; water cylinders 14"x48". The column pipe is 48 inches in diameter, coated with hydraulic cement to prevent the acid water from destroying the metal. This pipe is large enough to allow additional pumps to be added as the water increases during the development of this plant. It became necessary to use the safety lamp in all this mine, as the gas came off freely when the rock fell where they were drawing ribs It becomes necessary to blow the gas out of the gob at intervals, and it is done when the men, except the officials in charge, are all out of the mine. In October I measured 70,310 cubic feet of air going in at the inlets, and this volume is so well divided and subdivided, that the distribution is excellent. Mine boss, John A. Hart.

Slope.—This mine did not work full time this year, and while it was idle, some improvements were made. It is always kept in good order, with an average of 41,748 cubic feet of air in circulation per minute. This distribution is well attended to. Mine boss, John Whitfield.

United.—This mine has been in good shape throughout the year. The circulation averages 53,500 cubic feet, and it is well divided up and distributed in the mine. Mine boss, William West.

West Overton.—The condition of this mine is healthful. It has an average circulation of 17,920 cubic feet per minute, and this is fairly distributed in the mine. Mine boss, William Ledger.

West Newton Shaft.—At the beginning of the year the average amount of air in circulation was 21,000 cubic feet. This decreased during the summer months until it became insufficient to keep the mine in good condition. Inspector Louttit, of the First District, and myself meeting there, we ordered a fan to be erected forthwith. The superintendent agreed to do it. Mine boss, John Smith.

Weinman.—The ventilation in this mine was defective when I was there last. It is worked on the single-entry system, and the entries have to be driven to daylight before a current of air can be secured. The entry was nearly through at the time of my visit. Mine-boss, Jacob Weinman.

Westmoreland Gas Coal Company.

Many improvements have been made at the mines of this company during the last year, which I will briefly mention.

Larimer, No. 3.—This mine is in fair condition, with an average of

12.4000 cubic feet of air in circulation per minute; the distribution being reasonably good. The drainage, fair. Mine-boss, Arthur Fowler.

Larimer No. 4.—Important improvements are being made in this mine. Preparatory to the introduction of the endless-rope system of haulage, three main entries are being driven, two for hauling and the other as an air course These entries are made of a uniform grade. A twenty-foot fan has been erected to take the place of the one now in use. Each pair of butt entries will be aired by a separate split of air from the inlet, and overcasts will be built over the main entries at the foot of each pair of butt entries, which will remove the necessity for doors on the main hauling roads. This will be a decided improvement. When all these changes are completed this will be a model mine. There is an average circulation of 33,230 cubic feet per minute, and the distribution is excellent. Mining-boss, James Thompson.

South Side.—This mine has always been kept in fine condition, with an average of 112,175 cubic feet of air in circulation per minute. This quantity is carried through the mine in several divisions, and is well distributed to the face of the headings. Drainage, good. Mine-boss, Samuel Wood.

Westmoreland Shaft.—The endless-rope system of haulage has been introduced in this mine during the last year, and works admirably. The length of haul is 4,500 feet, with a double track. Forty full wagons are brought out to the shaft and forty empty ones taken in at the same time. Through trains of fifty-five cars can be hauled if desired. The engines are located at the bottom of the shaft, and the steam is conveyed from the boiler above, through 3½ inch steam pipe, enclosed in 5⅝ inch oil-well casing. Size of engines, 12x14 inches, geared to grooved drums 5 feet in diameter, on which the rope winds and unwinds in one continuous direction to bring a full trip out and take an empty one in. At present about eight hundred tons of coal per day are hauled, but as soon as the mine is fully developed all the coal shipped will be hauled by machinery. The daily shipments are from thirteen to fourteen hundred tons. The mine has been kept in good condition, with an average of 70,050 cubic feet of air in circulation per minute, and all this is well distributed. Mine-boss, John Williams.

Yough Valley.—On July 17th I visited this mine and found ventilation and drainage defective. I gave orders to have the mine put in working order. On July 29th I found the mine much improved. On my last visit I measured 12.960 cubic feet of air in circulation per minute. This was sufficient to supply the wants of the mine. Drainage, fair. Mine-boss, H. D. Thomson.

Yough Slope.—A better system of ventilation in this mine, since my last report, has increased the volume of air about 4,000 cubic feet per minute. The average amount now in circulation is 14,520 cubic feet, and it is well distributed to the face of the workings. The drainage was fair. Mining boss, James Latimore.

TABLE "A."—Comparative statement of casualities, coal tonnage and employés in the Second Bituminous District of Pennsylvania, for the years 1885, 1886, 1887 and 1888.

YEARS.	Killed.	Injured.	Total.	Total number of employés.	Total number of tons of coal mined.	Number of tons of coal mined to each fatal casualty.	Number of tons of coal mined to each non-fatal casualty.
1885, ...	16	20	36	7,498	3,929,729	254,608	196,486
1886, ...	10	71	81	9,258	5,072,431	507,243	71,442
1887, ...	25	46	71	9,744	5,435,923½	217,437	118,172
1888, ...	17	48	65	10,232	6,228,117	366,360	129,794

TABLE No. 1.—Showing location of collieries in the Second Bituminous Mine District for the year 1888.

NAME OF COLLIERY.	Name of operator.	Location—County.	Name of Superintendent.	Post office address.
Alexandria,	Alexandria Coal Company,	Westmoreland,	Thomas Donohoe,	Greensburg, Westmoreland county.
Alice,	J. M. Schoonmaker,	do.	W. M. Smith,	Mt. Pleasant, Westmoreland county.
Arnold,	Arnold Coal Company,	do.	do.	Burrell, Westmoreland county.
Amieville,	N. J. Bigley,	do.	S. H. Grace,	Suterville, Westmoreland county.
Armstrong,	Shaner Gas Coal Company (Limited),	do.	Alexander Moreland,	Youghiogheny, Westmoreland county.
Alpsville,	Thomas Hackett & Co.,	Allegheny,	John Duncan,	Duncan, Allegheny county.
Bessemer,	McClure & Co.,	Westmoreland,	James Devlin,	Mt Pleasant, Westmoreland county.
Buckeye,	A. C. Cochran,	do.	A. C. Cochran,	Stauffers, Westmoreland county.
Central,	Central Connellsville Coke Company,	do.	William C. Reynolds,	Tarr's, Westmoreland county.
Carbon,	Carbon Coal Company,	do.	Frank I. Kimball,	Greensburg, Westmoreland county.
Calumet,	Calumet Coke Company,	do.	S. M. Hankins,	United, Westmoreland county.
Donnelly Nos 1 and 2,	McClure & Co.	do.	J. P. Brennan,	Scottdale, Westmoreland county.
Dilworth,	William P. Dilworth,	do	Thomas Whiteman,	Scott Haven, Westmoreland county.
Duquesne,	J. B Corey,	Allegheny,	J. B. Corey,	Braddock, Allegheny county.
Emma,	Maria F. Overholt,	Westmoreland,	J. W. Overholt,	Scottdale, Westmoreland county.
Eureka,	Stoner & Co.,	do.	L. C. McLain,	Jacob's Creek, Westmoreland county.
Enterprise,	McClure & Co.,	do.	J. P. Brennan,	Scottdale, Westmoreland county.
Frankstown,	Theodore Heilman,	Allegheny,	Theodore Heilman,	Wilkinsburg, Allegheny county.
Greensburg,	Greensburg Coal Company,	Westmoreland,	A. W. Jones,	Greensburg, Westmoreland county.
Graver,	New York & Cleveland Gas Coal Company,	Allegheny,	William Fisher,	White Ash, Allegheny county.
Hampton,	Hampton Coal Company,	do	Major Lawton,	Wilkinsburg, Allegheny county.
Hecla,	Hecla Coke Company, (Limited),	Westmoreland,	Thomas Laird,	South West, Westmoreland county.
Hempfield,	Hempfield Coal Company,	do.	A. W. Jones,	Greensburg, Westmoreland county.
Hazlette, Nos. 1 and 2,	McClure & Co.,	do.	J. P. Brennan,	Scottdale, Westmoreland county.
Lucesco,	Leechburg Coal and Coke Company,	do.	W. H Wray,	Leechburg, Armstrong county.
Larimer Coke Works,	Carnegie Brothers & Co., (Limited),	do.	George Lauder,	Pittsburgh, Allegheny county.
Larimer Nos. 3 and 4,	Westmoreland Coal Company,	do.	George R. Scull,	Irwin, Westmoreland county
Manor Valley,	Manor Valley Gas Coal Company,	do.	W. H. Stanton,	Claridge, Westmoreland county.
Manor Shaft,	N. Y., & Westmoreland Gas Coal & Coke Co.,	do.	Samuel Furguson,	Harrison City, Westmoreland county.
Mutual Nos. 1, 2 and 3,	M. M., & M. Co.,	do.	Robert S. Jamison,	Greensburg, Westmoreland county.
Mammoth Nos. 1 and 2,	J. W. Moore,	do.	H. McCreary,	Mammoth, Westmoreland county.
Mullin,	McClure & Co.,	do.	J. P. Brennan,	Scottdale, Westmoreland county.
Mayfield,	do.	do.	do.	do. do.
No. 1 "A,"	The Southwest Coal and Coke Company,	do.	Morris Bamsay,	Mt. Pleasant, Westmoreland county.
No. 1 "B"	do. do.	do.	do.	do. do.
Nos 2 and 3,	do. do.	do.	do.	do. do.
No. 4	do. do.	do.	do.	do. do.
North Side,	Westmoreland Coal Company,	do.		Irwin, Westmoreland county.
Ocean No. 1,	Youghiogheny River Coal Company,	do.	John F Hosack,	Scott Haven, Westmoreland county.
Ocean,	George Vogele,	Allegheny,	George Vogele,	Wilkinsburg, Allegheny county.
Osceola,	Osceola Coal Company,	do.	J. H. Dewees,	McKeesport, Allegheny county.
Oak Hill No. 4,	New York & Cleveland Gas Coal Company,	do.	T. B. DeArmit,	Turtle Creek, Allegheny county.
Plum Creek,	do. do.	do.	do.	Negley, Allegheny county.
Penn Gas No. 1 shaft,	Penn Gas Coal Company,	Westmoreland,	John F Wolf,	Irwin, Westmoreland county.

Penn Gas No. 2 shaft,	Penn Gas Coal Company,	Westmoreland,	John F. Wolf,	Irwin, Westmoreland county.
Penn Gas No. 3 shaft,	do. do.	do.	do.	do. do
Penn Gas No. 4,	do. do.	do.	do	do. do.
Penn Gas Slope,	do. do.	do	do.	do. do.
Penn Gas Drift,	do. do.	do.	do.	do. do.
Penn Gas Coal Run,	do. do.	do.	do.	do. do.
Port Royal,	Port Royal Coal and Coke Company,	do.	Isaac Brown,	Fitz Henry, Westmoreland county.
Pennsylvania & Ohio,	Pennsylvania and Ohio Coal Company,	do	James Watkins,	do. do
Republic,	Republic Coal Company,	do.	James W. Shields,	West Newton, Westmoreland county.
Rising Sun,	McClure & Co ,	do.	James Devlin,	Mt. Pleasant, Westmoreland county.
South Side,	Westmoreland Coal Company,	do.	George R. Scull,	Irwin, Westmoreland county.
Standard No. 1,	H. C. Frick Coke Co.,	do.	Robert Ramsay,	Mt. Pleasant, Westmoreland county.
Standard No. 2,	do. do.	do.	do.	do do.
Standard Slope,	do. do.	do.	do.	do. do.
Smithton No. 1,	Waverly Coal and Coke Company,	do.	William McCune,	West Newton, Westmoreland county.
Smithton No. 2,	do. do.	do.	do.	do do.
Shaner No. 1,	Shaner Gas Coal Company (Limited),	do.	Alexander Moreland,	Youghiogheny, Westmoreland county.
Shaner No. 2,	do. do.	do.	do.	do do.
Sandy Creek,	New York and Cleveland Gas Coal Company,	Allegheny,	William Fisher,	White Ash, Allegheny county.
Spring Hill Nos. 1 and 2,	Spring Hill Coal Company,	do.	Eli Boyd,	Wallis, Allegheny county.
Union,	McClure & Co.,	Westmoreland,	J. P. Brennan,	Scottdale, Westmoreland county.
United,	United Coal and Coke Company,	do.	William C. Reynolds,	United, Westmoreland county.
Westmoreland Shaft,	Westmoreland Coal Company,	do.	George R. Scull,	Irwin, Westmoreland county.
West Newton Shaft,	West Newton Coal Company,	do.	A W. Osborne,	West Newton, Westmoreland county
West Overton,	A. C. Overholt & Co.,	do.	B. F Overholt,	West Overton, Westmoreland county.
Weinman Nos. 1 and 2,	Weinman & Co ,	Allegheny,	Jacob Weinman,	Wilkinsburg, Allegheny county.
Yough Valley,	Youghiogheny & Ashtabula Coal & Coke Co.,	Westmoreland,	John Blythe,	West Newton, Westmoreland county.
Yough Slope,	Yough Slope Gas Coal Company,	do.	Robert H. Latimore,	do. do.

TABLE No. 2.—Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employés, number of persons killed and injured, number of kegs of powder used, etc., in the Second Bituminous Mining District for the year ending December 31, 1888.

NAMES OF COLLIERIES.	Location.	Total production in tons of coal.	Total production in tons of coke.	Total shipments in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Alpsville,	Alpsville, Allegheny county,	26 263		26 263	300	21				1	4		25
Alice,	Mt. Pleasant, Westmoreland county,	142 633	103 221		222	215				2	22		251
Alexandria,	Goff, do.	137,172	51,908	59,310	201¼	21	2			3	25		293
Amieville,	Suterville, do.	64 796		56 226	201	198	1			1	13		
Buckeye,	Stauffer's, do.	84 285	58 295		227	126		1		4	10		160
Bessemer and Rising Sun,	Mt. Pleasant, do.	135,000	90,000		259	235				2	22		273
Calumet,	United, do.	1 680	85		92	141				4	7		105
Central,	Tarr's, do.	153.000	102 000		262	202				3			204
Carbon,	Greensburg, do.	83 773	11,468	22 773	280	126				4	8		82
Connelly Nos. 1 and 2,	Stoner's, do.	112,500	75, 00		246	159	1	1		2	14		200
Dilworth,	Scott Haven, do.	20 500		20 500	176	71					4		
Duquesne,	Wilkinsburg, Allegheny county,	52 000		52,000	192	163	1				13	1	
Emma,	Hoggs, Westmoreland county,	12,905	9 675		156	22				1	4		26
Enterprise,	Hawkeye, do.	14,250	9 500		138	35				1	5		51
Eureka,	Jacob's Creek, do.	48,000		25 000	300	80			50		6		18
Greensburg,	Greensburg, do.	95 173.35	5 426 30	86 473.35	300	110	1	4		1	9		10
Hempfield,	do. do.	112 054 65		111 854	313	123		2		4	16		
Hecla,	South West, do.	133 746.350	117 9 0 750		259½	249	1			4	35		272
Hazlett Nos. 1 and 2,	Mt. Pleasant, do.	87 000	58,000		222	204				6	25		261
Hampton,	Wilkinsburg, Allegheny county,	87, 325		87 325	204	174		1			17		
Larimer Nos. 1 and 2,	Larimer, Westmoreland county,	309, 473		309, 473	287½	299	2	2		4	27		
Larimer Coke Works,													300
Mutual Nos. 1, 2 and 3,	Mutual, Westmoreland county,	110 280	47, 670	38, 780	281	161		3	225	1	21		143
Mammoth Nos. 1 and 2,	Mammoth, do.	200, 234	157, 668		289	517				9	21		509
Manor Shaft,	Manor, do.	12 640		12 640	125	50		1		4	2		43
Manor Valley,	Claridge, do.	116 584		116 584	220	185		5		1	16		
Mullin,	Mt. Pleasant, do.	24 000	16.000		159	68				1	6		82
Mayfield,	Stoner's, do.	34 500	21,000		248	39					4		55
Nos. 1, "A" and "B" Shafts,	Mt. Pleasant, do.	366 598	245 609		271	482		2		14	49		470

Nos. 2 and 3,	Tarr's	do.	90 480	60 397		244	129				4	14		136
No. 4	Stoner's,	do.	48 829	32 508		271	59				3	9		72
Ocean No. 1,	Scott Haven,	do.	133 492 06		133 492.06	258	163			12		9		29
Ohio and Pennsylvania,	Fitz Henry,	do.	6 600	1,500		200	18				3	2		25
Osceola,	Osceola, Allegheny county,		100 311		100 311	216	172				1	8		
Oak Hill No. 4,	Turtle Creek,	do.	223 131 550		223 131.550	256	225		2		1	25		
Plum Creek,	Negley,	do.	123 171 900		123 171.900	208½	61					22		
Port Royal,	Fitz Henry, Westmoreland county,		67 523	30 312.950	22 009 475	278½	110	1	1	707	8	6		60
Penn Gas Coal Run,	Irwin,	do.	57 204 50		57 204.50	215	98		1			8		
Penn Gas No 1,	do.	do	188.110		188 110	272	298		1		6	14		
Penn Gas No. 2,	do.	do.	234 721		23 721	256	247	1	6		6	32		
Penn Gas No. 4.	Sewickley,	do.	160 161		160 161	252½	283			10	2	19		
Republic.	do.	do.	19 796.08		19 796.08	100	40			10		5		
South Side.	Irwin,	do.	288 519		288 519	224½	373	4	2		2	24	1	
Standard No. 2 Shaft,	Mt. Pleasant,	do.	435,597.50	353 000		280	981	1			15	63		885
Standard Slope,	do.	do.	10 342 50											
Smithton Nos 1 and 2,	Smithton,	do.	101 805	22 000	49 012	240	181	1	1	400	4	12		117
Shaner	Shaner,	do.	35 000		35 000	110	110			60	2	4		
Spring Hill Nos. 1 and 2,	Walls, Allegheny county.		29 696		29 696	280	59				1	4		
Sandy Creek,	Sandy Creek, do.		118 592		97 592	194½	211			12	2	40		
United,	United, Westmoreland county,		242.000	162 000		270	307		2	1	8	28		300
Union,	Stoner's,	do.	27 000	18 000		247	52				1	7		70
West Overton,	West Overton,	do.	37 618	26 804		169	85				2	6		1 0
West Newton Shaft,	West Newton,	do.	150 000		150 000	250	134		6		3	5		
Westmoreland Shaft,	Biddle,	do.	308 840		308,840	289½	398		3		12	21		
Westmoreland Car Shops,	Irwin,	do.				200	41				1	2		
Weinman,	Wilkinsburg, Allegheny county,		5 949			283	14					7		
Yough Valley,	Robbins, Westmoreland county,		77 3 3		77 283	164½	145					10		
Yough Slope,	West Newton,	do.	63 000		63 000	256	138	1	1		2	8		
Total,			6 228 117	1 915 795	3 391,631 50	13,399½	10 222	17	48	1,605	167	821	2	5,297

TABLE No. 3.—Showing the number of each class of employés at each colliery in the Second Bituminous Mine District, during the year 1888.

NAMES OF COLLIERIES.	Location.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand total inside and outside.
		Inside foremen or mine boss.	Miners.	Miners' boys.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen	Blacksmiths and carpenters.	Engineers and firemen.	Cokers and yardmen.	All company men.	Superintendents, book-keepers and clerks.	Total outside.	
Alpsville,	Alpsville, Allegheny county,	1	16	..	..	2	....	19	1	..	..	....		1	2	21
Amieville,	Suterville, Westmoreland county,	1	156	12	3	9	3	184	1	1	.	..	9	3	14	198
Alice,	Mt. Pleasant, Westmoreland, co,	1	85	2	5	12	5	110	1	3	1	89	9	1	105	215
Alexandria,	Goff, Westmoreland county,	1	110	5	4	16	4	140	2	3	3	55	10	1	74	214
Buckeye,	Stauffers, Westmoreland county,	1	55	1	3	5	3	68	1	3	4	49	8	3	68	136
Bessemer and Rising Sun,	Mt. Pleasant, Westmoreland county,	1	98	..	5	15	7	126	1	3	3	97	2	3	109	235
Central,	Tarr's Westmoreland county,	2	96	..	..	18	2	118	1	4	3	74	..	2	84	202
Carbon,	Greensburg, Westmoreland co.,	1	78	4	7	4	....	94	1	3	3	7	17	1	32	126
Calumet,	United, Westmoreland county,	1	15	3	1	1	....	21	1	2	4	30	78	5	120	141
Dilworth,	Scott Haven, Westmoreland co,	1	60	1	1	2	..	65	1	1	..	..	4	..	6	71
Donnelly Nos. 1 and 2,	Storner's, Westmoreland county,	1	65	6	6	11	3	92	1	2	1	57	3	3	67	159
Duquesne,	Wilkinsburg, Allegheny county,	1	120	14	6	7	2	150	...	2	4		6	1	13	163
Emma,	Hogg's, Westmoreland county,	1	9	...	..	2	...	12	.....		.	8		2	10	22
Enterprise,	Hawkeye, Westmoreland county,	1	15	...	1	3	.	20	1	1	..	9	2	2	15	35
Eureka,	Jacob's Creek, Westmoreland co.,	1	60	5	1	5	2	74		1	.		4	1	6	80
Frankstown,	Wilkinsburg, Allegheny county,	1	10	.	..	..	.	11	..		..	..		..	..	11
Greensburg,	Greensburg, Westmoreland county,	1	81	.	2	9	5	98	1	2	1	3	4	1	12	110
Hampton,	Wilkinsburg, Allegheny county,	1	124	20	3	7	4	159	1	3	2	....	7	2	15	174
Hempfield,	Greensburg, Westmoreland co.,	2	85	3	2	11	1	104	1	2	2	..	13	1	19	123
Hecla,	South West, Westmoreland county,	1	92	4	12	20	11	140	2	5	4	80	15	3	109	249
Hazlett Nos. 1 and 2,	Mt. Pleasant, Westmoreland co.,	1	75	..	10	12	3	101	2	3	5	80	10	3	103	204
Larimer Nos. 3 and 4.	Larimer, Westmoreland county,	2	301	15	27	25	9	379	1	2	2		13	2	20	399
Mutual Nos. 1, 2 and 3,	Mutual, Westmoreland county,	1	62	10	4	11	..	88	..	2	2	60	7	2	73	161
Manor shaft,	Manor, Westmoreland county,	1	40	..	2	2	.	45		1	3	.		1	5	50
Mammoth Nos. 1 and 2,	Mammoth, Westmoreland county,	3	195		18	21	13	250	3	7	5	215	29	8	267	517
Manor Valley,	Claridge, Westmoreland county,	1	140	2	9	14	3	169	1	2	2		10	1	16	185
Mullin,	Mt. Pleasant, Westmoreland co.,	1	27		2	3	1	34	.	1	1	30	1	1	34	68
Mayfield,	Stoner's, Westmoreland county,	1	18	.	1	3	..	23	1	.	..	12	1	2	16	39
Nos. 1 A and B shafts,	Mt. Pleasant, Westmoreland co.,	2	188	2	27	28	9	256	2	3	15	163	35	3	226	482
Nos. 2 and 3,	Tarr's, Westmoreland county,	1	52	1	6	7	2	69	1	2	3	45	9	..	60	129
No. 4.	Stoner's Westmoreland county,	1	24		1	4	1	31	1	1	2	21	3		28	59
Osceola,	Osceola, Allegheny county,	1	134	10	3	8		156	1	2	2		8	4	17	173
Oak Hill No 4,	Turtle Creek, Allegheny county,	1	200	58	3	19	4	285		6	2	....	29	3	40	325
Ocean No. 1,	Scott Haven, Westmoreland co,	1	125	10	3	8	4	151	1	2	.	..	7	2	12	163

Ohio and Pennsylvania,	Fitz Henry, Westmoreland county,		10			1		11			2	2	2	1	7	18
Ocean,	Wilkinsburg, Allegheny county,	1	8			1		10								10
Plum Creek,	Negley, Allegheny county,	1	115	16	4	1		149	2				8	2	12	161
Port Royal,	Fitz Henry, Westmoreland county,	1	54		8	6	3	72	1	3	5	15	12	2	38	110
Penn Gas No. 1,	Irwin, Westmoreland county,	2	217	6	22	17	4	267	1	3	4		16	7	31	298
do. 2,	do. do.	1	272	8	11	24	7	323	1	3	4		16		24	347
do. 4,	Sewickley, Westmoreland county,	1	229	5	13	14	6	267	1	3	2		10		16	283
Penn Gas Coal Run,	Irwin, Westmoreland county,	1	77	2	5	4	2	91	1	3			3		7	98
Republic,	Sewickley, Westmoreland county,	1	25	4		4		34	1	1			2	2	6	40
Smithton Nos. 1 and 2,	Smithton, Westmoreland county,	2	100	5	5	12	4	128		2	3	30	16	2	53	181
South Side,	Irwin, Westmoreland county,	1	295	15	17	21	5	354	1	2	3		11	2	19	373
Spring Hill Nos. 1 and 2,	Wall's, Allegheny county,	1	40	8		3		52		1	2		3	1	7	59
Sandy Creek,	Sandy Creek, Allegheny county,	1	140	21	3	14	1	180	1	7	2		19	2	31	211
Standard No. 2,	Mt. Pleasant, Westmoreland co.,	2	448	5	36	45	16	551	5	13	14	340	53	5	430	981
Shaner,	Shaner, Westmoreland county,	1	90	6		4		102		1	1		3	3	8	110
United,	United, Westmoreland county,	1	132	3	6	19	11	172	1	4	7	110	10	3	135	307
Union,	Stoner's, Westmoreland county,	1	20		1	3		25	1		1	22	1	2	27	52
West Newton Shaft,	West Newton, Westmoreland co.,	1	109	5	3	4	3	125	1	1	2		4	1	9	134
West Overton,	West Overton, Westmoreland co.,	1	24	5	1	4		45	1	1	1	34	1	2	40	85
Westmoreland shaft,	Biddle, Westmoreland county,	1	262	25	50	20	7	365	2	3	4		23	1	33	398
Westmoreland Car Shops,	Irwin, Westmoreland county,								3	25	1		12		41	41
Weinman,	Wilkinsburg, Allegheny county,	1	9			1		11					2	1	3	14
Yough Valley,	Robbins, Westmoreland county,	1	114	10	2	8	1	136		1			6	2	9	145
Yough slope,	West Newton, Westmoreland co.,	1	107	8	4	7		127		1	3		5	2	11	138
Total,		65	5,918	345	373	573	172	7,439	54	160	140	1,737	539	112	2,794	10 233

TABLE No. 4.—List of fatal accidents occurring in and about the mines of the Second Bituminous Mine District for the year ending December 31, 1888.

Date of accident.	NAME OF PERSON.	Occupation	Age.	Widow.	Number of orphans.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
September 11, . . .	Gustus Giphart, . . .	Miner, . .	15	. .	. .	Amieville, . .	Westmoreland, .	Killed instantly by a fall of roof while taking post out in a rib An elder brother was with him at the time.
September 14, . . .	William Homer, ...	Mining-boss,	45	1	8	Duquesne, . .	Allegheny, . .	Was smothered by going down a shaft fifteen .eet deep where his light would not burn.
October 4, ...	Michael Shandre, ...	Miner, ...	25			Standard No. 2, .	Westmoreland, .	Was fatally injured by a fall of sla e and coal. He died six hours afterwards
October 20, ...	John Wiece, ...	do.	31	1	3	Smithton No. 1, .	do. .	Received a compound fracture of the leg by a fall of coal, and died on December 10.
November 6, . .	William Kramer, ...	do. . . .	35	1	3	Larimer No. 3, .	do. .	Killed instantly by a fall of slate while drawing post in the stumps.
November 19, . . .	Charles Hazala, ...	do.	32	1	. .	South Side Mine,	do. .	Severely injured by a fall of slate. He died on December 6. The accident was caused by carelessness.
December 1, . .	Philip Brady, ...	do. . . .	. .	. .	.	Alexandria Mine,	do. .	Was seriously injured by a fall of coal, and died on the 5th Caused by his carelessness
December 11, . .	Samuel Battersby, ...	do.	38	1	6	Larimer No. 1, .	do. .	Instantly killed by fall of slate, which looked to be of a crumbling nature, and should have been taken down.
December 28, . . .	Adolfo Delorenzo, ...	do.	29		. .	Larimer No. 4, .	do. .	Killed instantly by a fall of slate. He had not taken the time to set a post under the slate.
January 3, ...	Charles McCafferty, . . .	do.	35	1	3	Alexandria Mine,	do. .	Was severely injured by a fall of coal, and died on the 4th. He had not taken proper care to sprag the coal.
January 25, ...	Henry Aston, ...	do.	58	1	7	Greensburg Mine,	do. .	Was instantly killed by a fall of coal; it was accidental.
February 15, . . .	John Smokouska, ...	do. . . .	42	. .	. .	Port Royal, . . .	do. .	Was instantly killed by a powder blast, by going back to the shot too soon. He was warned not to do so.
April 30, ...	Thomas Breen, ...	do.	26	1	1	Larimer No. 1, .	do. .	Killed instantly by a fall of coal and slate. If he had used proper care to post the slate the accident could have been averted in all probability.
June 14, ...	Charles Gardner, ...	do.	49	1	1	Y. ugh slope, . .	do. .	Was fatally injured by a fall of slate, and died three hours afterwards. He had not used proper care to post the slate.
July 23, ...	John O. Pearson, ...	do.	26	. .	. .	Penn Shaft No. 2,	do. .	Killed instantly by a fall of slate. He had only been mining coal three months.

August 4,	John Helmann,	do.	20	South Side Mine,	do.		Killed instantly by a fall of slate. He took no care to post the slate. There was a boy fifteen years old who warned him about the slate ten minutes before he was killed, but it was of no use.
August 14,	Andrew Currie,	Driver,	23	Hecla shaft,	do.		Killed instantly by a fall of roof as he was taking a wagon out of the stumps.

TABLE No. 5—List of non-fatal accidents occurring in and about the mines of the Second Bituminous Mine District, for the year ending December 31, 1888.

Date of accident.	NAME OF PERSON.	Occupation	Age.	Married.	No. of children.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
January 2,	William Detes,	Driver,	18	S.,		West Newton shaft,	Westmoreland,	Slightly injured between wagon and rib.
January 4,	Samuel Madder,	Miner,	28	S.,		do. do.	do.	Leg broken by a fall of coal and slate.
January 9,	Samuel Painter,	do.	20	S.,		Penn shaft No. 2,	do.	Leg broken by a fall of slate.
Januayy 13,	John Harvy,	do.	63	M.,		Manor shaft,	do.	Leg and collar bone broken by a fall of slate.
January 18.	Abraham Moore,	do.	24	S.,		Greensburg mine,	do.	Back crushed by a fall of slate. [cage.
January 19,	Paul Chechela,	do.	40	M.,		United shaft,	do.	Seriously injured by going under a descending
January 19,	Thomas Dougherty,	do.	58	M.,		Larimer No. 3,	do.	Back and side injured by a fall of slate.
January 19.	Benjamin Milliom,	Laborer,	20	S.,		do.	do.	Head and back injured by a runaway trip on the incline. [ing trip.
February 6,	Jacob Tropon,	Trapper,	14	S.,		West Newton shaft,	do.	Had three fingers taken off by jumping on mov-
February 20,	Joseph Sentner,	Miner,	25	M.,		Penn shaft No. 2,	do.	Ankle injured by a fall of coal.
February 21,	Edwin Hartley,	do.	45	M.,		do.	do.	Leg injured by being struck with a post.
March 7,	James Hogan,	do.	18	S.,		do.	do.	Leg bruised while riding out on wagons.
March 19,	James Painter,	Driver,	19	S.,		Mutual,	do.	Foot crushed between wagons.
March 26,	Edward Quinlard,	Miner,	23	S.,		Coal Run,	do.	Back and hip injured by a fall of slate.
March 31,	A. W. Hughes,	do	46	M.,		Mutual,	do.	Knee severely injured by a full wagon.
April 9,	Luther Freeman,	Driver,	18	S.,		Buckeye,	do.	Back bruised between wagons.
April 13,	David Gregg,	Miner,	32	M.,		South Side,	do.	Ankle fractured by a fall of coal
May 4,	Hugh Mirria,	do.	28	M.,		West Newton shaft,	do.	Injured between wagon and rib.
May 17,	Cornelius Hagerman,	Laborer,	58	M.,		Greensburg mine,	do.	Two ribs broken by being squeezed by a mule.
May 26,	Alexander Markey,	Driver,	30	M.,		Donnelly No 1,	do.	Injured between wagon and rib
May 28,	George McMunn,	Miner,	19	S.,		Larimer No. 3,	do.	Leg broken by a fall of coal and slate.
June 7,	James O. Donnell,	do.	33	M.,		Smithton No. 1,	do.	Hip dislocated by being caught between wagons.
June 13,	Cyrus McCartney,	do.	45	M.,		Manor Valley,	do.	Slightly injured by a fall of coal and slate.
June 14.	Henry Myers,	do.	20	M.,		do.	do.	Slightly injured by a runaway wagon.
June 22,	Nicholas Ross,	do.	55	M.,		Westmoreland shaft,	do	Back fractured and ribs broken by a fall of slate.
June 23,	Leonard Hulme,	do.	15	S.,		Hampton,	Allegheny,	Finger taken off by a fall of slate.
July 17,	James Brundiegl,	do.	60	M.,		Yough slope,	Westmoreland,	Leg broken by a fall of slate.
July 27,	John Kifer,	do.	33	M.,		Manor Valley,	do.	Slightly injured by a fall of slate.
August 11,	Andrew Thornblad,	do.	44	M.,		Hempfield,	do.	Leg broken by a fall of slate.
August 22,	Harrison Santimyre,	do.	60	M.,		S. W. No. 1 "A,"	do.	Arm broken by stepping out of a manhole in front of a trip of wagons.
August 23	A. L. Garland,	do.	41	M.,		Mutual,	do.	Severely injured by a fall of coal
August 29,	John Hoone,	do.	20	S.,		S. W. No. 1 "B,"	do.	Leg broken by being caught between wagon and post.
August 31,	Michael Snitch,	do.	54	M.,		United shaft,	do.	Two ribs broken by a fall of slate.

September 1,	Peter H. Byers,	do.	18	S.,	Oak Hill No. 4,	Allegheny,	Arm fractured in two places by a fall of coal.
September 4,	Boyd Friston,	do.	38	M.,	West Newton shaft,	Westmoreland,	Leg bruised by crossing between wagons.
September 7,	Philip Auston,	Driver,	30	M.,	Oak Hill No. 4,	Allegheny,	Foot injured by wagons, necessitating amputated.
Septemb r 15,	Fred. Shlatter,	do.	35	M.,	Manor Valley,	Westmoreland,	Face bruised by being kicked by a mule.
September 19,	George B. Lauffer,	Miner,	26	S.,	do.	do.	Foot injured by a fall of slate.
September 29,	John Curns	do.	29	M.,	West Newton shaft,	do.	Body injured by a fall of coal and slate.
October 19,	William Redfern,	Fire boss,	53	S.,	Port Royal,	do.	Finger taken off between door and rib.
October 27,	James Ashbaugh,	Driver,	22	S.,	Hempfield mine,	do.	Slightly bruised between wagons.
November 2,	Robert Watson,	Miner,	14	S.,	Penn shaft No 1,	do.	Leg broken and arm dislocated by a fall of slate
November 10,	Edward Franklin,	do.	24	S.,	Greensburg mine,	do.	Toe crushed by a fall of slate.
November 15,	Philip Hogan.	Driver,	23	S.,	Penn shaft No. 2,	do.	Leg injured between wagons.
November 16,	Joseph Brasnith,	Miner,	31	S.,	Westmoreland shaft,	do.	Back injured by a fall of slate.
November 19,	Oliver Trap,	do.	29	S.,	Penn shaft No. 2,	do.	Leg broken by being struck by a post.
November 25,	Edward Chenney,	do.	38	M.,	Greensburg mine,	do.	Knee sprained by slipping.
November 26,	Patrick Tute,	do.	34	M.,	South Side mine,	do.	Leg and foot injured by a fall of slate.

THIRD BITUMINOUS DISTRICT.

Hon. THOMAS J. STEWART,

Secretary of Internal Affairs of the Commonwealth of Pa :

SIR: In compliance with an act relating to the bituminous mines, and providing for the lives, health, safety and welfare of the persons employed therein, I have the honor of presenting my report of the inspection of mines of the Third Bituminous district for the year ending December 31, 1888.

Two miners lost their lives and seventeen other persons were injured at the mines of the district during the year. Mr. Barger, although a miner of large practical experience and of mature years, lost his life by gross carelessness. He deliberately lay down in front of over three tons of loose coal, which had been mined and shot the night previous, and, while he was undercutting the coal the next morning, and his younger brother was drilling a hole into it adjacent to the "rib," the whole mass fell, completely burying him. No attempt had been made by Mr. Barger or his brother to secure the loose coal before beginning to work in front of it. Surely these sad occurrences, which happen so frequently, should serve as object lessons, demanding the most careful attention of every miner, for the good of himself, family, and the community in which he lives.

This table gives a comparison of the fatal and non-fatal accidents, etc., in this district for the last four years:

A COMPARISON of the fatal and non-fatal casualties, etc., for the last four years, in the Third Bituminous district.

YEARS.	Number of miners.	NUMBER OF EMPLOYES.			ACCIDENTS BY FALLS.		ACCIDENTS BY MINE WAGONS.		ACCIDENTS—SUNDRY CAUSES.		ACCIDENTS—TOTALS.		Tons of coal mined per fatal accident.	Tons of coal mined per non-fatal accident.	Number of employes per fatal accident.	Number of employes per non-fatal accident.	Widows.	Orphans.	Total tonnage.
		Inside.	Outside.	Total.	Fatal.	Non-fatal.	Fatal.	Non-fatal.	Fatal.	Non-fatal.	Fatal.	Non-fatal.							
1885, . .	67	3 980	434	3,514	5	6	1	4	. . . . .	. .	6	10	321 729	160.864	585+	351+	4	12	1.608,647
1886, . . .	56	3.493	525	4,018	4	14	1	2	. . . . .	2	5	18	350, 397	97 238	803+	223+	1	1	1,751,986
1887, . .	54	3 865	613	4 478	8	11	. . . . .	4	. .	5	. . .	19	§	112.302	. .	235+	. .	. .	2,128 738
1888, . .	54	3 595	545	4,140	2	8	. .	4	. . . . .	5	2	17	946 922	111,396+	2,070	243+	1	11	1,893,744½
	*	*	*	*	.	. . .	. . . . .	. . .	. . . . .	. . .	. . .	. . . .	*	*	*	*	. . .	. .	. . .

§ Number fatal accidents. * Average.

Mining Statistics—Employes.

Number of persons employed inside of mines, including mine bosses,	3,595
Number of persons employed outside of mines,	545
Total,	4,140

Tonnage, etc.

Total coal production in tons of 2,000 pounds,	1,893,844½
Total coke production in tons of 2,000 pounds,	12,728
Total number of days the mines were in operation for the year,	9.564½

Four mines (Fairmount No. 2, Lackawanna No. 1, State Line, and Bethel Shaft) have been exhausted during the year, but four new ones have taken their places; consequently, the number of mines in the district still remains at fifty-four (54). There were employed in the mines in the district three hundred and nine (309) boys under the age of sixteen (16) years.

The sanitary condition of the mines, generally, is very good, and should the suggestions I have made, in another part of this report, to mine officials and miners, be carried into effect, the miners will have safe and healthy places in which to work.

Suggestions have been made in another part of this report relative to amending the mining law, to the establishment of mining schools, to mine officials and miners, and a brief description of the condition of the mines in general; also the usual tables giving the statistical matter of the report accompanies this.

All of which is respectfully submitted.

THOMAS K. ADAMS,
Inspector.

MERCER, MERCER COUNTY, PA., *February 1, 1889.*

The Mining Law.

For the better protection of the miners and other workmen employed in and about the mines, it is necessary that legislative action be had on the present incomplete bituminous mining act. The law needs revision, and some essential additions thereto are required. According to recent judicial interpretations the language of the act fails to clearly express the intention in many important respects. We do hope, however, that should our legislators attempt a revision of our present defective law, that they will see to it that the same mistake which happened in 1885 is not repeated now, viz.: that of attempting to revise the mining laws during the closing hours of the session of the Legislature, therefore the following suggestions are submitted for consideration:

1. A copy of each mine map (all extensions to be placed thereon every six months or yearly) should be in the possession of each mine inspector at all times, so that he could familiarize himself with the internal workings thereof, thereby enabling him to discharge his duties in a more satisfactory manner. The anthracite mining act has a provision of this kind. See article III and sections 1 and 2 of said act.

2. The language of the fourth section of the act should clearly and definitely direct the fire-boss to examine every part of the mine when fire-damp is known or supposed to exist; also, said officials should be required to make a written report of every examination made by him, a record of which should be kept at the mine office for the inspection of the Mining-boss, Superintendent and Inspector.

3. The fifth section should specify the distance, from the face of all narrow work, at which the air current should be circulating, or leave this matter to the discretion of the mine Inspector to so designate the distance.

4. The tenth section needs changing, as it should not require the Inspector to make four visits to every mine in the district each year, as some mines do not need that number of visits, while others would require more.

5. The sixteenth section requires a boy to be twelve years of age before he can be allowed to be employed in the mines; however, I am of the opinion that this provision in some cases is violated by parents stating that their boys are of the lawful age. It would be advisable to add a provision in this section requiring the parents of boys applying for employment to make affidavit as to the son's age before he is given work by the Superintendent or Mining boss.

6. The twenty first section should be so changed that when a violation of the law occurs, a graded fine of five dollars and upwards in amount should be imposed upon the offender, according to the nature of the offence, and if Justices of the Peace could be given jurisdiction over minor offences, so that summary punishment could be executed, it would have a greater tendency to insure better discipline in and about the mines.

7. An extra section should be added to the present law regulating the use and the storage of explosives in the mines.

8. Again we urge that the Mine Inspectors be relieved from performing the duties of sealers of weights and measures, imposed upon them by the act of Assembly of June 1, 1883.

Some of the other sections of the act, not herein referred to, would with equal propriety stand improvement which we know would add much to the efficiency of mine inspection.

It is not necessary to give further reasons for the desired changes herein suggested, as much has already been written, touching the points enumerated, in the different yearly reports of the Mine Inspectors.

Suggestions to Mine Officials and Miners.

There are certain requisites necessary to insure the safe, healthy and profitable operation of the mines, which are, as they occur to our judgment as follows: The mine superintendent and mining boss should be men especially fitted and trained by experience to discharge the duties of their stations faithfully and well, so that the comforts of the workingmen and the interests of their employers would not suffer through the lack of knowledge of the duties they have assumed, and these two men should consult with each other frequently, and act in perfect harmony. In opening a new mine, the best plan of working out the coal should be adopted and strictly carried out. The double-heading system, unless in a few exceptional cases, should be adopted. By this plan your coal territory can be rapidly developed and open space or new work kept ahead or ready to meet emergencies, provided you desired to increase the number of employés or increase the daily tonnage of your works. Ventilation is more easily conducted by this mode of operation, and it can be carried at such distances from face of the works as is considered healthy and expedient. It is cheaper, everything being considered, than any form of the single-entry plan. Very few doors are needed by this system, which results in a great saving in expense, and does away with the annoying defects of the other plans as far as the ventilation of the mine is concerned. Unless such a system is adopted the daily coal tonnage of any mine will be trifling. When the system of working the mine has been adopted, the management of the underground operations should be placed under the exclusive control of the mining-boss, who is generally supposed to have been employed for his ability, having had years of special training at such work. After this the mine superintendent should give him all proper encouragement and support, and this can be done by keeping him well supplied with all the materials necessary for the proper discharge of his lawful duties. The mining boss in his daily rounds of the mine should make it his duty to urge upon the several workingmen under him the necessity of exercising a greater degree of prudence while performing their labor; he should see that the traveling-way and miners' working places are in a safe condition, and that the lawful amount of ventilation is kept circulating throughout the entire underground workings daily; see that all air passages are made of as large an area as is practicable; see that they are driven at the right place and time, and have a bracing current of air not far from face of workings at all times; that the ventilating doors be hung properly and kept in good repair; see that all hauling roads are kept dry and well ballasted at whatever cost; see that air courses are not made the store-houses for all the timber, debris and filth of the mine; see that all necessary improvements are made when needed. To put off making necessary repairs from one month to another for fear of making the expense account

appear too high, shows a lack of good judgment. To get the economical results from improvements, they should be made when required. The mine surveys should be kept handy for reference, and all extensions put upon the map frequently during the year. The mine superintendent should also make frequent visits to the interior of the mine.

The miners can contribute largely to their own comfort by strictly observing all sanitary regulations; can add greatly to their safety and health by complying strictly with the mine rules, and should they observe any dangerous places, run no unnecessary risks, but immediately have all such places made safe if in their power to do so, if not, see that the mining-boss is made acquainted with the facts. Do not clog any of the air passages by throwing therein timber, debris and filth, or should you see a ventilating door standing open, make it your duty to shut it. We do hope that for the benefit of all employed in and about the mines that these suggestions will be carried into effect.

Mining Schools.

The establishment of mining schools by the State has been pretty generally discussed by representative miners and others interested in mining during the year, and it seems to be the opinion of all those who have written upon the subject that such institutions are necessary and much good is expected from them. We are very much inclined to the same opinion as our experience demonstrates to us this fact, that the more intelligent miners are, the fewer accidents occur in the mines of the State. The careless and reckless methods so often exhibited by many of the workingmen while performing their work in the mines is largely attributable to ignorance. Proper discipline, one of the best safeguards in preventing accidents that we know of, is not easily maintained where workingmen are unintelligent. We find that where discipline is lacking, accidents are plentiful and as a direct result of this we have widows and orphans left destitute, who, usually, become a public charge. Mine officials, also, who are largely responsible for the protection of the lives of the workingmen, should possess a much higher degree of intelligence and technical knowledge than the ordinary miner, from whose ranks they have to be drawn; therefore, it becomes an urgent duty upon the State to aid this worthy class of citizens in acquiring this knowledge so that they may be equipped to discharge their responsible and hazardous duties in an intelligent manner.

While representative mining men all agree as to the necessity of the State extending her aid in maintaining such schools, yet they are not in perfect accord as to the most practical plan upon which they should be conducted to make them a success, and that they might reach the greatest number of that class of citizens for whose benefit they are sought to be established. However, various plans, provided

our legislators take favorable action thereon, have already been suggested, but none of them, as appears to us, are what are demanded, consequently we would modify the various plans and suggest something like the following:

1st. Let a State Mining School, or two such schools, one to be located in the Anthracite region and the other in the Bituminous, be established and controlled by a board of five trustees.

2d. That the said trustees be granted the power, by the law creating the schools, to establish branch schools in the most central and populous mining districts of the State.

3d. The branches to be taught in those schools, viz: reading, writing, arithmetic English Grammar, algebra, geometry, trigonometry, geology, mine surveying, mechanics, natural philosophy, chemistry and the principles involved in mine ventilation, or in the theory and practice of coal mining.

4th. At the home or branch schools a course of studies, extending over a period of two years, should be arranged, beginning with the elementary branches of an education, such as reading, writing and arithmetic, and should the pupils show suitable proficiency at the end of the first year in these studies, they could be advanced to the intermediate or second year's course composed of the following studies, viz: English grammar, geometry and arithmetic and principles of mine ventilation, etc.

5th. There should be taught at the two central schools the higher branches of an education, viz: geometry, algebra, trigonometry, geology, chemistry, mine surveying, drawing, mechanics and the principles involved in the theory and practice of coal mining.

6th, Qualifications of applicants for admission to the home or branch schools, viz: They must have attained the age of eighteen years; pay a monthly fee of fifty cents each and be workingmen employed in or about the mines of the State, and must be citizens thereof if over 21 years of age.

7th. Qualifications of applicants for admission to central schools. 1st. Must have attained the age of eighteen years. 2d. Must have had five years practical experience in the mines of the State; pay a term fee equal to one-half of the tuition fee; must be citizens of the State if over 21 years of age and have attained such proficiency in the English branches as will be equal, at least, to the first year's studies in the branch schools.

8th. Lectures to be given at the branch schools from time to time on mining topics by the faculty of each central school, also, in the central schools by the same instructors. These instructors should be constituted examining boards, whose duties should be to examine all applicants for the position of mine Inspector, Mining-boss and fire-boss. The applicants for the position of Mining boss at the close of the second year's course of study, and for fire-boss at the close of the

first year. Graduation from these central schools or a knowledge of the branches taught therein. should be the requisite educational qualification, together with the lawful requirements as to practical experience, to entitle a person to hold the position of Mine Inspector.

Other details in connection with those proposed institutions should be left to the judgment of the trustees and instructors, etc.

The success of any mining institution will depend largely upon the miners themselves. If they be indifferent the establishment of schools will not accomplish the desired results. However, we hope that the Legislature will give this matter due and favorable consideration.

We would urge upon labor leaders throughout the State to adopt measures to have the act of May 22, 1883, relating to the establishing of "Evening schools" enforced in every mining community in the State wherever they find the requisite number (20) of boys prevented from attending "day school" by reason of being employed. See to it that this part of the common school law does not become a "dead letter" by reason of the indifference of the parents in our mining regions.

Description of Mines.

Armstrong county.—There are five mines located in this county, viz: Glen, Gosford, International, Riverview and Oak Ridge. The first four are not extensive operations. International has been idle since early spring. Neither has Gosford been running steadily during the year, but is in operation at present and is undergoing considerable repairs. Glen is a small concern and depends on natural means for its ventilation. I measured, at last visit, 7,320 cubic feet of air per minute in circulation in mine, which was sufficient for the twenty-three miners employed therein. Riverview was short in ventilation at time of my last visit, but at an early date, ample means will be provided, which will insure a sufficient air-current for the future. Oak Ridge, the largest mine in the county, was found in splendid shape Two hundred and ten (210) miners and laborers are employed therein. I measured 23,000 cubic feet of air per minute in circulation, which was being distributed throughout the working places of the mine. These mines have all been examined frequently during the year.

Beaver county.—Only one mine (Baker) has been in operation in this county during the year. At last examination I found it in good condition. The amount of air in circulation was 9,600 cubic feet per minute, and number of miners employed was eighty (80).

Butler county.—There are eight mines situated in Butler county, viz: Gomersal, Keister, Chisholm, Keystone, Karns, Barnes and Acbarr. At date of last visit Gomersal was idle, consequently was not inspected. At a previous visit, however, the mine was only in fair condition. They are sinking an air shaft, which will make some improvement both as to ventilation and drainage. Keister mine is in

fair condition; amount of air in circulation, 9,000 cubic feet, and fifty-five (55) miners are being employed. Chisholm, Keystone and Karns mines were found in excellent shape, each having a lawful amount of air in circulation and well distributed to the face of workings. Drainage was also good. Allegheny mine had ample ventilation for the number of persons employed therein, but the hauling roads were wet and muddy, caused by removing the pillars, thereby allowing the surface water to pass down into the workings of the mine freely. Barnes mine was flooded with water just prior to my last visit, by reason of which it was not in as good a condition as it should have been; but I am informed by the official in charge that the necessary improvements will be made without delay.

Clarion county.—The Mineral Ridge, Star, Avondale, Acme, Diamond, New Catfish and Red Bank mines, located in this county, were in a healthy and safe condition, and all the requirements of the mining act were being promptly complied with.

At the Keystone mine a ventilating shaft has been sunk and a substantial furnace built, thus insuring a sufficient ventilating power for some years to come. At Hardscrable and Monarch mines preparations are being made for the building of a ventilating furnace at each, which, when completed, will bring those mines up to a proper standard.

Lawrence county.—There are only three mines in this county. Penn and Beaver mines were sufficiently ventilated when last examined. I measured 7,290 cubic feet of air at the former and 11,380 cubic feet of air in circulation in the latter. Drainage of both mines was good. A new ventilating shaft has been sunk at Penn mine during the year. At the other mine (Clinton) about 6,000 cubic feet of air was being produced. In other respects the mine was in fair condition.

Mercer county.—The mines, situated on the Pittsburgh, Shenango and Lake Erie Railroad, viz: Black Diamond, Spears, Pardoe and Chestnut Ridge, had the lawful volume of air in circulation at last inspection. The drainage for this class of mines was uniformly good.

The two Stoneboro' mines were in fair condition, excepting the traveling way at No. 3. The water had been allowed to accumulate on the road, but I have been notified since my last visit by the official in charge that it is now in proper condition for travel.

At the following mines: Ormsby Slope, Ormsby Shaft, Hickory Slope and Carver, a lawful amount of ventilation is being distributed throughout the workings thereof, and in other respects the conditions are favorable. A new ten-foot ventilating fan has been erected at the Carver shaft during the year.

At the New Virginia mine a new furnace has been built lately, which is giving good results. The mine is well ventilated and drained. The Lackawanna shaft is also in excellent condition in every respect.

The "second opening" has been sunk during the year at this mine, the depth of which was 276 feet and size 8 feet by 8 feet.

Westmoreland county.—The Fairbank mine, which gives employment to 185 persons, is up to the requirements of the law in every respect. The provisions of the mining act, and the special rules of the mine, are strictly enforced. Strict discipline is maintained here, and the work goes on smoothly and without a jar.

At the Pittsburgh and Kiskiminetas and the Bagdad mines, everything is in splendid order. All the provisions of the mining act are promptly complied with, thus insuring to the miners a safe and healthy place in which to perform their work.

The Leechburg Nos. 3 and 4 mines are also in very good condition. Drainage is excellent and ventilation in lawful quantities. I have, however, during some of my visits to No. 3 mine, found the air too far from the face of the headings.

TABLE 1—Showing Location of Collieries in the Third Bituminous Mine District.

NAME OF COLLIERY.	Name of operator.	Location—County.	Name of Superintendent.	Post-office address.
Acme,	Acme Mining Company,	Clarion,	E. B. Hill,	East Brady, Clarion county.
Acbarr,				
Allegheny,	Allegheny Coal Company,	Butler,	D. H. Williams,	Grove City, Mercer county.
Avondale,	Avondale M. F & G. Company,	Clarion,	Frank Brown,	Lawsonham, Clarion county.
Albion,	Albion Coal Company,	do.	James W. Ganoe,	Rimersburg, Clarion county.
Black Diamond,	Filer, Sutliff & Co.,	Mercer,	Enoch Filer,	Sharon, Mercer county.
Bagdad,	Bagdad Coal Company,	Westmoreland,	Alfred Hicks,	Leechburg, Armstrong county.
Barnes,	Mercer Coal Company,	Butler,	W. H. Richardson,	Greenville, Mercer county,
Baker,	Scott & Company,	Beaver,	L. S. Hoyt,	Rock Point P. O., Beaver county.
Carver,	Carver Coal Company,	Mercer,	Enoch Filer,	Sharon, Mercer county.
Chestnut Ridge,	Filer, Westerman & Co.,	do.	do.	do. do.
Chisholm,	Mercer Coal Company,	Butler,	W. H. Richardson,	Greenville, Mercer county.
Caledonia,	Pgh and Fairport Coal and Coke Company,	do.		
Clinton,	Clinton Coal Company,	Lawrence,	Albert Harbison,	Rock Point P. O., Beaver county.
Diamond,	Thomas Mitchell & Sons,	Clarion,	Wilson Mitchell,	East Brady, Clarion county.
Fairmount No. 4,	Fairmount Coal and Iron Company,	do.	S Taylor Shaffer,	Fairmount City, Clarion county.
Fairbank,	Saltsburg Coal Company,	Westmoreland,	D. S. Robinson,	Saltsburg, Indiana county.
Glen,	J. R. Smith,	Armstrong,	J. R. Smith,	Mannorville, Armstrong county.
Gosford,	Armstrong Coal, Coke and Iron Company,	do.	W. W. Acheson,	Gosford, Armstrong county.
Gomersal,	Mahoning Valley Iron Company,	Butler,	William Ferguson,	Gomersal, Butler county.
Hardscrable,	Brady's Bend Mining Company,	Clarion,	C. F. Hartwell,	Oil City, Venango county.
Hickory Slope,	Hazzard, Wood & Co.,	Mercer,	Frank Hazzard,	Mercer, Mercer county.
International,	International Coal and Mining Company,	Armstrong,	Wesley Wilson,	Rimer, Armstrong county.
Jackson,	Jackson Coal Company,	Mercer,	William Graham,	Jackson Centre, Mercer county.
Keystone,	Keystone Coal and Mining Company,	Clarion,	George E. Henry,	East Brady, Clarion county
Keystone,	Pittsburgh, Fairport Coal and Coke Co.,	Butler,	H. L. Graff,	632 Liberty street, Pittsburgh, Pa.
Karns,	do. do.	do.	do.	do. do.
Keister,	Union Coal and Coke Company,	do.	George G. Stage,	Greenville, Mercer county.
Kittanning,	Kittanning Iron Company (Limited),	Armstrong,	Henry Colwell,	Kittanning, Armstrong county.
Lackawannock No. 2,	Pierce Coal Company (Limited),	Mercer,	Archy McIntyre,	Neshannock, Mercer county.
Leechburg No. 3,	Leechburg Coal and Coke Company,	Westmoreland,	A. B. Ashbaugh,	Ashbaugh P. O., Westmoreland county.
Leechburg No. 4,	do. do.	do.	do.	do. do.
Mineral Ridge,	Mineral Ridge Coal Company,	Clarion,	C. W. H. Eiche,	West Monterey, Clarion county.
Monarch,	Monarch Coal Company,	do.	C. P McCafferty,	East Brady, Clarion county.
New Catfish,	Pittsburgh Coal and Mining Company,	do.	C. C. Watt,	Lock Box 434, Pittsburgh.
New Virginia,	Virginia Coal Company,	Mercer,	S Perkins, Jr.,	Sharon, Mercer county
Oak Ridge,	Oak Ridge Coal and Mining Company,	Armstrong,	J. C. Baker,	Oak Ridge Station, Armstrong county.
Ormsby Shaft,	Ormsby Coal Company (Limited),	Mercer,	Frank Hazzard,	Mercer, Mercer county,
Ormsby Slope,	L. M. Ormsby & Co., (Limited),	do	L. M Ormsby,	do. do.
Pgh. and Kiskiminetas,	P. and K. Coal and Coke Company,	Westmoreland,	Alfred Hicks,	Leechburg, Armstrong county.
Penn,	Penn Coal Company (Limited),	Lawrence,	W. H Marquis,	New Castle, Lawrence county.
Pine Run,	Stephenson & Mitchell,	Clarion,	Thomas Mitchell,	East Brady, Clarion county.

TABLE No. 1—*Continued.*

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of Superintendent	Post-office Address.
Pardee,	Mercer Coal Company,	Mercer,	W. H. Richardson,	Greenville, Mercer county.
Riverview,	Riverview Coal and Mining Company,	Armstrong,	C. C. Watt,	Lock Box 434, Pittsburgh, Pa.
Redbank,	Alex. Reynolds' Sons,	Clarion,	David Reynolds,	Red Bank Furnace, Clarion County.
Stoneboro' No. 2,	Mercer Iron and Coal Company,	Mercer,	Robert P. Cann,	Stoneboro' Mercer county.
Stoneboro' No. 3,	do. do.	do.	do	do. do.
Star No. 2,	Northwestern Coal and Iron Company,	Clarion,	S. Taylor Sheaffer,	Fairmount City, Clarion county.
Spears,	Pine Grove Coal Company,	Mercer,	James Spears,	Grove City, Mercer county.

TABLE No. 2—Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employés, number of persons killed and injured, number of kegs of powder used, etc., in the Third Bituminous Mining District, for the year ending December 31, 1888.

NAMES OF COLLIERIES.	Location.	Total production in tons of coal.	Total production in tons of coke.	Total shipments in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Acme,	Rimersburg, Clarion county,	44 079	.....	44,079	251½	92	...	...	.....	...	5	...	...
Acbarr, *	Hilliards, Butler county,	...	.....	...	..	..	...	...	.....	..	..	...	...
Allegheny,	Argentine P. O., Butler county,	39,288	.....	39 044	217½	56	...	...	.....	2	5	...	...
Avondale,	Lawsonham, Clarion county,	19 119	..	19 119	214	63	.	...	70	..	4	..	...
Albion,	Rimersburg, Clarion county,	400	.....	400	45	12	...	...	15	.	1	..	...
Beaver,	Clinton, Lawrence county,	36 510	.....	35 509	150½	99	...	..	..	1	3	..	...
Black Diamond,	Grove City, Mercer county,	38 454	.....	36 434	152	76	.	...	300	4	5	...	...
Bagdad,	West. Penn. R. R., Westmoreland Co.,	22 865	.....	22.865	267	68	...	...	575		4	...	...
Barnes,	Forestville P. O., Butler county,	33 180	.....	33 180	181½	51	...	...	28	1	9	...	...
Baker,	Clinton, Beaver county,	40 800	....	40 600	180	89	...	1	.....	..	7	...	...
Carver,	Near Jackson Centre, Mercer county,	55 093	.....	55.093	209	122	..	1	300	6	9	...	...
Chestnut Ridge,	Near Grove City, Mercer county,	56,655	....	56,655	230	113	.	.	240	4	10	...	...
Chisholm,	Branchtown, Butler county,	21,300	....	21 300	178½	57	...	...	48	..	4	...	...
Caledonia,§	Caledonia, Butler county,	...	.....	...	...	...	...	...	.....	...	...	...	...
Clinton,	Near Clinton, Beaver county,	31,850	....	31 850	142	51	...	1	25	...	4	...	...
Diamond,	Rimersburg, Clarion county,	42 740	....	42 740	284	75	...	...	.....	.	3	...	...
Fairmount Nos. 4 and 2,	Fairmount, Clarion county.	18 098	1,029	18 038	47	173	...	...	100		12	..	...
Fairbank,	Fairbank, Westmoreland county,	180 000	...	180,000	288	202	...	...	.....	1	11	...	...
Glen,	Kelly's Station, Armstrong county,	16 317	....	16 317	312	37	...	..	90		3	...	...
Gosford,	Gosford, Armstrong county,	18 773	.....	18 773	190	54		..	75	..	4	..	...
Gomersal,	Gomersal, Butler county,	41.481	.....	41.481	228	71	...	...	250	..	4	...	...
Hardscrable,	East Brady, Clarion county,	56 241	.....	56.241	247	120	...	...	.....	..	11	...	...
Hickory Slope,	Hazzard P. O., Mercer county,	27.919	...	27 919	155¾	78	..	.	175	2	5	...	...
International,	Rimer P. O., Armstong county,	8,200	....	8 200	65	50	.	..	.....		3	...	...
Jackson, §	Jackson Centre, Mercer county,	...	.....	..	.	...	...	...	.....	..	..	...	...
Keystone,	Lawsonham, Clarion county,	40.128	.....	40 128	230	61	.	2	.....	..	4	...	...
Keystone,	Roy P. O., Butler county,	20.000	.....	20 000	119	69	..	1	150	1	6	...	...
Karns,	Karns City, Butler county,	9,413	..	9 379	174	25	...	1	.....	..	2	...	...
Keister,	Coaltown, Butler county,	26,584	3,740	26,584	265	70	...	...	110	...	7	...	50

TABLE No. 2—*Continued.*

NAMES OF COLLIERIES.	Location.	Total production of tons of coal.	Total production in tons of coke.	Total shipments in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number of coke ovens.
Kittanning,	Kittanning, Armstrong county,	7 894½	4,370		58	71	1			2	4		66
Lackawannock No. 2,	Greenfield, Mercer county.	5 093		5 093	185	68			15	4	2		
Leechburg No 3,	Ashbaugh P. O., Westmoreland county,	67 953		56 640	275	105		1		12	7		
Leechburg No. 4,	do. do	18 980		18 980	309	43					2		
Mineral Ridge,	West Monterey Clarion county,	61. 83		37 950	249	125	1				7		
Monarch,	Red Bank, Clarion county,	13 054		13 054		44			90				
New Catfish,	Catfish, Clarion county,	11 807		11 807	242	20					3		
New Virginia,	New Virginia, Mercer county,	13 631		12 635	123	55			30	3	3		
Oak Ridge,	Oak Ridge Station, Armstrong county,	119 195		119 195	189	225			854		15		
Ormsby Shaft,	Jackson Centre, Mercer county,	27.391		25 693	137½	78				2	7		
Ormsby Slope,	do. do.	36 526		36 526	141	98		1		1	9		
Pittsburgh and Kiskiminetas,	West Penn. R. R., Westmoreland Co.,	38.921		38 921	283	71			800		4		
Penn,	Near New Castle, Lawrence county,	38.561		38 561	217½	77					6		
Pine Run,	East Brady, Clarion county,	50 374		50 374	223	70					4		
Pardoe,	Pardoe, Mercer county,	62.280		62 280	230	119		2	200	2	12	1	
Riverview,	Riner, Armstrong county,	54 412		54.412	254	94					9		
Red Bank,	Red Bank, Clarion county,	31,435	3 229½	25 931½	190½	102			200	2	7		33
Stoneboro' No 2,	Stoneboro, Mercer county,	50.086		50 036	211½	131		1	242	1	13		
Stoneboro' No. 3,	do. do.	36.580		35 724	206	94			128	2	5		
Spears,	Grove City, Mercer county,	44 445		44 445	200	68			400	3	4		
Star No. 2,	New Bethlehem, Clarion county,	168 708		169 708	241	211		5			17		
State Line,	East Palestine, Ohio,	5.000		5.000									
Cranberry,	Sharon Coal Company, Limited,	29, 440		23 940	218	24			75	2	3		
Total,		1,898,844½	12,723	1,840,402½	9,564½	4,091	2	17	5,320	51	234	1	234

*This mine has been idle during the year. § Have reduced the number of employees to less than ten.

TABLE No. 8—Showing the number of each class of employés at each colliery in the Third Bituminous Mine District, during the year 1888.

Names of Collieries.	Location—county.	Number of Persons Employed Inside.						Number of Persons Employed Outside.					Grand totals—inside and outside.
		Inside foreman or mine boss.	Miners.	All company men.	Drivers and runners.	Doorboys and helpers.	Total inside.	Blacksmiths and carpenters.	Engineers and firemen.	All company men.	Superintendent, book-keepers and clerks.	Total outside.	
Acme,	Clinton,	1	76	2	5	....	84	1	....	4	4	9	93
Acbarr,	Butler,	....	....	....	....	....	....	....	....	....	....	....	....
Allegheny,	do.	1	41	1	4	....	47	1	2	6	1	10	57
Avondale,	Clarion,	1	52	2	3	....	58	....	....	5	1	6	64
Albion,	do.	1	8	....	1	....	10	....	....	2	1	3	13
Beaver,	Lawrence,	1	77	3	7	....	88	1	1	7	3	12	100
Black Diamond,	Mercer,	1	55	3	6	2	67	1	2	4	3	10	77
Bagdad,	Westmoreland,	1	58	1	3	....	63	....	....	4	2	6	69
Barnes,	Butler,	1	33	2	5	....	41	2	2	4	3	11	52
Baker,	Beaver,	1	72	2	7	....	82	1	....	5	2	8	90
Carver,	Mercer,	1	98	3	8	1	111	2	2	5	3	12	123
Chestnut Ridge,	do.	1	90	3	8	1	103	2	2	5	3	12	115
Chisholm,	Butler,	1	44	2	4	....	51	1	..	3	3	7	58
Caledonia,	do.	....	....	....	....	....	....	....	....	....	....	....	....
Clinton,	Lawrence,	1	66	2	5	....	74	1	..	4	3	8	82
Diamond,	Clarion,	1	63	1	3	1	69	1	..	4	2	7	76
Fairmount, No. 4,	do.	1	127	2	7	2	139	2	1	29	3	35	174
Fairbank,	Westmoreland,	1	141	24	11	4	181	5	2	13	2	22	203
Glen,	Armstrong,	1	29	1	3	....	34	....	....	2	2	4	38
Gasford,	do.	1	41	2	4	2	50	1	1	1	2	5	55
Gomersal,	Butler,	1	57	3	4	1	66	1	....	3	2	6	72
Hardscrable,	Clarion,	1	97	3	10	....	111	..	....	9	1	10	121
Hickory slope,	Mercer,	1	58	3	5	....	67	2	2	6	2	12	79
International,	Armstrong,	1	35	4	3	....	43	2	....	4	2	8	51
Jackson,	Mercer,	....	..	....	....	....	....	..	....	....	....	..	....
Keystone,	Clarion,	1	51	2	3	....	57	1	....	3	1	5	62
do.	Butler,	1	49	2	5	....	57	1	2	9	1	13	70
Karns,	do.	1	17	2	2	....	22	....	....	2	2	4	26
Keister,	do.	1	44	6	6	1	58	1	....	10	2	13	71
Kittanning,	Armstrong,	1	30	2	7	....	40	..	1	31	....	32	72
Lackawanna,	Mercer,	1	51	4	1	....	57	1	2	5	2	10	67
Leechburg, No. 3,	Westmoreland,	1	91	4	5	....	101	1	..	3	1	5	106
do. 4,	do.	1	36	3	1	....	41	..	....	2	1	3	44
Mineral Ridge,	Clarion,	1	107	2	3	....	113	2	....	4	2	8	121
Monarch,	do.	1	34	1	3	1	40	1	....	2	2	5	45

TABLE 3.—*Continued.*

NAMES OF COLLIERIES.	Location—county.	NUMBER OF PERSONS EMPLOYED INSIDE.						NUMBER OF PERSONS EMPLOYED OUTSIDE.					
		Inside foreman or mine boss.	Miners.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Blacksmiths and carpenters.	Engineers and firemen.	All company men.	Superintendent, boss, keepers and clerks.	Total outside.	Grand totals—inside and outside.
New Catfish,	Clarion,	1	15	2	1	..	19	..	..	..	2	2	21
New Virginia,	Mercer,	1	41	4	3		49	1	2	3	2	7	56
Oak Ridge,	Armstrong,	1	175	5	13	10	204	4	1	15	2	22	226
Ormsby Shaft,	Mercer,	1	58	4	6	..	69	1	2	6	1	10	79
do. Slope,	do	1	75	3	7	2	88	1	2	7	1	11	99
Pittsburgh and Kiskiminetas,	Westmoreland,	1	60	1	4	..	66	1	..	3	2	6	72
Penn,	Lawrence,	1	66	..	5	..	72	1	..	3	2	6	78
Pine Run,	Clarion,	1	50	5	5	2	63	1	..	5	2	8	71
Pardoe,	Mercer,	1	88	5	12	1	107	2	3	5	3	13	120
Riverview,	Armstrong,	1	76	1	6	1	85	1	..	6	3	10	95
Red Bank,	Clarion,	1	68	3	4	1	77	3	1	20	2	26	103
Stoneboro' No. 2,	Mercer,	1	92	9	10	5	117	2	1	10	2	15	132
do. 3,	do.	1	68	6	4	3	82	2	3	6	2	13	95
Spears,	do.	1	52	..	4	..	57	1	2	3	1	12	69
Star,	Clarion,	1	146	3	12	4	166	4	3	28	3	46	212
Cranberry,	Mercer,	1	12	1	.		14	2	2	6	1	11	25
Grand total,	..	49	3,093	154	255	44	3,595	62	46	242	95	545	4,140

TABLE No 4.—List of fatal accidents occurring in and about the mines of the Third Bituminous mine district for the year ended December 31, 1888.

Date of accident.	Name of Person.	Occupation.	Age.	Widow.	Number of orphans.	Name of colliery.	Location—county.	Nature and cause of accident.
Feb'y 15, .	Frederick McAfoose,	Miner, . .	55	. . . .	5	Kittanning, . . .	Armstrong, ...	Was killed by a fall of slate while making a "cut-through" through a room-pillar. He had fired a shot in the coal early that morning, which had shattered the roof, and, while in the act of bearing in to make ready another "cut," a stone about ten cwt. fell upon him. One of the drivers found him under the stone dead at about 1 o'clock P. M.
August 18,	P. L. Barger, ...	Miner, . .	57	M., .	6	Mineral Ridge, .	Clarion, ...	Was killed by a fall of coal and slate. He neglected to secure the loose coal that he had shot the night previous. The weight of coal and slate that fell upon him was about three and one-half (3½) tons. He was carelessly "bearing in," and lying in front of the shot coal when the accident occurred.

TABLE No. 5.—List of non-fatal accidents occurring in and about the mines of the Third Bituminous mine district for the year ended December 31, 1888.

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Number of children.	Name of colliery.	Location—county.	Nature and cause of accident.
March 19,	Hugh Malone,	Miner,	42	M.,		Star,	Clarion,	Injured by fall of slate.
April 4,	Vinton Barr,	Mule driver,	22	M.,		Keystone,	do.	Head injured by being caught between cars.
June 4,	S. J. Adams,	Laborer,	38	M.,		Star,	do.	Hurt by mine cars.
July 2	Daniel Glover,	Miner,	40	M.,		Pardoe,	Mercer,	Injured by fall of coal.
July 2,	John Micheals,	do.	45	M.,		do.	do	do.
July 30,	John Lulley,	do.	54	M.,		Clinton,	Lawrence,	Injured by fall of slate.
July 31,	Len Hites,	Laborer,	40	M.,		Keystone,	Clarion,	Injured by railroad cars.
Sept. 1,	George W. Rigby,	Miner,	50	M.,		Baker,	Beaver,	Injured by fall of slate.
Sept. 15,	John Evans,	do.	39	M.,		Karns,	Butler,	Foot injured by fall of coal.
Nov. 6,	James McGoarty,	do.	24	S.,		Star,	Clarion,	Injured by a premature explosion of powder.
Nov. 6,	Charles McGoarty,	do.	17	S.,		do.	do.	do. do.
Nov. 6,	Patrick McGoarty,	do.	19	S.,		do.	do.	do. do.
Nov. 7,	Joseph Dowlar,	Laborer,	40	S.,		Stoneboro' No. 2,	Mercer,	Injured while lifting loaded cars.
Dec. 1,	Robert Thompson,	Miner,	25	S.,		Ormsby Slope,	do.	Injured by fall of slate.
Dec. 3,	Riley Ashbaugh,	Mule driver,	17	S.,		Leechburg No. 3,	Westmoreland,	Injured by mine cars.
Dec. 17,	Patrick Monoghan,	Miner,	40	S.,		Keystone,	Butler,	Injured by fall of slate.
Dec. 20,	John Stubbs,	Outside lab'r,	55	M.,		Carver,	Mercer,	Right foot cut off by railroad cars.

FOURTH BITUMINOUS DISTRICT.

Hon THOMAS J. STEWART,

Secretary of Internal Affairs, Harrisburg:

SIR: I herewith submit the annual report showing the condition, production, accidents and other information relating to the mines of the Fourth Bituminous District of Pennsylvania, for the year ending December 31, 1888.

The number of mines is slightly, and the production considerably increased over the previous year, and I am sorry to report a great increase in the number of fatal accidents, owing to the disastrous explosion at Kettle Creek, Clinton county, and accompanying this report will be found a report of the coroner's inquest, and a map showing No. 2 mine at Kettle Creek. There are also the usual tables and descriptions of accidents and improvements, and also my views stated at length, as to the cause of the explosion at Kettle Creek, and a full description, with drawings, of the Endless Rope Haulage at Antrim mines, Pa.

The following table will give a synopsis of the report.

Total number of mines in district,	72
Number of mines shipping coal,	67
Total production in tons,	4,632,043
Total shipment in tons,	4,118,025
Total production in tons of coke,	238,758
Total number of persons employed inside,	7,102
Total number of persons employed outside,	1,207
Total number of persons employed inside and outside,	8,309
Number of fatal accidents,	22
Number of non fatal accidents,	29
Number of tons per each fatal accident,	210,547
Number of tons per each non fatal accident,	159,725
Avarage number of days worked during the year,	232
Number of coke ovens in the district,	1,101

Very respectfully yours,

ROGER HAMPSON.

TOWANDA, *March 8, 1889.*

General Condition of the Mines.

Morris Run mines have not worked very steadily during the year. In the Salt Lake mine, quite a number of the heading pillars are being pulled out, and only six or seven headings are being driven, and the general condition of the mine has been very good during the year.

The Slope mine has the largest number of men employed, and the coal being low a great number of headings. Seventeen in number, have to be kept going on all the time, and the ventilation of the mine has been kept good. The new East Creek heading has been put through to the outcrop, and an inlet for the air current has been made here. The ventilation of all the headings on East Creek and to the right of the slope has been very much improved, and when the new waterway on the south side is completed and an inlet made on that side, the mine will be in a better condition than ever before.

The new mine in the Seymour vein has only a few men employed in driving the headings, and the mine is in a good condition. The mines all through are in good condition.

There has not been much work done at Fall Brook mines during the year. No. 2 mine has not worked very much, and the work in No. 5 mine has kept getting narrowed down, until, at my last visit, the only work going on was drawing pillars back. The condition of these mines during the year has been good, those in charge fully understanding their business, and doing all that was necessary to keep the mines in a good condition.

Arnot mines have been working very well during the year. In the summer the North drift and South drift were closed, and the men put in the Lower drift and No. 4 drift.

There is very little heading work being done in the Lower drift. A great many miners are at work on pillars and the ventilation of the mine has been kept pretty good during the year.

In No. 4 mine there are a few headings being driven, and quite a large number of men at work. The ventilation has been very good. This mine will hereafter serve as the waterway for the lower drift water, as it is at a lower point; and, as the pillars are coming back, and a great deal of water comes in, it has now a good outlet through this mine. Everything around and in the mine is in very good shape.

Antrim mines have worked fairly well during the year, and a large number of men are employed here. The ventilation of these mines has been good, and things are well looked after inside the mines, and everything is done to keep the mines in a good and healthy condition, and their condition reflects credit on those in charge of the works.

Gurnee mines have only employed a few miners, and work has not been very good. The mines have been kept in a good, healthy condition during the year.

Barclay mines have been worked well during the year. Very little work has been opened, the work being confined to pillars and

pieces of coal left years ago. The general condition of the mines has been fair, and a great deal of care and thought has been exercised in keeping the mining in such condition, for there is not a solid piece of coal in the mine.

At No. 4 Fall Creek, about twenty-five to thirty men have been at work in the lower coal, and the condition of the mine for awhile was not good; but now the mine is in good shape and ventilation good.

Long Valley mine has not been worked steadily this year. A new heading or two has been driven, and the mine been kept in a good condition so far as ventilation is concerned.

Kettle Creek mines in Clinton county, were opened in February of this year, and until the furnace in No. 1 mine was finished the ventilation was not very good, and the same remark will apply to mine No. 2. After that the ventilation of the mines was all right.

Whitehead mine, in Elk county, was opened this year, and only a few miners employed so far. The ventilation of the mine during the year was fair.

Tyler mine was worked the early part of the year. The condition of ventilation was fair. A fire destroyed the shutes, washer, etc., and no work has been done in the mines since that time.

Tannerdale mine has had only a few men at work during the year pulling out the pillars. The condition of the mine was good during the year.

St. Mary's mines have been worked very steadily, and the ventilation of the mines has been very good all the year. The same remarks will apply to the Cascade mines that adjoin these mines.

Dagus mines have worked very well during the year. A great deal of new work has been done. The ventilation and drainage of the mines has been very good, and everything has been well looked after.

Clarion mines operated by the same company as the Dagus mines have been kept steadily at work during the year.

No. 3 mine is nearly worked out, and not much new work has been done in No. 2. The ventilation of the mine has been kept in good condition. Clarion mines 5, 6 and 7, have also been worked well during the year. A great deal of new work has been done, and the ventilation of the mines has been very good.

Eureka slope has not worked during the year. Hazle Dell is a new mine near St. Mary's, opened this year, and the condition of the mine has been good. The mine is not very large, and only a few miners are employed. The vein is thin and is of good quality.

Beech Tree No. 2 mine was operated the first part of the year, and the condition on left side of the mine was very good, and on the right side there was one heading, that was ahead of the others, that was not so good. The general condition of the mine, however, was good. No. 3 mine was kept in a very good condition, as the fan is capable of forcing in an immense quantity of air.

Coal Glen mine has been worked very well this year, and a great deal of new work has been opened up. The ventilation and general condition of the mine has been first-class.

Dixon mine has worked fair, and the men have been employed in pillar work. The ventilation of the mine has been kept very good.

Pleasant Valley mine has been kept in very good shape during the year, the ventilation being good, a new opening in a country mine having improved the ventilation very much. A monkey drift to serve as a waterway has also been made here.

The Hamilton mine was finished early this year, and the men put in the other mines belonging to the company.

Soldier Run mines, 1 and 2, have beenkept very well ventilated. A new shaft was put down, that made a great deal of difference in ventilation, as it was near the face of the work. Most of the work in this mine consists of pillar work.

Sprague mine was very well ventilated during the past year, and they have also made a connection with a country bank which gave the ventilating current a more direct course to the furnace, everything being well attended to.

Rochester mine has made great improvements in the matter of ventilation during the year, and everything in the mine is now in good shape, the ventilation being very good all through the mine. The above five mines are operated by the Bell, Lewis & Yates Coal Mining Company.

Walston mines, 1, 2 and 3, have been well looked after, and the ventilation has been good. Much new work has been done in all three of the mines and many improvements made, and no expense spared to make it a first class work.

Adrian mines have been well looked after and kept in good condition. Much new work has been opened in No. 1 mine, and the ventilation carried well to the face of the workings. In No. 2 mine difficulties were met with in main heading, but now it seems to be a little more promising. A new slope, No. 3, has been put in and connects with No. 2, and the fan supplies both mines with ample currents of air.

West Eureka, No. 1, has made great progress during the year. In the early part of the year the ventilation was not very good, as the furnace was not large enough to do the work required, but since the fan started, the mine has been very well ventilated and condition good. At mine No. 2 the ventilation was not very good until the new fan was started, but since that time the mine has been well ventilated. This mine is very wet, the water coming from the roof and coal, as they are below water-level. A large rock roll has considerably interfered with the development of the mine. West Eureka No. 3 is opened, but no coal will be shipped until next spring.

New Mines and Improvements.

At Cook's Run, Clinton county, two new mines have been opened, a furnace built in each mine, a plane 4,000 feet in length, and a tramroad to the shutes, on P. & E. R. R., have been opened since February of this year by the Kettle Creek Coal Company.

A new mine has been opened, a plane and twenty coke ovens built at Whitehead, near Caledonia, on Low Grade Division of C. V. R. R., by the Elk Coal and Coke Company.

New shutes and a large washer, with all the latest improvements by Mr. Stutz, of Pittsburg, Pa., have been built at Tyler to replace the ones destroyed by fire last spring. This work is operated by the Clearfield Coal Company.

The Bell, Lewis & Yates C. M. Co., at DuBois, have put up a twenty-foot Guibal fan at their Rochester mine, and they are also making a new slope, putting up shutes, hoisting machinery, etc., at their property, near the Dixon mine, and when these improvements are finished, the shutes, etc., at DuBois will be abandoned.

At Antrim, Tioga county, the slope from mine No. 3 to the Cushing vein was completed during the summer, and the mine is being opened up. A new shaft has also been sunk to the slope mine, and a twenty-foot Guibal fan been erected.

At West Eureka, No. 1, a sixteen-foot Guibal fan has been built, and at West Eureka, No. 2, hoisting machinery, a twenty-foot fan, and bank of coke ovens have been built during the year. West Eureka, No. 3, is also opened, but not shipping coal yet.

At Dagus mines a new opening has been made at Kyler Run, which will be fully developed during the coming year.

At Fall Brook a new opening is being made into a body of coal that could not be reached from No. 5 mine, and it is expected they will ship coal early in the spring.

At Adrian, a new slope, No. 3, has been sunk and connection made with No. 2 mine. New shutes have also been built, and an ingenious arrangement for lowering the coal from the dump to the railway cars has been put in and works like a charm.

At Walston mine, No. 2, a plane 2,700 feet long has been made inside the mine, and trips of fifteen cars of two tons each are now let down the plane at a time, and everything works very smoothly. A large Cameron pump has been put in the new slope.

At Sprague mine a new opening in the opposite hill has been put in during the year.

At Beech Tree, No. 2, mine the tail rope has been lengthened very considerably, and ropes put in Right Heading No. 12 to bring the coal to the main hauling road.

Kaul & Hall have put in a new mine at Cascade and built a furnace. They have also opened a new mine, the Hazle Dell, and built a furnace.

Description of Endless Wire Rope Haulage, at Antrim Mines, Tioga Co., Pa.

The drawings herewith submitted show an endless wire rope haulage at Antrim, Tioga county. The drift going south from the engine house has been in use since November, 1883, and the drift going east since December, 1886. From November, 1883, until December, 1886, the coal was hauled to the shutes by a small locomotive, which from November, 1883, until 1886, hauled the coal out of the mine.

Since December, 1886, the coal has been taken to the shutes by the rope running in the East drift. The wheel A, under the track near the engine house, is 6 feet in diameter and has two grooves in the rim. About thirty feet from the wheel, the rope from the shutes is let under the track and into one of the grooves of wheel A; from here into the engine house, and over the friction wheel twice; then coming from engine house it is led into the other groove in wheel A, and goes from here east to the wheel C, in the mine. At a distance of 30 feet, at wheel A, the rope comes from under the track and lies on the horizontal rollers. These rollers are placed about 25 feet apart.

The rope, when the plan was drawn, extended 2,900 feet into the mine, but it has been extended 1,250 feet since that time, making the distance now from wheel A to wheel C, 4,150 feet.

The grade does not exceed 2.75 feet per hundred feet, and that grade is only for a short distance. The road near the engine house is forty-five feet higher than the road at wheel C.

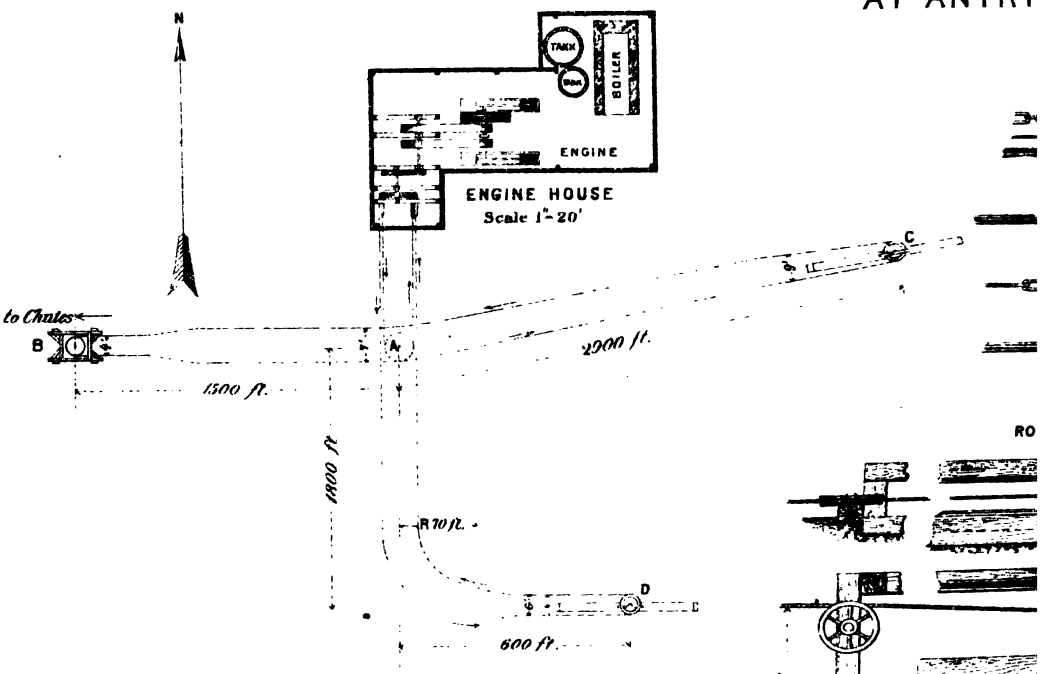
The grade from the engine house to the shutes ascends about one foot per hundred feet for a distance of 600 feet, and from there descends to the shutes; the greatest down grade is 1.5 feet per hundred feet. The empty wagons are run by gravity over the space at wheel A, where the rope lies under the road, the clutchman releasing his clutch and applying it without stopping the train or rope. At this point the supplies for the mine, such as props, caps, lumber, etc., are loaded and a man is stationed there to load the supplies and help the clutchman over this space when it is necessary for loading the props, etc., or to stop the train.

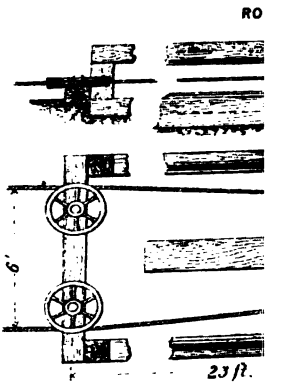
The road coming from the south is graded so that the loaded trip crosses over to the road leading to the shutes by gravity and a movable rail (see sketch track near engine house) is used to take the wagons across without riding on the rope. The plan shows the size of the different wheels used in the engine house.

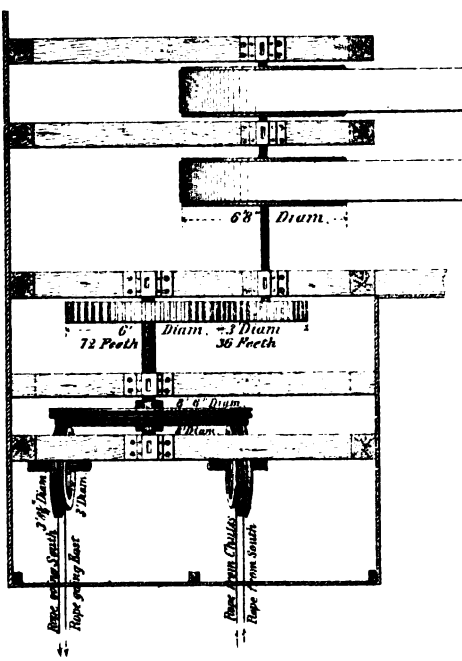
The power is two horizontal engines 16" x 24." Two endless rubber belts 20" wide and 5 ply thick are used. The clutch used, weighs 40 pounds, and was designed by W. S. Nearing, General Superintendent for the Morris Run Coal Mining Company. The carriage consists simply of a set of wheels and axles fastened to a frame, a seat for the clutchman, and a tool box. The drawbar on the carriage is put under the axle on the end to which the clutch is attached. This is done to

WIRE ROPE N

AT ANTRI







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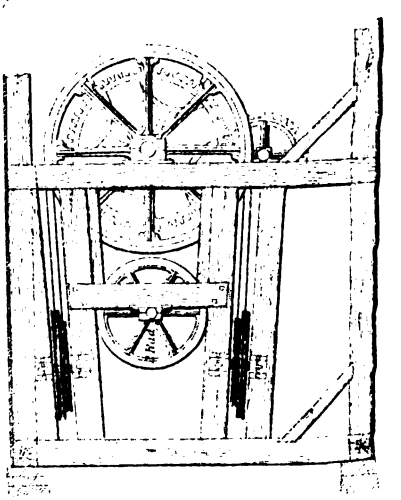

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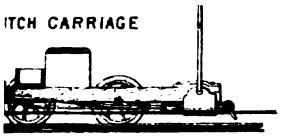
ITCH CARRIAGE



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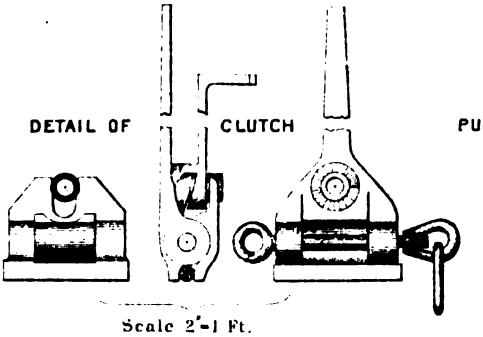
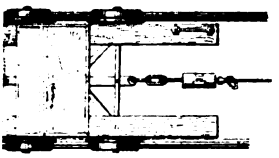
DETAIL OF CLUTCH

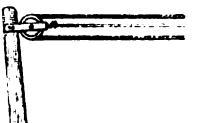


Scale 2"-1 Ft.

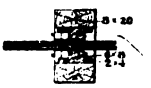
PULLEY FOR CURVES.

Scale 1"-1 Ft.

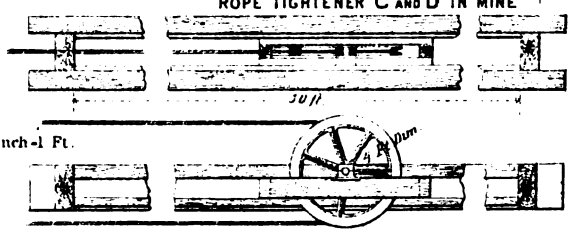


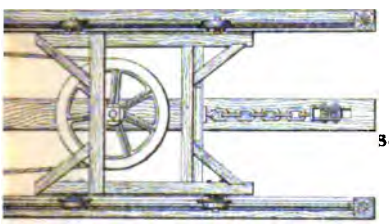


TIGHTENER B AT CHUTES.

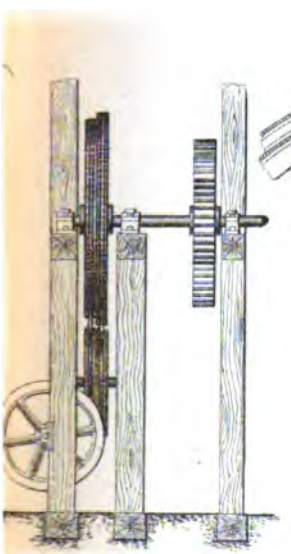


ROPE TIGHTENER C AND D IN MINE

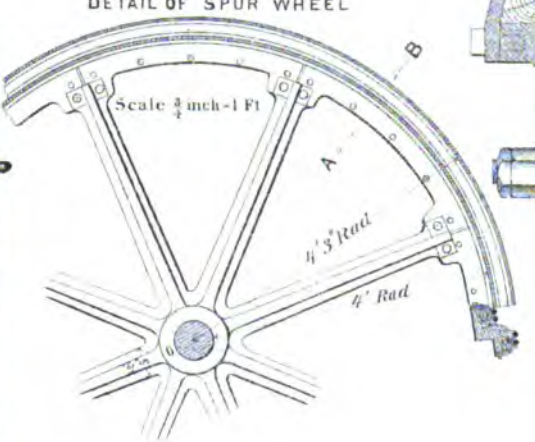




Scale ½ inch-1 Ft.

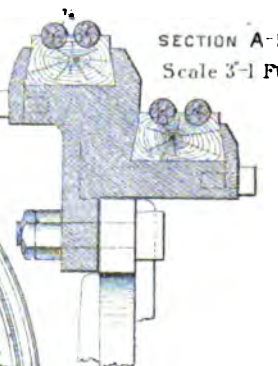


DETAIL OF SPUR WHEEL



SECTION A-B

Scale 3"-1 Ft



keep the rope from coming over the vertical rollers used in going around curves. These vertical rollers or pulleys, as will be seen by the plan, are cast iron pulleys filled with wood on the end. The axle on which the pulleys turn is bolted to a cast iron plate, which plate is bolted to the ties of the road with wood screws. For location of vertical pulleys see sketch "Tracks near engine house."

The tightening wheel B, as will be seen by the plan, is used for tightening the rope. This is done with a lever and a block and tackle. A chain with links 8 inches long reaches from the carriage to the lever, and a clevis fastens one end of the chain to the lever, the other end being fastened to the carriage. The sweep of the lever will take up two links or sixteen inches. The rails on which the carriage runs, are notched and "dogs" fastened to the carriage drops into the notches and they keep the carriage from going back.

The plan, "tracks near shutes," shows how the rope runs under the track, the grade being sufficient to run the loaded wagons close to the weigh scales, and a mule is used to take the empty wagons to the point on the road where the clutchman can fasten his clutch to the rope. The weigh scales and shutes are 75 feet south of wheel B. The tightener wheels C, and D, are operated by a jack screw.

As will be seen by the plan, both ropes are operated by the same machinery, the large friction wheel being made for that purpose [See section A—B], the rope from the schutes going over the 8 foot diameter, and the rope from the south going over the 8 foot 6 inch diameter. The ropes are taken over the friction wheel twice by means of wheels underneath conveying the rope from one groove to another. Both ropes are taken over the friction wheel in the same manner. The wheels underneath are 4 feet in diameter, and one of them has in its hub a bronze bushing and turns on the shaft, the other wheel is keyed to the shaft. The two wheels on each side of the friction wheel—one for each rope—are of different diameters, so as to convey each rope into its proper groove. One of these wheels, on each side, has a bronze bushing in its shaft, and turns on the shaft; the other wheels are keyed to the shaft. This is done on account of the speed of the ropes, one running 4½ miles per hour, the other running about 5 miles per hour. Close to the engine house, on the rope going east, a wheel weighing 250 pounds rides the rope keeping it tight when heavy loads are lifted. The rope near wheels C and D is spread so as to run 6 feet from center to center.

The weight of a loaded wagon, on an average, is about 2,000 pounds the empty wagons 600 pounds. Each clutchman draws from 20 to 30 wagons at a trip, and 5 clutchmen are employed. Two, and sometimes three, are on the rope with a loaded trip at one time. The capacity of the mine is from 800 to 900 tons per day, and can be increased so as to haul all the coal that can be mined.

This plant was designed and put in operation by Mr. James Pol-

lock, superintendent of mines, for the Fall Brook Coal Company, who owns and operate the mines. Mr. Pollock must be congratulated on having put in such a model plant, and one that works so successfully.

Fatal Accidents.

Accident No. 1.—James Malloy and James Kennedy, miners, were killed in Adrian mine, No. 1, March 2, 1888. These men were at work undermining, when the whole body of coal parted away from a slip running right across the back of the coal they were mining, up to a spar on right hand side, and settled right over the sprags they had under the coal, upon the men, causing their deaths. This accident was entirely unforeseen, the men having taken all the precautions necessary for their safety.

Accident No. 2.—James Ryan, aged twenty-three years, employed as a driver in Rochester mine, DuBois, while coming out with his loaded trip, and standing on the end of the rear car, was struck by a heavy piece of fire-clay which fell from the roof, and he died in seven or eight hours after the accident, which occurred August 6, 1888. The fire-clay had been pulled down in the heading up to the point where the accident happened, and it was just at the beginning of the jog that the fire-clay fell. The clay was covered by a false roof of coal and was not perceptible.

Accident No. 3.—Gus Magneson, a Swede, fifty years of age, was killed in mine No. 1, Antrim, October 2, 1888. Deceased had been working a loose end place, and had fired a shot about ten feet from the loose end, which had brought some of the coal and rock down, but left the loose end still staying up, and he lay down under it to mine it deeper, when the rock came down upon him killing him instantly.

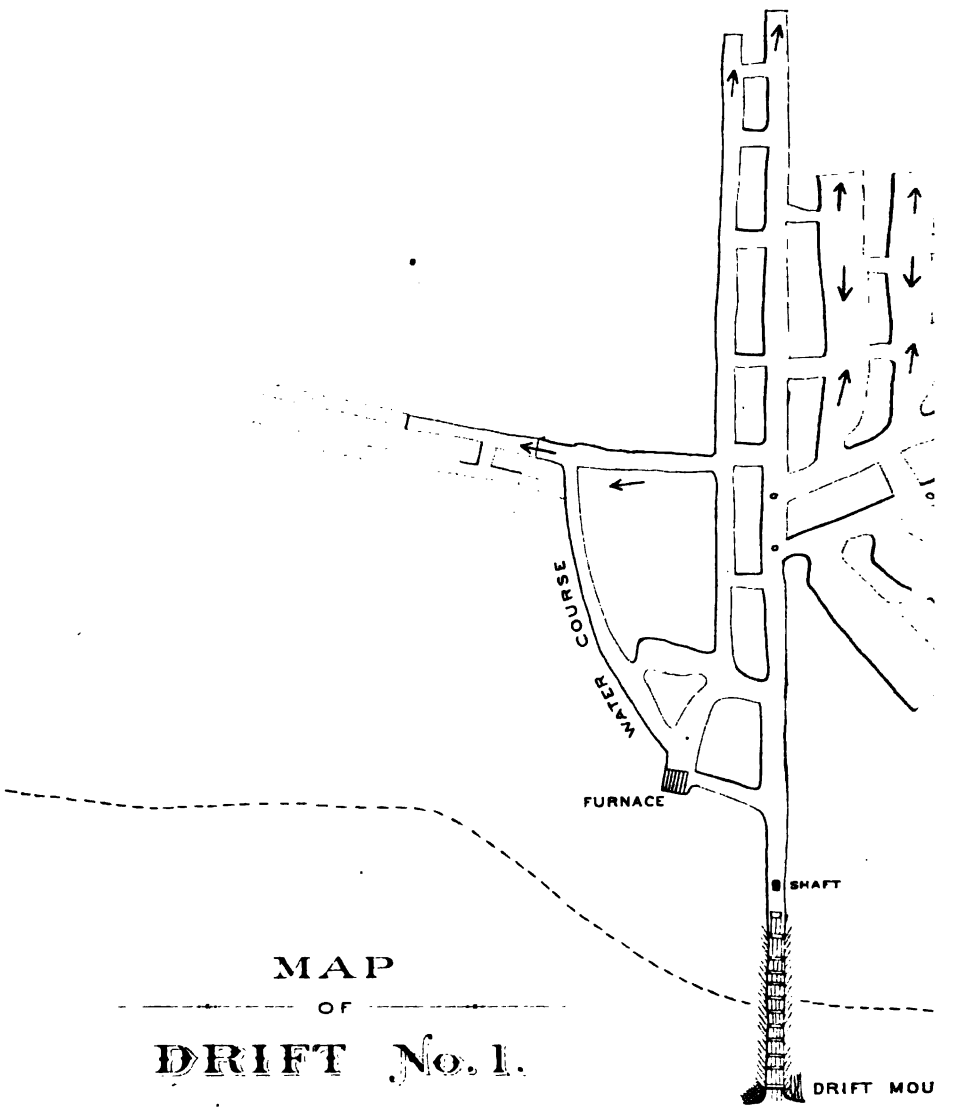
Accident No. 4.—See Kettle Creek explosion.

Accident No. 5.—John Fisher, aged —— years, a miner, and employed in Arnot mine, No. 3, was instantly killed in working place, December, 1888. Fisher, in company with a companion, was at work and had fired one shot on the fast side, and Fisher was just finishing the mining on the end, when the coal fell on top of him with the above result. There were no sprags under the coal, which had a loose end and a smooth top, and the accident seemed due to pure negligence.

The Explosion at Kettle Creek Coal Mine.

On Saturday afternoon, November 3, a disastrous explosion occurred at No. 2 mine, belonging to Kettle Creek Coal Company, by which sixteen men were almost instantly killed and one other died on November 7, making seventeen in all who lost their lives.

The mines are located in Clinton county, Pa., on the line of the P. & E. R. R., and distant from Cook's Run station two miles, and at an elevation of about 1,800 feet above tide water. The mines



MAP

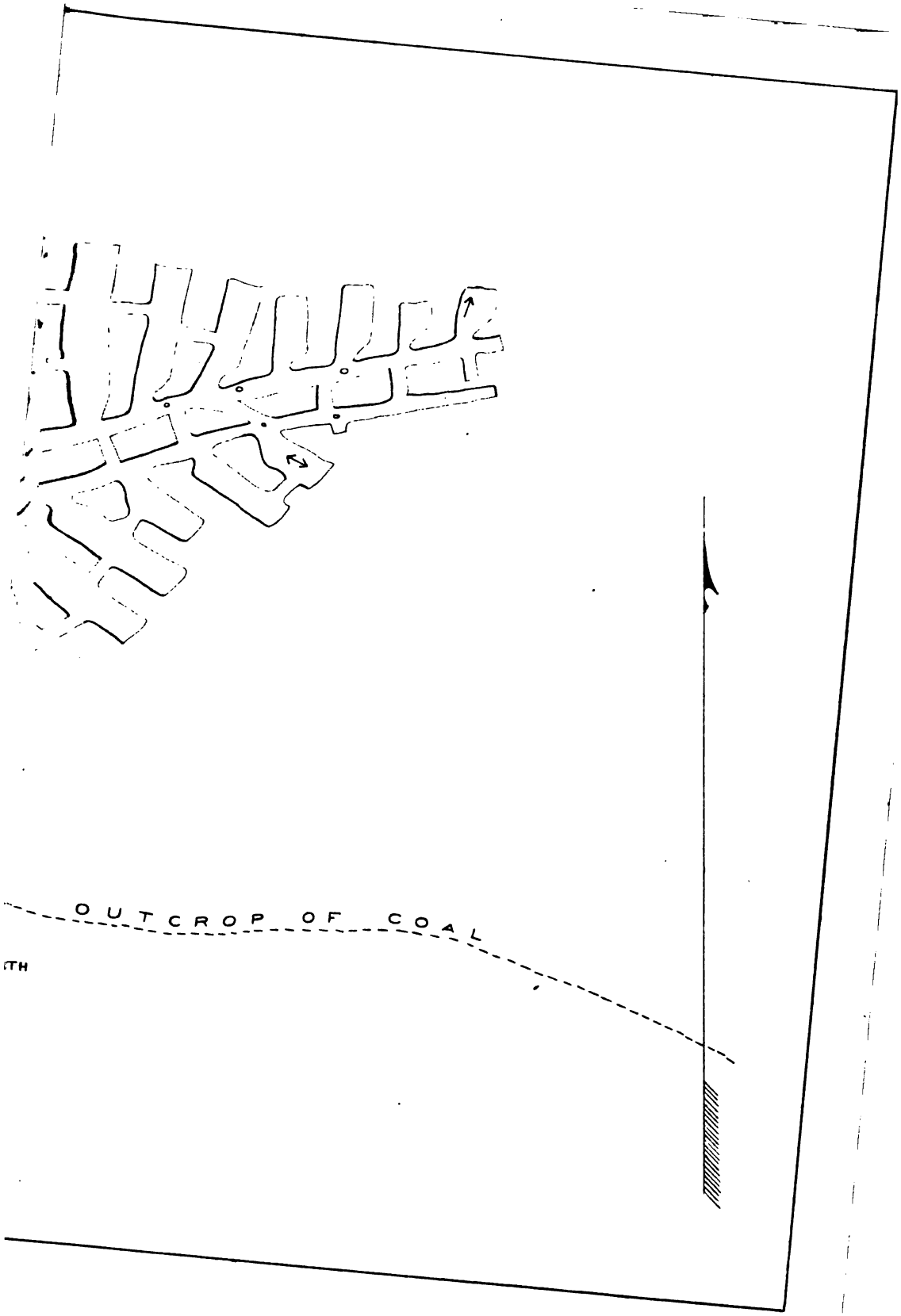
OF

DRIFT No. 1.

KETTLE CREEK COAL MINING COMPANY.

SCALE 100 FEET = 1 INCH

GEO. L. MILLER, ENG.


OUTCROP OF COAL
TH

were opened in February of this year, and were doing a good business. In putting in this No. 2 mine, a fault had been met with just on the outcrop of the coal, and the drift had been made by overcasting, and when the rock fault had been reached the legs of the timbers had been set on the fault, and as soon as this was passed the drift went under cover.

As will be noticed from a glance at the map, the main heading was only driven for a distance of about five hundred and fifty feet. To the right, two heading were being driven; in the first, there were seven rooms turned off, and in the other, nine rooms had been turned away. About half-way to the face of the main heading a heading had been driven for a distance of nearly one hundred and twenty feet, and it had gone to the dip very fast; and so to strike the bottom of the dip and to drain it, a heading had been started just inside the drift timbers, and, passing under the air shaft, had been driven diagonally until it had intersected the dip heading spoken of, and to further drain the heading, and to make the water-way more uniform, four Swedes had been set to work, on the morning of November 3, to blast a ditch in this diagonal heading, and as they were considered capable men, and the heading was covered with water, dynamite was given to them to blast with, and they had fired three shots and were getting ready for the fourth when one of the men, Carlson, went outside to the store for a fresh supply of dynamite and fuse, but could not get any fuse, but brought in six more sticks of dynamite and a box of cartridges, and as one of the survivors of the explosion, Anderson, states, he and his two companions were just commencing to drill the hole, Anderson holding the point of the drill down, and his two companions turning the crank of the machine drill, when Carlson came in with dynamite and box of caps, and seeing the drill post giving way, he hastily put the dynamite and caps down and tried to hold up the post, but it fell over and the explosion immediately occurred. Anderson remembers nothing after this, but managed in some way or other to get out of the mine, as also did his brother, while Carlson was hurled up the air shaft and over the stack built on top of it, his body not being found until the next morning. The other man was hurled up the back heading, which runs parellel to the main heading for a distance of one hundred and fifty or one hundred and sixty feet. Two miners at work in the drift making a ditch, were hurled out with terrific force on to the slate dump, a distance of about one hundred and seventy feet, and instantly killed. An Italian boy, who was employed as a trapper at the door on main heading, where the air is turned up into the first right heading, was hurled away from his post almost to the mouth of the drift, just outside some timbers that had been blown out, and instantly killed.

The explosion seems to have spread itself as follows: Up the air shaft, out of the drift, up the main heading and up the first and second

right headings, and it was in these two headings that twelve men lost their lives as they were endeavoring to escape from their places, some of the bodies being found on the gangway and some in the rooms. Three miners, who were at the face of the second right, escaped from the mine, as did also another miner, and a driver who was in the first room in second right also escaped, while his mule perished.

Now the question arises, was the amount of explosives (for in addition to the dynamite and caps there were two half kegs of powder in the Swedes' boxes) great enough to cause this terrible loss of life and destruction in the mine, for, in addition to the timbers being blown out at the mouth of the drift, every door and brattice in the mine was blown away, and even the stack on top of the air shaft was badly wrecked?

From the evidence adduced at the inquest it appears that the men must have had four sticks of dynamite in the morning, and allowing them to have used one stick for the three shots, then with the six sticks Carlson brought in, there would have been nine sticks, but two sticks were subsequently found in the water ditch heading, so we can only say that seven sticks, the box of caps and two and a half kegs of powder exploded.

What, then, was the cause of the death of the men in 1st and 2nd headings? Was it as some of the miners suggested—fire damp? I must say no, in answer for myself. Inspector Callaghan, Superintendents Miller and Eddy and Messrs. Anderson, Bolem, and myself went carefully through every working place in the mine with safety lamps, and could not find the least trace of fire damp, and the next day we again went through the mine with the same result. Mr. Lyle, of Rathmel, and Mr. Bate, of Bitumen, old and experienced miners so far as gas is concerned, being with us; and, on Thursday, November 8, Inspector Blick, W. Kelly, General Manager Kemble Coal and Iron Company, John Mitchel, Superintendent Kemble Coal and Iron Company, and Jacob Anderson, Mine Foreman of St. Mary's, again went in the mine and could not find a trace of gas, so we must look for some other cause for the deaths of those miners in 1st and 2nd Right; and, in spite of the fact that I lay myself open to ridicule and misrepresentation, I now state it as my earnest and sincere belief that it was the coal dust that lay along 1st and 2nd Right headings, and in the rooms of the same, that ignited and caused the death of these miners in the headings spoken of; and here I may ask, is it not possible for such a concussion as resulted from the ignition of these explosives to raise all this fine dust in a cloud, and then for the flash of the same to have ignited the dust, and the consequent explosion of it and the resulting carbonic-oxide to have caused these deaths? For, commencing at room No. 1 in 1st Right, we first find the traces of the burnt dust, not only along the heading, but also in the 1st room, and find the current passed on and up through the cross-cuts

in every room until the top room is reached, when it comes out and joins the current that had come up the heading, and then, passing down and into some of the rooms in the 2nd Right, until it met a counter current coming up 2nd Right, and through the rooms of the same, and in no case do we find any trace of the burnt dust for a distance of from 20 to 24 feet beyond the last cross-cut in each room; and we find it did not go up to the face of the main heading by 60 or 70 feet.

One peculiar feature in the path of this explosion was noted, viz: That wherever there had been a bend made in driving the heading, and the rib was of a convex shape, the current was deflected from its course and it then struck the opposite rib and so passed on. Another feature noted was that the burnt dust was thickest on top of the props and along the top of the ribs, while near the bottom very little could be noted. Three miners were at the face of 2nd Right, and one of the men at the moment of the explosion looked down the heading, and he says he saw the *heading full of sparks*, and not a flash. Another Swede gave the same testimony, and the mule driver says the same thing. All these men who thus escaped did so by crawling on their hands and knees to the drift mouth.

That there was no fire-damp present in the explosion, we point to the fact that in a few minutes after it, Mine Foreman Meehan and others went in to the mine with naked lights and went up the headings for quite a distance until driven back for a few minutes by the dense smoke and gas, resulting from the burnt dust, and in less than an hour's time all the bodies had been recovered from the mine. Of the bodies so recovered there were no traces, so far as could be ascertained, of any of them being burnt, but they appeared to have been suffocated, and none of them showed any signs of having been hurled around, so we must conclude that these men were killed by the explosion of the coal dust. And now let us see if there is any ground, or have we any well authenticated cases of coal-dust explosions, and let us first see what Dr. Chance says in his work on "Coal Mining," page 395.

"But there are several considerations opposed to this view of the necessity of the presence of fire-damp:

"1. Although admixtures of coal dust and air may not be readily inflammable (explosive) under ordinary conditions, it seems probable that when suddenly and violently set in vibration by a powder blast, an otherwise non-explosive mixture may become explosive.

"2. It is a well known fact that flour and other fine vegetable powders may cause violent explosions.

"Explosions have occurred in some collieries, notably one at Berandine in 1877, when no fire-damp had been detected for long periods (twenty-two years), and in a colliery at Campagnac an explosion occurred in 1875, although fire-damp had never been detected.

"It is evident that the danger from this source is confined to comparatively dry mines, and is greater in dry than in wet weather."

Mr. Galloway quotes Mr. Vital as saying:

"Very fine coal dust is a cause of danger in dry working places in which shots are fired. In well-ventilated workings it may of itself alone give place to disasters. In workings in which fire-damp exists, it increases the chance of explosions, and, when an accident of this kind does occur, it aggravates the consequences.

"But, while these conditions are doubtless correct as regards the dust of bituminous coals, it is certainly questionable whether anthracite coal dust will form an explosive mixture with air alone under ordinary temperature and atmospheric pressure, or whether it will increase the explosive force of an explosive mixture."

Mr. W. Galloway, late Inspector of mines in England, and one of the greatest living authorities on the question of coal dust explosions, contributed a remarkable paper to the South Wales Institute of Engineers, and this same article was reprinted in the "Colliery Engineer," of Shenandoah, Pa., in the July, August and September numbers, and in the September number is the following remarkable paragraph:

"The flame of great colliery explosions is found, as a rule, to have traversed the intake airways, the working-places, and the return airways, to a greater or less extent; that is to say, it has passed through those regions of the workings which contain pure air and coal dust, as well as those which contain a mixture of air and fire-damp, together with coal dust. Hence it is that, ever since serious attention has been drawn to the inflammable nature of mixtures of fire-damp, air and coal dust, and of air and coal dust alone, differences of opinion have existed as to how far the fire-damp, on the one hand, or the coal dust, on the other, may have contributed toward the production of the results observed in the case of any particular explosion. Altoft's explosion is, however, a remarkable exception of recent occurrence, in regard to which, all who examined the mine after the explosion, the author included, *came to the conclusion that coal dust alone had been the inflammable agent.*"*

For a full description of this peculiar explosion, I would refer your readers to the "Colliery Engineer" for September, 1888, and in the same journal for December, 1888, will be found copious extracts from the recently-published work of Messrs. W. N. and J. B. Atkinson, H. M. Inspectors of mines, in which is clearly shown the great influence exerted by coal dust in an explosion. I quote the two following paragraphs as bearing directly on this subject:

"What is the reason of the change from inflammation unattended with violence to inflammation with violence, the writer can only conjecture. It is possible, owing to the compression of the air in front of

*The italics are mine.

the inflamed dust-air mixture by the expansion of the air behind it by the heat evolved. The compression of the dust taking place in air so compressed, would be assisted, as Mr. Galloway has pointed out, by the heat evolved during compression, and it is possible that in compressed air, even at ordinary temperatures dust would burn more readily."

"After the explosion was fairly established, conditions quite different to the ordinary conditions of a colliery would exist, which appeared to be sufficient to insure the continuance of both flame and violence over the whole of those roads containing an uninterrupted supply of coal dust.

"These conditions would be: 1. A wave of air preceding the explosion and filling the air in the road with coal dust. 2. Flame following instantly into compressed air charged with dust."

Let us now see if we have had any similar accidents in this country in which it is claimed that coal dust was the explosive agent, and the Pocohontas, Va., disaster is the first case in point; and it is claimed in this case that the coal dust was the destructive agent, and it was finally contended that fire-damp had not been seen in the mine previous to, or after, the explosion.

Coming down to more recent cases, we find an explosion at Rich Hill, Mo., caused by a blown-out shot, or a "cyclone," as the miners term it, and, soon after the Kettle Creek accident, we find one occurring at Pittsburg, Kansas, very similar in all respects to those above mentioned, and, taking everything into consideration—the extreme dryness of the mine, and the large amount of very fine dust lying along the roadways, and the fact that it was near quitting time, and most miners had fired their shots—everything seemed just in the right condition for a disastrous explosion, and only needing the flash of a large amount of explosive material to ignite it, and to carry death and destruction in its pathway.

In conclusion I would say, after the most careful examination of the mine, and of those who escaped from it, I am satisfied that, in this case at least, coal dust played the most important part; for I firmly believe that the deaths of Curran, Donley, Carlson, Pearson and the Italian boy, were due to their being thrown around by the concussion of the dynamite caps and powder, and the death of all the others was due to their being suffocated by the gas and smoke given off from the burning coal dust ignited from the explosion of the dynamite caps, and powder.

TABLE No. 1—Showing Location of Collieries in the Fourth Bituminous Mine District.

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of Superintendent.	Post-office Address.
Adrian, 1, 2 and 3,	Rochester and Pittsburgh Iron and Coal Co.,	Jefferson,	John H Bell,	De Lancy, Jefferson county.
Antrim, 1, 2 and 3.	Fall Brook Coal Company,	Tioga,	James Pollock,	Antrim, Tioga county.
Arnot, 1, 2, 3 and 4,	Blossburg Coal Company,	do	Frank F Lyon,	Arnot, Tioga county.
Barclay, 1 and 2,	Towanda Coal Company,	Bradford,	R T Hodson,	Barclay, Bradford county
Beech Tree, 1, 2 and 3,	Rochester and Pittsburgh Coal and Iron Co.,	Jefferson,	John H Bell,	DeLancy, Jefferson county.
Cameron.	Cameron Coal Company,	Cameron,	John Morris,	Cameron, Cameron county.
Cascade, 1 and 2	Kaul & Hall,	Elk.	Andrew Kaul,	St. Mary's, Elk county
Clarion, 1, 2 3 4, 5 and 6	N. W. Min. and Exchange Company,	Jefferson,	D Robertson,	Dagus Mines, Elk county.
Clumont,	Buffalo Coal Company,	McKean,	J. H. Tate,	Clumont, McKean county.
Coal Glen,	Jefferson Coal Company,	Jefferson,	Austin Blakeslee,	Coal Glen, Jefferson county.
Dagus mines, 1 to 25,	N W. Min. and Exchange Company,	Elk,	D. Robertson,	Dagus Mines, Elk county.
Dixon mine,	H. K. Wick & Co.,	Clearfield,	Frank Morrison,	Victor P. O., Clearfield county.
Eureka Slope,				
Fall Brook, 1 and 2,	Fall Brook Coal Company,	Tioga,	Fred. Wells,	Fall Brook, Tioga county.
Fall Creek,				
Gaines, 1 and 2	Gaines Coal and Coke Company,	Tioga.	P. C. Smith	Gurnee, Tioga county.
Hamilton,	Bell, Lewis & Yates C. M. Co.,	Jefferson,	George Mellinger,	Reynoldsville, Jefferson county
Hildrup				
Instanter, 1 and 2,	Buffalo Coal Company,	McKean,	J. H Tate,	Clumont, McKean county.
Kettle Creek, 1 and 2,	Kettle Creek Coal Company,	Clinton.	Geo. L. Miller,	Bitumen, Clinton county
Long Valley,	Long Valley Coal Company,	Bradford,	E. O. Macfarlane,	Towanda, Bradford county.
Morris Run 1, 2 and 3,	Morris Run C M. Company,	Tioga.	W. S. Mea ing,	Morris Run, Tioga county.
Pleasant Valley,	Bell, Lewis & Yates C. M. Co.,	Jefferson,	George Mellinger,	Reynoldsville, Jefferson county.
Renovo mines,		Clinton		
Rochester,	Bell, Lewis & Yates C. M. Co.,	Clearfield,	L. W. Robinson,	DuBois, Clearfield county.
Sprague.	do. do.	Jefferson,	George Mellinger,	Reynoldsville, Jefferson county.
Soldier Run 1 and 2	do do.	do.	do	do do.
St Mary's, 1, 2 and 3,	St. Mary's Coal Company,	Elk,	Joseph Eddy,	St. Mary's, Elk county.
Tannerdale,	do. do.	do.	do.	do do
Walston, 1, 2 and 3,	Rochester and Pittsburgh Coal and Iron Co.,	Jefferson,	John McLeavy,	Walston Mines. Jefferson county.
Williamsport,	Clearfield Coal Company,	Clearfield,	— Jacobs,	Tyler, Clearfield county.
Whitehead,	Elk Coal and Coke Company,	Elk.	W. H. Taylor,	Caledonia, Elk county.
West Eureka, 1, 2 and 3,		Jefferson,	Thomas Richards,	Horatio, Jefferson county.

TABLE No. 2.—Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employés, number of persons killed and injured, number of kegs of powder used, etc., in the Fourth Bituminous Mining District, for the year ending December 31, 1888.

NAMES OF COLLIERIES.	Location.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs of powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Adrain, Nos. 1, 2 and 3,	Jefferson,	278,695	26,252	218 977	235	647	2	2	....	10	..	..	450
Antrim, Nos 1 2 and 4,	Tioga,	318 559	.	318 559	212	805	1		....		...	2	.
Arnot, Nos 1, 2, 3 and 4,	do.	318 200	13 414	297 240	226	794	1	5		3	..	3	250
Barclay, Nos. 1 and 2.	Bradford,	109,975	.	107 776	250	254	..	2	....			1	....
Beach Tree, Nos. 1, 2 and 3.	Jefferson,	138,743	.	138 743	200	254		3		3	....		
Cameron,	Cameron,	1.024	....	1,024		7			20		..		..
Cascade, Nos. 1 and 2.	Elk,	77,861	.	77 711	310	114		1	.	1	..		....
Clarion, Nos. 1, 2, 3, 4, 5 and 6,	Jefferson,	361,451	...	361,451		584		3	2,224	1	...	2	....
Clumont,	McKean,	10 443		10 443		18			10				....
Coal Glen,	Jefferson,	154.000	.....	153 000	200	205		1	1,240	1	...		.
Dagus Mines, Nos. 1 to 25,	Elk,	343 848	.	334 297	214	743			1,327	8	..	2	36
Dixon Mine.	Clearfield,	50,617	..	50,617	200	72	..		162		..		..
Eureka Slope,	Elk,	...	.....	...		...	..	..	...	..	....		....
Fall Brook, Nos. 1 and 2,	Tioga,	56 919	..	56 919	227	130		..	....	..	....	2	.
Fall Creek.	Bradford,	...	....	.							....		..
Gaines, Nos. 1 and 2,	Tioga,	7,906	.....	7,906		20	..	.	56		....	..	....
Hamilton,	Jefferson,	..	...	...			..				....	..	....
Hildrup,	Clearfield,	..	..	...	...	..		..	..	..	....		....
Instanter,	McKean,	...	..			..				..	..		....
Kettle Creek, Nos 1 and 2,	Clinton,	32 000	..	32 000		134	17	..	400		....	..	....
Long Valley,	Bradford,	53 846	....	53 846	198	126			600	1	....	..	....
Morris Run, Nos. 1, 2 and 3,	Tioga,	373 712	..	373 712	192	661		1		4	....		....
Pleasant Valley,	Jefferson,	..	....	..							....	.	
Renovo,	Clinton,	..	....	.							..		....
Rochester,	Clearfield,	354 198	..	354 198	232	462	1	4	3,000	4	...	1	..
Sprague.	Jefferson,										..		
Soldier Run, Nos. 1 and 2.	do.	586 103	19,711	539 251	286	664				..	..	1	100
St. Mary's, Nos. 1, 2 and 3,	Elk,	100,000	.....	100,000	300	152	..	..	100	..	....	1	....

TABLE No. 2—*Continued.*

NAME OF COLLIERIES.	Location.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Tannersdale,	Elk.	14 626		14 626	300	25							
Walston. No 1, 2 and 3,	Jefferson,	457 961	153 492	196 581	270	804		2		7			
Williamsport,	Clearfield,	7 874	4 415	7 874	120	126				2			100
Whitehead,	Elk	11 515	131	11 515		72			200				24
West Eureka, Nos. 1, 2 and 3,	Jefferson,	298 660	22 342	298 660	250	607		5	3 000	10			141
Total,		4, 632 043	232, 758	4 118, 025	232	8 309	22	29	12, 839	55		15	1 101

TABLE No. 3.—Showing the number of each class of employés at each colliery in the Fourth Bituminous Mine District during the year 1888.

NAMES OF COLLIERIES.	Location—county.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.						Grand total inside and outside.
		Inside foreman or mine-boss.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	All company men.	Superintendents, book-keepers and clerks.	Total outside.	
Adrian, 1, 2 and 3,	Jefferson,	2	442	9	12	35	7	507	.	6	5	50	4	65	572
Antrim, 1 2 and 3,	Tioga,	2	546	27	. .	46	23	644	. . .	16	7	121	7	151	805
Arnot, 1, 2 3 and 4	do.	1	410	109	27	57	32	636	. .	8	6	140	4	158	794
Barclay, 1 and 2,	Bradford,	1	147	27	9	19	7	210	. .	3	2	35	2	42	254
Beech Tree, 1, 2 and 3,	Jefferson,	1	205	10	6	4	4	229	. .	5	2	15	3	25	254
Cameron,	Cameron,	1	4	. .	.	1	. .	6	. . .	. .	. . .	. .	2	2	8
Cascade, 1 and 2,	Elk,	1	53	14	. .	3	1	102	. .	2	1	8	2	13	115
Clarion, 1, 2 3 4, 5 and 6,	Jefferson,	2	459	21	8	22	1	513	1	7	3	53	4	68	581
Clumont,	McKean,	. . .	15	1	.	.	. . . .	16	. .	. . . .	. . .	.	.	.	16
Coal Glen,	Jefferson,	1	155	20	5	8	.	188	. . .	2	1	12	2	17	205
Dagus Mines, 1 to 25,	Elk,	3	424	32	8	34	2	503	1	17	7	120	10	155	748
Dixon Mine,	Clearfield,	1	55	. . . .	3	5	2	66	. . .	1	. . . . .	5	1	7	72
Eureka Slope,	Elk,	. . . .	.	.	.	. . .	.	.	. . . .	. . .	. . . .	.	. . .	.	.
Fall Brook, 1 and 2,	Tioga,	1	74	10	. .	8	3	96	. . . .	4	2	25	3	34	130
Fall Creek,	Bradford	. .	. . .	. . .	.	. .	.	. .	. . . .	.	. . . .	.	. . .	.	. .
Gaines, 1 and 2,	Tioga,	1	13	2	. .	1	1	18	. . . .	. . . .	. . .	1	2	3	21
Hamilton,	Jefferson,	. . .	. .	. .	. .	. . .	. .	.	. . .	. . .	. . .	.	.	.	.
Hildrup,	Clearfield,	. . . .	. .	. .	. .	. .	. . .	.	. . .	. . . .	. . .	.	. . .	.	.
Instanter,	McKean,	. .	. .	. . .	. . .	. .	. . .	. .	. . . .	. . . .	. . .	. . .	.	.	.
Kettle Creek, 1 and 2,	Clinton,	1	110	. .	.	5	2	118	. . .	4	1	12	2	19	134
Long Valley	Bradford,	1	71	15	9	10	4	110	. . . .	2	2	18	2	24	126
Morris Run, 1, 2 and 3,	Tioga,	2	430	120	17	30	22	621	. . .	6	4	25	7	42	661
Pleasant Valley,	Jefferson,	.	. . . .	. .	. . . .	. . .	. .	.	. . .	. . . .	. . .	.	. . .	.	.
Renova mines,	Clinton	. .	. . .	. .	.	. .	. .	.	. . .	. .	. . .	. .	.	.	.
Rochester,	Clearfield,	2	298	60	17	35	17	429	. . .	4	4	24	3	35	462
Sprague,	Jefferson,	.	. .	. .	. .	. .	. .	.	. . . .	. .	. . .	.	. .	.	.
*Soldier Run, 1 and 2,	do	3	480	25	25	49	23	605	. . . .	6	4	48	4	62	664
St. Mary's, 1, 2 and 3,	Elk,	2	113	10	5	7	. .	137	. . . .	2	2	8	3	15	152
Tannerdale,	do.	1	19	. .	. .	2	. . . .	22	. . .	. .	. .	3	.	3	25

*Pleasant Valley and Sprague are included in production, etc., of Soldier Run mine.

TABLE 8—*Continued.*

NAMES OF COLLIERIES.	Location—county.	NAMES OF PERSONS EMPLOYED INSIDE.							NAMES OF PERSONS EMPLOYED OUTSIDE.						Grand totals inside and outside.
		Inside foreman or mine-boss.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foreman.	Blacksmiths and carpenters	Engineer and firemen.	All company men	Superintendents, book-keepers and clerks.	Total outside.	
Walston, 1, 2 and 3,	Jefferson,	2	386	22	96	22	28	556	....	8	10	190	6	248	804
Williamsport,	Clearfield,	1	93	..	14	4	4	120	....	3	2	8	3	16	136
Whitehead,	Elk,	1	63	3	8	2	2	79	....	1	.	1	2	4	72
West Eureka, 1, 2 and 3,	Jefferson,	2	520	12	....	23	10	567	....	6	10	19	7	42	607
Total,	....	36	5,615	550	270	436	195	7,102	2	114	75	931	85	1 207	8 309

TABLE No. 4—List of fatal accidents occurring in and about the mines of the Fourth Bituminous Mine District for the year ended December 31, 1888.

Date of accident.	Name of Person.	Occupation.	Age.	Widow.	Number of orphans.	Name of colliery.	Location—county.	Nature and cause of accident.
Feb'y 9,	Anthony Haddon,	Miner,	40	Yes,	3	Rochester,	Clearfield,	Ankle badly bruised by fall of coal; amputation was necessary, and he died February 18.
March 2,	James Malloy,	Miner,	46	Yes,	4	Adrian,	Jefferson,	Killed by a fall of coal while undermining.
do.	Jame Kennedy,	do.	56	No,		do.	do.	
Aug. 6,	James Ryan,	Driver,	23	No,		Rochester,	Clearfield,	Killed by a fall of fire-clay in gangway.
Oct. 2,	Gust Magneson,	Miner,	51	Yes,		Antrim,	Tioga,	Killed by a fall of stone while undermining.
Nov. 3,	Steve Polatka,	do.	22	No,		Kettle Creek,	Clinton,	Killed by an explosion of dynamite, fulminating caps and black powder; explosion intensified by the ignition of fine coal dust (See report on explosion at Kettle Creek).
do.	Aaron Carlson,	do.	27	No,		do.	do.	
do.	Michael Marcy,	do.	16	No,		do.	do.	
do.	John Anderson,	do.	20	No,		do.	do.	
do.	Samuel Killinger,	do.	50	Yes,		do.	do.	
do.	Joseph Malcolta,	do.	20	No,		do.	do.	
do.	Sarton Marcy,	do.	18	No,		do.	do.	
do.	John Carlson,	do.	18	No,		do.	do.	
do.	Charles Ahlman,	do.	22	Yes,	1	do.	do.	
do.	Joseph Backus,	do.	55	Yes,		do.	do.	
do.	John Backus,	do.	16	No,		do.	do.	
do.	Dominic Colosimo,	do.	35	Yes,		do.	do.	
do.	Morris Yonka,	do.	15	No,		do.	do.	
do.	Michael Curran,	do.	40	Yes,	7	do.	do.	
do.	Patrick Donley,	do.	55	Yes,	5	do.	do.	
do.	Martin Pearson,	do.	20	No,		do.	do.	
do.	W. H. Smoke,	do.	25	No		do.	do.	
Dec. —,	John Fisher,	do.		Yes,		Arnot,	Tioga,	Killed by fall of coal.

TABLE No. 5.—List of Non-Fatal Accidents occurring in and about the Mines of the Fourth Bituminous Mine District for the year ended December 31, 1888.

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Number of children	Name of colliery.	Location—county.	Nature and cause of accident.
March 9,	David Hynd,	Laborer,	65	Yes,		Adrian,	Jefferson,	Leg broken; run over by trip of cars in the slope.
do.	Mike Larago,	Miner,	20	No,		do.	do.	Leg broken by fall of slate.
May 21,	George Shaffer,	do.	20	No,		Cascade,	Elk,	Leg broken by fall of rock from the roof.
July 2,	Robert Walker,	do.	38	Yes,		Arnot,	Tioga,	Back broken by fall of fire-clay; is still living.
Aug. 15,	Nicola Franze,	do.	45	No,		Watson, No. 2,	Jefferson,	Leg broken while taking down a fall of coal
Sept. 19,	Patrick Duffey,	do.				Arnot,	Tioga,	Back slightly hurt by fall of coal.
do. 26,	Pasquale Peri,	do.	32	No,		Walston,	Jefferson,	Leg b oken; slipped in front of a loaded car, which ran on him.
do. 26,	George Allen,	do.		Yes,		Clarion,	do.	Seriously hurt on breast and shoulders by fall of coal.
Oct. 12,	Patrick McGown,	do.	36	Yes,	5	Eureka, No. 2,	do.	Hurt by a fall of coal
do. 20,	Degaspar Alberto,	Dumper,	40	No,		Beech Tree, No. 2,	do.	Foot badly hurt by coal car.
do. 23,	James Weaver,	Miner,	54	Yes,		Eureka No. 2,	do.	Leg broken by fall of coal
Nov. 3,	Aaron Anderson,	do.				Kettle Creek,	Clinton,	Badly injured by explosion of dynamite, etc.
do 3,	John Anderson,	do.				do.	do.	do. do. do.
do. 7,	Josiah Bennett,	do.	35	Yes,		Morris Run,	Tioga,	Collar-bone broken by fall of coal.
do 24,	Robert Ramsey,	do.	69	Yes,		Pleasant Valley,	Jefferson,	Foot bruised by fall of coal.
Dec. 24,	Thomas Dransfield,	Laborer,	16			Antrim,	Tioga,	Arm badly hurt by being run over by loaded cars.

FIFTH BITUMINOUS DISTRICT.

Hon. THOMAS J. STEWART,

Secretary of Internal Affairs:

SIR: I have the honor of presenting herewith my annual report as inspector of coal mines, for the Fifth Bituminous coal district, for the year ending December 31, 1888.

The report contains the usual tables showing the location of collieries, the number of tons of coal mined and coke produced at each. Also the number of each class of employés at each colliery, etc., and the number of accidents reported as having occurred at each works. We find by the list of accidents that there has been ten fatal, or that resulted fatally. Of the non-fatal accidents, there were fifty-eight reported, but among this number there are only a few that were of a serious nature. A great number of these accidents were caused from injuries by pit wagons, as can be seen by examining the description given in the lists explaining the nature and cause of accidents which gives the following:

Causes of Accidents.

Fatal—By falling roof,	6
By mine wagons,	2
From miscellaneous causes,	2
Total,	10
Non-fatal—By mine wagons,	26
By falling coal,	10
By falling roof,	13
From miscellaneous causes,	9
Total,	58

From the statistics received from the mines, we find that the total output is greater than that of the year 1887, taking the whole district. The total production in tons of coal in 1887, was 4,563,657 tons, and in 1888, 5,240,941⅓ tons, showing an increase of 676,284 tons. That of coke in 1887 being 2,755,394, and in 1888, 3,238,548 tons, showing an increase in tons of coke of 483,254 tons. The coal ship-

ments in tons of raw coal for 1887 was 406,001, and in 1888 it equals 431,065 tons, which is an increase of 25.064 tons.

Total number of coke ovens reported for 1888, shows an addition of 537 to the number reported in 1887.

On referring to the number of days worked at each mine, it will be found that several of the works have been idle the greater part of the year, while others are found to have done more and worked a greater number of days than in the year 1887. The same may be said in regard to the number of persons employed in some cases on a comparison with that of 1887. We find the number reduced at some mines, while a slight increase is found at others. There are three new mines opened and put in operation during the year, which are described in the report. At other mines there are important improvements made which is also noticed in the report. All the large mines in this district are well provided with ample means for their proper ventilation, and those in charge are anxious to make proper use of it. It can be said that the mines in this district are generally in good condition. But all mining operations have their dangers. These dangers are not all from the same source. What threatens and troubles one mine is not found so in another. Some mines are comparatively free from danger, while others require the best skilled miners, mine bosses and managers in order to make them comparatively safe to work in. It is very important that persons working in dangerous places should give proper attention to their safety and make proper use of the means at hand to secure it. We find sometimes, when visiting the face of workings, upon inquiry of the miner in regard to the condition of his roof, that he reports it good. When requested to sound it, he discovers that it is not as good as he thought it was, and he finds that it requires posting, etc. There is no one who knows the nature of the roof better than the intelligent miner who is working under it every day, when he gives it his proper attention. But often for want of proper care on his part, and, in order not to be delayed with his work, he neglects his safety. In all mines where dangerous gases are generating, all working places should be carefully examined before any of the working force of the mine enters, and a mark should be left near the face, as proof that such examination has been made. And every miner upon entering his place in the morning should assure himself that his place has been examined by finding the "mark" before commencing his day's work. The safety of mines of this nature depends in a great measure upon the constant vigilance of all in the mine. The safety of to-day should not be taken for granted, because nothing serious happened yesterday. It may be that places where no trace of gas could be found yesterday, may be full to-day of explosive mixtures. Many of the accidents which have been the cause of serious loss of life, and the destruction of property, may be attributed to neglect of proper attention given to this matter, and by assuming it to

be all right to day because it was so yesterday. If all mining operations would be laid out and conducted with the view of granting the greatest safety, and that with the least possible expenditure, both the operator and those employed in the mines would be greatly benefited. The science of mining should be studied by all concerned, so that they might become conversant with the nature and composition of those destructive elements met with in mining. Every inspection district should be provided with the best instruments for testing gases, etc, so that the inspector might be enabled to make tests himself of the action of the gases when mixed with different quantities of the air of the mines, etc. And to know how to handle them with safety, etc.

Mining Statistics.

Total number of mines in the district,	78
Number of tons of coal mined,	5,240,941⅓
Number of tons of coke produced,	3,238,548½
Number of tons of coal shipped,	431,065½
Number of persons employed inside,	4,765
Number of persons employed outside,	3,224
Total number of persons employed,	7,989
Number of coke ovens reported,	8,627
Number of fatal accidents,	10
Number of non-fatal accidents,	58
Number of tons of coal mined per fatal accident,	524,094+
Number of tons of coal mined per non-fatal accident,	90,343.81+

Accompanying the report there are drawings of the buildings and machinery of the No. 3 Leisenring shaft, and plan of the underground working and arch at pit bottom. A photograph of the Yough pumping engine, at Leisenring, No. 1, with letter describing the same. Plan of the new rope haulage in the Trotter mine, with description given by the Chief Engineer, J. H. Paddock.

Yours very respectfully,

J. J. DAVIS.
Inspector.

CONNELLSVILLE, FAYETTE COUNTY, PA., *February 16, 1889.*

Description of Mines.

Anchor.—A slope opening. Located at Dunbar. Operated by the Pennsylvania Manufacturing, Mining and Supply Company. Superintendent, C. A. Laing; mining-boss, Thomas Lowes; Fire-boss, Martin Markey. This mine has only been in operation 105 days during the year. When visited in November, the workings were on three flats, two on right and one on left of slope. Room workings in three headings. Average thickness of coal worked, 7 feet. There are 100 ovens at these mines, and at time of visit there were 76 in blast. The ventilation is produced by a fan. Air measurements taken showed a current of air in circulation of 31,920 cubic feet per minute.

Atlas.—Slope opening. Located near Dunbar. Owned and operated until November 15 by the Atlas Coke Company, Limited. Since then it has been operated by the Cambria Iron Company. When I visited it on the 3d of October, I found the workings on four flats, two left and two right, They were driving one butt and two flat headings and room workings in three entries. I found the ventilation of the mine fair, and drainage good. Air measurements taken showed 14,400 cubic feet of air in circulation.

Buffalo.—This mine is located near Garrett, in Somerset county. The mine openings are on the Berlin branch of B. & O. R. R. They consist of a drift and shaft openings. Operated by the Buffalo Coal and Coke Company. Superintendent, W. F. Childs; mining-boss, Wm. K. Murray. They commenced operations in 1887, and built 6 coke ovens during that year to coke the slack coal. In the present year they increased the number by building 22 more ovens, making 28 in all. Up to the beginning of the year the product of the mine was taken out through the drift openings. At present, machinery is put in position to hoist the coal through the shaft. At the time of my last visit, December 6, the air course connection had been made, and the main hauling-way was in course of construction. Several improvements have been made in new buildings and machinery. A new fan has been erected and gives satisfaction. Average number of miners employed during the year, 37. Average number employed inside and outside, 52.

Berlin.—A drift opening. Located near Berlin, Somerset county. Operated by B. D. Morgan & Co. Superintendent, C. J. Baker. This mine has not come under the provisions of the law during the year on account of employing less than ten persons and the small amount of work done. Total production of the mine, as reported, being only 2,400 tons of coal in 200 days worked.

Co-operative.—This also is a small mine, employing less than ten during the year. In 1887 it came under the provisions of the law, and its production was more than double of that reported this year.

Clinton.—Is a small mine, which employed, when visited in March, 12 miners. It has been idle nearly all summer on account of the low price of coke. The coal is taken out of the mine by a rope haulage about 2,200 feet long. At the time of last visit the mine, as to ventilation, was in good condition. B. F. Keister & Co. reports: "The works were disposed of about the middle of November, 1888. Since then they have been in the hands of H. C. Frick Coke Company. They were closed down April 15. There was an air compressor put up in August last with the intention of operating the pumps with air instead of steam." H. C. Frick Coke Company reports that they bought the works from B. F. Keister & Co. in the month of November, 1888, and that they had them in operation to December 31—30 days.

Cochran Mine.—Located near West Salisbury, Somerset county, and has been idle most of the year. The total production reported for the year was only 530 tons.

Cupola.—This is a new mine. A shaft and slope opening. Located on the P. McK. & Y. R. R., in Fayette county. Operated by the H. C. Frick Coke Company. When visited, on the 24th of December, I found only a few persons employed inside. The plant was in course of construction, and to all appearance it gave indications that when completed it would be one of the best plants in the region. There will be in the near future 300 coke ovens built at these works. The underground workings are laid out with the view of connecting with the Trotter mine, and efforts are being made on both sides to have it accomplished as soon as practicable. The connections, when made, will be very beneficial to both sides when properly arranged.

Clarissa.—This mine is operated by James Cochran Sons & Co. Superintendent, P. G. Cochran; mining-boss, J. C. Moore. The coal is taken out through drift openings. The system of working is part on the single and part on the double-heading plan. The headings are driven 8 feet wide; rooms, 12 or 13 feet; and ribs, 11 or 12 feet wide. There are four openings to this mine, three drifts and one shaft. Air measurements taken when visited showed air current at the outlet giving a volume of 16,360 cubic feet per minute, and the mine generally in good condition. Number of days worked during the year, 265.

Coal Brook.—Drift opening. Operated by the McClure Coke Company. Superintendent and mine-boss, M. F. Pickard; assistant mine-boss, W. Baker. When visited on the 12th of October the room workings were in three headings, and drawing ribs on one. The mine is on the single-heading plan; heading, 8 feet wide. This mine supplies a plant of 70 ovens with coal. The underground workings, as to ventilation and drainage, are generally found in good condition. Air measurement taken on last visit showed a velocity of 180 feet per minute on the intake currents. Number of days worked during the year, 250.

Connellsville Shaft, and Plummer.—These mines are operated by the H. C. Frick Coke Co.; one a shaft and the other a drift opening. Crawford Stillwagon is the mine-boss and William Gannear the fire-boss in the shaft workings, and Thomas Louden mine-boss and George Roebuck fire-boss of Plummer mine.

When I visited the shaft (October 24th) the number of miners employed was 68 men and 6 boys; the ventilation of the working places in good condition; drainage and roads fair.

The Plummer mine, when visited (November 5th), had 45 miners employed. The ventilation showed a strong current on main heading; it measured 43,200 cubic feet per minute. Those parts which were reported in last year's report that had to be sealed up in order

to exclude the air from communicating with the fire in the burning district, are well watched. The brick stoppings are cool and show no sign of fire being near.

Cora is a drift opening, owned and operated by J. Newmeyer & Sons. Superintendent, J. S. Newmeyer; mining-boss, Thomas S. Hepplewhite. The workings of this mine are on the single heading plan. The headings are driven 8 feet wide, rooms 12 feet and ribs 10 feet. On one of my visits I found 10,920 cubic feet of air in circulation, and the mine as to both ventilation and drainage in good condition. At this mine there are 42 coke ovens. Average number of persons employed inside and outside during the year, 42.

Casselman.—This mine is located on the B. & O. R. R., near Garret, in Somerset county. Superintendent, William G. Hocking; mining boss, William Phennecy. Number of miners employed in month of October was 33 men and 5 boys. Thickness of the seam of coal worked is 4 feet. The rooms are driven from 25 to 30 feet wide. There is strong roof and hard bottom to this coal. The ventilation is assisted by exhaust steam, but at times rather defective in this mine. Average number of miners employed in the year, 37; number of days worked, 300.

C. & E. L. C. C. Mine is a drift opening, located on the Salisbury branch of the B & O. R R., in Somerset county. Operated by the Cumberland and Elk Lick Coal Company. Superintendent, A. Chamberlin; mine-boss, James Phillips. The average thickness of coal worked in rooms is 6½ feet. The headings are driven 8 feet wide, rooms 16, and ribs 20 feet wide.

On my visit, in September, the mine was not working to its full capacity, the number of miners employed being 53 men and 8 boys. Number of cubic feet of air in circulation was 22,575.

The annual report received from the mines gives the average number of miners employed during the year at 63 men and 10 boys. Total number of persons employed inside and outside, 106. Total production in tons of coal, 65,229; total production in tons of coke, 7,930, and total shipments in tons of coal, 54,235. The are 75 coke ovens at this mine, but, owing to the low price of coke, the ovens were idle for a considerable time.

Cumberland.—Drift opening. Located on Grassy Run, Somerset county. Operated by the Cumberland Coal and Mining Company. Superintendent, John Hocking, Sr.; mining-boss, R. A. Winter. This mine is connected with Hamilton mines. When visited, in September, the ventilation and drainage were in good condition, but the mine had been idle for want of orders, the mine-boss working on repairs and making improvements. When visited, on the 11th of December, I found 23,520 cubic feet of air in circulation, and the ventilation to face of workings fair, and drainage in good condition.

Diamond.—Drift mine. Operated by the McClure Coke Company.

Superintendent and mining-boss, S. C. White. Number of miners employed, 16; total number employed inside and outside, 52. Mine only running 32 days during the year. The workings, when running, are generally kept in good condition,

Dexter Mine.—A drift mine. Operated by J. R. Stauffer & Co. Superintendent and mining-boss, Samuel R. Fairchild. The mine was only in operation 98 days during the year. Total number of persons employed inside and outside, 25.

Foundry.—Drift mine. Owned and operated by the H. C. Frick Coke Company. Mine in operation 128 days during the year. The ovens at this mine are now supplied from the Rist mine, and the mines have been abandoned since July 1, 1888.

Frick & Morgan.—Drift openings. Owned and operated by the H. C. Frick Coke Company. Superintendent, Thomas Lynch; mining-boss, John Keck.

The Frick was in operation 281 days and the Morgan 278. The workings in both of these mines are ribs and stump workings. Total number of miners employed, 22 men and 2 boys. The work of robbing out the pillars in both has been very successfully done, without any serious accidents reported from either.

Fountain.—A drift opening. Operated by E. A. Humphries, who is also superintending the works himself. Mining-boss, George Armstrong. Average number of miners employed in the year, 35; total average, inside and outside, 68 persons. The mine has only been in operation 165 days during the year. When visited, in October, the ventilation and drainage were in fair condition. The number of cubic feet of air in circulation, measured on the return current, in the last week of November, was 12,960.

Franklin.—Drift opening. Operated by B. F. Keister & Co. Superintendent, B. F. Keister; mining-boss, Samuel Barnum. There are several openings to this mine. The ventilation is produced by a furnace. I measured 28,000 cubic feet of air on the outlet current on my last visit. The average thickness of coal worked in rooms, 8 feet. Rooms are driven 13 feet wide, and ribs are 8 feet. The mine worked 81 days during the year. When visited, I found it in good condition, as to both the ventilation and drainage.

Fort Hill.—Drift opening. Located on the P., McK. and Y. R. R. Operated by W. J. Rainey. Superintendent, T. J. Mitchell; mine-boss, Wm. Sloan. When visited, I found this mine in good condition, as to both ventilation and drainage. The number of miners employed were, 44 men and 2 boys. Air measurements gave 21,840 cubic feet in circulation per minute.

Fairchance is a drift opening, operated by the Fairchance Furnace Company. Superintendent R. L. Martin; mining-boss, W. J. Callaghan. When visited, I found that they were driving 2 entries, and working in rooms in 2 headings. There were no ribs drawing at that

time. I found the ventilation of the workings good. An air measurement taken at head of No. 5 Butt Heading, gave 7,840 cubic feet per minute in circulation. Number of miners employed at the time, 20.

Flog Hill and Fair View.—These mines are drift openings, and are connected. Operated by the Fair View Coal Company. Superintendent, Thos. Rees; mining-boss, Thos. Counihan. At time of my last visit, on 5th of December, they were working in rooms in six entries, three in each mine, and drawing ribs in one in Fairview. The headings, or entries, are 9 feet wide, and the rooms 18 feet, also, 18 feet for ribs. Average thickness of coal worked in rooms, 7 feet. I found the condition of these mines, as to both the ventilation and drainage, fair. Air measurements taken on intake current, for Fair View, 7,840 cubic feet, and at Flog Hill, 8,000. Both mines were in operation 150 days during the year.

Fayette.—This mine is a slope opening. Operated by the Fayette Coke and Furnace Company. Mining-boss, Wm. Coulsin; fire-boss, Peter Conner. The workings of this mine are on the single and double entry plan. On my last visit, in November, the lower working parts were under water. Owing to imperfect surface drainage the water had taken its course into the pit. The report received from the mine, defining the improvements, has "one culvert, 5x5 feet, put through furnace track. An imperfect culvert at this place was the cause of drowning the mine, August 21; commenced to discharge the mine water through a six-inch bore hole, etc." Air measurement taken showed an intake current of 15,120 cubic feet on slope. Improvements were making to take the air nearer to face of workings.

Grace.—This mine is operated by W. J. Rainey. Superintendent, Thos. F. Johns; mining-boss, Chas. Watson. When visited, on December 26, there were 125 miners employed. There were 5 flats working all on right, and 6 headings with room workings, and 7 headings with rib drawing, the ventilation, fair, but the improvements in course of construction were not completed. A new shaft has been sunk for the purpose of improving the ventilation and drainage, and a large pump placed near the bottom with a new fifteen-foot fan, purchased and on the ground ready to be put up on the top. As soon as these improvements are completed it is expected that this mine will be one of the best drained and ventilated mines in the region. The mine has three drifts and two shaft openings. Air measurements taken on above date showed 16,240 cubic feet per minute near bottom of air-shaft, but the quality of the air not what it should be, which could not be changed till improvements are further advanced.

Grassy Run.—This is a drift opening. Operated by the Grassy Run Coal Company. Superintendent and mining-boss, John Meager, employing at times about 21 miners. Production during the year, 9,906 tons; number of days worked, 130. The mine is located at [illegible] Run, Somerset county. At the time visited, in December, the

room workings were in two headings. Average thickness of coal worked, 7½ feet. Ventilation, fair, but requiring some improvements.

Great Bluff.—This is a small drift opening. Lacated in Fayette county. Operated by Isaac Taylor, employing 9 persons inside. Mine in operation 146 days during the year.

Henry Clay.—This is a slope opening. Located on the B. and O. R. R, near Broad Ford. Operated by the H. C. Frick Coke Company. General superintendent, Thos. Lynch; mining-boss, Thos. R. Kane; fire-boss, Jacob Hauser. This mine was in operation 193 days during the year. All the old ovens at these works were torn down and 120 new ones built, which are at present among the best in the region. There are inside connections between this mine and the Rist mine. Both mines belonging to the same company their ventilation is conducted with the view of benefiting both places. There is a twelve-foot fan at the head of this slope, which is used to assist the ventilation, and gives good satisfaction.

Hill Farm.—This mine is a slope opening. Located near Dunbar. Operated by the Dunbar Furnace Company. This mine and the Parrish mine are connected and worked under the same management. General superintendent, H. W. Hazard; mine superintendent, Robt. Lang; mining-boss, Geo. J. Burns; fire-boss at the Hill Farm, Daniel Shearing, and at the Parrish mine, Thomas Shearing. On my last visit to these mines, on the 27th of December, I found the total intake current of air into both of these mines to be 31,140 cubic feet per minute. The parts where gas was generating I ordered to be closely watched, and the working places kept clear of any standing gas.

Home.—This is a small drift mine. Operated by Stauffer & Wiley. Superintendent, J. W. Wiley. In operation during the year 103 days, but employing less than 10 persons.

Hamilton.—Mine located on Grassy Run, in Somerset county. Operated by Hamilton & Cochran. Superintendent and mining boss, James Cochran. The workings of this mine are through into the Cumberland mine. Average thickness of coal worked in rooms, 7½ feet. When visited, on the 11th of December, the room workings were in three entries and ribs in one. The ventilation showed a current of air on No. 2 right heading of 12,480 cubic feet. The working faces were dry, and the drainage good. Average number of miners employed during the year, 43 men and 2 boys.

Hocking.—Drift opening. Located in Somerset county. Operated by the Hocking Coal Company. Superintendent, John T. Hocking; mining-boss, Robert Easton. Number of miners employed in month of December, 34 men and 3 boys. I found when I visited the mine on the 12th of December, that they were driving two headings and rooms working in one. There were no ribs drawing. Air measurements showed a current of air of 16,200 cubic feet per minute on the intake current, but in some parts, it required to be taken nearer to

face of working, which I was informed was attended to soon after my visit. The mine was only operated part of the year.

Jackson.—A drift opening. Operated by the Jackson Mines Company. Superintendent, John C. Cochran; mine-boss, John S. Huston, This mine has been in operation during the year for 300 days. Enploying 23 persons inside and 22 outside; total number of persons employed, 45. On my last visit I found the room workings in two headings, and rib workings in one. They were driving one entry. Ventilation fair; by air measurements I found that the intake current at head of No. 6 Butt heading, showed a volume of air of 14,400 in circulation.

Kyle Farm Mines.—Are drift openings. Operated by Bliss & Marshall. Superintendent and mining-boss, John W. Sterling; employing 50 miners. Total number employed inside, 60; inside and outside, 129. Mine was in operation 175 days during the year. On my last visit I found 6 entries driving, room workings in 5 headings, and no ribs drawing. Air measurements showed 11,340 cubic feet of air per minute in circulation, and the condition of the mine as to both ventilation and drainage in good condition. The roads through the mine were kept dry and well taken care of. They have added 10 more coke ovens during the year.

Keystone Mine—A drift opening. Located in Somerset county. Operated by the Keystone Coal Company. Superintendent, E. J. Weld; mining-boss, Fred. Rowe. When visited on the 14th of December, the mine was undergoing a change in improvements in roads and drainage. Roof was blown down and grade changed, also new pipes put in for siphon purposes. As soon as these improvements were completed, the miners were to be removed to other parts of the mines Air measurements taken showed a current of air in circulation of 9,600 cubic feet.

Leith.—Shaft opening. Located near Uniontown. Operated by the Chicago and Connelsville Coke Company. Superintendent, C. McSweeney; mining-boss, Adolph Whyel; fire bosses, Thos. Hooper and Daniel Ferrimand. The m ne has been in operation for 228 days during the year. Average number of miners employed, 160. On my visits I found the working parts in fair condition. There are improvements made in roads and haulage. The new rope haulage put in last year is giving good satisfaction. The ventilation of the mine is produced by a twenty-foot fan, and a strong current of air is generally found in circulation. A new section of the mine is to be opened in the near future, which when properly opened will add greatly to facilitate an increased out-put as soon as the workings are sufficiently advanced.

Lemont.—This mine is a slope opening. Operated by R. Hogsett & Co. Superintendent, Robert Boyd; mining-boss, John Usher; fireboss, John Gordon, Sr. Number of miners employed, 40 men and 3 boys.

At the time visited in October, the workings were confined to three flats, one left and two right. They were driving seven headings and working rooms in six, rib workings in one heading. Number of cubic feet of air in circulation 14,000, measured on the intake current. This mine suffered like others at the time of the flood in this region; part of the lower workings were under water, and the ventilating fan was also disabled by the flood. Total number of days worked during the year, 275.

Leisenring, No. 1.—This is a shaft and an extensive mine. Operated by the Connellsville Coke and Iron Company. Superintendent, J. K. Taggart; mining-boss, Charles Walters; fire-bosses, John Hughes and Bernard Moore. Number of days worked during the year, 275. The mine workings are in two sections—north and south. At time of my visit on October 26, there were twenty-nine headings driving, room workings in seventeen, and rib drawing in six headings. I found the ventilation good; several air measurements taken showing a strong current of air in circulation; total number of cubic feet per minute in the return current 142.150, and the safety of the mine well taken care of. I found the roads and working faces dry. The drainage of the mine is under the control of the celebrated Yough pumps, which are generally used through most of the deep mines of this region Accompanying this report is a photograph of the pump, and the following is a description of its workings and merits, described by the makers.

J. J. DAVIS, ESQ.,

Inspector of Mines:

DEAR SIR. The accompanying photograph was taken from our Yough Pumping Engine placed in the Leisenring, No. 1 shaft. The size of the cylinders are 24" x 10," with 4 foot stroke, 10" suction and 8" discharge. Elevation of shaft, 395 feet. This pump has been on constant duty since June, 1885, and have in addition fourteen others of our make working in their different shafts of various sizes; also have now under construction a long stroke, special mine pump with 31½" x 12" cylinders, and 4 foot stroke, for use in their No. 3 shaft, with a perpendicular elevation of 550 feet. We have made important improvements in the construction of our pumps. Instead of using the square water chest and valves in the large sizes, we now use a round water chest and valves. The steam valve motion is a very important part in the Yough Pumping Engine. It consists of a slide valve and piston valve, with oscillating valve at side of steam chest, having direct connection with main piston rod, and all the steam valves are in steam chest. By this simple device, we do away with all complication of rocker shafts, plug valves or their equivalents. No nuts or bolts are used inside of chest to operate valve motion. All steam valves are in steam chest, and when requiring repairs, no heavy steam cylinder need be handled, but simply steam chest, the steam cylinder rarely

needing any repairs. The piston rod in large pumps is in two pieces, connected by a crosshead and keys, thus allowing either steam or water piston rods and heads to be taken out without disconnecting both ends of the pump. The water chest that contains the valves is a separate casting from the cylinder. The valves are easily removed by taking off the water chest cap. The water chest and water cylinder being separate castings, form an important feature in handling and repairs of pump. There are suction and discharge passages on both sides of the pump for convenience of connecting. All parts are made to standard gauge, so that any piece or part can be supplied without delay.

Yours truly,

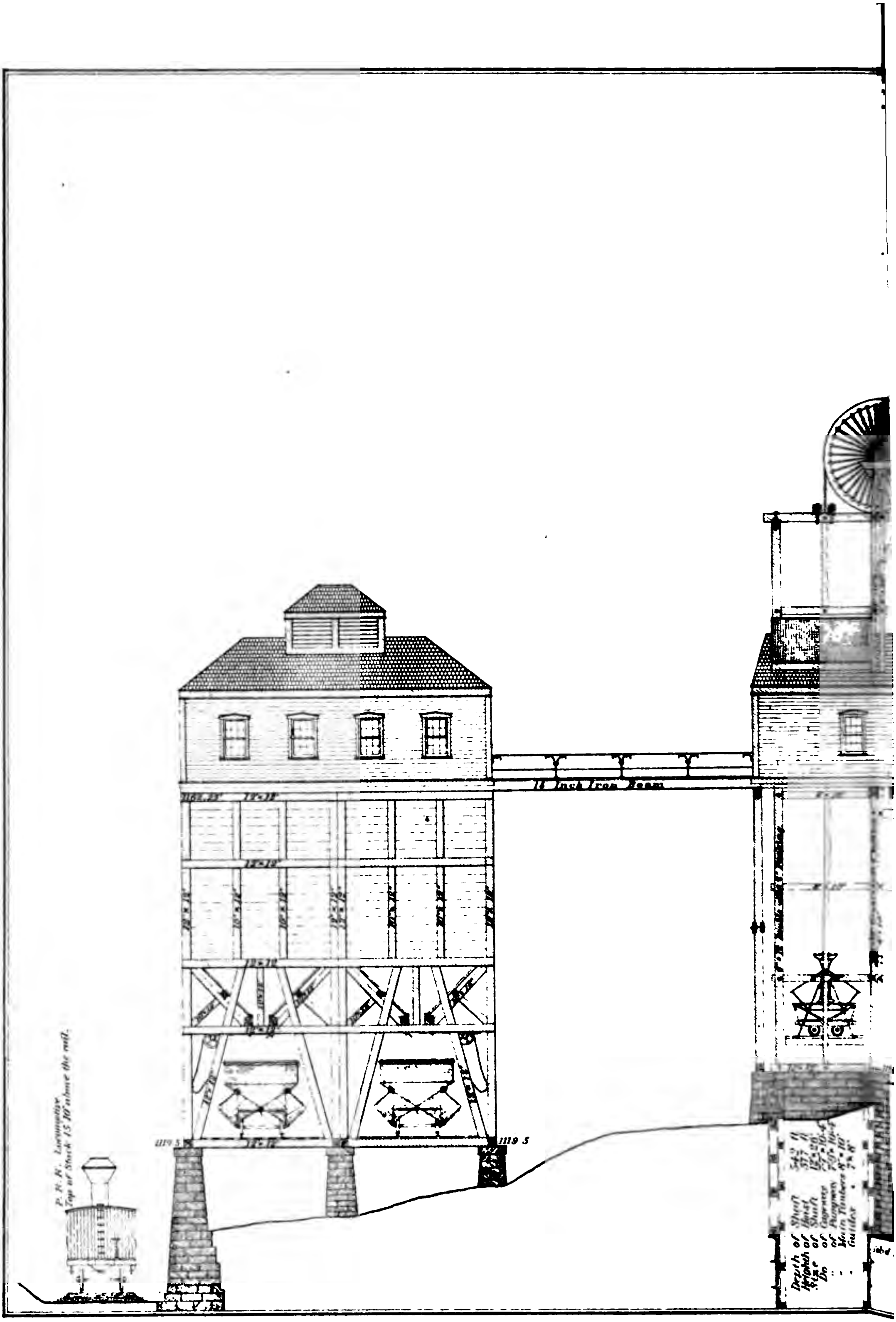
BOYTS, RITER & Co.

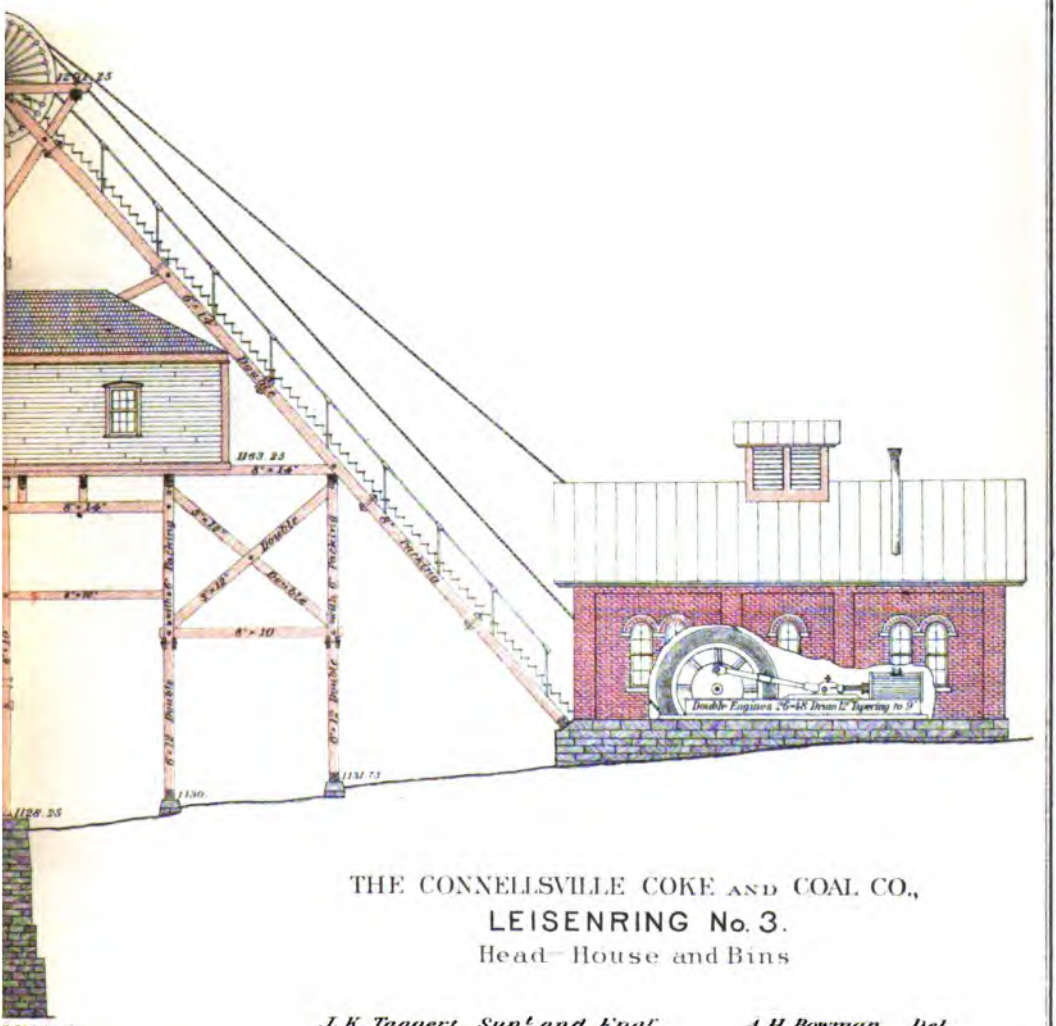
Leisenring, No. 2.—Shaft opening. Operated by the Connellsville Coke and Iron Company. General superintendent, J. K. Taggart; superintendent, S. B. Price; mining-boss, J. F. Anderson, fire bosses, Robert Wilson and Alexander Parks. Number of days worked during the year, 260. The workings are on the double entry system. Entries 9 feet wide, rooms 12 feet and ribs 15. On my visit (November 21st) I found the ventilation and drainage of the mine in good condition and a strong current of air in circulation. Air measurement taken near bottom of air shaft, on return current, gave a volume of 99,750 cubic feet per minute.

Leisenring, No. 3.—This is a new work. Owned and operated by the Connellsville Coke and Iron Company. Superintendent, J. K. Taggart; mining-boss, William Bean; fire boss, David Hay. This plant, when completed, will have 500 ovens. Half of that number is about finished, and the other half in course of construction. The hoisting machinery and buildings on top are of modern style, and rank among the best in use as to strength and capacity. Both the engine and boiler houses are brick buildings. The winding engines are first motion, and the drums conical. The depth of the hoisting shaft is 542 feet from surface. Height of hoist equal to 577 feet. Size of shaft is 12′x26′. It is divided into three compartments, two for cageways and one for pumpway, which are of the following dimensions: Cageways, 7′ 7″x10′ 4″, as shown on drawings accompanying this report.

The openings into the mine from the bottom of shaft are wide and roomy, and are timber-arched, which is also shown by drawings. In addition to this, there is accompanying this report, a map of the mine, showing the system adopted for ventilation, haulage and working of the coal. The air is to be conducted by overcasts, giving a separate split for each section, and doing away with the use of doors, etc. The system is claimed to be superior to any in use in any of the shaft workings in the region.

The following descriptive letter, received from Mr. A. H. Bowman,


P. R. R. Locomotive
Top of Stack 15.10" above the mill.
11 Inch Iron Beam
1119.5
1119.5
Depth of Shaft 54? ft
Height of Head 37? ft
Size of Shaft 15'2"×20'-4"
Do of Cageway 7'6"×10'-4"
Do of Pumpway 7'6"×10'
Main Timbers 8"×10"
Guides 7×8"

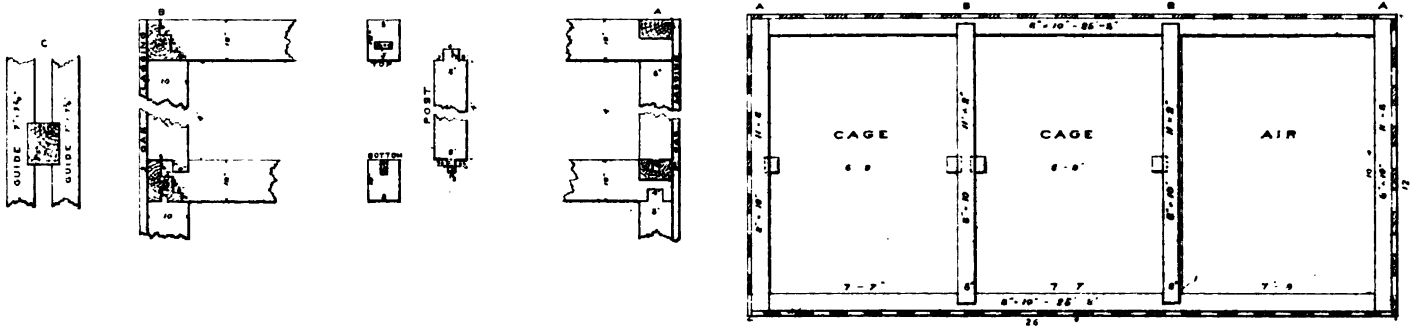


THE CONNELLSVILLE COKE AND COAL CO.,

LEISENRING No. 3.

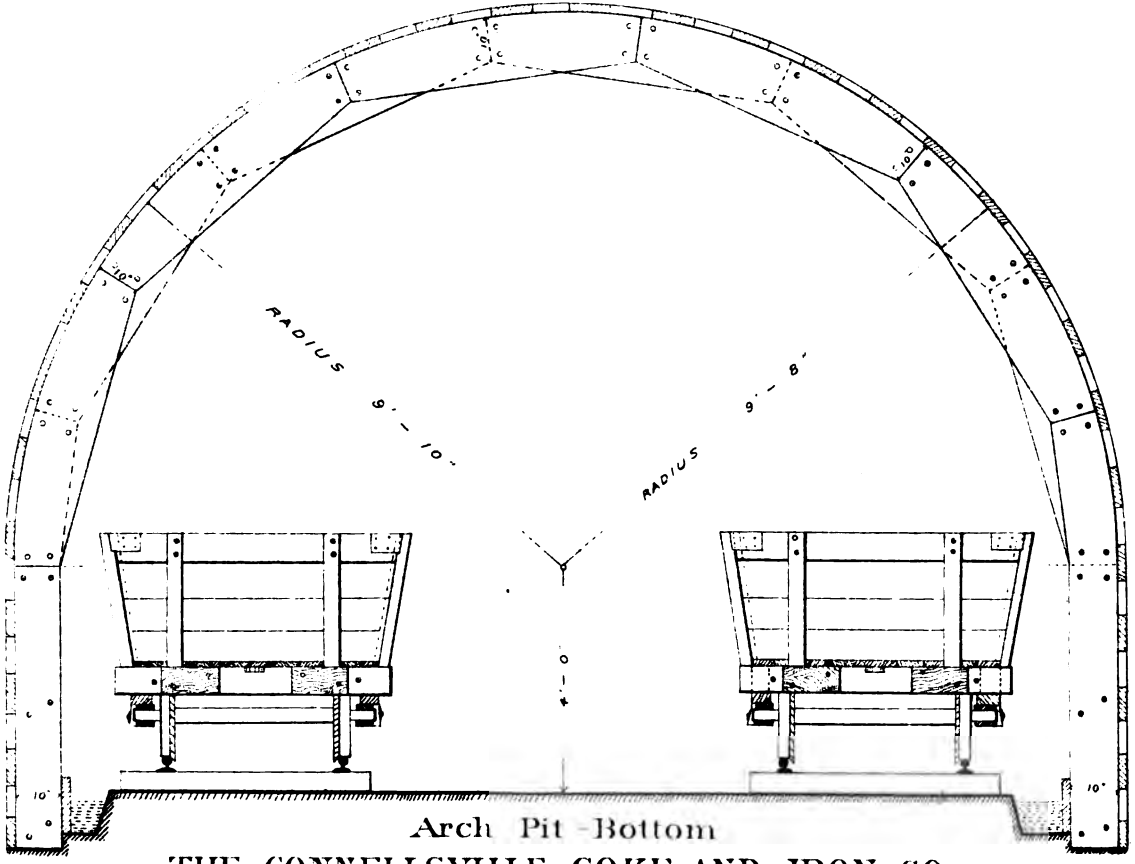
Head-House and Bins

J. K. Taggert. Sup't and Eng'r *A. H. Bowman. Del.*



SHAFT TIMBERS

C. C & I. CO. SHAFT Nº 3.



Arch Pit -Bottom

THE CONNELLSVILLE COKE AND IRON CO.

SHAFT Nº 3.

mining engineer at the Leisenring mines, relates to Shaft No. 3 and the Third Coke Plant of the Connellsville Coke and Iron Company:

"This shaft is located in the coal basin, about midway between Shafts Nos. 1 and 2. These three shafts are working an unbroken field, containing 9,000 acres of Connellsville coking coal.

"Sinking was begun at No. 3 on the 17th day of December, 1886, and the bottom of coal reached on March 2, 1888, during which time more than three months were lost by labor strikes. In size it is 12x26 feet, incased with timbers, as shown by accompanying drawing, marked 'shaft timbers.'

"The shaft is 542 feet deep, and contains 526 feet of timber, as shown, which, at 350 feet B. M. per lineal foot of depth, makes 184,100 feet of white oak lumber. The guides are of best yellow pine, 7x8 inches, and set to a gauge 6 feet 9 inches apart. They are fastened to the buntings by 9-inch wood screws, with heads countersunk one inch below the surface.

"The mines, as well as the entire work above ground, is laid off from a center line, passing through center of engines, cageways and coal bins.

"The pit bottom is arched for 150 feet on both sides of shaft, with a timber arch, as shown in drawing. A glance at the mine plan will show a new departure in the working design. A pillar, practically 500 feet wide, protects the main face headings, while the main butts, being three in number, give one for a working heading and the other two protected by sufficient pillars.

"The air is carried each way from main shaft, and goes straight to the face of workings, without a single door to obstruct; it is carried back through the parallel headings and across the flats by overcasts to the air shaft, doing away with almost every door now generally used in mines in this region.

"The air shaft (which was sunk in conjunction with the main shaft, and reached the coal but one month later,) is provided with a 25-foot exhausting fan, made by Vulcan iron works. The fan house is so arranged that, by changing the partitions, the fan is as readily a downcast, and this change is easily made in two hours.

"The mine pump is a 'Piston pattern Yough.,' made by Boyts, Porter & Co, Connellsville, Pa., the steam cylinder of which is 31½x48 inches, water-end 12x48 inches, and 12-inch discharge.

"This pump is placed about 75 feet away from the bottom of shaft, and is set on top of coal. In case anything breaks, or the mine is flooded, it cannot be drowned out.

"The engine house is built of brick, and set 63 feet from center of shaft, in which is placed the winding machinery. This consists of a pair of first-motion engines, built by W. H. Stroh, Mauch Chunk, Pa. Cylinders 26x48 inches, with all improvements in this class of engines,

and the drums, which are conical in shape, are 12 feet in their largest diameter, tapering to 9 feet at the ends. The largest diameter is toward the center, and drums set to bring the center of each drum in vertical plane with sheave wheels. The shells of drum are cast in one piece and fitted to the spider by bolts and the usual inside projections.

"The head frame is built after the triangular pattern, on the 'standard plan,' set on a stone foundation built 18 feet deep to the rock. It is 73 feet, 6 inches from foundation to center of sheaves, 30 feet wide at the base, and 16½ feet at the top. The braces run back to the front of engine house walls 56 feet, 6 inches, and are anchored by four two-inch bolts fastened under two sixty-pound steel rails, over which is built 46 cubic yards masonery and the engine house.

"The sheave wheels are 12 feet 10 inches in diameter, cast iron rims and shaft, double hub with wrought iron arms set staggered.

"The 'Robert Ramsey patent' steam caging apparatus is placed in the head house, a steam ram pushes the empty car on the cage, and, at the same time, the full one off. This runs by gravity to the dump, then returns by another track, and, still by gravity, to the transfer truck, which is operated by another steam cylinder, that brings up the empty car in a position to be placed on the cage as before.

"The coal is dumped from mine cars into a double bin of 600 tons capacity. These bins are placed 33 feet from the shaft as a fire protection, and the space is bridged by 6 fifteen-inch iron girders. An accompanying drawing shows side view of engine house, head house and bins, and will illustrate the design more fully.

"The ovens, 500 in number, are built with heavy walls, 3 feet, 6 inches at base, and 22 inches at the top, two inch batter to the foot. Ovens are placed 13 feet, 9 inches from center to center, and are the usual 12 foot bee-hive oven.

"The entire work was designed and built under the supervision of Mr. J. K. Taggart, superintendent and engineer, who has spared no pains or expense to make this plant the most substantial, economic and withall the best coke works in the entire region."

Mahoning.—A slope opening, located near Dunbar. Operated by the Cambria Iron Company. Superintendent, John Dilworth; mining boss, A. L. Nelson; fire-boss, Thos. Farr. On my last visit to this mine I found that they were driving the dip and working on five flats, one right and four left, rooms in two headings and ribs drawing in three. I found the working parts well conducted and showing that care and attention had been exercised both as to safety and the proper working of the coal. Air measurements on intake current on left, showed a volume of 23,040 cubic feet; air measurement taken on right air-way showed a current of 21,120 cubic feet. The mine was in operation 296 days during the year.

Morrell.—Slope mine. Operated by the Cambria Iron Company. Superintendent, James F. Beattie; mining-boss, Andrew Beattie;

fire-bosses, John Yocum and Henry Johnson. Mine in operation during the year, 291 days. It is an extensive mine employing over 200 miners. Total number of persons employed inside and outside, 412. The workings of this mine are well laid out. The direction and distances of rooms are looked after, as well as that of the entries. A regular system of splitting the air is in use. The ventilation is produced by two Murphy fans which are used as blowers, one of which was built during the year in order to increase the ventilation. The monthly report for the fourth week in December gives air measurements for 85,400 cubic feet of air at the outlet.

Mt. Braddock.—Slope opening. Operated by R. Hogsett & Co. Superintendent, C. B. Colborn; mining-boss, John McDonald; fire-boss, David Twist. The mine has been in operation during the year, 275 days. On my last visit, on November 7, the workings were on two flats on left of slope. A part of the dip was under water. The ventilation showed an intake current on No. 5 left flat of 15,840 cubic feet per minute. I found in some parts of workings that the air current was too far back from face of workings, and gave instructions to carry the air to face.

Nellie Drift and Shaft.—These mines are owned and operated by Brown & Cochran. Superintendent, P. G. Cochran; mining boss at the shaft, Allen Champ, and at the drift, J. F. Pickard. The workings of these mines are connected. The shaft mine when visited on the 3d of November had 81 miners and 2 boys employed. The workings were on the double-entry plan. The entries are eight feet wide, with 30 feet of coal between parallels. The ventilation is assisted by exhaust steam. The current of air coming into the shaft workings from the drift mine was 5,600 cubic feet. The intake current through man-way was 13,800 cubic feet. Total volume in circulation, 19,400. The company intends to erect a fan in the near future.

Painter—Drift openings. Operated by the McClure Coke Company. Superintendent and mining-boss, S. C. White. Average number of miners employed, 60. On my last visit, November 28th, I found by air measurements, 29,760 cubic feet of air in circulation, and the general condition of the workings as to ventilation good. A furnace is in use to assist the air current. The assistant mine-boss, Geo. W. Santemyer takes pride in keeping the mine in good condition, and the roads and drainage were well taken care of. The mine has fair roof and hard bottom compared with others in the region. There are 228 ovens at these works; a portion of the year part of the ovens were shut down. During the entire year only 60 per cent. of the ovens were in blast according to reports received from the mines.

Pennsville.—A drift opening. Located on the S. W. P. R. R. Operated by the Pennsville Coke Company. Superintendent, J. L. Dillinger; mining-boss, Wm. Sloan. Mine in operation, 196 days during the year. Average number of miners employed, 32. Total

number of persons employed inside and outside, 74. This mine is ventilated by a fan, and the ventilation and also the drainage was in good condition when visited. Average thickness of coal worked, 8 feet. The workings are part single and part double entry. Entries are driven 9 feet wide; rooms, 12 feet, and the same for ribs.

Percy is a slope opening. Operated by the Percy Mining Company. Superintendent, L. deSaulles; mining boss, E. Shipley; fire-boss, J. W. Yowler. On my visit, on November 17, the number of miners employed was 17 men and 1 boy. These works had been idle from April 1 until November 10. I found the condition of mine as to the working faces fair. The ventilation and drainage good.

Paul Mine.—This is a drift opening opened in 1887. Operated by Wm. J. Rainey. Superintendent, T. J. Mitchell; mining boss, Geo. Dawson. The present openings are not intended to be the permanent ones, but a slope or shaft opening is to be sunk nearer the center of the coal property, and the outside improvements are constructed with that in view. The condition of the mine when visited required some changes which have since been made. Average ventilation reported in December, 10,392 cubic feet per minute. Total number of persons employed inside, 51.

Redstone.—At this mine there are 2 slope openings, both used for hoisting coal. It is operated by the Redstone Coke Company, limited. Superintendent, S. E. Wadsworth; mining-boss, Elijah Parker; fire-bosses, J. E. Reynolds and William Haile. Mine in operation, 280 days. Average number of miners employed, 180; total number employed inside and outside, including 12 persons employed at crusher, 509. On my last visit I found the mines in good condition. Total number of cubic feet of air in circulation, 95,320, which was carried around the workings in 2 splits, north and south. The safety of the mine is very carefully watched, and those in charge deserve credit. The workings are on the double-entry system. Entries 9 feet wide, and rooms, 12. The distance between rooms have been made to suit the nature of the bottom, the object in view being to work the coal as clean as possible, etc. Improvement—new engine house at lower slope and one pair new engines, also, coke crusher and 2 engines.

Rist is a slope opening. Located near Broad Ford. Operated by the H. C. Frick Coke Company. Superintendent, Thos. Lynch; mining boss, J. F. Keck. The mine was in operation during the year for 278 days. Average number of persons employed inside, 127. The workings of this mine and those of the Henry Clay are connected, and there are ample means provided for their proper ventilation, and on my last visit to this mine I found the ventilation and general condition, good.

Rainbow is a drift opening. Operated by the Rainbow Coal and Coke Company. Superintendent, D. P. Whitsett; mining-boss, George W. Gastkill; fire boss, A. Roberts. When visited, on the 12th

of November, I found the ventilation, fair, and the drainage, good. Among the improvements reported are the grading of tracks, and increasing the number of side tracks, T rail is used to replace the wooden rail for pit roads; the capacity of the mine increased and the drainage improved. The mine is worked on the single-heading system. The headings are driven 7 feet wide, rooms 24 feet and ribs eighteen feet. Average thickness of coal about 7 feet.

Summit, Nos. 1 and 2, also, The Eagle and Foundry.—These mines are drift openings. Located at Summit station, on the Mt. Pleasant branch of the B and O. R. R. They are all connected, and are owned and operated by the H. C. Frick Coke Company. On my visit, of November 22, I found the mining-boss, John Grumbly, in charge. There were 80 miners and 6 boys employed. The workings were in good condition, as to ventilation, drainage and roads. The mine boss takes great pride in keeping the mine in good order. He sees that all the underground stations are white-washed and marked, and every important point is named, the name placed in large letters in a conspicuous place so that any person passing cannot fail to notice it. At junctions he has signal boards, which are painted. Each driver passing has his number on the board and a tab hung by a nail to his number. The tab is painted white on one side and black on the other. When the driver passes in he turns the black side out, and when he passes out he turns the white side out. The direction a driver is going can always be told by looking at the board.

Sterling, Nos. 1 and 2.—These mines are owned and operated by the J. M. Schoonmaker Coke Company. Superintendent, Wilson Rosser; mining-boss at No. 1 mine, Frank A. Cochran, and at No. 2, Mark Watson. The coal is taken out of No. 1 mine by rope haulage, which is reported to have been extended about 2,500 feet further into the mine during the year, and is giving great satisfaction. It is ventilated by furnace, and I found the mine on my last visit, December 3d, as to general conditions, in good order. No. 2 mine is a drift opening, located on the B. and O. R. R. The December report of this mine reports 33 miners, men, and 4 boys. The average ventilation for the month at the inlet is 16,087½ feet; at heading, 6,887½ cubic feet, and at outlet, 16,387½ cubic feet. On my last visit to this mine I found the working parts in good condition, but the ventilation, at times, not steady.

Stewart.—A slope opening. Operated by the Stewart Iron Company, limited. Superintendent, F. C. Van Dusen; mining-boss, Chas. Roberts; fire boss, S. Hackett. This mine was worked 260 days during the year. There have been improvements made in the haulage. A rope haulage is adopted for parts of the workings, which is reported by the superintendent to be "operated by the Webster, Camp & Lane engine and friction drum." They have also added 2 boilers to the plant. The mine is ventilated by a twenty-foot fan, and on my

visits to this mine I always find it well ventilated. On my last visit, air measurements showed a current of 75,220 cubic feet of air in circulation.

Statler.—This mine is a drift mine. Located in Someret county, near Grassy Run. Operated by E. Statler. Mining-boss, Robert Easton, who was in charge of the mine at time of my visit, on the 21st of June. Since then the number of persons in the mine were reduced so that the mine would not come under the provisions of the law. The number of cubic feet of air in circulation at time of my visit was 5,880.

Thomas.—A drift mine. Operated by Benjamin Thomas, who is also the superintendent. Mining-boss, Milton J. Smith. This mine was in operation 220 days during the year, but most of the time there were only a few persons employed.

Tip Top Mine.—A drift opening. Operated by the H. C. Frick Coke Company. Superintendent, Thomas Lynch; mining-boss, John Nicholson. Average number of miners employed, 47 men and 3 boys; total number employed inside and outside, 99. The ventilation is produced by a fan, which gives good satisfaction Air measurement taken in the outlet-current showed 37,800 cubic feet of air in circulation. On my last visit I found ventilation and drainage of workings in good condition.

Tyrone.—This mine is a drift opening. Operated by Laughlin & Co. (Limited). Superintendent, C. Wharton; mining-boss, Albert G. Herrington. This mine has only been in operation 172 days in this year. During the idle time, changes have been made in the haulage. The grade of inside roads were found to be sufficient to run out the loaded wagons by gravity, a shaft having been sunk to the rise of the seam and near the extreme end of the workings. An engine and boiler were placed in the mine near the shaft and rope haulage adopted, the rope to let the full and loaded wagons down and bring the empties back, the heat of the boiler and steam to assist the ventilation. Among the outside improvements is a larger boiler put up outside to run the pumps supplying water for the ovens, and also to run the new machinery built for crushing the coal, and elevating it into bins for charging. On my last visit an air measurement showed 14,000 cubic feet of air in circulation through the mines.

Tub Mill Run.—This is a drift opening. Operated by Fair View Coal Company. Superintendent and mining-boss, Thomas Rees; assistant, John Rees. When visited September 18, it employed miners, 33 men and 3 boys. The average heighth of the coal mined is 8½ feet. The headings are driven 9 feet wide; rooms 17 feet and ribs 15 feet. An air measurement taken in the return air current showed 10,080 cubic feet.

When visited on the 13th of December, I found 16,530 cubic feet of

air in circulation, and the general condition fair. During the year the works were in operation 187 days.

Trotter—Shaft opening. Owned and operated by the H. C. Frick Coke Company. Superintendent, John Sneddon; mining-boss, Elias Phillips; fire-bosses, Geo. Weightman, William Johnson and Alex. Erskine. Mine in operation 282 days; employing an average number of 175 miners, and 6 boys; total number of persons employed inside and outside, 434. The workings are divided into three sections, and all parts on the double entry system. On my last visit I found the ventilation and drainage in good condition, and the safety of the mines well taken care of. Number of cubic feet of air in circulation, 88,200. Average thickness of coal 8 feet. Entries are driven 8 feet wide; rooms 12 and ribs 15. There are several improvements made in this mine during the year; one of the most important is the new rope haulage. Accompanying this report is a full description of the machinery, etc., giving by the Chief Engineer of the company of J. H. Paddock, which may be of great benefit to those contemplating a change to rope haulage.

To Mr. J. J. DAVIS,

Inspector of Mines:

DEAR SIR: Herewith please find a short description of the new haulage at Trotter.

The Trotter mine has an average daily output of 1,400 tons of coal, and as the workings are becoming considerably extended, it was found necessary for the economical handling of the coal to substitute something in the place of mule power.

A pair of haulage engines were consequently placed in the mine, close to the bottom of the shaft, to which steam is supplied from a pair of 5′ x 15′ tubular boilers, located on the surface. The engine room is situated 100 feet from the main heading, the centre line of the engines being at right angles to the main heading and haulage way, the dimensions of the engine room being 34 feet long, 26 feet wide and 14″ 9′ high. The roof of the engine room is supported by 10″ x 12″ posts with 5″ x 15″ double cap pieces bolted together, the lents being spaced 3 feet apart from centers. A middle timber 6″ x 15″ doubled, runs under the caps, the whole room being planked outside and neatly weatherboarded, on the interior. Ventilation is supplied from the back part of the room. The air passing directly through to the shaft, keeps the engine room cool and comfortable. The engines were built at the Mauch Chunk Iron Works, and are a pair of first motion engines with 16″ x 32″ cylinders. The drums are cylindrical, 5 feet in diameter and 2′ 4″ face, grooved, being worked by a friction clutch, so arranged that either or both drums can run loose. When not hauling a trip, the engines are allowed to run loose to prevent the accumulation of water in the cylinders. The use of direct

acting engines for a haulage is novel, at least in this section of the country.

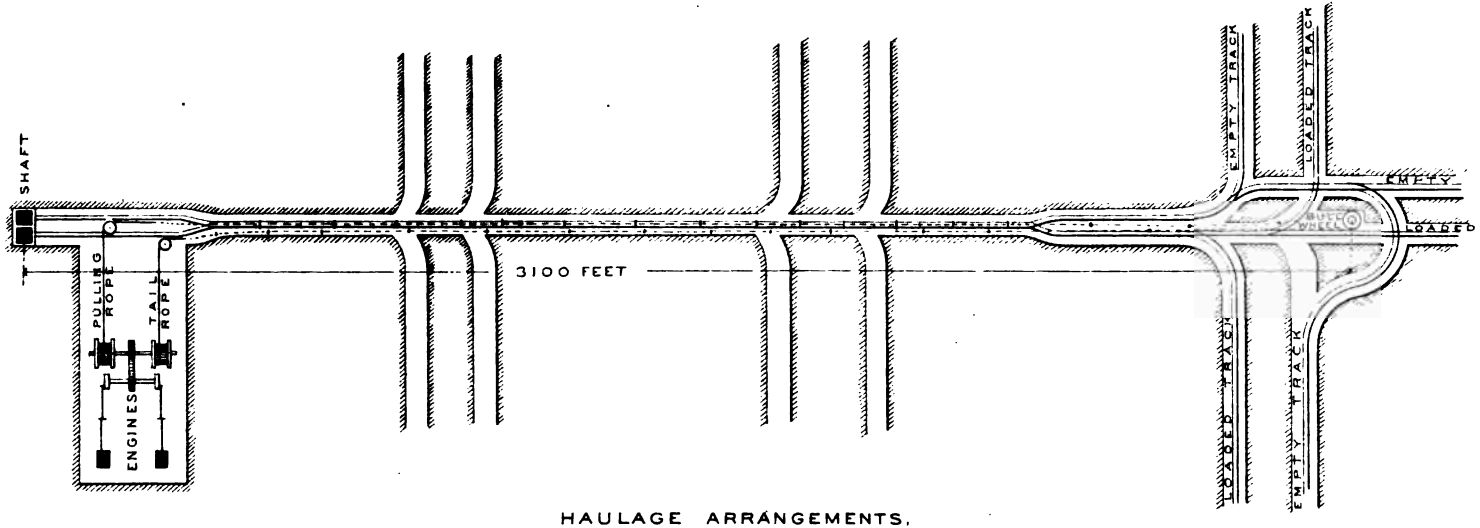
The method of haulage in use is the tail-rope system, the main rope being $\frac{3}{4}$" in diameter, and the tail-rope $\frac{5}{8}$". The tail-rope passes around a 4 foot sheave wheel and on pulleys along the side of the heading to a 5 foot bull wheel at the extreme end of the haulage, the hauling rope likewise passing around a sheave wheel and attached to the front of the trip. The track is on a perfectly straight line throughout its entire length. The grades are undulating, though carefully surfaced to a grade line. For a distance of 380 feet from the bottom, there is a 1 foot grade per 100 feet, so that the cars run freely to the cages. At the far end there is a grade sufficient to make up the trips readily. Between these points the grade varies from level to $\frac{3}{10}$ % grade. At either end of the haulage way, sidings are located about 300 feet long. The engines can be easily speeded up to 15 miles per hour. The average time, however, in making a round trip is 10 minutes, 3 minutes each way for running and 2 minutes at either end for connecting up the loaded or empty cars. It is proposed to considerably extend the usefulness of the engines by the application of side branches. This haulage was put in operation early in December, 1888. It required several days to get the friction clutch properly adjusted, but since that has been done, it has given great satisfaction and has required no alteration in the most minute detail. The sidings, ropes, etc., were arranged for hauling 30 to 50 bushel cars; but thus far owing to the rapidity of the engines it has been found that better time can be made by handling from 15 to 20 cars at a trip.

Yours truly,

J. H. PADDOCK, M. E.

Union.—A drift opening. Operated by J. D. Boyd & Co. Superintendent, J. D. Boyd; mining-boss, George Whyel. The number of miners employed at any one time during the year vary from 18 to 48. In the month of June the report shows 48 miners employed. When the mine was visited, on the 31st of October, they were driving four butt headings and working rooms in three. The headings are driven eight and one half ($8\frac{1}{2}$) feet wide, and rooms twenty-one (21) feet wide and three hundred (300) feet in length. Improvements were being made in ventilation by building a furnace, the mine up to that time, having been ventilated by natural means. The total production in tons of coal was 34,563. Number of days worked, 260.

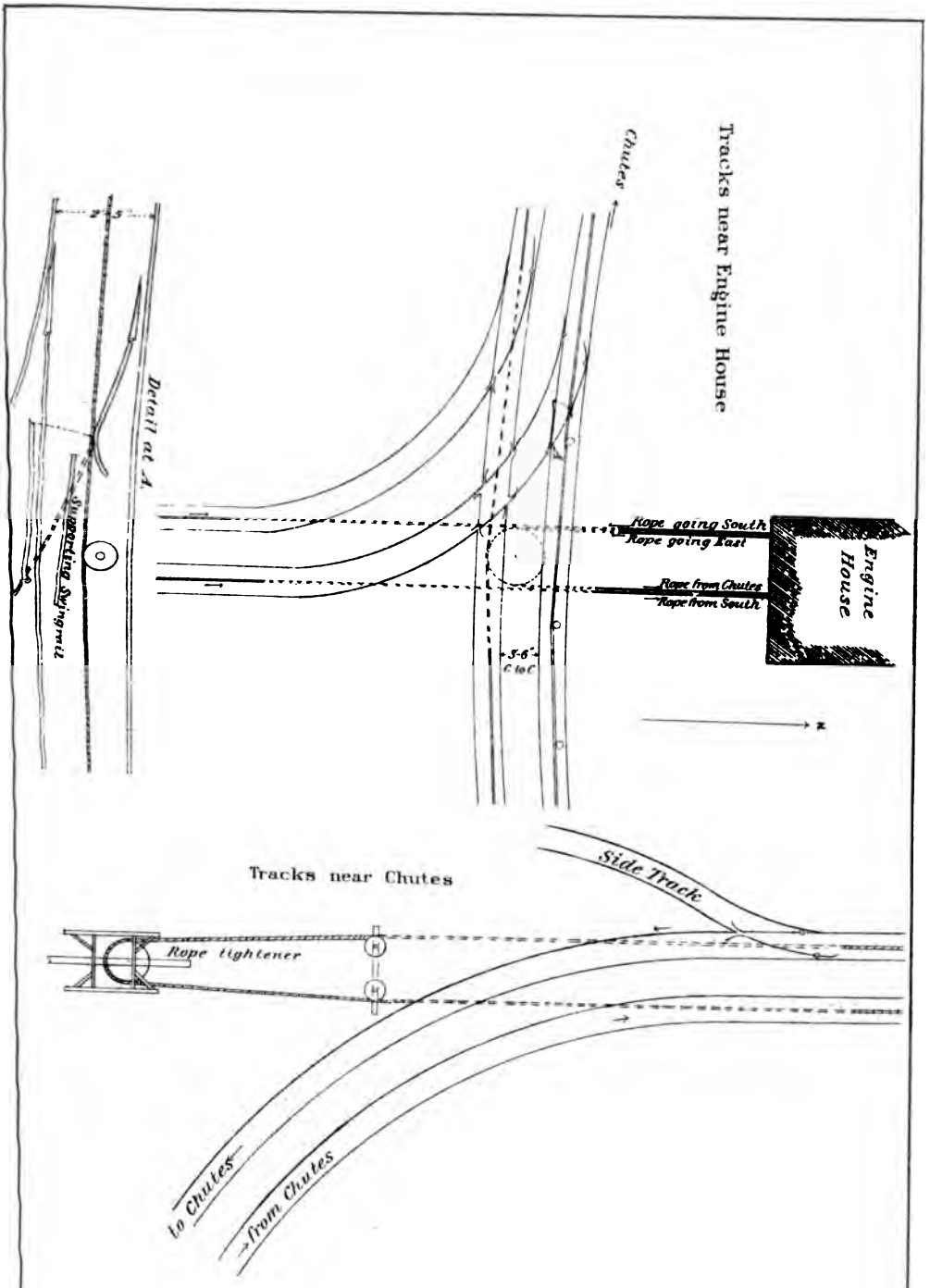
Uniondale is a slope opening, driven on the dip of the coal. Operated by Reid Brothers. Superintendent, J. M. Reid; mining-boss, Charles R. Trew; fire boss, William Holsing. When visited, on the 28th of December, I found the workings on two flats on left of slope. There were room workings in two headings and ribs in one. The mine



HAULAGE ARRANGEMENTS,

TROTTER MINE,

H.C.FRICK COKE CO.


Tracks near Engine House
Chutes
Detail at A
Rope going South
Rope going East
Rope from Chutes
Rope from South
Engine House
5-6"
C to C
Tracks near Chutes
Side Track
Rope tightener
To Chutes
From Chutes

was ventilated by fan, giving 37,520 cubic feet of air per minute for circulation, and the condition of the workings as to both ventilation and drainage good; also, the safety of the mine was well looked after. The mine was only in operation 86 days.

Ursina is a new mine; the inside workings are not fully opened. There are 30 coke ovens now built, and, according to the information received on my visit, December 10th, there will be many more built in the near future and large works established. The works are operated by the Connellsville and Ursina Coal and Coke Company. Superintendent, E. H. Reid; mining-boss, John Harris.

Valley.—This is a drift opening. Operated by the H. C. Frick Coke Company. Superintendent, Thomas Lynch; mining-boss, Jas. Jackson. I find this mine generally in good condition as to both ventilation and drainage. The roads are kept in good order and the working places well taken care of. The ventilation is produced by furnace and boiler. System of working, double heading. Headings are driven 8 feet wide, rooms 12 feet, and ribs 14 feet wide. The coal is hauled out of the mine by a stationary engine and wire rope haulage. Distance from engine to bull wheel, 5,255 feet. Average number of cars taken out each trip, 45; average time for round trip, 20 minutes. At the inside end of the line there is a siding 440 feet long, which is double timbered from end to end, and both the workmanship and material are of credit to the parties who had it in charge.

Wheeler.—Slope opening. Operated by the Cambria Iron Company. Superintendent, James F. Beattie; mining-boss, Neil Beattie; fire boss, William H. Johns. This mine has been in operation for 313 days during the year. Average number of miners employed, 31 men and 8 boys. Average thickness of coal, 8 feet. On my last visit (November 29th) the workings were on four flats—two right and two left. They were driving nine headings, and the balance of the men working in ribs. I found the mine in good condition as to both ventilation and drainage, and the safety of the men well looked after.

White is a drift opening. Operated by the H. C. Frick Coke Company. Superintendent, Thomas Lynch; mining-boss, John Hayden. Number of days worked during the year, 253. Average number of miners employed, 64 men and 8 boys; total number employed inside and outside, 173. On my last visit I found room and rib workings in six headings, and the working faces in good shape, well supplied with timber and properly used. The mine is ventilated by an exhaust fan, which gives a sufficient volume of air to ventilate the workings.

Youngstown is a slope opening. Operated by the Youngstown Coke Company (Limited). Superintendent, F. C. Keighley; mining-boss, George Eustis; fire-bosses, Daniel Davis and Walter Littlewood. The mine has been worked 230 days during the year. Average number of persons employed inside, 142; total number inside and outside, 244. On my last visit (December 20th) I found a strong current of

air in circulation and the drainage and roads in fair condition. The workings were on five flats—three right and two left. The system of working is the double-entry. Headings are 8 feet wide; rooms 12 feet, with 30 feet rib between. The ventilation is produced by a fan 20 feet in diameter, which is used as an exhaust, and gives good satisfaction.

TABLE No. 1.—Showing location of collieries in the Fifth Bituminous Mine District.

NAME OF COLLIERY.	Name of Operator.	Location—County.	Name of Superintendent.	Post-Office Address.
Anchor,	Pennsylvania Manufacturing, Mining and Supply Co.,	Fayette,	Charles A. Laing,	Dunbar, Fayette county.
Atlas.	Atlas Coke Company, Limited,	do.	James Henderson,	do. do.
Berlin,		Somerset.		
Buffalo,	Buffalo Creek, Coal Company,	do.		
Clinton,	B. F. Keister & Co.,	Fayette,	A. L. Keister,	Owensdale, Fayette county.
Coal Brook,		do.	M. F. Packard,	Moyer, Fayette county.
Cora,	J. Newmeyer & Sons,	do.	J. Newmeyer,	Dawson, Fayette county.
Clarissa,	James Cochran Sons & Co.,	do.	P. J. Cochran,	Vanderbilt, Fayette county.
Casselman,	Casselman Coal Company,	Somerset,	Wm. G. Hocking,	Meyersdale, Somersat county.
Cochran,	James Cochran,	do.	James Cochran,	Elk Lick P. O., Somerset county.
C. & L. C. C.,	C. & E. L. C. Co.,	do.	A. Chamberlin,	Meyersdale, Somerset county.
Cumberland,	Cumberland C. & M. Co.,	do.	John Hocking, Sr.,	do. do.
Co operative,	Co-operative Coal Company, Limited.			
Connellsville Shaft,	P. & C. Gas Coal and Coke Company,	Fayette,	Charles Davidson,	Connellsville, Fayette county.
Cupola,	H. C. Frick,	do.	Thomas Lynch,	Scottdale, Westmoreland county.
Diamond,	McClure & Co.,	do.	S. C. White,	do. do.
Dexter,	J. R. Stauffer & Co.,	do.	S. R. Fairchild,	do. do.
Eagle,	H. C. Frick Coke Company,	do.	Thomas Lynch,	do. do.
Furnace.				
Foundry,	do. do.	do.	do.	do. do.
Frick.	do. do.	do.	do.	do. do.
Franklin.				
Fort Hill	W. J. Rainey,	do.	T. J. Mitchell,	Connellsville.
Fairchance,	Fairchance Furnace Company,	do.	R. L. Martin,	Fairchance, Fayette county.
Flog Hill,	Fair View Coal Company,	Somerset,	Thomas Rees,	Meyersdale, Somerset county.
Fair View,	do do.	do.	do.	do. do.
Fayette,	Fayette Coke and Furnace Company,	Fayette.		
Fountain,	E. A. Humphries,	do	E. A. Humphries,	Scottdale.
Grassy Run,	Grassy Run Coal Company,	Somerset,	John Meager,	Elk Lick, Somerset county.
Grace,	W. J. Rainey,	Fayette,	T. J. Mitchell,	Connellsville.
Great Bluff.	Isaac Taylor,	do.	Isaac Taylor.	Dunbar.
Henry Clay	H. C. Frick Coke Company,	do.	Thomas Lynch,	Scottdale.
Hill Farm,	Dunbar Furnace Company,	do.	H. W. Hazard,	Dunbar P. O.
Hamilton,	Cochran & Hamilton,	Somerset,	James Cochran,	Elk Lick P. O.
Hocking,	Hocking Coal Company,	do.	John T. Hocking,	Meyersdale.
Home.	Stauffer & Wiley,	Fayette,	J. W. Wiley,	Scottdale.
Jackson,	Jackson Min g Company,	do.	J. T. Cochran,	Dawson.
Kyle Farm,	Bliss & Marshell,	do	J. W. Sterling,	Fairchance.
Keystone,	Keystone Coal Company,	Somerset,	Edward Weld,	Meyersdale.
Leith.	Chicago and Connellsville Coke Company,	Fayette,	Charles McSweeney,	Uniontown.
Leisenring, No. 1,	Connellsville Coke and Iron Company,	do.	J. K. Taggart,	Leisenring P. O.
Leisenring, No. 2.	do. do.	do.	S. B. Price,	West Leisenring P. O.
Leisenring, No. 3,	do do.	do.	John Henry,	Leisenring P. O.
Lemont,	R. Hogsett & Co.,	do.	Robert Hogsett,	Lemont Furnace P. O.
Mahoning,	Cambria Iron Company,	do.	Isaac Taylor,	Dunbar.
Morrell,	do. do.	do.	James F. Beattie,	Connellsville.

TABLE No. 1 —*Continued.*

NAME OF COLLIERY.	Name of Operator.	Location - County.	Name of Superintendent.	Post-Office Address.
Morgan,	H. C. Frick Coke Company,	Fayette,	Thomas Lynch,	Scottdale.
Mt Braddock,	R. Hogsett & Co.,	do.	Charles B. Colborn,	Mt Braddock.
Nellie Drift,	Brown & Cochran,	do.	P. G. Cochran,	Vanderbilt P. O.
Nellie Shaft,	do do.	do.	do.	do
Painter,	McClure & Co.,	do.	S. C. White,	Scottdale.
Pennsville,	Pennsville Coke Company,	do.	J. L. Dillinger,	Pennsville.
Percy,	Percy Mining Company,	do.	L. DeSaulles,	Uniontown.
Plum er,	P. & C. Gas Coal and Coke Company,	do.	harles Davidson,	Connellsville.
Parrish,	Dunbar Furnace Company,	do.	H. W. Hazard,	Dunbar.
Paul	W J. Rainey,	do	T. J. Mitchell,	Connellsville.
Redstone,	Redstone Coke Company, Limited,	do.	S. E Wadsworth,	Brownfield P. O.
Rist,	H. C. Frick Coke Company,	do	Thomas Lynch,	Scottdale
Rainbow,	Rainbow C & C. Company,	do.	D. P. Whitsett,	Whitsett P. O.
Rolling Mill.				
Summit, Nos. 1 and 2,	H. C. Frick Coke Company,	do.	Thomas Lynch,	Scottdale.
Sterling, No. 1,	J. M. Schoonmaker Coke Company,	do.	Allison Rosser,	Dawson.
Sterling, No. 2,	do. do.	do.	do	do.
Stewart,	Stewart Iron Company, Limited,	do	F. C. Van Dusen,	Uniontown
Statler,	E. Statler,	Somerset,	E Statler,	Elk Lick P. O.
Tip Top,	H. C. Frick Coal Company,	Fayette,	Thomas Lynch,	Scottdale.
Tyrone,	Laughlin & Co., Limited,	do	C. Wharton,	Broad Ford.
Tub Mill Run,	Fair View Coal Company,	Somerset,	Thomas Rees,	Meyersdale.
Thomas,	Thomas,	do.	B. Thomas,	do.
Trotter,	H. C. Frick Coke Company,	Fayette.		
Union,	J. D. Boyd & Co ,	do.	J. D. Boyd,	Uniontown.
Uni ndale,	Reid Brothers,	do.	J. M. Reid,	Dunbar.
Ursina,	Connellsville and Ursina Coal and Coke Company,	Somerset,	E. H. Reid,	Ursina.
Valley,	H C. Frick Coke Company,	do.		
Wheeler,	Cambria Iron Company,	do.	James F. Beattie,	Connellsville.
White,	H. C. Frick Coke Company,	do.		
Wynn,	Wynn Coke and Mining Company,	do		
Youngtown,	Youngstown Coke Company, Limited,	do.	Fred C. Keighley,	Uniontown.

TABLE No. 2—.Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employés, number of persons killed and injured, number of kegs of powder used, etc., in the Fifth Bituminous Mining District, for the year ending December 31, 1888.

NAMES OF COLLIERIES.	LOCATION.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Anchor,	Dunbar, Fayette county,	25 000	18.000	....	105	91	..	..	4	5	9	..	100
Atlas, Atlas Coke Company, limited,	do. do.	24 900	17 438	..	109	74		...	..	3	6	..	..
Atlas, Cambria Iron Company,	do. do.	9,940	7,952	....	36	82	..	..	...	2	6	..	80
Buffalo,	Garrett, Somerset county,	19.684	.....	18 993½	188	52		1		1	10	..	28
Berlin.	Berlin Somerset county,	2,400	..	1,858	200	11			30		2	..	
Clinton, H C. Frick Coke Company,	Owensdale, Fayette county,	3 700	2,500	....	30	39		...		2	3	..	..
Clinton, B. F. Keister & Co.,	do. do.	5,900	3,835	....	51	33			60	1	3	..	44
Coal Brook,	do. do.	52 276	37.314	....	220	53		1	...	1	6	..	70
Clarissa,	Vanderbilt. Fayette county,	71.394	43 570	..	265	78	..	..		..	7		108
Cora,	Jimtown, Fayette county,	21.973	15 800	525	213	36		...	15	1	3	..	42
Cassellman,	Garrett, Somerset county,	40.000	.....	40 000	300	48	1	2	225	1	5	..	..
Cochran,	West Salisbury, Somerset county,	530	..	530		3	..		...	..		..	
C & E. L. C. C.,	Meyersdale, Somerset county,	65. 229	7,930	54 235	212½	106	..	4	.	...	7	..	75
Cumberland,	Grassy Run, Somerset county,	30.000	...	30.000	200	39	..		..	...	3	..	..
Co-operative,	do. do.	6 200	50 563	6,200	135	11		2	60	4	1	..	
		79,090			231	134					10	..	
Connellsville Shaft and Plummer,	Connellsville, Fayette county,	22 074	84 437	....	291	111	1	2	...	3	3		296
Cupola,	Mayville, on P., McK & Y. R R., Fayette co.,	24 000	15 000	.....	22	49	..	...	...	3	5	..	100
Diamond,	McClure Station Fayette county,	4,934	3 436	....	32	43	..	..	.		5	..	66
Dexter,	West Overton. Fay tte county,	8.287½	6 012½	....	98	27		...	41	..	2	..	40
Eagle,	Sherrick Station, Fayette county,	43 000	30 000		256	71			..	..	9		80
Foundry,	do. do.	25 000	40.000	Ovens	281	79	..	...	...			..	97
				Mines	128								
Fountain,	Scottdale Station, Fayette county,	32,380	23 015	..	165	68	..	1	...	1	16	..	87
Furnace (Idle),	do. do.		.....				..	..	.	...	..	..	
Frick,	Broad Ford, Fayette county,	40 000	50 000	..	231	49		...			3	..	106
Franklin,	Owensdale, Fayette county,	6 900	4 495		81	37	..	..	90	1	3	..	50
Fort Hill,	do. do	75 000	50 000		285	96			..	1	10	..	140
Fairc ance,	Fairchance, Fayette county,	54,360	27,700	1.800	307	90		2			10	..	85
Flog Hill,	Grassy Run, Somerset county,	23 826	.....	23 826	150	48	..	..	257		4		
Fair View,	do. do.	14,318	.....	14,418	150	31	..		162	..	2	..	..

TABLE No. 2—*Continued*

NAMES OF COLLIERIES.	Location.	Total production in tons of coal	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Fayette,	Fayette Works, Fayette county,	52,675	31,536	761	288	105				4	7		130
Grace,	Moyer station, Fayette county,	225,000	150,000		275	310	1	3		6	25		374
Great Bluff,	Dunbar, Fayette county,	6,163	4,499		146	15					2		16
Grassy Run,	Grassy Run, Somerset county,	9,906		9,906	130	23			86		2		
Henry Clay,	Broad Ford, Fayette county,	46,000	30,000		193	117				6	15		120
Hill Farm,	Dunbar, Fayette county,	76,911	47,572		252	89				5	12		120
Home,	Valley Station, Fayette county,	5,457	3,780		103	14					1		20
Hamilton,	Grassy Run, Somerset county,	38,104		38,104	260	58			300		3		
Hocking,	do. do.	27,000		27,000		42					2		
Jackson,	Dawson, Fayette county,	37,500	25,000		300	45				1	6		64
Kyle Farm,	Fairchance, Fayette county,	54,530	35,509		175	129		3	10	1	10		127
Keystone,	Meyersdale, Somerset county,	9,961		9,961	250	20					4		
Leith,	Leith Station, Fayette county,	167,380	111,000		228	344	3	1		8	25		284
Lemont,	Lemont Furnace, Fayette county,	65,000	53,000	500	275	97		3		4	9		134
Leisenring, No. 1,	Leisenring, Fayette county,	348,498	246,813	1,500	275	422		7		11	27		509
do. 2,	West Leisenring, Fayette county,	212,390	143,874		260	294		4		8	22		300
do. 3,	do. do.	13,106	8,797		98	55	1			5	5		250
Mahoning,	Dunbar, Fayette county,	85,414	56,185		296	85				6	7		100
Morrell,	Morrell, Fayette county,	305,435	210,846		291	412		5		16	30		400
Morgan,	Morgan Station, Fayette county,	24,000			278	13					2		
Mt. Braddock,	Mt Braddock, Fayette county,	38,800	24,524	7,835	275	101		1	8	6	9		130
Nellie Drift,	Vanderbilt, Fayette county,	153,862	92,300		282	189		1		3	14		254
Nellie shaft,	do. do.												
Painter,	McClure Station, Fayette county,	89,595	64,565		286	163				1	19	1	228
Pennsville,	Pennsville Fayette county,	41,600	29,000	600	196	74				3	4		93
Percy,	Percy Coke Works, Fayette county,	22,714	10,495	10,080	183	64				2	5		62
Parrish,	Ferguson Station, Fayette county,	24,001	13,933	2,862	168	53		1		4	3		75
Pearl,	Vanderbilt, Fayette county,	42,750	28,500		285	70		1		1	6		88
Redstone,	Brownfield Station, Fayette county,	316,719	238,800		280	497		4	5	10	34		446
Rist,	Broad Ford, Fayette county,	200,000	80,000		278	134		2		2	18		165
Rolling Mill (Idle),	Scottdale Station, Fayette county,												
Rainbow,	Whitsett Station, Fayette county,	33,640		33,640	230	61	1		300	1	5		
Summit, 1 and 2,	Summit Station, Fayette county,	110,000	70,000		292	127					14		148

Sterling, No. 1, Sterling, No. 2,	Jimtown, B. & O. R. R., Fayette county,	277 061	197 401	200	280	302		2	419	3	32		394
Stewart,	Evans Station, Fayette county,	82 613	58,453		260	110				3	6		120
Stailer,	Grassy Run Somerset county,	12 000		12,000	150	12			150		2		
Tip Top,	Valley Station, Fayette county,	62,000	40,000		220	99		1		1	9		12
Tyrone,	Broad Ford, Fayette county,	52 713	32,686		172	88			60	2	14		144
Tub Mill Run,	West Salisbury, Somerset county,	38 182		37,182	187	49			415		4		
Thomas,	do. do.	9 037		9,037	220	15			90		1		
Trotter,	Trotter, Fayette county,	380,000	250,000		282	434			8	3	40		464
Union	Smock Station, Fayette county,	34 563		32,600	260	46	1	2	180		4		
Uniondale,	Dunbar, Fayette county,	14 025	9,710		86	73				3	5		76
Ursina,	Ursina, Somerset county,	4,300	1,900			21					1		30
Valley,	Valley Station, Fayette county,	125 000	80 000		279	159				3	18		152
Wheeler,	Wheeler, Fayette county,	90,110	59 657		313	100	1	1		4	15		100
White,	Morgan Station, Fayette county,	122,000	80,000		253	173				1	17		210
Wynn,	Wynn Coke Works, Fayette county,	22 790	13,238	4,972	98	64		1		1	4		70
Youngstown,	Youngstown Station, Fayette county,	97 751	66,000		220	244			60	8	27		240
Total,		5,240,941½	3,238,548½	431 085½		7,989	10	58		176	727		8,627

TABLE No. 3.—Showing the number of each class of employés at each Colliery in the Fifth Bituminous Mine District, during the year 1888.

NAME OF COLLIERIES.	Location—County.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand totals—Inside and outside.
		Inside foremen or mine bss.	Miners.	Miners' boys.	All company men.	Drivers.	Door-boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Cokers and yard men.	All company men.	Superintend't, bookkeepers and clerks.	Total outside.	
Anchor,	Fayette,	1	33	2	2	4	1	43	1	2	4	35	3	3	48	91
Atlas—Atlas Coke Company (Lim).,	do.	1	32	2	1	4		40	1	1	2	28	1	1	34	74
Cambria Iron Company,	do.	1	30	5	3	5		44	1	2	2	30	1	2	38	82
Berlin,	Somerset,	1	6		2	1		10						1	1	11
Buffalo,	do.	1	37		1	4		43	1	1	2	2	2	1	9	52
Clinton—B. F. Keister & Co.,	Fayette,	1	14			3		18	1		1	17		1	20	38
H. C. Frick Coke Company,	do.	1	20		1	2		24	1		1	13			15	39
Coal Brook,	do.	1	25			4		30		1		21		1	23	53
Clarissa,	do.	1	40		2	4		47	1	1	1	25	1	2	31	78
Cora,	do.	1	13	2		2		18		1		15		2	18	36
Cassleman,	Somerset,	1	37	3		3		44			1		3		4	48
Cochran,	do.		2	1				3								3
C. & E. L. C. C.,	do.	1	63	10	3	7	2	86	1	1		12	4	2	20	106
Cumberland,	do.	1	35			2		38						1	1	39
Co-operative,	do.		9					9	1					1	2	11
Connellsville Shaft,	Fayette,	1	70	4	6	10	6	97	1		4		9		14	111
Cupola,	do.	1	12		4	2		19	1	1	3	18	4	3	30	49
Diamond,	do.		16		1	3		20				21		1	22	42
Dexter,	do.		12			2		14				12		1	13	27
Eagle,	do.	1	27	3	3	4		38	1	1		27	3	1	33	71
Foundry,	do.	1	30		3	6		40		1		37	1		39	79
Fountain,	do.	1	35		1	7		44	1	1		16	6		24	68
Furnace (Idle),	do.															
Frick,	do.	1	14	2	2	2	1	22	1			24		2	27	49
Franklin,	do.	1	14			2		17	1			17	1	1	20	37
Fort Hill,	do.	1	45		3	7		56		1		38		1	40	96
Fairchance,	do.	1	45		1	6		53		1		32		4	37	90
Flog Hill,	Somerset,	1	32	6		4		43		1			3	1	5	48
Fair View,	do.		18	6	1	2		27	1	1			1	1	4	31
Fayette,	Fayette,	1	40	2	3	5	2	53	1	2	3	40	3	3	52	105
Grace,	do.	1	128	2	15	16	4	164	1	5	5	120	9	6	146	310
Great Bluff,	do.		7		1	1		9				5		1	6	15
Grassy Run,	Somerset,	1	21			1		23								23
Henry Clay,	Fayette,	1	49	4	6	9	1	70	1		3	43			47	117
Hill Farm,	do.	1	42	2	3	5	2	55	1	4	4	20	3	2	34	89

23 MINES.

Home,	do.		7			1		8				5		1	6	14
Hamilton,	Somerset,	1	43	2	4	3		53								58
Hocking,	do.	1	34	3		2		40					1	1	2	42
Jackson,	Fayette,	1	18			3	1	23		1	1	18	1	1	22	45
Kyle Farm,	do.	1	50		2	6	1	10	1	1	1	60	5	1	69	129
Keystone,	Somerset,	1	14			3		18		1				1	2	20
Leith,	Fayette,	1	160	3	28	19	10	221	1	4	8	95	10	5	123	344
Lemont,	do.	1	40	3	4	6	2	56	1	2	4	30	1	3	41	97
Leisenring, No. 1,	do.	1	180	5	23	28	15	252	1	6	6	132	19	6	170	422
Leisenring, No 2,	do.	1	130	3	13	22	12	181	1	5	4	88	13	2	113	294
Leisenring, No. 3,	do.	1	20		7	4		32	1	2	4	12	2	2	23	55
Mahoning,	do.	1	35	3	4	4	1	48	1	2	3	25	4	2	37	85
Morrell,	do.	1	225	4	18	25	3	276	1	6	3	75	49	2	136	412
Morgan,	do.		8		3	2		13								13
Mt. Braddock,	do.	1	35	3	3	6	2	50		2	5	40	1	3	51	101
Nellie Drift, Nellie Shaft, }	do.	2	100		5	9		116	1	3	5	61	1	2	73	189
Painter.	do.	1	60			14	2	77		2	2	78	1	3	86	163
Pennsville,	do.	1	32		3	3	1	40	1	1	3	27	1	1	31	74
Percy.	do.	1	30		1	3	3	38	1	1	2	15	6	1	26	64
Parrish,	do.	1	22	2	1	2	1	29	1	2	3	16		2	24	53
Paul,	do.		38			5	1	44		2	2	20		2	26	70
Plummer,	do.	1	44	2	4	10	5	66	1	6	2	57	1	1	68	134
Redstone,	do.	1	185		9	58	20	273	1	8	10	190	5	10	224	497
Rist.	do.	1	88	13	11	14		127	1	3	3	45	4	1	57	184
Rolling Mill (Idle),	do.															
Rainbow,	do.	1	43	2	1	4		51	1	3	1		2	3	10	61
Summit, Nos 1 and 2,	do.		45	6	3	8		63	1	1		50	9	3	64	127
Sterling, No. 1, Sterling, No. 2, }	do.	2	129	6	9	19	3	168	1	11	2	102	14	4	134	302
Stewart,	do.	1	50		6	5	1	63	1	2	6	75	1	2	87	150
Statler,	Somerset,		9					9					3		3	12
Tip Top,	Fayette,	1	47	8	7	6		62	1	1		31	3	1	37	99
Tyrone,	do.	1	34	8	4	5	1	53	1	2	1	24	6	1	35	88
Tub Mill Run,	Somerset,	1	33	5		4		43	1	1			3	1	6	49
Thomas,	do.		10	2		1		13	1					1	2	15
Trotter,	Fayette,	1	175	6	19	22	15	238	1	6	5	153	28	3	196	434
Union,	do.	1	35			3		39	1	1			2	3	7	46
Uniondale,	do.	1	30		2	3	1	37	1	1	2	30	2		36	73
Ursina,	Somerset,		9	1		1		11	1	1		7		1	10	21
Valley,	Fayette,	1	68	5	9	8	2	93	1	2	1	56	5	1	66	159
Wheeler,	do.	1	31	8	3	5	2	50	1	2	3	40	4		50	100
White,	do.	1	64	8	8	10	1	92	1	1		70	8	1	81	173
Wynn,	do.	1	30		1	3	1	36	1	1	1	18	6	1	28	64
Youngstown,	do.	1	85	10	22	12	12	142	1	3	10	72	11	5	102	244
Total,		66	3,576	172	303	510	138	4,765	52	128	139	2,485	270	130	3,224	7,969

TABLE No. 4.—List of fatal accidents occurring in and about the mines of the Fifth Bituminous District, for the year ended December 31, 1888

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married or single.	Number of orphans.	Name of Colliery	Location—County.	Nature and Cause of Accident.
Feb'y 13, .	John McGuire, ...	Trapper and driver.	15	S.,	. .	Connel'sville Shaft.	Fayette, ...	Fatally injured by being caught between wagon and post at bottom of shaft while the cager was taking a loaded car on to the cage. He lived about an hour and a-half after being hurt.
April 17, .	Martin Doyle, ...	Miner, ...	45	S.,	. .	Grace, ...	do.	He was fatally injured by a fall of roof while drawing rib. He had only commenced working on that rib that morning, and had been put to work on rib-drawing at his own request. He died on the 19th
May 9, .	John Pankauch, ...	do.	43	M.,	4	Union, ...	do.	Fatally hurt by a fall of slate while turning room No. 14 in No. 4 butt heading From the statements of some of his fellow miners, the accident was the result of his own carele-sness. He had been urged to secure the slate before it would fall on him, but he claimed that it was safe
May 10, .	William Brown, ...	Stone mason, .	45	S.,	5	Wheeler, ...	do.	Killed by a trip of empty cars on the slope. He was building a brattice wall between the manway and the slope, and had, at the time of accident, gone to the slope to inquire of a party that he had heard passing what time it was. Just as he got on the slope the trip came down and caught him. He was killed instantly.
May 17, .	Melvin P. Lashley, ...	Pumper, ...	26	M.,	2	Leisenring, No. 3.	do.	He had gone down to oil the pumps in the shaft, and had been down sufficient time to do all he intended doing, and had rung to be hoisted. When the cage came up Lashley was not on. A party went down the air shaft to see what had happened. and when they came to the bottom of the hoisting shaft they found him lying dead. From all appearance he must have been caught in the timbers as the cage was leaving the bottom and knocked off.
July 12, .	John Urish, ...	Miner, ...	38	M ,	2	Leith, ...	do.	Killed by a fall of roof in rib No. 18 on 5th butt in 4th section north. Frank Leber was working with him at the time of the accident, and holding the lights to him to knock out some posts, when a piece of the roof fell, killing him instantly.

July	16, .	Mich. Smith, ...	. . . . .	43	M.,	5	do.	do.	Both Smith and Bedner were killed in rib No. 19 on 5th butt in 4th section north. They were to have commenced working in this rib on the morning of the accident. The person who had worked in the rib last had, before he quit, set up his break rows of posts to save the "face," and had taken out his back posts to give the roof a chance to break. When they (Smith and Bedner) came in, they found the roof still up, and, in place of working at the face, they went back of the break rows to get some coal that had been crushed by the squeeze and left by their predecessor. While they were doing this the roof broke and killed them both.
July	16, .	Mich. Bedner, ...	. . . . .	28	M.,	1	do.	do.	
Sept.	11, .	Eli Phennicie, ...	do.	52	M.,	6	Casselman, . .	Somerset, ...	He was fatally injured by a fall of "horse-back" while working in face of heading His back was broken and his body severely bruised, and, although some hopes were entertained of his recovery, yet his death occured on the 13th inst. At the time of my investigation several of his fellow miners spoke very highly of him as being a careful man and a good miner, having worked in this coal for years
Dec.	22, .	William Wilson, ...	Mining boy, . .	15	. . .	. .	Rainbow, . . .	Fayette, ...	Killed by being struck by coal loosened by a shot fired by O. M. Sweeney in the next room to the one where he worked with his father. Before putting the hole in for the shot, Sweeney went into the Wilson room and had a talk with him in regard to whether there was sufficient coal in the rib for him to put in a shot on his side to blow his coal down. They both thought that the rib was thick enough to prevent the force of the shot coming through on the Wilson side of rib. Wilson was putting on his clothes to go home when Sweeney left him to get his hole in. When the shot was ready he fired, not knowing that the boy had been left in after Wilson had gone. The force of the shot came to the Wilson side, causing the death of young Wilson by being struck by flying coal.

TABLE No. 5.—List of non-fatal accidents occurring in and about the mines of the Fifth Bituminous Mine District for the year ending December 31, 1888.

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married	Name of Colliery.	Location—County.	Nature and Caus of Accident.
January 7.	John Miller,	Roadman,	28	Yes,	Kyle Farm,	Fayette,	Foot bruised between empty cars.
January 17,	William Eaton.	Miner,	30	Yes,	C. & E. L. C. Co.,	Somerset,	Thigh hurt by a brake handle.
January 24,	Genero Feo,	do.	34	Yes,	Fairchance,	Fayette,	Leg broken by fall of coal while undermining.
January 24,	James Kirk,	Timberman,	46	Ye ,	Leisenring, No. 1,	do.	Ribs broken by falling while passing mule.
February 9,	George Gallater,	Driver,	19	No,	Rist,	do.	Collar-bone broken by wagon jumping track.
February 14,	George Jae,	do.	23	Ye ,	do.	do.	Dislocated his elbow by being caught between wagon and door frame.
February 29,	James Flowers,	Miner,	36	Yes,	Cassellman,	Somerset,	Leg broken by being caught by full car.
March 31,	Charles Peters,	do.	40	Yes,	Union,	Fayette,	Body and legs bruised by fall of coal
April 4,	Tonny Lennie,	Driver,	24	No,	Leisenring, No. 1,	do.	Leg squeezed between tail chain and car.
April 4,	William Burns,		28	No,	Redstone,	do.	Head, back and nose cut by fall of slate.
April 5	Steve Baboofchuck,	Miner,	23	No,	do.	do.	Head cut by drawing pillars.
April 14,	Wm. T. Humphreys,	do.	25	Yes,	Wynn,	do.	Body bruised by fall of roof
April 18,	Dan Barnt,		30	Yes,	Redstone,	do.	Hurt on slope by being caught by truck.
April 20,	Stephen Humphreys,	Driver,	24	No,	Kyle Farm,	do.	Arm broken by car jumping track.
April 21,	Wm. McFern,	do.	20	No,	Leisenring, No. 2,	do.	Two fingers cut off between wagon and roof.
April 23,	Conrad Straup,	Miner,	24	No,	Sterling No. 1,	do.	Hips squeezed between wagon and rib.
April 23,	Isaac Keffer,	do.	31	Yes,	do.	do.	do. do. do.
May 3,	John McDonald,	Mine-boss,	36	Yes,	Mt. Braddock,	do.	Bruised by car getting loose on slope.
May 22,	John Miller,	Miner,	37		Morrel,	do.	Ribs broken by drawing post.
May 28,	Chalmer McCutire,	do.	22	No,	Fairchance,	do.	Foot injured by fall of coal.
June 3,	Thomas Weldon,	do.	28	Yes,	Leisenring, No. 2,	do.	Hip dislocated by a piece of slate knocking out a set of timber
June 23,	John Moroska,	do.	45	Yes,	Leisenring, No. 1,	do.	Rib broken by car jumping track near bottom of shaft.
June 24,	Alex. Hart,	do.		Yes,	Coal Brook,	do.	Ankle bruised by a fall of roof.
June 25,	John Bell,	Driver,	25	No,	Leisenring, No. 2,	do.	Kicked by a mule. Idle three days.
June 27,	John Whitehouse,	do.	24	Yes,	Leisenring, No. 1,	do.	Shoulder bone broken by falling in front of empty trip.
June 30,	John Vigg.	Miner,	40	No,	do.	do.	Back injured by fall of top coal.
July 2,	John T. Tres,	do.	45	Yes,	C. & E. L. C. Co.,	Somerset,	Back and shoulder injured by fall of breast coal.
July 19,	John Bevan.	Lamp-lighter,	13	Boy,	Morrell,	Fayette,	Leg broken by loaded cars
July 20,	Francis Battiga,	Miner.	30	Yes,	do.	do.	Hurt while drawing out props.
July 23,	A. W. Franks,	Cager,	44	Yes,	Connellsville Shaft,	do.	Leg squeezed between cars.
July 26,	Joseph Malia,	Driver,	16	Boy,	Leisenring, No. 1,	do.	Leg hurt by empty cars.
July 28,	Lewis Addis,	Charger,			Paul,	do.	Injured by cars passing over his foot.
July 30,	John Gelinska,	Miner,	22	No,	Union,	do.	Leg broken by fall of coal
July 30,	James Meyers,	Driver,	19	No,	Wheeler,	do.	Body bruised by falling under his trip of loaded cars.

August 3, . .	Geo. Hughs, ...	Miner, ...	21	No, .	Tip Top, ...	do.	Body bruised by fall of roof
August 18, . .	O. Morgan, ...	Trapper, ...	14		Leisenring, No. 2,	do.	Hand injured by explosion of dynamite cap.
August 20, . .	M. W. Ball, . . .	Driver, ...	37	Yes,	Connellsville Shaft,	do	Foot squeezed between wagons.
August 21, .	John Kendull, . . .	Miner, ...	52	Yes,	Buffalo, ...	Somerset, ...	Rib broken by fall of coal.
September 12, .	Peter Hixon, . .	Track-layer, . .	40	Yes,	Redstone, . .	Fayette, ...	His foot cut by fall of slate.
September 14, .	L. Hager, . . .	Driver, ...	23	Yes,	Nellie Drift, ...	do.	Leg broken by being caught between wagons.
September 27, .	Isaac Dougherty, . .	Miner, ...	30	Yes,	Lemont, ...	do.	Hurt by fall of roof coal, but not seriously.
October 3, . . .	Ben Brazeirn, ...	Driver, ...		Yes,	Grace, ...	do.	Ribs broken and body bruised by wagons on empty siding.
October 5. . .	Darius Hays, ...	. . . . .	38	Yes,	Lemont, ...	do.	Collar-bone broken by empty wagon.
October 10, . .	Wm. Johnson, . . .	. . . . .	27		do.	do.	Foot bruised by full wagon.
October 15, . .	Chas. McFartlan, . .	Miner, ...	49	Yes,	Plummer, ...	do.	Back hurt by car running against him on tramway, outside.
October 27, . .	Andrew Graig, . . .	do.	33	Yes,	C. & E. L. C. Co., .	Somerset, ...	Collar-bone broken by a fall of breast coal.
October 29, .	John Dougherty, . .	. . . . .	29	No, .	Kyle Farm, . .	Fayette, ...	Hurt between cars.
November 4, .	Isaac Cline, ...	Trapper, ...	14		Leith, ...	do.	Leg broken by jumping on wagons.
November 17, .	George Volshko,	Miner, ...	40	Yes,	Leisenring, No. 1,	do	Head and leg bruised by a fall of top coal.
November 19, .	Wm. J. Lohr, . . .	do.	30	Yes,	Cassellman, ...	Somerset, ...	Leg broken by a fall of breast coal.
November 26, .	Jacob Murtzell, .	. . . . .	24	No, .	Plummer, ...	Fayette, ...	Leg caught between wagons.
December 5, .	Peter H. Weimer, .	Miner, ...	30	Yes,	C. & E. L. C. Co., .	Somerset, ...	Thigh bruised and ribs broken by fall of breast coal.
December 11, .	Joseph Means, .	Door-boy, . . .	15	No,	Grace, ...	Fayette, ...	Caught by empty wagon; foot mashed.
December 12, .	Matthias Kisner, . .	Miner, ...	43	Yes,	do.	do.	Left hip knocked out of joint by the end of a fall when drawing out posts.
December 21, .	James McCleary, . .	do. . . .	49	Yes,	Parrish, ...	do.	Bruised arm and side by a piece of coal and slate falling on him.
December 24, .	Patrick Hainey, . .	Driver, ...	21	No, .	Fountain, ...	do.	Collar-bone broken by being knocked against rib by mule while trying to make mule pull.
December 29, .	David Brown.	Horseback men,	36	Yes,	Morrell, ...	. . . . .	Injured, but not seriously, while drilling a hole, by some rock falling that had been loosened by former shot.
December 29, .	Joseph Agnew, . . .	do.	50	Yes,	do.	. . . . .	

SIXTH BITUMINOUS DISTRICT.

SIXTH BITUMINOUS DISTRICT,
OFFICE OF INSPECTOR OF MINES,
JOHNSTOWN, PA., *February 9, 1889.*

HON. THOMAS J. STEWART,
Secretary of Internal Affairs:

SIR: I have the honor of presenting herewith my fourth annual report for the year ending December 31, 1888.

The tables giving the production of coal mined, show 3,265,596 tons for the year 1888, a decrease of 75,785 tons from that of 1887. This was due to the depressed condition of the coal and coke trade during the past summer, under which quite a number of the mines ceased operations for several months, especially where the product was used in the manufacture of coke for use in blast furnaces. Yet, notwithstanding this depression in the trade, there has been unusual activity in opening up new collieries, particularly so in the northern part of Cambria county, where a new field of coal of excellent quality for steam and coke purposes is being developed. This opening up of new collieries has increased the number of employés in 1888 to 6,877, from 6,078 in 1887; and the indications are now, that the increase for 1889 will be still greater, as there are several new operations not included in my report, as they had not made any shipments of coal.

I am pleased to report that the district has been quite free from the destructive influences of strikes and lockouts during the year 1888, and an increased disposition on the part of the employer and employé to arbitrate differences that arise on the wage and other questions.

In regard to the general condition of the mines, I would state that substantial improvements are being continually adopted in the systems of mining, hauling and ventilation, by those in charge of the collieries, all of which tend to increase their safety and sanitary condition. Though I do not wish, by this statement, to convey the impression that this is applicable to all mines, for rather conservatism or a disinclination to improve would be far more properly applied to some who have charge of our collieries, it is strange that those men should be so adverse to the adoption of the improved methods of mining, hauling and ventilation, as they not only improve the safety and sanitary condition of the mines, but add to the profits as well. The great impediment to good ventilation in quite a number of our bitu-

minous mines, is small contracted headings and airways, single doors where they should be double, and they left to be opened and closed by the drivers, in place of having a regular attendant. Something to correct these evils would be of incalculable value in improving the ventilation of our bituminous mines, especially in the proper distribution of the air through the working faces, as it is in this part that the deficiency generally exists.

The number of accidents for the year 1888 is 18, six of which proved fatal. This shows a decrease of one in the list of fatal accidents from 1887; the non-fatal being the same number, 12, as is shown in the classification of accidents.

CLASSIFICATION OF FATAL AND NON-FATAL ACCIDENTS.

Causes of Fatal Accidents.

1. By falls of coal,	3	
2. By falls of rock,	1	
3. By mine wagons,	1	
4. By explosion of powder,	1	
Total,		6

Causes of Non-Fatal Accidents.

1. By falls of coal,	9	
2. By falls of rock,	1	
3. By machinery,	1	
4. By mine wagons,	1	
Total,		12
Grand total of fatal and non-fatal accidents,		18

Number of wives made widows by fatalities,	3
Number of children left orphans by fatalities,	14
Number of tons of coal mined per fatal accident,	544,266
Number of tons of coal mined per non-fatal accident,	272,133
Number employed per fatal accident,	1,146
Number employed per non-fatal acccident,	573

I enclose with report, a map of the "Webster, No. 3 colliery," also one of "Gallitzen shaft," for insertion in report. In addition to the usual tables I have tabulated the production of coal and coke for each county of which the district is composed, also showing the amount of coal and coke shipped on each railroad on which mines are located. I have briefly reported the condition of all mines in the district.

Yours very respectfully,

J. T. EVANS,
Inspector of Mines.

Table showing the number of mines, and the production of coal and coke in each county of the Sixth Bituminous district:

Blair county.—Number of mines,	7
Coal production,	300,557
Coke production,	115,173
Bedford county.—Number of mines,	8
Coal production,	237,860
Coke production,	38,305
Cambria county.—Number of mines,	36
Coal production,	1,517,788
Coke production,	203,657
Clearfield county.—Number of mines,	6
Coal production,	137,932
Coke production,	36,058
Huntingdon county.—Number of mines,	5
Coal production,	275,700
Coke production,	76,292
Indiana county.—Number of mines,	5
Coal production,	159,223
Coke production,	8,236
Westmoreland county.—Number of mines,	10
Coal production,	606,532
Coke production,	196,030
Total number of mines,	77
Total coal production,	3,265,596
Total coke production,	673,751
Coal shipped from mines on P. R. R.,	1,506,020
Coke shipped from mines on P. R. R.,	510,274
Total amount shipped in tons of coal and coke,	2,016,294
Coal shipped from mines from B. & H. R. R.,	244,336
Coal shipped from mines on B. G. R. R.,	151,599
Coke shipped from mines on B. G. R. R.,	68,054
Total amount shipped in tons of coal and coke,	219,653

Coal shipped from mines on C. C. R. R.,	59,865
Coke shipped from mines on C. C. R. R.,	27,044
Total amount shipped in tons of coal and coke,	86,909
Coal shipped from mines on W. P. R. R.,	145,086
Coke shipped from mines on W. P. R. R.,	39,335
Total amount of coal and coke shipped in tons,	184,421
Coal shipped from mines on East Broad Top R. R.,	147,253
Grand total of coal shipped to and over P. R. R.,	2,254,159
Grand total of coke shipped to and over P. R. R.,	644,707
Grand total of coal and coke shipped to and over P. R. R.,	2,898,866

There are 14 mines in this district, working on the Pittsburgh bed, which are those located in Westmoreland and Indiana counties, except the Lockport Mine, in Westmoreland county. The remainder of the mines are all working in the lower coal measure; 18 on the E, or "Lemon" bed; 5 on D bed, or Moshmon; 7 on C prime, or Cement bed; 32 on B, or Miller bed. In Cambria county, the B bed is an excellent coal for steam purposes, while in Blair, it is changed in its nature—is a superior coking coal at that point. The distance apart and thickness of beds vary in different localities, as well as the quality, from a steam to a coking coal or *vice versa*. There are no mines working on bed A, it being a very inferior quality of coal.

Bedford County Mines.

Mount Equity Mine.—This is one of the oldest mines in the Broad Top coal field; consequently those in charge of it have experienced the difficulties that are to be encountered in putting an old colliery of this kind in good sanitary condition. To overcome this trouble in getting the air to the face of the workings, they walled up all the old openings on the sides of the main gangway with brick and mortar for fully one mile. Such air stoppings are practically air tight. This insures that the air entering the mine is carried to the face of the works to keep the mine in good, healthy condition. Mining boss, John Mitchell.

New Hampshire.—This mine has but recently been leased by John Whitehead & Co. They intend to abandon it very soon, as they are opening on another part of the property, where the coal can be more advantageously mined. Mine-boss, James Allen.

Brown.—There have been many improvements made at this mine during the year in their hauling, ventilation, etc. The main gangway had reached a distance of one mile or over, when it struck the bottom

of a trough or basin; and they put down a slope at this point, from which they are now hoisting their coal by machinery. This has cut off a haul of one mile, and will also enable them to improve their ventilation by having the men put more closely together, thereby not having the air so much scattered over the work, which generally results in a very weak current of air at the face of the workings by being lost through doors, stoppings, etc. Mining-boss, William Powell.

Duval, Coaldale and *Wigdon Shaft* are three other mines on the Run. The latter has not been worked during the year, and the two former have been worked very little; neither of them employed sufficient men to come under the law during the year, therefore were not examined.

Harriet Lane.—This colliery is located on Sandy Run, near Hopewell. It has recently been reopened, after being closed for several years. On my last examination I found the ventilation rather defective in one of the old headings, where men were working, as there was no current of air passing through it. I notified those in charge of the defects, which they promised at once to remedy. There is generally a great deal of hard work to do in opening an old colliery of this kind to have it put in good sanitary condition in the opening of airways, etc. Mine-boss, William Speer.

Cambria.—There have been great improvements made in this mine during the year in the system of mining, hauling and ventilation. Still there is room left to improve the latter. They have put in machinery to haul out the coal in place of mules, having adopted the tail-rope system of haulage. They also contemplate the erection of a self-acting plane to bring the coal from the upper levels of the mine, the grade being such that the weight of the full cars will draw up the empties. The surprise to me is why more of these planes are not put in mines where the grades are heavy. Mine-boss, Charles Jenkins.

Chevington.—This mine has been idle for the last six months of the year. When examined last it was in good condition.

Blair County Mines.

Lemon.—This mine is located at Bennington and is worked on the E bed, the coal being used to make coke. The ventilation here is, I consider, the most judicious and economical, as well as the most perfect one that can be put in use to keep the mine in good sanitary condition. All headings are ventilated with fresh air from the inlet, each having its own split, after which it is returned direct to the furnace.

By the use of this system no doors are required in the mine. This insures a regular current of air to all parts of the work without depending on the doors being closed. Mine-boss, John Daniel.

Porter Shaft.—The ventilation in this mine was somewhat defective in the early part of the year in regard to the distribution of air. This is a common trouble where the system of mining is single-heading, as

it is here, though the work is now in very fair condition, as they have cut into an adjoining mine at the extreme face of their works. This will enable them now to keep their mine in a good, healthy condition. Mine-boss, John Leonard.

Bennington Slope.—The ventilation here is produced by a fan. The air is generally well distributed through the mine. The seam of coal mined is very low, being only 2 feet, 4 inches in thickness, though of an excellent quality for making coke. The small size of the seam makes it very difficult to ventilate, as it gives such small areas to pass air through where the rock has not been blown down. John Bradley, mine-boss.

Beach Grove.—Ventilation here is just fair. They work on the single-heading system. This, of itself, does not speak very favorably of the ventilation of any mine; but, as stated, the work is now in a fairly good condition. Mine boss, J. Eagen.

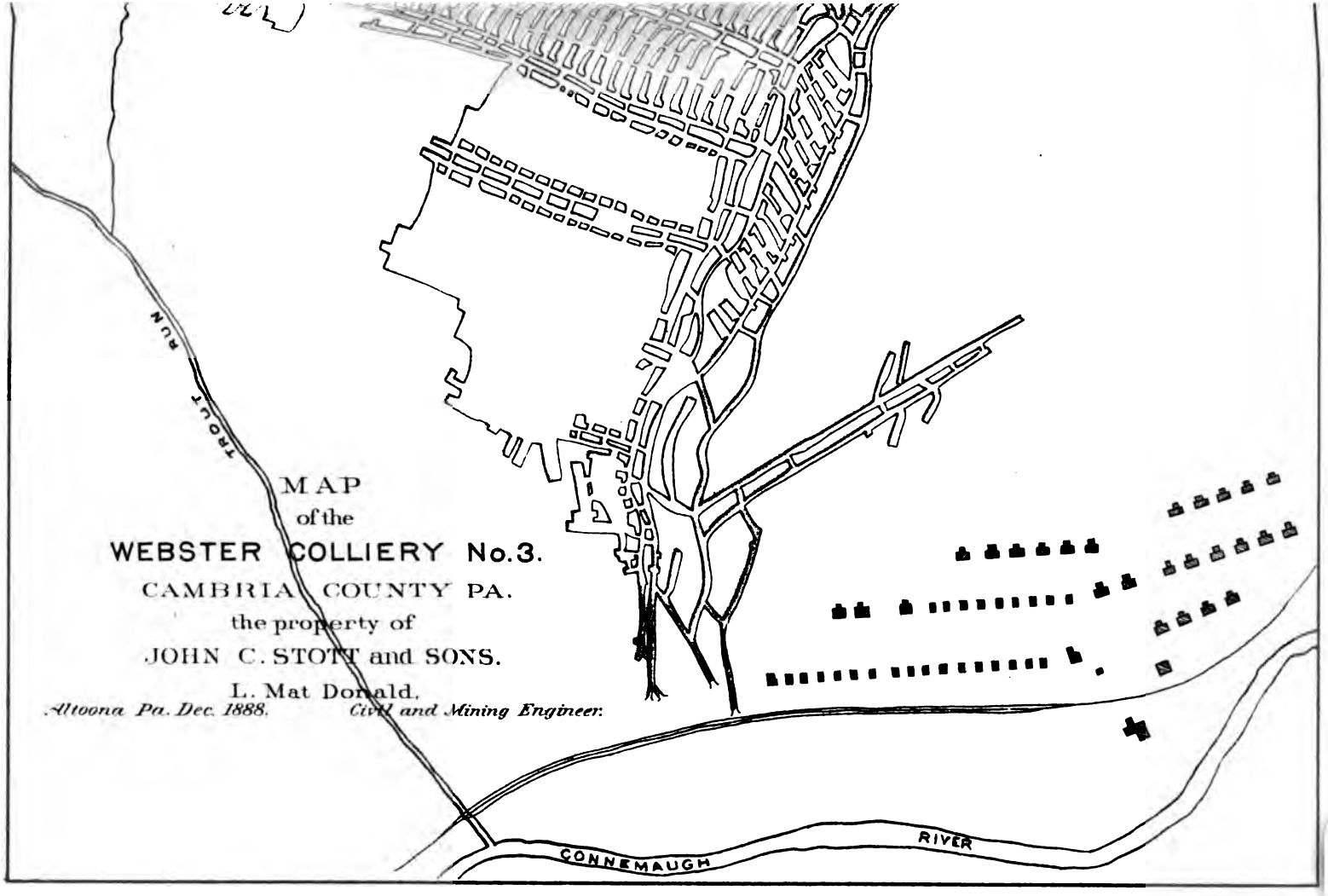
Horse Shoe.—The seam of coal here is only 2 feet, 4 inches in thickness, but is of a superior quality for making coke. The ventilation here is just fair, and requires the careful attention of those in charge to keep it in this condition, as the seam of coal is so low; consequently the airways are small to force air through. Francis Grimes, mining-boss.

Glen White.—The ventilation here is produced by a 10-foot Guibal fan. William Ambler has had charge of this mine for some time past, and to his credit it must be said that it is in very good condition, at all times keeping the air close to the working faces. This is a fault generally found with some of our mine-bosses—they fail to keep the air as close as they should to the face of the headings, there being no excuse for such neglect. This mine is very difficult to keep in good sanitary condition, as the seam is small, and makes a large quantity of water, which requires two large pumps to keep it dry. The opening is by slope. Coal is used to make coke.

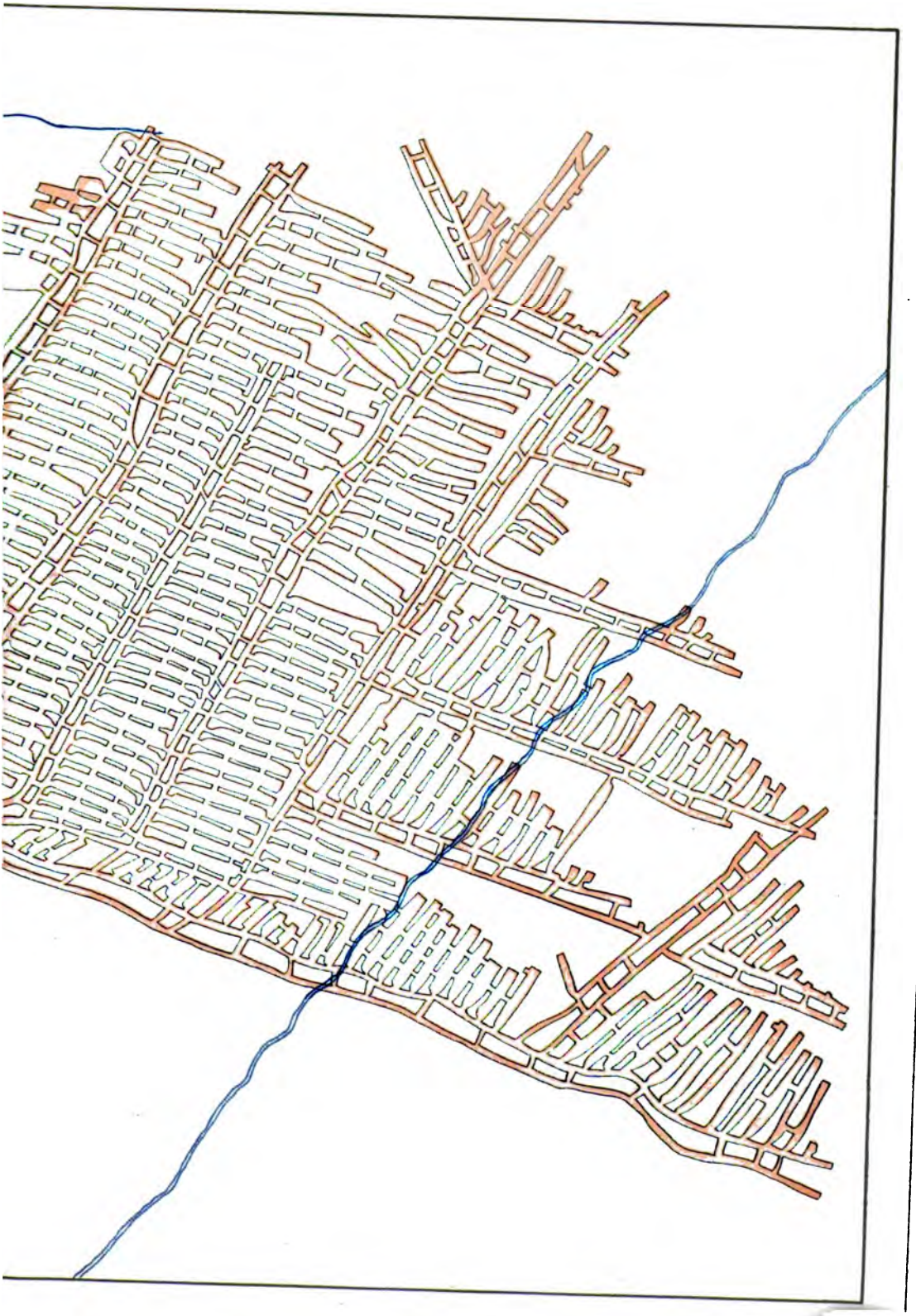
Tipton.—There are two mines here, a slope and a drift. The latter is about worked out. The slope is comparatively a new opening, and has been idle now for some time. When examined last it was found in very good condition. The plan of mining is all double-heading. Mine-boss, Gowen Stokes.

Cambria County Mines.

Cushon.—At present this is the only mine in Johnstown coming regularly under the mine act, since the introduction of natural gas into the town. They employ here about 30 men to mine coal for domestic use and to supply Cambria Iron Company's locomotives. The ventilation here was somewhat defective during the summer, caused by faulty doors and air stoppings. This trouble was remedied by a regular overhauling of all ventilating apparatus of the mine, which assisted in the distribution of the air. The mine is now in a fair condition. Thomas H. Caddy, mining-boss.



MAP
of the
WEBSTER COLLIERY No.3.
CAMBRIA COUNTY PA.
the property of
JOHN C. STOTT and SONS.
L. Mat Donald.
Altoona Pa. Dec. 1888. *Civil and Mining Engineer.*



Conemaugh.—This mine has been idle since the first of April, as the furnace which it supplied has not been working since that date. When examined, last the mine was in good condition.

Argyle.—This is one of a group of mines located at South Fork, and is noted for its large and spacious headings, which are all driven 9 feet wide in the clear, top and bottom, and 6 feet in height. Another good feature in this mine is that cut throughs are only made every 300 feet, in place of every 90 feet, between the double headings, using brattice cloth to enable them to run this distance. This is a judicious method for two reasons: In the first place it lessens the leakage of the mine over two-thirds and also strengthens the pillars between the headings. The sanitary condition of the mine is good. Mine-boss, R. Ott.

Aurora.—Doors and air stoppings in our mines are supposed to be built as nearly air-tight as practicable, and probably in no colliery in this district are the doors and air stoppings better in this respect than in this mine, defective built doors and stoppings being one of the impediments to good ventilation in our mines. Ventilation here is good. Mine-boss, Frederick Croyle.

J. C. Stineman.—This mine is worked on the double-heading plan, and is kept in a good, healthy condition. They had some trouble here for a short time with a creep in their mine, which I found was caused by leaving in too much of their pillar coal—enough to prevent the rock from breaking. So, I advised them to be more careful in getting out the pillar coal, and to take back a section of from 4 to 6-room pillars together, and have all the coal taken out clean. My advice was taken, and they have no trouble now in breaking the roof, which prevents the creep. Mine-boss, William W. Watkins.

Euclid.—Ventilation and drainage here are fully up to the requirements of law. Mining-boss, Wendle Croyle.

South Fork.—Machinery is in use here for hauling out of the mine, it being opened on the dip of coal. The sanitary condition of this colliery has room to be improved, though it is fair. A little more attention to door stoppings, etc., would improve it very much. Mining-boss, John McIntyre.

Webster, No. 3.—I enclose a map of this mine for the Report (scale of which is 200 feet to one inch), by which it can be seen that it is a large colliery. The ventilation here is produced by two 12-foot Guibal fans. This being a very dry and dusty mine, they have recently adopted a system of sprinkling the roads with water, which has very much improved the sanitary condition of the mine, as the dust of the hauling roads was vitiating the atmosphere of the workings very much. There are other parties who should imitate these people, for where there are dusty roads, we know not when we may have an explosion, as it has been clearly proven that if dust will not explode of itself, it will do so with a very low percentage of carburetted hydrogen gas mixed with it, less possibly than we can detect with our present means,

a percentage that may be existing in a great portion of our so-called non gaseous mines. Sanitary condition of the mine is good. Mine-boss, James Ward.

Martindale Slope.—This colliery has changed hands since the first of November last; is now operated by J. L. Mitchell, of Tyrone, who proposes to remodel the mine and change the system of mining entirely. The ventilation is produced by fan, which forces a large volume of air into the mine; but that is not ventilation. The air must be taken, after entering the mine, and conducted properly through it to the places where the miners are at work. This, no doubt, will be properly done in due course of time by D. A. Johnson, present mine-boss.

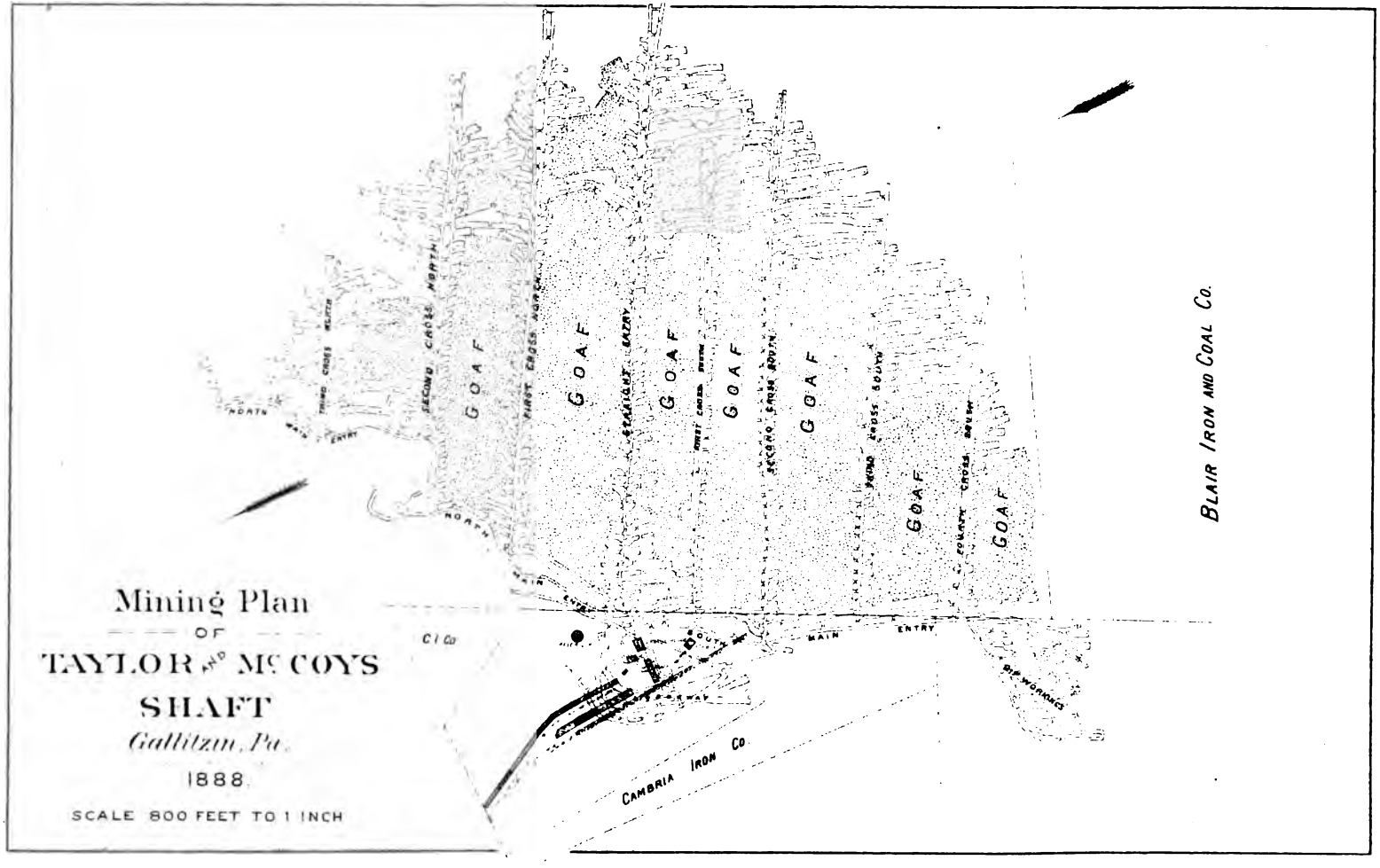
Mount Vernon, No. 4.—This mine is worked on the double-heading principle, but has a drawback in its ventilation by not having a furnace sufficiently large to do the work. They will, no doubt, have to make some improvements here in the spring, to increase their power to ventilate to enable them to keep the mine in a healthy condition. Mining-boss, Joseph Campbell.

Dysert, No. 2.—This colliery has been in operation for a great number of years, and has, consequently, a large number of old workings to contend with, through which a great portion of the air naturally will escape. The result is, that the air becomes very weak at the face of the mine. But in the latter part of December they cut into an adjoining mine at the face of their workings. This will very much improve the ventilation, as it will cut off a large portion of their old workings through which air was escaping, as well as shorten the route of the air. Mine-boss, Thomas Leahy.

Lilly Slope.—This is a new operation, having been opened during 1888. They have yet but one opening, consequently are only allowed to employ twenty men on one shift to work in the mine. They expect to reach their second opening about February. They contemplate putting in a fan to ventilate the mine.

Dysert, No. 1.—This is but a small mine and could be kept in good condition if properly worked and looked after. In my examinations of the workings of it there seemed to be no system whatever in the running of the headings, rooms, etc., and quite as little in the system of ventilating. On my last visit to the mine there was a good current of air going in the drift, but no doors to assist in its distribution. I ordered the erection of several doors and stoppings, by which I learn the ventilation has been very much improved. Mine-boss, Canon Leahy.

Gallitzin Slope.—The most approved systems of mining, hauling and ventilation are in use at this colliery, the result of which is a model operation. Every foot of ground is driven here by sights in rooms as well as headings, the system of mining being double-headings, and


Mining Plan
OF
TAYLOR AND MC COYS
SHAFT
Gallitzin, Pa.
1888
SCALE 800 FEET TO 1 INCH
GOAF
GOAF
GOAF
GOAF
GOAF
GOAF
MAIN ENTRY
CAMBRIA IRON CO.
BLAIR IRON AND COAL CO.

the ventilation is produced by a fan which keeps the mine in the best of sanitary condition. Mining-boss, James Smith.

Gallitzin Shaft.—The ventilation here is produced by a 12-foot fan, running seventy revolutions per minute, which forces from 40,000 to 45,000 cubic feet of air per minute through the workings in two equal splits, which are well distributed through the face of the mine. I enclose a photographic view of the map of this mine, by which an idea can be formed of the extent of the workings and the system of mining, which is at present all double heading. Those to be seen on maps (singles) are not working; when started, will all be driven double. William Rodda has charge of the mine.

Great Bend, No. 2.—Is located on the Bell's Gap railroad. This mine, when examined last, was in very good condition, the air being carefully distributed through the face of the workings. The mine is in charge of John Cann.

Eldorado and Eagle.—These are two small mines. The first has been doing little work since May last. The latter is a new mine and has not yet come under the provisions of the mine act, as it employs but 8 men.

Benscreek Plain.—The system of mining here is double heading. They have had a great deal of trouble in this mine with faults, throwing the coal out of its position several feet. This has interfered greatly with their ventilation, and caused it at times to be rather defective. Those in charge endeavor to keep the mine in good condition. They could improve their ventilation by driving larger air-ways. Mine-boss, John Leap.

Sonman Shaft.—The ventilation is produced here by fan, system of mining being double heading. There has been a little trouble here once or twice during the year with the ventilation, caused by doors being left to be opened and closed by the drivers, who are generally poor attendants to keep doors closed, and there is no one who knows this fact better than the mine-boss; for this reason, when a door is put on a hauling road, the mine-boss should provide a regular trapper to attend to it. Outside of this trouble the mine has been kept in good condition, having been improved considerably in its general arrangements for safety. Mine-boss, Wm. McKee.

Sonman, No. 1.—This mine is worked on the single heading system. Taking this into consideration, the mine is in pretty fair condition, though a new furnace and air-shaft are required here to enable them to keep this mine in good, healthy condition. Mine-boss, Daniel Leahy.

Sonman, No 2.—This colliery is located at Lilly. They have just completed a new furnace here which will improve the ventilation of this mine. The old furnace which they used prior to this was inadequate to ventilate the mine, there being such a large territory of work opened up, and that being on the old plan of single heading, which leaves so many openings to be kept closed. The new furnace

is much closer to the face of the works, thus cutting off a good portion of the old workings, through which air escaped, and also shortening its route. With the proper care of keeping doors closed, etc., the ventilation should be now kept in good condition. Mining-boss, John Watson.

Standard.—They have had a little trouble in this mine with their ventilation for a short time by allowing their return air-way to close on them, although this was soon remedied by having another airway put through. The system of mining here is favorable for good ventilation, being double heading. Still, a new air-shaft and furnace are required to have the mine kept in a good, healthy condition. Mine-boss, John Burton.

Smittle.—This mine is also located on the B. G. R. R., at Mountaindale. The ventilation was rather defective, when examined last, and that for the want of keeping the mine doors closed. Another example of the fallacy of trying to conduct air through a mine with doors, relying upon them, being kept closed by the drivers. I notified the superintendent and mine-boss of the defects and their causes, which they had remedied at once, by having trappers put on to have the doors, which caused the trouble, kept closed. Superintendent and mine-boss, Joseph Smittle.

Rubino.—This mine is located on the C. C. R. R. Their system of mining here is double heading. The ventilation is produced by a furnace, and the distribution of the air well looked after, though the furnace is inadequate for the work from where it is at present located. They were putting down another air-shaft near the face of the mine, which, I expect ere this, is in operation, with a furnace of much larger dimensions than the old one. They employ in this mine over 200 men. Superintendent and mine-boss, Richard Bowen.

Amsbury is also located on the C. C. R. R. They propose having a large plant here, and are now erecting their tipple, engine house, etc. Everything in connection with this plant is to be fitted with the most modern improvements, such as self-dumping arrangements on the slope, traveling buckets run by machinery for carrying slack from the bins to ovens, 200 of which they propose building at this plant. The sanitary condition of the mine is good. W. J. Williams, mine-boss.

Delaney.—This mine is opened by a slope driven down on the dip of the coal. The ventilation and drainage are good. The system of mining is double heading, and where this is in use there is scarcely any trouble with the ventilation, especially where they have some artificial means to produce it; and this we never fail to find when a man is progressive in his ideas and can see the economy of double heading plan of mining; he will see the advantage of using artificial means to ventilate with. Superintendent and mine boss, Lee Ott.

Clearfield County Mines.

National.—This mine is ventilated by a twelve-foot Guibal fan. The system of mining is double heading, with separate splits of air for each heading. This mine, as well as the others in this county, located on the B. G. R. R., are all troubled more or less with local swamps. The stratas here are very flat, so that when a swamp is reached there is no chance to get the water out by draining, as there is no fall to go on. The result is that the water has all to be pumped out. Mine-boss, Wm. Keller.

Irvona, No. 1.—Prior to September last they had several hundred feet of syphon pipes in this mine by which they drained the water from the workings. This system of draining gave them considerable trouble, so they put in a new steam pump in September, to relieve the mine of water, since which time they have had no trouble. This mine is kept in good condition as regards ventilation. Superintendent and mine-boss, John McNulty.

Irvona, No. 2, is operated by the same company as No. 1. It has but recently been leased by them; was formerly operated by J. L. Mitchell, of Tyrone. The ventilation here was good when examined last. Water is a great annoyance in this mine. Archie Bathgate, mine-boss.

Great Bend, No 3, has been very much improved during the past year in drainage and ventilation, and is now fully up to the requirements of the law. Mine-boss, William Bell.

Oakland.—This mine has been working very little during the year. When working last was in good condition, having recently had a new furnace put in by which to ventilate the mine.

Huntingdon County Mines.

Prospect.—The ventilation of this mine has given me considerable trouble for sometime past, the defects being caused by a heavy creep on the works, which partly closed some of the main air-ways. I examined the mine very carefully, and could find no way to overcome this trouble but to sink an air-shaft beyond that part of the work where the air-ways had been affected by the creep. I notified the parties in charge, of this fact, and they at once went to work to sink the shaft, which has been completed, and has very much improved the ventilation of the mine. Still there is much to do here yet in the way of driving air-ways to connect with the new air-shaft, ere the mine will be in good sanitary condition. Mine-boss, Scott Reed.

Huntingdon.—The condition of this mine, on my last examination, I found much improved over my previous visit. The mining-boss fully determined to continue improving the ventilation until his system was perfected. The seam of coal worked here is only a little

Indiana County Mines.

Foster is located at Avenmore. This mine is always found in the best condition as regards ventilation and drainage. The appearance of everything in and around the mine is sufficient evidence of its being in the hands of competent men. Mine-boss, J. M. Jonson.

Smith, Turner and Centre.—These are small mines that only employ at certain times a sufficient number of men to come under the provisions of the law. All mine on Pittsburgh seam of coal.

TABLE No. 1.—Showing location of collieries in the Sixth Bituminous Mine District.

Name of Colliery.	Name of operator.	Location—County.	Name of superintendent.	Post-office address.
Argyle,	Huff & Coulter,	Cambria,	J. P. Wilson,	South Fork, Cambria county.
Aurora,	Herst & Luke,	do.	D. W. Luke,	do. do.
Amsbry,	Cambria Coal and Coke Company,	do.	R H. Spindly,	Amsbry P. O., Cambria county.
Blands,	Frederick Bland,	do.	Fred Bland,	Blandsburg, Cambria county.
Blairsville,	Jacob Graff,	Indiana,	Jacob Graff,	Blairsville, Indiana county.
Beach Grove, No. 1,	Beach Grove Coal Company,	Blair,	Martin Meagher,	Gallitzin, Cambria county.
Bennington Slope,	Blair Coal and Iron Company,	do.	do.	do. do.
Brown,	Sweet & Brown,	Bedford,	Wm. Sweet,	Saxton, Bedford county.
Benscreek Plane,	E. W. Mentzer,	Cambria,	E W. Mentzer,	Hollidaysburg, Blair county.
Buffalo,	Haywood Coal Company,	do.	J. H. Hill,	South Fork, Cambria county.
Black Diamond,	Page & Reighard,	do.	Emanuel Reighard,	Mineral Point, Cambria county.
Cushon,	Fulton & Caddy,	do.	Thomas Fulton,	Johnstown, Cambria county.
Cambria,	Clearfield Consolidated Coal Company,	Bedford,	John Langdon,	Huntingdon, Huntingdon Co.
Chevington,	do. do. do.	do.	do.	do. do.
Columbus, No. 3 and 4,	J. L. Mitchell Coal and Coke Company,	Clearfield and Cambria,	J. L. Mitchell,	Tyrone, Blair county.
Centre,	Centre Coal and Coke Company,	Indiana,		Homer, Indiana county.
Duval,	E. P. Jenkins & Co.,	Bedford,	E. P. Jenkins,	Six Mile Run, Bedford county.
Dysert, No. 1,	Canon Leahy,	Cambria,	Canon Leahy,	Hemlock P. O., Cambria county.
Dysert, No. 2,	D. Laughman,	do.	D. Laughman,	Altoona, Blair county.
Delany,	Allegheny Coal and Coke Company,	do.	Lee Ott,	Altoona, box 479, Blair county.
Derry Shaft,	Derry Coal and Coke Company,	Westmoreland,	Edward Saxman,	Latrobe, Westmoreland county.
Euclid,	Euclid Coal Company.	Cambria,	——— Luke,	South Fork, Cambria county.
Eldorado,	Ray & McCartney,	do.	J. McCartney,	Mountaindale, Cambria county.
Eagle,	Gwin & Son,	do.	Luther Gwin,	do. do.
Foster,	Saltsburg Coal Company,	Indiana,	D. S. Robinson,	Saltsburgh, Indiana county.
Fenn,	John Griffiths,	Cambria,	John Griffiths,	John stown, Cambria county.
Gallitzin Shaft,	Taylor & McCoy,	do.	David McCoy,	Gallitzin, Cambria county.
Gallitzin Slope,	Mitchell & Laezar,	do.	William Smith,	do. do.
Glen White,	Taylor & McCoy,	Blair,	David McCoy,	do. do.
Great Bend, No. 2,	Great Bend Coal Company,	Cambria,	John E. Bell,	Bellwood, Blair county.
Great Bend, No. 3,	do. do.	Clearfield,	do.	do. do.
Huntingdon,	Edward Gould,	Huntingdon,	Edward Gould,	Dudley, Huntingdon county.
Horseshoe,	Allegheny Coal and Coke Company,	Blair,	Lee Ott,	Altoona, P. O. box 479. Blair Co.
Hastings,	Chest Creek Coal and Coke Company,	Cambria,	Wm. Smith,	Gallitzin, Cambria county
Harriet Lane,	Lyeth & Langdon Coal Company,	Bedford,	John Langdon,	Hopewell, Bedford county.
Irvona, No. 1,	Irvona Coal and Coke Company,	Clearfield,	John McNulty,	Coalport, Clearfield county.
Irvona, No. 2,	do. do. do.	do.	do.	do. do.
Isabella,	Isabella Furnace Company,	Westmoreland,	Wm. Grist,	Blairsville, Indiana county.
J. C. Stineman,	J. C. Stineman,	Cambria,	J. C. Stineman,	South Fork, Cambria county.
Lilly Slope,	Lilly Coal Company,	do.	Charles Hughes,	Altoona, Blair county.
Loyalhana Shaft,	Loyalhana Coal and Coke Company,	Westmoreland,	C. H. Carl,	Latrobe, Westmoreland county.
Latrobe Coal Works,	Latrobe Coal and Coke Company,	do.	D. W. Jones,	do. do.
Lockport,	Lockport Coal and Coke Company,	do.	Alex. Cameron,	Lockport, Westmoreland county.
Lemon,	Blair Iron and Coke Company,	Blair,	Martin Meagher,	Gallitzin, Cambria county.
Leatherwood,	Leatherwood Coal Company,	Clearfield,	JohnQuinn,	Irvona, Clearfield county.

TABLE No. 1.—*Continued.*

NAME OF COLLIERY.	Name of operator.	Location—County.	Name of superintendent.	Post-office address.
Mount Vernon, No. 3,	Consolidated Coal Company,	Cambria,	John Langdon,	Huntingdon, Huntingdon Co.
Moshannon,	Felix Tool.	do	Felix Tool,	Portage, Cambria county.
Martindale Slope,	J. L. Mitchell & Co.,	do.	Wm. Smith,	Gallitzin, Cambria county.
Millwood Shaft,	Millwood Coal Company,	Westmoreland,	E. P. Kimmel,	Millwood, Westmoreland county.
Monastery Slope,	Frick Coal Company,	do.	R. W. Slater.	Latrobe, Westmoreland county.
M. Saxman,	M. Saxman & Co.,	do.	Frank Kuman,	do. do.
Mount Equity,	Kemble Iron Company,	Bedford,	Wm. Kelly,	Riddlesburg, Bedford county.
Moredale,	E. P. Jenkins & Co.,	Huntingdon,	Thomas A. Jones,	Dudley, Huntingdon county.
Miller,	Miller Coal Company,	Cambria,	Harvy Mears,	Portage, Cambria county.
Maher,	Maher & Baumgardner,	Bedford,	Roda Maher,	Six Mile Run, Bedford county.
National,	Whitmer Coal and Coke Company,	Clearfield,	George Ramsey,	Irvona, Clearfield county.
New Hampshire,	Whitehead & Co.,	Bedford,	John Whitehead,	Huntingdon, Huntingdon Co.
Oakland,	Samual Haggerty,	do.	Samuel Haggerty,	Coalport, Huntingdon county.
Ocean,	Wm. Sweet,	Huntingdon,	Wm. Sweet,	Saxton, Bedford county.
Porter Shaft,	Porter & Dennison,	Blair,	C. H. Porter,	Hollidaysburg, Blair county.
Prospect,	Reed Brothers,	Huntingdon,	Wm. Reed,	Dudley, Huntingdon county.
Rubino,	Cresson Clearfield Coal and Coke Company,	Cambria.	Richard Bowen,	Frugality, Cambria county.
Robertsdale,	Rock Hill Coal and Iron Company,	Huntingdon,	Charley Conners,	Robertsdale, Huntingdon county.
Ridgeview,	D. C. George & Co.,	Westmoreland,	D. C. George,	Latrobe, Westmoreland county.
St. Clair,	St. Clair Coke Company,	do.	P. Slavin,	Bradenville, Westmoreland Co.
Smittle,	Smittle & Co.,	Cambria,	Joseph Smittle,	Mountaindale, Cambria county.
South Fork,	G. B. Stineman,	do.	G. B. Stineman,	South Fork, Cambria county.
Sonman, No. 1,	W. H. Piper & Co.,	do.	John Leahy,	Hemlock P. O., Cambria county.
Sonman, No. 2,	do.	do.	do.	do. do.
Standard,	R. Hughes & Co.,	do.	Richard Hughes,	Altoona, Blair county.
Sonman Shaft,	Sonman Coal Company,	do.	Charles Hughes,	do. do.
Smith,	Smith & Co.,	Indiana,	W. Smith,	Blairsville, Indiana county.
Schuylkill,	Schuylkill Coal Company,	Cambria,	John Holland,	Portage, Cambria county.
Turner.	Turner & Co.,	do.	W. L. Turner,	do. do.
Tipton Run,	Tipton Coal Company,	Blair,	E. K. Meyers,	Tyrone, Blair county.
Webster, No. 3,	John Scott & Son,	Cambria,	Phillip Hartman,	Summer Hill, Cambria county.

TABLE No. 2.—Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employés, number of persons killed and injured, number of kegs of powder used, etc., in the Sixth Bituminous Mining District, for the year ending December 31, 1888.

Names of Collieries.	Location.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Argyle,	South Fork, Cambria county,	112 854	...	112 854	313	134	1	...	1,080	...	9	...	...
Aurora,	do. do	24.924		24,924	250	81	...	...	216	...	2	...	...
Amsbry,	Amsbry, Cambria county,	9.374	1,044	6 865	94	75	...	...	98	1	5	...	12
Blands,	Blandsburgh, Cambria county,	11 830		2,500	312	12	...	...	10)		2	...	
Blairsville,	Blairsville, Indiana county,	13 737	8,236	.....	300	25	...	...	..	...	..	...	24
Beach Grove,	Bennington, Cambria county,	21 853	11,977	5 020	270	33	...	...	40		2	...	30
Bennington Slope,	do. do.	25 480	....	21,932	204	72	...		16	5	10	...	
Brown,	Defiance, Bedford county,	83 848	....	84 810	187	125	...	1	120	1	15	...	.
Benscreek Plain,	Benscreek Cambria county,	41 756	....	41 786	280	93	...	..	90	.	10	...	
Buffalo,	South Fork, Cambria county,	7 000	....	7 000	165	53	...		40	1	4	...	...
Black Diamond,	Mineral Point, Cambria county,	8 895	....	8 893	164	13		.	50		2	...	...
Columbus, No 3,	Coalport, Clearfield county,	18 285	....	18 285	125	55	...		85	..	5		.
Columbus, No. 4,	Portage, Cambria county,	8 396	...	8 396	42	75	...		30	1	4		.
Cushon,	Johnstown, Cambria county,	24 612	...	.	300	38	...	.	20	..	5	...	...
Cambria,	Hopewell, Bedford county,	41 358	....	41 358	198	110			....	1	9	...	
Chevington,	do. do	15 593		15,593	99	68		...	..		3	...	
Conemaugh,	Conemaugh, Cambria county,	7.612	2,987		73	23			30	1	2		30
Centre,	Homer, Indiana county,	2 550	..	2 550	112	9	...	...		1	1	...	10
Duval,	Six Mile Run, Bedford county,	2 711		2 711	66	10			2		2	...	
Dysert, No. 1,	Lilly, Cambria county,	14 000	2,600	9 800	216	31		...	96		4	...	17
Dysert, No. 2,	Benscreek, Cambria county,	66 903		66 903	213	120	1	...	100	.	15	...	
Delany,	Baker, Cambria county,	84 632	10 509	69,053	290	135	...	...	100	2	7	...	20
Derry Shaft,	Bradensville, Westmoreland county,	40.332	25,4.0	1 500	3.0	108	...	..	..	2	5	...	102
Euclid,	South Fork, Cambria county,	22.634	..	26.000	290	38	.	.	40	...	3	...	...
Eldorado,	Mountaindale, Cambria county,	7 525	....	7 525	122	20	.	...	5		2	...	...
Eagle,	do. do.	5 243	...	5.243	230	9	.	.	50		1	...	...
Foster,	Avenmore, Indiana county,	110 000	....	110,000	280	150	...	.	..	1	10	...	...
Fenn,	Johnstown, Cambria county,	6,630		6 600	250	11	...	..	..	.	2		
Gallitzin Shaft,	Gallitzin, Cambria county,	149, 989	55, 022	60, 425	219	286	...	...	250	3	16	.	120

TABLE No. 1.—*Continued.*

NAME OF COLLIERY.	Name of operator.	Location—County.	Name of superintendent.	Post-office address.
Mount Vernon, No. 3,	Consolidated Coal Company,	Cambria,	John Langdon,	Huntingdon, Huntingdon Co.
Moshannon,	Felix Tool.	do	Felix Tool,	Portage, Cambria county.
Martindale Slope,	J. L. Mitchell & Co.,	do.	Wm. Smith,	Gallitzin, Cambria county.
Millwood Shaft,	Millwood Coal Company,	Westmoreland,	E. P. Kimmel,	Millwood, Westmoreland county.
Monastery Slope,	Frick Coal Company,	do.	R. W. Slater.	Latrobe, Westmoreland county.
M. Saxman,	M. Saxman & Co.,	do.	Frank Kuman,	do. do.
Mount Equity,	Kemble Iron Company,	Bedford,	Wm. Kelly,	Riddlesburg, Bedford county.
Moredale,	E. P. Jenkins & Co.,	Huntingdon,	Thomas A. Jones,	Dudley, Huntingdon county.
Miller,	Miller Coal Company,	Cambria,	Harvy Mears,	Portage, Cambria county.
Maher,	Maher & Baumgardner,	Bedford,	Roda Maher,	Six Mile Run, Bedford county.
National,	Whitmer Coal and Coke Company,	Clearfield,	George Ramsey,	Irvona, Clearfield county.
New Hampshire,	Whitehead & Co.,	Bedford,	John Whitehead,	Huntingdon, Huntingdon Co.
Oakland,	Samual Haggerty,	do.	Samuel Haggerty,	Coalport, Huntingdon county.
Ocean,	Wm. Sweet,	Huntingdon,	Wm. Sweet,	Saxton, Bedford county.
Porter Shaft,	Porter & Dennison,	Blair,	C. H. Porter,	Hollidaysburg, Blair county.
Prospect,	Reed Brothers,	Huntingdon,	Wm. Reed,	Dudley, Huntingdon county.
Rubino,	Cresson Clearfield Coal and Coke Company,	Cambria.	Richard Bowen,	Frugality, Cambria county.
Robertsdale,	Rock Hill Coal and Iron Company,	Huntingdon,	Charley Conners,	Robertsdale, Huntingdon county.
Ridgeview,	D. C. George & Co.,	Westmoreland,	D. C. George,	Latrobe, Westmoreland county.
St. Clair,	St. Clair Coke Company,	do.	P. Slavin,	Bradenville, Westmoreland Co.
Smittle,	Smittle & Co.,	Cambria,	Joseph Smittle,	Mountaindale, Cambria county.
South Fork,	G. B. Stineman,	do.	G. B. Stineman,	South Fork, Cambria county.
Sonman, No. 1,	W. H. Piper & Co.,	do.	John Leahy,	Hemlock P. O., Cambria county.
Sonman, No. 2,	do.	do.	do.	do. do.
Standard,	R. Hughes & Co.,	do.	Richard Hughes,	Altoona, Blair county.
Sonman Shaft,	Sonman Coal Company,	do.	Charles Hughes,	do. do.
Smith,	Smith & Co.,	Indiana,	W. Smith,	Blairsville, Indiana county.
Schuylkill,	Schuylkill Coal Company,	Cambria,	John Holland,	Portage, Cambria county.
Turner,	Turner & Co.,	do.	W. L. Turner,	do. do.
Tipton Run,	Tipton Coal Company,	Blair,	E. K. Meyers,	Tyrone, Blair county.
Webster, No. 3,	John Scott & Son,	Cambria,	Phillip Hartman,	Summer Hill, Cambria county.

TABLE No. 2.—Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employés, number of persons killed and injured, number of kegs of powder used, etc., in the Sixth Bituminous Mining District, for the year ending December 31, 1888.

Names of Collieries.	Location.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Argyle,	South Fork, Cambria county,	112 854	...	112 854	313	134	1	...	1,080	...	9	...	...
Aurora,	do. do	24 924		24 924	250	81	...	...	216	...	2	...	...
Amsbry,	Amsbry, Cambria county,	9 374	1,044	6 865	94	75	...	...	98	1	5	...	12
Blands,	Blandsburgh, Cambria county,	11 800		2 500	312	12	...	.	10)		2	...	
Blairsville,	Blairsville, Indiana county,	13 737	8,286	.....	300	25	...	...	..	...	..	...	24
Beach Grove,	Bennington, Cambria county,	21 833	11,907	5 020	200	33			40		2	...	30
Bennington Slope,	do. do.	25 480	....	21.922	204	72	...		16	5	10	...	
Brown,	Defiance, Bedford county,	85 548	....	81 613	187	125	...	1	120	1	15	...	.
Benscreek Plain,	Benscreek Cambria county,	41 756	....	41 786	230	93	...	..	90	.	10	...	
Buffalo.	South Fork, Cambria county,	7 000	....	7 000	165	53	...		40	1	4	...	...
Black Diamond,	Mineral Point, Cambria county,	8 895	....	8 895	164	19		.	50		2	...	...
Columbus, No. 3,	Coalport, Clearfield county,	19 283	....	19 283	125	55	...		85	..	5		.
Columbus, No. 4,	Portage, Cambria county,	8 396	....	8 396	42	75	...		30	1	4	.	.
Cushon,	Johnstown, Cambria county,	24 612	..	.	300	38	...	.	20	.	5	...	...
Cambria,	Hopewell, Bedford county,	41 358	....	41 358	198	110			....	1	9	...	
Chevington,	do. do.	15 595		15,595	99	65		...	..		3	...	
Conemaugh,	Conemaugh, Cambria county,	7.612	2,267		75	23			30	1	2		30
Centre,	Homer, Indiana county,	2 550	..	2 550	112	9	...	...		1	1	...	10
Duval,	Six Mile Run, Bedford county,	2 711	.	2 711	66	10			2	.	2	...	
Dysert, No. 1,	Lilly, Cambria county,	14 000	2,600	9 800	216	31		...	96		4	...	17
Dysert, No. 2,	Benscreek, Cambria county,	66 903		66 903	213	120	1	...	100	.	15	...	
Delany,	Baker, Cambria county,	84 632	10 509	68,059	290	135	...	...	100	2	7	...	20
Derry Shaft,	Bradensville, Westmoreland county,	40.333	25,4.0	1 500	3.0	108	...	..	..	2	5	...	102
Euclid,	South Fork, Cambria county,	22.634	..	26.000	290	88		...	40		3	...	....
Eldorado,	Mountaindale, Cambria county,	7 525	....	7 525	123	20		...	5	.	2		....
Eagle,	do. do.	5 242	..	5.242	220	9			50		1		....
Foster,	Avenmore, Indiana county,	110 000	...	110 000	280	150	...	.	..	1	10	..	....
Fenn,	Johnstown, Cambria county,	6 600		6 600	250	11	...	...	..	.	2		....
Gallitzin Shaft,	Gallitzin, Cambria county,	149,389	55,022	60,425	219	286	...	...	250	3	16	..	120

TABLE No. 2—*Continued.*

NAMES OF COLLIERIES.	Location.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Gallitzin Slope,	Gallitzin, Cambria county,	169.454	70,519	58,816	203	272	.	2	535	5	15		174
Glen White,	Glenwhite, Blair county,	38 948	24,652	. .	310	95	. . .		75	2	12	. .	80
Great Bend, No 2,	Mountaindale, Cambria county,	48.175		48 175	225	97	1	. .	!0	. . .	5	. . .	. . .
Great Bend, No. 3,	Coalport, Clearfield county,	22,780		22 780	166	70	.	. .	40	. . .	2	. .	
Hastings,	Hastings, Cambria county,	28,282	15,196	2.268	92	182	.	. . .	195	. . .	11	. .	152
Huntingdon,	Dudley, Huntingdon county,	19 225		18 869	236	51	. . .	.	100	.	4	. . .	
Horseshoe,	Baker, Blair county,	38 313	25,372		295	84	. . .	. . .	20	.	10	. . .	80
Harriet Lane,	Hopewell, Bedford county,	10,882		10,882	124	63	. . .	. . .	. .	. .	4	. . .	
Irvona, No. 1,	Coalport, Clearfield county,	51,170	26,058	11 022	292	97	.	.	200	2	15	.	80
Irvona, No. 2,	do. do.	3.200		3,200	70	20	. . .	. . .	10		3	. . .	
Isabella,	Coketon, Westmoreland county,	51,833	31,099		106	206	.	.	.	7	15	. .	251
J. C. Stineman,	South Fork, Cambria county,	77.136	.	77,136	290	126	. . .	.	500	.	13	.	
Loyalhana Shaft,	Latrobe, Westmoreland county,	122.441		122.441	245	174	. . .	. .	. .	8	12	.	240
Latrobe Coal Works,	do. do.	122,739	45 520	57,054	285	158	. . .	1	.	4	9	. .	100
Lilly,	Lilly, Cambria county,	3,480		3.440	70	24	. . .	.	20	1	1	.	
Lemon,	Bennington, Blair county,	86,658	50,415	7.337	285	176			235		10	.	100
Leatherwood,	Irvona, Clearfield county,	3 500		3,000	100	24	.	. .	20		2	. . .	. .
Miller Coal Company,	Portage, Cambria county,	6.400		6 400	150	10	.	.	40		1	. . .	
Mount Vernon,	do. do.	42,000	. .	42,000	250	94	1	. . .	150	. . .	6		. . .
Moshannon,	do. do.	11.507	. . . .	11.507	281	16			31		2	.	. . .
Martindale,	do. do.	50,000		50,000	220	92		. .	60	1	6	. . .	25
Maher,	Northpoint, Bedford county,	7.814	. . . .	7.814	100	57	. . .	. .	14		5		. .
Millwood,	Millwood, Westmoreland county,	70,588	. . .	67,000	311	121			50	6	10	2	
Monastery Slope,	Latrobe, Westmoreland county,	68 000	51,000		197	158		. .		7	12	.	208
M. Saxman,	do. do.	90 600	29,600	46,200	252	92		. .	. .	2	9	. . .	59
Mount Equity,	Riddlesburg, Bedford county,	65 404	38 305		296	112	. . .	. . .	25		15		32
Moredale,	Dudley, Huntingdon county,	8 600		8,492	138	38	. .		31	. .	4	. .	. .
New Hampshire,	Six Mile Run, Bedford county,	7.508		7,508	96	24	.				4	. .	
National,	Irvona, Clearfield county,	38,997	10,000	26,176	183	117	. . .	. . .	100	1	4		100
Ocean,	Dudley, Huntingdon county,	44 000		44 000	315	68			80	. .	5		
Porter Shaft,	Bennington, Blair county,	40,049	2,827	35 350	170	121	.		10	2	19		
Prospect,	Dudley, Huntingdon county,	48,374	29,024	2 500	248	143	. . .	. . .	115	. . .	14	. . .	100

Rubino,	Frugality, Cambria county,	80,000	26,000	50,000	290	295			900		10		88
Robertsdale,	Robertsdale, Huntingdon county,	155 501	47,263	147,253	246	315			1,800	6	30		180
Ridgeview,	Bradensville, Westmoreland county,	10 000	5,411	2 739	65	97				1	11		79
St. Clair,	do. do.	30 000	8 000	18 000	140	82				2	8		128
Smittie,	Mountaindale, Cambria county,	22,780	16 800	4 485	240	52			40	1	4		40
South Fork,	South Fork, Cambria county,	27,294		27,294	169	41			50	1	4		
Sonman, No. 1,	Benscreek, Cambria county,	34 066	3,000	34,066	240	93		1	144		10		
Sonman, No. 2,	Lilly, Cambria county,	50.000		45 000	250	110			170		12		20
Standard,	do. do.	28 500		28 500	250	62			10		5		
Sonman Shaft,	Benscreek, Cambria county,	56,000		56 000	250	98			50	1	7		
Smith,	Blairsville, Indiana county,	16 400		16 000	300	17					2		
Schuylkill,	Portage, Cambria county.	7,962		7.962	171	10			46		2		
Turner,	Blairsville, Indiana county,	16 536		16.536	301	17					2		
Tipton Run,	Tipton, Blair county,	49,346		43 052	262	99			128	2	4		
Webster, No. 3,	Summerhill, Cambria county,	189,035		189,035	270	300	2	7	1,000	2	25		
Total,		3,285,596	673,751	2,254,162	15,919	6 877	6	12	8,712	84	553	2	2,626

TABLE No. 8.—Showing the number of each class of employés at each colliery in the Sixth Bituminous Mine District, during the year 1888.

NAMES OF COLLIERIES.	Location—county.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand totals—inside and outside.
		Inside foreman or mine boss.	Miners.	Miners' boys.	All company men.	Drivers and runners.	Doorboys and helpers.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Coke men.	All company men.	Superintendent, bookkeepers and clerks.	Total outside.	
Argyle,	Cambria,	1	95	12	4	8	.	120	1		3	.	.	3	2	14	134
Aurora,	do.	1	20	4	1	2	.	28	.	.	.	.	.	1	1	3	31
Amsbury,	do.	1	55	. . . .	3	3	1	63	.	2	1	3	3	3	12	75
Blands,	do.	1	9	. .	. . . .	2	.	12	. . .	.	. . .	.	.	.	.	12
Blairsville,	Indiana,	1	8	. . . .	. .	1	.	10	.	1	. . .	7	6	1	15	25
Beach Grove,	Blair,	1	20	. .	1	2	.	24	. .	. .	.	6	2	1	9	33
Bennington Slope,	do.	1	42	10	2	5	2	62	1	2	2	.	3	2	10	72
Brown,	Bedford,	1	80	13	5	8	3	110	. . .	2	1	. .	8	4	15	125
Bensen ek Plain,	Cambria,	1	76	4	2	8	2	93	. . .	1	.	.	3	1	5	98
Buffalo,	do.	1	35	2	5	4	.	47	.	1	1	. . .	2	2	6	53
Black Diamond,	do.	1	7	. . .	2	1	.	11	.	. .	.	.	1	1	2	13
Columbia, No. 3,	Clearfield,	1	41	. .	1	4	2	49	.	1	.	. . .	4	1	6	55
Columbia, No. 4,	Cambria,	1	59	2	4	2	1	68	.	1	1	.	2	2	7	75
Cushon,	do.	1	28	. . .	1	4	.	34	. . .	1	.	.	2	1	4	38
Cambria,	Bedford,	1	75	11	6	6	3	103	.	1	1	.	4	1	7	110
Chevington,	do.	1	50	5	2	4	2	64	. . .	1	.	. . .	2	1	4	68
Conemaugh,	Cambria,	1	17	. . . .	. .	2	. .	20	. .	1	1	. .	. . .	1	3	23
Centre,	Indiana,	1	7	. .	. . . .	1	.	9	. . .	. . . .	.	.	. . .	. . . .	. .	9
Duval,	Bedford,	1	7	. .	1	1	.	10	. . .	.	.	.	.	. .	.	10
Dysert, No. 1,	Cambria,	1	14	3	1	4	. .	23	. .	1	.	4	2	1	8	31
Dysert, No. 2,	do.	1	100	10	2	10	2	125	. .	1	.	.	2	2	5	130
Delany,	do.	1	100	5	2	7	3	118	.	2	1	7	5	2	17	135
Derry Shaft,	Westmoreland,	1	60	. .	4	5	.	70	. . .	1	2	30	3	2	38	108
Euclid,	Cambria,	1	27	. . . .	5	2	2	37	.	. .	.	.	.	1	1	38
El Dorado,	do.	1	14	. . .	1	2	1	19	. .	. . . .	. .	.	.	1	1	20
Eagle,	do.	1	7	. . .	. . .	1	.	9	.	.	.	.	.	.	.	9
Foster,	Indiana,	1	118	. .	4	6	3	132	1	2	2	. .	11	2	18	150
Fen,	Cambria,	1	9	. .	. .	1	.	11	.	.	.	.	.	. .	.	11
Gallitzin Shaft,	do.	1	200	10	5	15	5	237	1	3	3	36	3	3	49	286
Gallitzin Slope,	do.	1	175	6	6	9	5	202	1	3	4	50	9	3	70	272
Glen White,	Blair,	1	40	.	5	8	3	57	1	2	4	22	6	3	38	95
Great Bend, No. 2,	Cambria,	1	80	. . . .	4	7	3	95		1		. .		1	2	97

Great Bend, No. 3,	Clearfield,	1	60			4	1	66				2	2	4	70
Hastings,	Cambria,	1	110		4	5	4	124	1	2	48	6	1	58	182
Huntingdon,	Bedford,	1	40			4	1	46		1		3	1	5	51
Horseshoe,	Blair,	1	50	3	1	8	2	65	1	2	15	1		19	84
Harriet Lane,	Bedford,	1	50		1	4	2	58		1		3	1	5	63
Irvona, No. 1,	Clearfield,	1	48	4	2	5	2	62		1	27	4	1	35	97
Irvona, No. 2,	do.	1	15		1	2		19					1	1	20
Isabella,	Westmoreland,	1	92	2	7	11	4	117	1	4	50	25	2	89	206
J. C. Stineman,	Cambria,	1	86	12	2	13	4	118		2		4	2	8	126
Loyalhana Shaft,	Westmoreland,	1	100	7	13	10	4	135	1	2	5	25	4	2	39	174
Latrobe Coal Works,	do.	1	97	5	3	9		115	1	3	4	19	4	2	43	158
Lilly Slope,	Cambria,	1	17	1		1		20			1		1	2	4	24
Lemon,	Blair,	1	96	9	3	7		116	1	2		45	10	2	61	175
Leatherwood,	Clearfield,	1	19		1	2		23					1	1	24
Miller Coal Company,	Cambria,	1	9					10							10	10
Mount Vernon,	do.	1	76	2	3	5	2	89		1		3	1	5	94
Moshannon,	do.	1	10		2	2		15					1	1	16
Martindale,	do.	1	75		1	6	2	85		2	1	2	2	7	92
Millwood Shaft,	Westmoreland,	1	80	6	6	9	1	103	1	2	3	11	1	18	121
Monastery Slope,	do.	1	85	6	3	11	2	113	1	4	7	58	3	2	75	188
M Saxman,	do.	1	48	3	7	9	3	71		1	1	15	3	1	21	92
Mount Equity,	Bedford,	1	45	14	2	9	2	73		2		32	5	1	39	112
Moredale,	Huntingdon,	1	27	2	2	3		35		1			1	1	3	38
Maher,	Bedford,	1	43	2	1	4		56						1	1	57
New Hampshire,	do.	1	19			3		22						1	1	24
National,	Clearfield,	1	71	11	1	4	2	89		1	1	20	4	2	28	117
Oakland,	do.															
Ocean,	Huntingdon,	1	50	3		5	2	61		1		4	2	7	68
Porter Shaft,	Blair,	1	51	17	6	13	3	90	1	2	2	10	15	2	32	121
Prospect,	Huntingdon,	1	70	7	3	11	2	94		1		40	5	3	49	143
Rubino,	Cambria,	1	177	6	15	8	5	212	1	4		40	24	4	73	285
Robertsdale,	Huntingdon,	1	180	20	14	14	10	239	1	6	5	40	10	3	65	314
Ridgview,	Westmoreland,	1	50	3	5	11		70	1	1	1	18	5	1	27	97
St. Clair,	do.	1	50		1	6	1	59		1	1	15	4	2	23	82
Smittie,	Cambria,	1	33	1	1	3	2	41		1	1	8		1	11	52
South Fork,	do.	1	27	5	1	2	1	37		1	1		1	1	4	41
Sonman, No. 1,	do.	1	65	7	5	10	2	90		1			1	1	3	93
Sonman, No. 2,	do.	1	75	6	5	12	2	101		1		6	1	1	9	110
Standard,	do.	1	45	3	4	4	2	59					2	1	3	62
Sonman Shaft,	do.	1	75	5	3	7	2	93		1	1		2	1	5	98
Smith,	Indiana,	1	12	1		2		16						1	1	17
Schuylkill,	Cambria,	1	8			1		10								10
Turner,	Indiana,	1	12	1		2		16						1	1	17
Tipton Run,	Blair,	1	70		6	4	2	83	1	2	2		2	2	16	99
Webster, No. 3,	Cambria,	1	194	54	4	24	10	287	1	2	1	7	2	13	300
Total,		76	4,310	326	223	399	127	5,586	20	93	71	693	284	109	1,287	6,877

TABLE No. 4.—List of fatal accidents occurring in and about the mines of the Sixth Bituminous Mine District for the year ended December 31, 1888.

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married or single.	Number of orphans.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
April 8, .	George Vincent, ...	Miner, ...	44	M.,	6	Great Bend, . .	Cambria, ...	Killed by a fall of coal in his room, for the want of using the proper precautions of spragging his coal up, as he was aware of its being loose, having fired a shot in it
Oct. 26,	Richard Mayers, ...	do.	54	M.,	4	Webster, No. 3,	do.	Injured by a fall of bony and draw slate, from the effects of which he died on the 28th.
Oct. 28, .	David Davis, ...	do.	62	M.,	4	Argyle, ...	. . . . .	This man was persuaded by his son, who was a driver, to jump on his trip and ride out, which he did. On his way out he was knocked off the car, receiving injuries that proved fatal November 12, 1888
Dec. 17, .	George McCall, ...	Miner, ...	19	S.,	. .	Dysert, No. 2, .	. . . . .	This young man was killed by a fall of coal. He was knocking out a stump from under a fall of coal, lying down to do it. Had he stood up to do this work the accident might have been avoided.
Dec. 18, .	Andrew Shrouinski, . .	Miner, ...	24	S.,	. .	Mt. Vernon, No. 4.	Cambria, ...	This man went to work at 4 o'clock in the morning, and at 6 o'clock the man working next to him, when passing his room, heard him groaning. He was killed by his own neglect in not spragging the coal.
Dec. 18, .	Christ. Sparkingbaugh, . .	Miner boy, . .	14	S.,	. .	Webster, No. 3,	. . . . .	Was killed by an explosion of powder. A spark from his lamp flew in an open keg of powder, which was near him. He died the same evening.

TABLE No. 5.—List of Non-Fatal Accidents occurring in and about the Mines of the Sixth Bituminous District for the year ended December 31, 1888.

Date of accident.	Name of Person.	Occupation.	Age.	Married.	Name of colliery.	Location—county.	Nature and cause of accident.
Jan. 13,	Alf Mentzer,	Driver,	16	S.,	Gallitzin Slope,	Cambria,	Leg broken above the ankle by the hauling-rope slipping off pulley and striking him.
Jan. 16,	J. C. O'Neil,	Miner,	33	M.,	Moredale,	Huntingdon,	Back and shoulder hurt by fall of coal in his working place.
Jan. 28	William Bollinger,	Driver,	24	M.,			Collar bone broke by car running over him.
April 2	Charles Andrew,	Miner,	22	S.,	Webster, No. 3,	Cambria,	Breast hurt by fall of coal.
April 14,	Henry Moore,		45	M.,			Collar bone broken by fall of coal.
April 19,	Benard Gallaligan,		63	M.,	Gallitzin Slope,		Leg broken above the knee by a fall of coal, caused by his not spragging the coal.
June 12.	Albert Mitchel,				Latrobe Coal Works,	Westmoreland,	Rib broken by fall of roof in his own place.
July 17,	Edward Kelly,	Miner boy,	14		Webster, No. 3,	Cambria,	Leg broken by coal falling on him from the side of the pillar in his room.
Aug. 9,	James Topper,	Miner,	32	M.,			Collar bone broken by a fall of coal.
Aug. 9,	Charles Brinton,		17				Leg broken by a fall of coal.
Aug. 27,	Samuel Donaldson,		26	M.,			Collar bone broken by a fall of coal.
Dec. 28,	Wm. Callahan,		28	M.,	Sonman, No. 1,		Rib fractured; by fall of rock. He had put a shot in the rock and it did not fall, and he was knocking out a prop to leave it down, and the prop struck another, knocking it out, and it fell against his breast and ribs.

props are then set to the upper coal roof, when the miner again proceeds to mine the next breast of coal, securing the slate as before.

Most of our accidents are due to the dangerous nature of this slate, as many of the miners become careless and venture too far under it without securing themselves by setting sufficient props. About the only way accidents from this cause can be lessened is by frequent inspection by the mine boss and a close vigilance and strict attention to duty by the men themselves; but there is one great drawback in the fact that we have to contend with a very large number of unskillful miners, many of whom do not understand our language, and are oftentimes unable to realize their danger or to secure themselves therefrom; and it is very difficult, at all times, to keep them out of harm's way unless the mine officials are with them constantly, which, of course, is impossible.

I am gratified to be able to report that hitherto during my term of office no fatalities have occurred from explosions of any kind, notwithstanding there are from thirty-five to forty mines in this district wherein fire-damp is generated to a greater or less extent. Very often the coal seam is intermixed with strata of slate (commonly called by the miners clay veins), which are generally found in a vertical position, or nearly so, ranging in thickness from six inches to four feet, and often holding a direct course through the strata for hundreds of feet; sometimes running at right angles, and intersecting each other in their course. When excavations are approaching these interruptions, gas is nearly always found in copious quantities, and, when they are passed through, immediately beyond them sudden outbursts are frequently encountered, and the noise of the escaping gas can sometimes be heard for a distance of several hundred feet, the sound being similar to that of high pressure steam escaping from the safety valve of a boiler. But there is no difficulty in guarding against accidents from this cause if the proper precautions are taken. In the first place the entries and air-ways should be kept well in advance of the other working places, a good, sweeping air-current should be maintained at the face of such entries at all times, and, when the clay vein is reached, mining should cease and a bore hole be drilled through its center, which should penetrate the coal on the opposite side for a distance of six feet or upwards. If gas is not found in that distance it may be assumed to be safe to take out the stratum of slate and drive the entry forward. In butt-entries the hole should be drilled a little out of line of the entry, so as to intersect the slips in the coal. If gas is found with the drill, it can then be drained away through the bore hole in such quantities as the air-current will dilute and render harmless until it is exhausted. Generally speaking, after it has been escaping from three to six days, the pressure becomes imperceptible and the place can be advanced with safety.

Gas is also found, more or less, where pillars are being mined and

in old abandoned workings, where the pillars are left standing, where the coal is all taken out, so that the overlying strata has perfect freedom to subside. There is, as a rule, very little difficulty experienced in removing the gas as soon as it is discovered; all that is needed, in most instances, is to place an obstruction in the entry and force the air-current around the face of the pillars and over the edge of the falls, where the roof has broken down. Canvass brattice cloth answers well for this purpose, but, when the pillars are left in over large areas, as is the case in some localities, the difficulties of keeping the mine in a safe condition are greatly increased, as in such cases the roof generally falls only just sufficiently to effectually close the air ways which may have been made through the pillars from one room to the other, so that all possibility of ventilation is cut off, while there are immense open spaces left, which act as receptacles for large accumulations of gas, which it is next to an impossibility to remove. Sometimes, under these circumstances, bulkheads are erected against the old workings to prevent the gas from passing to the roadways or into the working places.

This system, it may be said, is attended with considerable danger, as heavy falls may force out the bulkheads and flood the mine with gas when unlooked for, and where it is resorted to, and when it is possible to do so, an air-way should be specially provided inside of the bulkheads and over the edge of the roof falls, and a current of air passed through the same in the direction of the fan or upcast shaft. If this precaution is observed, the probabilities are that the gas will, in time, be drained away to a great extent, and the danger from the same materially lessened.

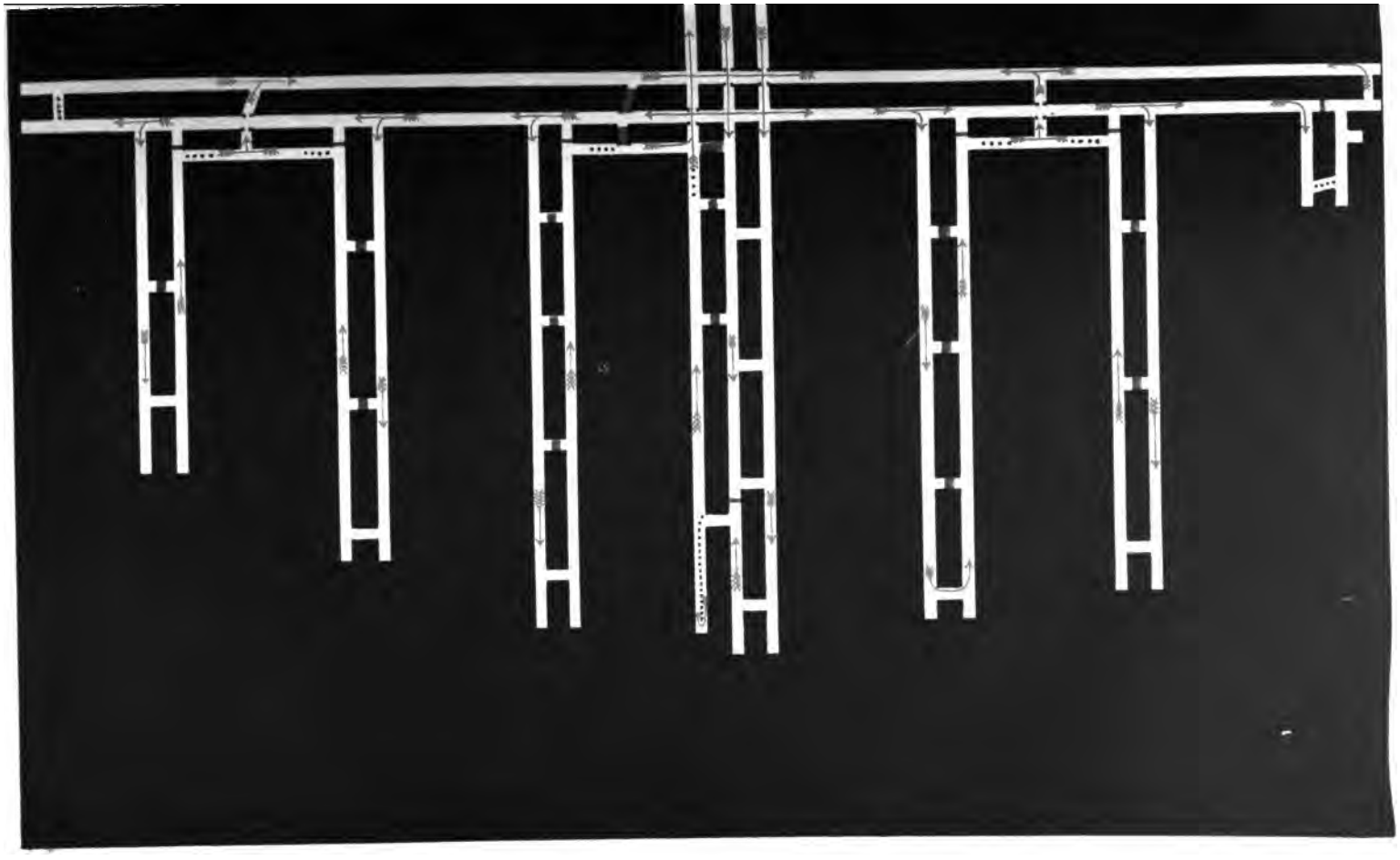
The system of mining has also been considerably improved of late years. The double entry system is now very generally adopted, which consists of driving two parallel entries, a short distance apart, into the solid coal, when opening up new workings, the rooms being turned on one side of entry only. The advantages of this method over that of the old single entry system are many, a few of which, I think, it will not be out of place to mention.

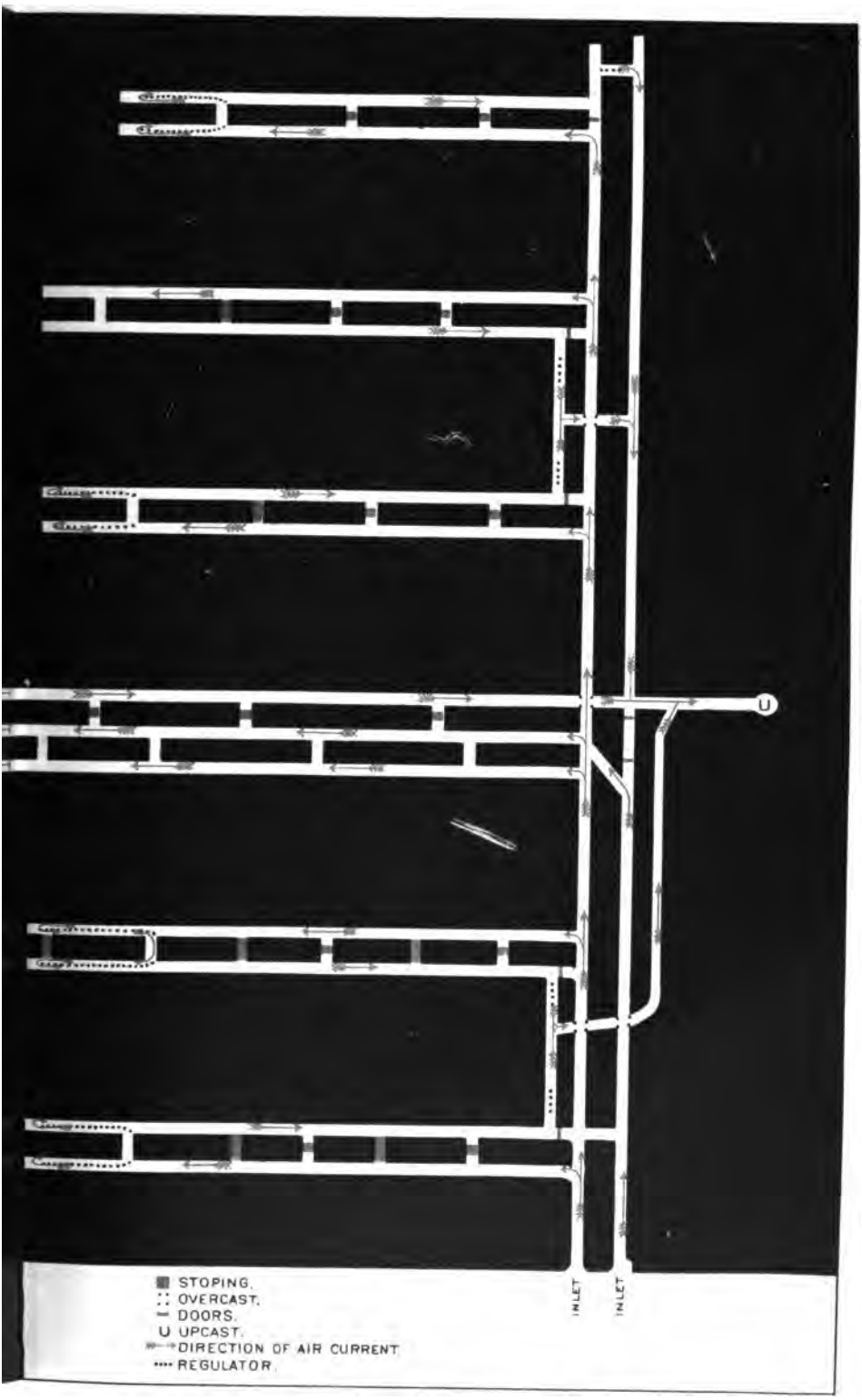
First, the ventilation can be kept under perfect control and each pair of entries can be supplied with a separate air-current independent from any other part of the mine; also, the current can be kept well up to the face of the entries as they are driven forward. For this latter purpose the center pillars are generally cut through about every fifty yards and the back cut-throughs are sealed up, so as to force the air forward; but this method of cutting through the pillars so often is not a commendable one, as a large number of cut-throughs have a tendency to weaken the pillar and bring on a crush or creep. Besides, at every bulkhead, there is more or less leakage of the air-current, unless they are built with bricks and cement, and as in this region we

have not yet arrived at that degree of perfection, it is far more preferable to leave greater space between the air-ways and conduct the current to the face of entries by means of brattice cloth. If the mine is properly ventilated, the air can be conducted in this way for a distance of from four to six hundred feet. A difficulty often found in ventilation is that when rooms from the opposite entries meet each other, a solid pillar of coal must be left, otherwise the air current is diverted from its course and part of the workings left without ventilation. But this may be obviated if the mine is laid out in such a manner that the direction of the current will be the same in each of the entries mentioned, the same as shown on the plan which accompanies this report. This can very readily be done, in most instances, if due consideration is given to the subject at the proper time.

For convenience, for haulage and ventilation, three main entries should be driven, one for a main return air-way and the others for main inlets, hauling and traveling way. Rooms should not be opened on either of these entries until all other parts of the mine are exhausted, otherwise the intake air will be heavily charged with noxious gases before it reaches the miners' working places. Another advantage is that the coal can be mined out without waste and the workings kept in a more uniform condition. As soon as all the room workings are finished in any pair of butt entries, the entry pillars can be taken out forthwith, without the least interruption to the ventilation of any other parts of the mine.

The solid pillar of coal between the entries should be left sufficiently large to prevent crush or creep, the same may also be said of the room pillars. Of course, in order to determine the amount of coal which should necessarily be left to be mined out in the pillars, we must take into consideration the power of the coal to withstand heavy crushing weight, the nature and depth of the overlying strata, also the strata underlying the coal, all of which varies in different localities, and sometimes there is considerable variation even in the same mine. Where the cover is light and other conditions are favorable, about 40 feet between entries, and about 35 per cent. in room pillars is sufficient; while in other cases, where the cover is deep and of a hard nature, difficult to break, and the coal is of a porous nature, underlaid with a bed of fire-clay, or other soft strata, it is then necessary to leave much larger pillars; otherwise a creep and a large loss of coal will be the natural result. In all cases where practicable, main face entries should be driven at intervals of about 400 yards, in which case the coal can be mined in sections, and the road material moved forward as required. The matter of driving the butt entries for a distance of 1,200 or 1,600 yards, as is sometimes done, is a great mistake which involves a large unnecessary expense to supply material and maintain the roads in good condition. If face entries are driven at intervals as above suggested, the wire rope system of haulage can then be applied




U
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REGULATOR.

to much better advantage, and a less number of horses and mules will suffice. A greater amount of coal can also be mined and hauled at a less cost from a given area, in a given time. Take for instance, a single entry, with 70 miners working therein, and assume that five mules will take the coal from them, and take again a pair of double entries with rooms turned one side only, with 35 miners in each entry. It will be found in this case that four mules will haul about as much coal as the five will in the single entry, simply from the fact that they have more freedom to do their work and less hindrance while waiting for each other to gather their trips and at the end of their journeys. While the area of ground worked over is only increased by the size of the pillars left between the entries, the advantages, from an economical standpoint, of keeping the area of operations as compact as is consistent with the output, is apparent to most people possessing a practical knowledge of mining operations. A map, showing face and butt entries and mode of ventilation, representing the ideas as above expressed, accmpanies this report. By this plan of working, all ventilating doors may be dispensed with by making an extra overcast at the inlet to each pair of butt entries and working the coal out in sections.

Total production of run of mine coal in tons of 2,000 lbs each,	4,683,921
Total production in tons of coke,	48,745
Number of mines in the district,	82
Number of mines operated during the year,	77
Number of persons employed inside,	9,038
Number of persons employed outside,	879
Total number of persons employed,	9,917
Number of lives lost by accidents,	14
Number of non-fatal injuries,	58
Number of women made widows by above fatalities,	5
Number of orphans from same cause,	10
Number of tons produced per life lost,	334,566
Number of persons employed per life lost,	708+
Number of tons produced per person injured,	80,757
Number of persons employed per non fatal injury,	171
Number of horses and mules employed,	616

Yours very respectfully,

JAMES BLICK.

IDLEWOOD, ALLEGHENY COUNTY, *February, 1889.*

Description of Mines with Improvements Made During the Past Year.

Alliquippa, Nos. 1 and 2.—The general condition of these mines was, at each visit, found to be very satisfactory, and the health and safety of the employés seems to be at all times properly guarded. Amount of air passing in No. 1 is 28,000 cubic feet per minute; but the workings are becoming so extensive as to justify the assertion that in the near future a more powerful apparatus will be required in order to maintain good ventilation. The wire rope system of haulage has

recently been adopted, which has greatly facilitated the transportation of the coal from the mine to the river, a distance of over one mile. The down grade from the main parting to the pit mouth is just sufficient for the full trip to carry the rope out by gravity, and the empty trip in turn has the rope attached to it and is drawn back to the parting by steam power. From 40 to 50 cars are run at each trip. From the pit mouth, the cars are run down two self-acting inclines to the river tipple, from whence the coal is shipped by water to the lower markets.

Amity.—This mine, on the whole, may be said to be in very fair condition. Twenty six thousand three hundred and twenty cubic feet of air per minute was in circulation at the time of my last visit. By the aid of brattice cloth, the current was found to be carried well up to the face of entries and air-ways which were being driven, to open out new workings. This is a matter that I had to complain about previously, but it is satisfactory to note that there has been no cause for complaint during the past year, but all parts of the mine were found to be well ventilated.

Atlantic and Pacific.—The former mine has been in operation but very little during the year. The latter has been run pretty steadily, and its condition cannot be said to be beyond improvement. There is a new ventilating furnace provided; but its location, I think, was not selected with a view to efficiency, consequently the results obtained are very unsatisfactory. Amount of air passing 21,000 feet.

Bower Hill.—In the early part of the year, the ventilation was in very poor condition; but during the summer an excellent furnace was erected, which is giving satisfaction, and the mine is now in first-class condition. The size of the furnace is as follows: it is built on the double arch principle; length of outside arch, 40 feet; length of inside arch, 30 feet; width of inside arch. 8 feet, 8 inches; height from floor to top of grate bars, 2 feet, 9 inches; from grate bars to centre of arch, 4 feet, 8 inches; length of grate, 9 feet; air chamber between arches, 8 inches; depth of shaft and stack, 140 feet. Average amount of air produced about 40,000 cubic feet per minute. Probably the cost of furnace and shaft is not far short of $2,000; but the company went about the matter with a view to permanence and efficiency, and the results obtained will justify the expenditure, and will in the end prove by far to be the most economical. The mine is owned and operated by the Imperial Coal Company, but it has not been in operation more than five months during the past year.

The Beach Cliff and Montour Mines are operated by the same company, neither of which is in the best of condition. The roadways are sometimes very wet and the ventilation is sometimes during the summer season below the requirements. Both mines lack good permanent return airways, consequently are very difficult to ventilate. There is a ventilating furnace at each mine, neither of which would appear to have been built with a view to future requirements, as they are inca-

pable of producing the required amount of air at the present time. The above defects are not attributable to the present management, as they are doing their utmost to remedy matters; but when mines have for any length of time been operated on an imperfect make shift system, the matter of improvement is rendered very costly and difficult. Both mines throw off a large amount of black-damp, which is very injurious to the health of the miners, unless a good, sweeping ventilation is maintained in all working parts of the mines. Amount of air passing, 16,500 and 21,000 feet respectively.

Boston, Nos. 1 and 2.—Located at Boston. No. 1 is a very extensive mine employing about 250 miners. The furnace was passing 37,600 cubic feet of air-current per minute at the time of my last visit, the same being well distributed through the working places. The drainage is also well attended to, and the roadways are kept in excellent condition, which is a matter of prime importance, as wet, dirty roads are not conducive to the economical transportation of the coal from the miners to the pit mouth, and are an unnecessary hardship upon the horses and mules, besides being very disagreeable to the men in passing to and from their work. The outside facilities for handling a large amount of coal, are second to none. The tipple, which was built one year ago, is said to be the largest and best constructed on either of the rivers. No. 2 mine is also in first-class condition. A new furnace has been provided during the past summer, with dimensions as follows: built on the double arch principle; length of outside arch, 40 feet; length of inside arch, 30 feet; width of inside arch, 10 feet; height from floor to top of grate bars, 2½ feet; from grate bars to center of arch, 5 feet; air chamber between arches, 9 inches; inclination from grate to shaft, 1 in 8; depth of shaft, 110 feet; an open space of 2 feet, is provided around the outside walls. The roof above the arch is supported by heavy timbers, so that no part of the brickwork comes in contact with the surrounding coal or strata; hence there is no danger of their taking fire from the excessive heat of the furnace. Amount of air produced when last measured, 66,700 cubic feet per minute, which is the largest ventilating current produced in any mine in the district, which is partly due to the large area and excellent condition of the air-ways in the mine. It may be remarked that the managers of these mines when undertaking to make improvements, do not stop at half-way measures. They fully realize the fact that a make-shift principle, when applied to the mining of a large valuable coal property, proves to be very costly and unsatisfactory to the owners. Robert Cornell is superintendent and Frank Cornell is inside manager. Those two are the only mines of any note that ship the product by water from the Youghiogheny river.

Bridgeville and Old Bower Hill.—These mines have been maintained in reasonably good condition throughout the year. The most of the workings in the Bridgeville mine are now back in the second

hill, the whole of the coal in the first hill, with the exception of a few pillars, is worked out. The ventilation in the winter is good, but in warm weather, it is sometimes defective.

Beachmount is in reasonable working order. Amount of air at outlet, 9,000 feet per minute. This amount will have to be increased before development can be carried much farther.

Bellwood was, on each visit, found in very good condition. Amount of air passing at the furnace, when last measured, 36,400 cubic feet per minute, well distributed through the workings. The drainage is also in good condition.

Beck's Run.—The ventilation in this mine is not so good as formerly. The furnace and shaft are not sufficiently large to produce the required amount of air-current. This company seems to be rather dilatory about complying with the mining law in many respects without considerable urging. Amount of air in circulation, 22,260 feet per minute. The Hays Street Run mines, Nos. 2 and 3, are operated by the same company and are not in the best of condition. The cut-throughs in the room pillars were not made as regular as they should be, consequently the air current in some of the working places were below the requirements. I also found cause for complaint in regard to the timber supplies. Amount of air passing at the upcast shaft, 33,000 feet per minute. This can be maintained during the winter season without the aid of a furnace, but I have requested that the furnace be built before next summer, also that other matters complained of be rectified forthwith, which has since been attended to. This company owns a very large, valuable tract of coal property and has changed their system of working, from single, to double entry, which is a step in the right direction.

Beadling.—This mine has been rather deficient in ventilation hitherto, but an air-shaft has been prepared and the erection of a new furnace is now in progress. When it is complete there will be an ample supply of air produced. The coal at this point generates fire-damp very freely, and it requires a large flow of air current to keep the workings in a perfectly safe and healthy condition. The old furnace was not capable of producing anything like the amount of air which I considered necessary for a mine of this description, hence I insisted upon a new and more powerful one being provided, and I can say that the change would not have been made had I not insisted upon it.

Bellevue was, at the time of my last visit, in reasonable working order. On account of the numerous openings to daylight it is impossible to measure the exact amount of air-current in circulation, but all parts of the mine were pretty well ventilated.

Bunola—This is a new opening; is worked on the double entry system and is in all respects in good condition. Amount of air passing, 30,000 cubic feet per minute, produced by furnace-power,

which has been erected during the past summer. The mine is located in the third pool, and the product shipped by river to the lower markets.

Boyd—Is not being operated very extensively. Was, when last visited, found to be in reasonable working order.

Cherry—Was in reasonable condition when last visited. Amount of air passing at outlet, 13,000 feet per minute.

Camp Hill.—They are doing very little beyond taking out pillars. It has not been worked very steadily for sometime past. Was not in very good condition. The product is disposed of in Pittsburgh principally for domestic use.

Camden—Has not been run to its full capacity for sometime past. Amount of air in circulation, 18,000 feet per minute. As only one part of the mine was in operation, employing about 100 men, this amount of air was sufficient, but it will need to be increased very materially when the full complement of miners are again employed. A new furnace will be provided in the near future. The sinking of a shaft for that purpose will take two or three months to complete, but if the work is pushed the furnace may be erected in time for next summer's run. During my last visit to the mine the manager promised to commence the sinking of the shaft as soon as he could make arrangements to do so. The mine is not running at the present time, and will not likely do much work before spring.

Castle Shannon, Nos 1 and 2.—These mines are in very fair condition. There are only a few men employed in No. 1, taking out entry stumps. Both mines are run pretty steadily during the winter season, but very little work is done in the summer. The product is disposed of in Pittsburgh city for household use. Amount of air in circulation when last measured, 15,000 feet per miuute.

Dravo—Was in good working order when last visited. Amount of air passing, 11,000 feet per minute, which was well circulated through the working places.

Essen—Was, when last visited, in reasonable condition, but I have on several occasions had to complain about their tardiness in regard to making break-throughs in the room pillars and providing proper timber supplies. The superintendent is not found to be anxious to comply with the letter of mining laws, but requires to be continually reminded of their requirements. No. 2 mine, operated under the same management, comes, at times, under the same head of complaints, although its condition is better than formerly. Both mines are pretty well ventilated. Amount of air passing, 26,600 and 23,000 feet respectively.

Enterprise.—I have at all times found this mine in good condition. The ventilation is produced by both fan and furnace-power. Amount of air passing at the inlets, 36.000 cubic feet per minute, which is not a very large flow of air current in comparison to the power applied to

produce the same, but the mine is very extensive and the air-ways very long, consequently there is considerable friction to be overcome; hence the reason why the amount of air is not greater, and as the distance will continue to be increased, the necessity for a more powerful ventilating apparatus in the near future will become imperative.

Fox—Is in very good working order. Considerable improvement has been made in the drainage during the past year. All parts of the mine are now perfectly dry, and the roadways put in good order. The ventilation is also in good shape. Amount of air passing, 13,500 feet per minute. About 30 miners are employed in the winter season, but during the summer very little coal is mined.

Federal Spring—Was in reasonable working order when last visited. Amount of air in circulation, 9,600 feet per minute.

Fort Pitt.—This mine was also in reasonable condition at the time of my last visit, but in the early part of the year the ventilation and drainage were not of the best; 8,600 cubic feet of air per minute was in circulation.

Grant—Was not in very good condition, the ventilation in one part of the mine being rather below the requirements. Drainage, also, was in poor shape. The present workings are nearly exhausted. They are at present opening into a new body of coal, back in the fourth hill, which will require a new furnace for its efficient ventilation. The Mansfield and Erie mine, operated under the same management, was also defective in drainage; but in other respects was in pretty good order. Amount of air passing in each mine was 12,000 and 8,000 cubic feet per minute respectively.

Glenshaw.—At the time of my visit the ventilation at the head of one of the entries was very defective. I instructed them to make arrangements to conduct the air-current to the face of the workings forthwith. On my next visit I found matters much improved. Amount of air passing, 5,000 feet per minute. Number of men employed, about 25.

H. D. O'Neil—Was in very fair condition when last visited. Amount of air passing, 13,000 feet per minute. The drainage is good, and the mine is kept perfectly dry.

Horner & Roberts. Nos. 3 and 4.—These mines are always kept in good condition, and the health and safety of the employés is at all times considered as far as possible. Average amount of air-current in No. 4, 26,740 feet per minute. No. 3 has been idle nearly the whole year, with the exception that a few men are employed, making improvements. Average amount of air passing in this mine, 28,000 feet per minute.

Hasting Slope.—A new shaft has been sunk and will be used exclusively for a traveling way for the miners to pass into and from the mine so that the necessity of passing through the main slope and the danger incurred thereby, is averted. Sometimes I find the ventilation

at the face of the mine somewhat defective. Amount of air passing at inlet when last measured, 10,000 cubic feet per minute.

Idlewood.—During the summer the coal at the bottom of the upcast shaft took fire from the furnace, which interrupted the flow of air-current for sometime. The fire was, however, extinguished without much damage having been done. The furnace was abandoned, a new shaft sunk and a furnace built in a more suitable location for the present workings, and the ventilation is now fully up to the requirements. Amount of air passing at the outlet, 18,000 feet per minute. Very little coal has been mined at this mine during the past year.

Jefferson.—Is in first-class condition. Amount of air passing at the outlet when last measured, 36,000 cubic feet per minute, being well distributed to all parts of the workings; the air-current is conducted to the working places on the split system, so that each division receives its own supply direct from the inlet, and it is again passed direct to the furnace by means of overthrows; by this system the smoke and foul gas generated in one part of the mine are not conducted over the men working in other parts; a greater volume of air is also produced in the aggregate.

Leesdale.—Is in very fair condition. Is much better ventilated than formerly. Amount of air in circulation, 17,000 cubic feet per minute.

Lovedale.—The coal bed at this mine lies very uneven and is intermixed with numerous clay veins and strata of rock, which makes it very expensive and difficult to work. The mine is well managed, and is at all times in good condition. Amount of air passing, 27,000 cubic feet per minute.

Lower and Upper Walton.—These mines are in good working order. Amount of air passing at the furnace in the upper mine, 50.000 cubic feet per minute. About 38,000 feet is passing through the workings of this mine, the other 12,000 feet per minute being used to ventilate one division of the lower mine, the other part being ventilated by natural means, which, owing to favorable conditions, generally gives a good circulation, excepting sometimes in the summer season, when it is rather slack, but it is not often that the mine is in operation during the summer time. Amount of air passing, including the 12,000 feet mentioned above, is 24,000 cubic feet per minute. The Walton mine, located in the first pool and operated by the same company, is in good order. Amount of air passing in this mine, 27.500 feet per minute. They are at present opening into a new field of coal, which will require an additional furnace for its efficient ventilation.

Laurel Hill.—I have made a number of visits to this mine during the year, as its condition is not as good as it should be. A shaft for the purpose of ventilation has been sunk at the face of the workings. In the summer season it is used as a downcast, and as an upcast in winter. When it was acting as a downcast I measured 16,000 cubic

feet per minute, and 7,000 feet were passing in the old division, making a total of 23,000 feet per minute as circulating through the working places, but the fans at this time were exhausting 58,000 feet; probably there were about 3,000 feet per minute exhausted from the coal-cutting machines, giving a total effective ventilation of 26,000 cubic feet per minute. This leaves the extraordinary amount of 32,000 cubic feet per minute as being lost by leakage. Some of this was from surface breaks, but most of it was passing from the main tunnels through the old workings direct to the fans. Of course, some of this leakage can and has since been prevented, but when all is done that can be done, there will still be a large loss in excess of the amount necessary to keep the tunnels free from noxious gases. This condition of things is the result of the unsystematic method of working adopted, when it would seem that future requirements were not taken into consideration. On my last visit the shaft was being used as an upcast, and was passing 26,000 cubic feet per minute, and 8,000 cubic feet were in circulation in the old division, making a total of 34,000 cubic feet per minute as effective ventilation. They have been considerably annoyed by water in the old adjoining mine, of which there is no map or plan in existence. The water is now nearly all drained off, and where the last opening was made it was found to contain a large body of fire-damp, which cannot be gotten rid of until air-ways are driven for that purpose, and even then it will have to be removed with great caution when the men are out of the mine. This company has purchased a large tract of coal property in the locality known as Miller's Run. They have already sunk a shaft, and expect to commence to ship coal in the spring.

Milesville.—When this mine is being worked to its full capacity during warm weather the ventilation is not sufficient, but a full complement of men have not been employed for some time past. My last air measurement registered 17,000 feet per minute, which amount was ample for the number of men who were employed.

Mansfield, Nos. 1 and 2.—No. 1 is in reasonably good order. Amount of air passing when last measured, 18,000 cubic feet per minute, which was well circulated through the workings. The drainage in some parts of the mine was not very good, but the coal bed lies near the surface; where the pillars are taken out the strata subsides to the surface, and in wet weather a large amount of water flows into the mine, when it is very difficult to keep the roads properly drained. The ventilation and drainage in No. 2 mine is not in very good condition. Amount of air in circulation, 25,000 cubic feet per minute; hitherto this has been sufficient when well distributed, but, at the present time, on account of the extent of the workings and the extra large quantity of noxious gases generated, it is far below the requirements, and I have requested the manager to make provisions for a much larger volume.

National—The ventilation and drainage of this mine is not in good

condition. They are at the present time opening into a new field of coal, and if it is properly laid out they will have no difficuty to make it a number one mine. That part where the larger number of men are mining coal at present will soon be worked out. Amount of air in circulation, 14,400 feet per minute.

Nixon.—Sometimes the manager of this mine becomes rather too economical in his way of operating the mine. On one occasion I found about 8,000 cubic feet of standing gas in one of the entries that was driven a long distance in advance of the air-current, which had been there for about two weeks without any attempt having been made to remove it and secure safety to the miners. The only excuse was that it would require a few dollars to provide lumber for brattice, which he thought could be saved by allowing the gas to drain away of its own accord. This is the kind of management that furnishes us with some of our mining catastrophes, as all that was required was for the furnace to be neglected, or one of the main ventilating doors to be left open for a short time, when ten lives at least would have been sacrificed. Probably the man was excusable, inasmuch as he did not understand enough about the matter to realize the danger. It was not the fault of the pit-boss, as he realized the danger and would have remidied it had he been furnished the material to do it with. Where criminal carelessness of this character is found to exist, the law should provide swift and ample punishment for the guilty parties, let them be who they may, without the interposition of five days notice from the inspector to rectify matters. Of course I notified them to remove the gas forthwith, which was done, and since that time I have had no cause for complaint. The amount of air in circulation when last measured was 14,520 cubic feet per minute.

Natrona.—This mine at the present time does not employ the required number of men to bring it under the provisions of the mining law, but it was in good order when last visited.

Old Eagle.—The ventilation is below the requirements. They have made a new inlet at the face of the mine, but it is not of much benefit. The only remedy is to provide a more powerful ventilating apparatus. The mine is well drained, and everything, with the exception of the ventilation, is in first-class condition, and that will, I have no doubt, be attended to as soon as arrangements can be made to that end, as the manager is fully alive to the dangers of an insufficient supply of air current. Amount of air passing, 17,000 feet per minute.

Ormsby.—Is in very fair condition. Amount of air in circulation 26,700 cubic feet per minute, which is sufficient for the number of men employed if properly distributed to all the working places.

Oak Ridge.—The old part of this mine is about worked out, and they are driving the main entry into a new field of coal. Was found in good order when last visited.

Ocean, Nos. 2, 3, 4, 5 and Southwest.—No. 2 is in first-class condi-

tion in all respects. Amount of air passing at the outlet 43,780 cubic feet per minute, well distributed to all parts of the workings Number of persons employed when in full operation about 320, producing upwards of 1,000 tons of coal per day. No. 3 has been idle the whole year. No. 4 and Southwest are in poor condition, the ventilation not being up to the requirements. Amount of air at the outlet 37.500 feet per minute. Both mines are ventilated by the same furnace, which was erected about two years ago; but, on account of its unfavorable location, it is incapable of producing anything like the requisite amount of ventilation for workings so extensive as these are; besides, a large part of the air that is produced escapes through the old workings direct to the outlet, and is of no benefit to the men working at the face of the mines. During the excessive rains that occurred during the latter end of August, the water rose above the top of one of the air-shafts and flowed into the mines in such large volumes as to cause a suspension of work over the greater part of each mine for several months, and some parts not directly affected by the water could not be operated on account of the main air-ways being flooded, which prevented any circulation of air-current. No. 5 is a new opening, and during the former part of the year the ventilation was not good, but they have since built a furnace which will produce about 40,000 cubic feet of air current per minute, so that the mine is now in good condition. The above mines are operated by the Youghiogheny River Coal Company, which owns a very large and valuable tract of coal property in this locality.

Powers, Nos. 2 and 3.—A 10-foot fan has been provided and the ventilation is now in pretty good shape. Both mines are at present ventilated by this fan. On my last visit I measured 28,000 cubic feet at the outlet, with a water gauge of 0.8 of an inch, which equals 4.16 pounds pressure per square foot. Considering that the mines are not, as yet, very extensive, the above results do not indicate a very favorable condition for the main air-ways. The average amount of air passing is about 22,000 feet per minute. The fan itself is of very weak construction, and cannot be run at a high velocity.

Penny and Robbins.—The workings of these mines are connected, and neither of them are in very good condition. The most of the coal, with the exception of pillars, is worked out in both mines. In the winter season the ventilation is good, but in warm weather it is sometimes below the requirements. They are both very old mines, and no proper air-ways are preserved, so that it is very difficult to conduct the air-current to the working places.

Pine Run, Nos. 1 and 2.—These mines were idle the whole of last year.

Pine Creek.—Is a new opening located at Glenshaw, on the Pittsburgh and Western railroad. The coal is about three and a-half feet high, and is known as the Lower Freeport seam. The coal is of ex

cellent quality for steam purposes, especially for locomotive use, and there is every indication that this will, ere long, become an extensive mine. At the present time there are about fifty men employed. The ventilation is produced by steam-jet, but a fan is to be erected in the near future. Mine in good order when last visited.

Rock Run.—Is in first-class condition. Amount of air passing 19,800 cubic feet per minute, well distributed to the working places.

Rankinville.—Has recently re-commenced operations after a long suspension. It is now run by a coöperative company, composed of about twenty working men, the whole of them being employed in and about the mine. The ventilation, at the time of my last visit, was defective. I requested them to erect a new furnace so as to improve matters.

Streets Run, Nos. 1 and 2.—No. 1 is just about exhausted. Both mines are in very good condition. Amount of air in circulation in the aggregate 40,000 cubic feet per minute.

Stones.—Has only been in operation about three months during the year. Was in reasonably good order when last visited. Amount of air passing at the outlet 30,600 feet per minute.

Star.—Its condition is not up to the requirements. The operator of this mine has very little regard for the mining law, and is quite an adept in evading its provisions. The ventilation was fairly good at the time of my last visit. Amount of air passing 12,220 feet per minute.

Snowden.—A fan has been placed in position at this mine during the past summer, so that the ventilation is now all that can be desired. Mine also in good order in all other respects.

Summer Hill.—Its general condition is pretty favorable. Amount of air at the inlet 15,000 and about 20,000 cubic feet per minute at the outlet, showing 75 per cent. of the furnace production as effective ventilation. Arrangements for producing a much larger volume of air-current are among the immediate necessities for the future, as the mine is becoming a very extensive one, requiring far more ventilation than formerly.

Venture.—Is in very fair condition. Amount of air passing 14,400 feet per minute. This amount can be increased at any time when required, as the mine is ventilated by a 16-foot fan capable of producing about 35,000 feet per minute.

Willow Grove.—Is ventilated by a 12-foot fan producing 35,000 cubic feet of air-current per minute. Only about 50 per cent. of this amount is passing through the working parts of the mine. This great waste is due to numerous surface breaks and to the fact that no proper return air-ways are preserved, which makes it next to impossible to confine the current to its proper course; still, the mine is fairly well ventilated and in good order.

First Pool, Monongahela Gas Coal Company, No. 1.—This is a new

mine, located on the Wheeling branch of the B. & O. R. R., about 12 miles from Pittsburgh, and was in good order when last visited.

Description of Fatal Accidents which Occurred in the Seventh District during the year 1888.

Alex McAllister, mule driver, was killed by being crushed between a coal car and the side of the entry. It would appear that the deceased jumped from his trip when in motion in order to adjust the brake to bring the cars to a stand, when part of his clothing became entangled in the end of one of the cars and he was dragged to a narrow place where his head was crushed between the car and the entry pillar. It was a little down grade at the point where the accident occurred, and there was not room for the driver to pass his trip on the side where the brakes were; but they did not often use the brakes at this point, and would not have done so on this occasion only that there was another driver standing with his trip on the entry, for if the trip had been stopped a short distance farther back the cars would have come to a standstill without the aid of the brakes. This is what should have been done, as the deceased knew that the other trip was on the road in front of him. The above accident occurred at the Bellwood mine, February 17th.

Horner & Roberts, No. 4.—James Lerul, mule driver, was fatally injured at this mine on February 18th, by being crushed between his mule and cars. He was driving his mule at a high rate of speed; was riding on the front end of the trip; his light went out, when the mule was forced against the side of the entry by the momentum of the cars and fell back against the man with such violence as to cause internal injuries, which proved fatal four days afterwards. It was an act of carelessness on his part. The road was practically level and in good order, and he should not have driven his mule so fast.

Charles Werner, miner, was killed by falling slate in Walton mine, on March 7th. He was working in a room pillar and failed to protect himself by setting sufficient props under a dangerous piece of slate. The danger was apparent and could, with ordinary care, have been averted.

Hugh Grant, roadman, was killed in Laurel Hill mine, on March 3. This man met with his death in a very simple manner. He was standing by a full car, to which the mule was attached, jesting with the driver, when the mule suddenly started forward and crushed his head between the top of the car and the roof.

Ralph Heppelwhite, engine driver, was fatally injured in the Enterprise mine, May 21. He was taking down the ventilating furnace, and had taken out the key bricks the whole length of the arch and neglected to remove the quarters of arch as he proceeded, when he removed the last key brick the sides of the arch were left without support, and as a natural consequence gave way. The deceased was standing inside of the arch and was almost buried by the bricks which

fell upon him. He died three days after the accident, aged 59 years. He was an old resident of Banksville, held in great esteem, and his death was deeply lamented by all who knew him, and from my personal knowledge of the deceased, I can testify to the fact that his untimely end removed from the church and community of this little mining village, one of its most earnest and valuable Christian leaders.

Handy Teninson, miner, was killed in the National mine, May 26, by a fall of slate and roof. He was working in a room pillar, and at this time was removing props; he had knocked the prop loose with his sledge, and had then gone under the loose roof to remove it, when the overlying strata fell upon him with fatal result. This method of removing props is a very dangerous one, but it seems to be a very difficult matter to introduce anything better in this region.

William Hess, miner, was fatally injured at Beck's Run mine, August 29. He had fired a blast in the coal and had afterwards commenced to undermine the loose coal without having first set sprags for protection, a very careless, dangerous proceeding, which cost him his life.

Peter Swaitzer, miner boy, aged 15, was killed in Camden mine, September 6. The boy was working in a room pillar, his father was working in another pillar near by, and he said that he went back and forth often to see that his boy was safe and to assist him to set and remove his props, but on this occasion, although he had been in his boy's working place shortly before the accident, he had left it in a very insecure condition, the consequence was that a large piece of slate fell upon the little fellow, causing instant death. Further comment is unnecessary, as it is evident to all thinking people, that a boy of such tender years should not have been allowed to mine in a place by himself.

William Kay, laborer, was killed in the tipple of Alliquippa mine, October 31. He was engaged in changing the ropes from the full trip to the empty ones, at the bottom of the self-acting incline, while the cars were in motion. The rope connected to the empty trip had by some means became entangled in the trestling-work, and the sudden jerk broke the coupling connected with the full trip, and the three cars were precipitated to the bottom of incline with a fearful velocity, where either the cars or the coal struck the deceased with such violence as to cause almost instant death. At the time the rope connection broke, the full trip was passing the safety switch, so that it could not be used to stop the momentum of the cars.

Daniel Rice, mule driver, was killed in the Essen mine, November 9, by being crushed between the cars. He was a strange driver and unacquainted with the grades of the roadways in this mine. He was killed in taking out his first trip; he should not have been trusted alone with the mule until he had become familiar with the roads and

had been instructed where to use his sprags, and how many were required.

Julius Lefever, Sr., and Julius Lefever, Jr., father and son, aged 57 and 15 respectively, were killed in the Willow Grove mine, November 9, by a fall of horseback roof. The father was an old practical miner and his working place was well timbered, indicating that he was a careful workman, but the piece of roof which caused the accident was encircled by a slip which disconnected it from the surrounding strata, and the danger was very difficult to detect.

TABLE No. 1—Showing Location of Collieries in the Seventh Bituminous Mine District.

NAME OF COLLIERY.	Name of operator.	Location—county.	Name of superintendent.	Post-office address.
Alliquippa, Nos. 1 and 2,	Bailey, Wilson & Co.,	Allegheny,	James Wilson,	Camden.
Amity,	J. C. Risher & Co.,	do.	S. S Crump,	Dravosburgh.
Atlantic,	Lake Erie Gas Coal and Coke Company,	do.	John F. Hoosack,	Scott Haven, Westmoreland co.
Buena Vista,	Youghiogheny River Coal Company,	do.	do.	do. do.
Bower Hill,	Imperial Coal Company,	do.	F. L. Shallenberger,	Imperial, Allegheny county.
Bellwood,	Munhall Bros.,	do.	John Munhall,	Homestead.
Beck's Run,	H. C. Burghman, as trustee,	do.	Peter Trautman,	Redman's Mills.
Beadling,	Beadling Bros.,	do.	William Beadling,	Essen.
Beach Cliff,	Imperial Coal Company,	do.	F. L. Shallenberger,	Imperial.
Bellevue,	Gumbert & Huey,	do.	William Huey,	Elizabeth.
Bridgeville,	A. G. Shulte,	do.	C. P. Mayer,	Bridgeville.
Boyd,	Edward Fisher,	do.	Edward Fisher,	P. O. box 906, Pittsburgh.
Bunola,	O'Neil & Peterson,	do.	G. W. Peterson,	Bunola.
Boston, Nos. 1 and 2,	W. H. Brown's Sons,	do.	Robert Cornell,	Boston
Beach Mount,	Beach Mount Coal Company,	do.	William Sturgeon,	Beachmount.
Camden.	G Lysle & Sons,	do.	Joseph Griffith,	Camden.
Castle Shannon, Nos. 1 and 2,	Pittsburgh and Castle Shannon Railroad Co.,	do.	John Jahn,	Castle Shannon.
Camp Hill,	David Steen,	do.	David Steen,	Putnam.
Cherry,	Morris McCue,	do.	Morris McCue,	Third ave and Try st., Pittsburgh.
Dravo,	Lake Shore Gas Coal Company,	do.	C. Wisser,	Robbins, Westmoreland county.
Enterprise,	Hartley & Marshall,	do.	Rodger Hartley,	South Side, Pittsburgh.
Essen,	Sanford & Co.,	do.	James Henderson,	Essen
Fox,	Thomas Fox,	do.	Thomas Fox,	Thirty-sixth ward, Pittsburgh.
Federal Spring,	W. J. Steen,	do.	W. J. Steen,	Putnam.
First Pool, Mon. Gas Co., No. 1,	First Pool, Monongahela Gas Company,	do.	Charles Giles,	Hope Church.
Fort Pitt,	Fort Pitt Coal Company,	do.	John E. McCrickart,	1010 Penn avenue, Pittsburgh.
Glenshaw,	Glenshaw Coal Company,	do.	S. W. Spencer,	Glenshaw.
Grant,	Grant Coal Company,	do.	George Hoosack,	Putnam.
H. D. O'Neil,	H. D O'Neil,	do.	Harver O'Neil,	McKeesport.
Horner & Roberts, Nos. 3 and 4,	Horner & Roberts,	do.	George Roberts,	Elizabeth.
Hays Street Run, Nos. 2 and 3,	H. C. Burghman, as trustee,	do.	J. Watson,	Hope Church.
Hastings Slope,	Pennsylvania Coal Company, Limited,	do.	John Neish,	Bridgville.
Idlewood,	Stewart, Lewis & Dickson,	do	T. D. Stewart,	Crafton.
Jefferson,	Foster, Clark & Wood,	do.	Thomas Foster,	Coal Valley.
Jones,	George Jones & Co.,	do.	T. M. Jones,	West Elizabeth.
Lovedale,	John A Wood & Son,	do.	George R. Gray,	Elizabeth.
Lysdale,	Gregg Bros.,	do.	Stephen Gregg,	Woodville.
Lower Walton,	Joseph Walton & Co.,	do.	John Rike	West Elizabeth
Laurel Hill,	W. P. Rend & Co.,	do.	John Rend,	McDonald, Washington.
Montours,	Imperial Coal Company,	do.	F. L. Shallenberger,	Imperial.
Milesville,	Milesville Coal Company,	do.	Robert Jenkins,	Sunny Side.

TABLE No. 1—*Continued.*

NAME OF COLLIERY	Name of operator.	Location—county.	Name of Superintendent.	Post-office address.
Mansfield, Nos. 1 and 2,	Mansfield Coal and Coke Company,	Allegheny,	Daniel R isinger,	1042 Liberty street, Pittsburgh.
Mansfiel l and Erie,		do.	George Hoosack,	Putnam.
National,	National Coal Company,	do.		Noblestown.
Natrona,	Pennsylvania Salt Manufacturing Company,	do.	J. R. Hill,	Natrona.
Nix on,	Chartiers Valley Coal Co.pany,	do.	Charles Bristol,	Sixth street, Pittsburgh
Old Eagle,	W. H Brown's Sons,	do.	James Louttit	Elkhorn.
Old Bower Hill,	A. J. Shulte,	do.	C. P Mayer,	Bridgeville.
Ormsby,	Birmingham Coal Company, Limited,	do.	Joseph Keeling,	South Side, Pittsburgh.
Oak Ridge,	Oak Ridge Coal Company, Limited,	do.	G. W. Schluederberg,	
Ocean, Nos. 2, 3, 4 and 5,	Youghiogheny River Coal Company,	do.	John F. Hoosack,	Scott Haven, Westmoreland co.
Pacific,	Lake Erie Gas Coal company,	do.	do.	do. do.
Pine Run, Nos 1 and 2.				
Penny,	Penny Coal Company,	do.	David H. Lynch,	McKeesport.
Powers, Nos. 1, 2 and 3,	Chartiers Block Coal Company,	do.	E. W. Powers,	Federal.
Pine Creek,	Robbins Coal and Coke Company,	do.	F. Robbins.	Penn build'g, Penn ave., Pittsb'h.
Robbins,	Robbins & Co ,	do.	W. R Smith,	McKe-sport.
Rock Run,	W. J. Snodgrass & Co ,	do.	J. S. Scott,	Camden.
Rankinville,		do.		
Street's Run,	I. D. Risher,	do.	I. D. Risher.	Hope Church.
Stone's,	G. W. Stones,	do.	G. W. Stones,	McKeesport.
Summer Hill,	Frank Armstrong,	do.	Frank Armstrong,	Woodville.
Star,	Francis Mankedick,	do.	Francis Mankedick,	Sturgeon.
Sanford, No. 2,	Sanford & Co.,	do.	James Henderson,	Essen.
Snowden,	Pittsburgh and Chicago Gas Coal Company,	do.	D. W. VanKman,	Gastonville, Washington county.
Upper Walton,	Joseph Walton & Co.,	do,	John Rike	West Elizabeth.
Venture,	Gray & Bell,	do.	William Bell,	Banksville.
West Elizabeth.				
Walton,	Joseph Walton & Co.,	do.	Morris Copp,	Carrick.
Willow Grove,	Willow Grove Mining Company,	do.		

TABLE No. 2—Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employés, number of persons killed and injured, number of kegs of powder used, etc., in the Seventh Bituminous Mining District, for the year ending December 31, 1888.

Names of Collieries.	Location.	Total production in tons of coal.	Total production in tons of coke.	Total shipments in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Alliquippa, Nos. 1 and 2,	Allegheny county,	98 045		98,045	132½	217	1			3	11		
Amity,	do.	61 110		51,630	187	224		4	12		18		
Atlantic,	do.	2,437		2 437	20	63			10		3		
Buena Vista,	do.	56 405½		56 405½	175	113		2	52		6		
Bower Hill,	do.	31,261		31,261	110	88		1			5		
Bellwood,	do.	54 430		54 430	110	189	1	1			9		
Beck's Run,	do.	107,460		107,460	145	247	1	1		4	14		
Beadling,	do.	57 375		56,975	222	104			65	1	5		
Beach Cliff,	do.	83,108		83 108	241	125		2		2	9		
Bellevue,	do.	86 328		86,328	178	172				1	15		
Bridgeville,	do.	49,014		49,014	145	89					5		
Boyd,	do.	19 707		17,827	175	56					4		
Bunola,	do.	49,020		49,020	250	103		1		1	7		
Boston, No. 1,	do.	165 750		165 750	222	270		1		4	15		
Boston, No 2,	do.	64 260		64,260	152	110				2	6		
Beach Mount,	do.	48 832		48 832	240	72		4		1	3		
Camden,	do.	115,375		115,375	162	217	1	2		2	13		
Castle Shannon, Nos. 1 and 2,	do.	27 840	1,358	27,840	275	79					5		6
Camp Hill,	do.	30,160		29,380	208	55				2	4		
Cherry,	do.	22 220		22,220	160	53		1			6		
Dravo,	do.	43 243		43 243	175	81					4		
Enterprise,	do.	108 698		108 698	226	281	1		180	4	11	1	
Essen,	do.	50,340		50,340	146	179	1			2	11		
Fox,	do.	8,792		8,792	300	23				1	1		
Federal Spring,	do.	25,000		25,000	200	58		1			3		
First Pool, Mon. Gas Coal Co, No. 1,	do.	5,000		5,000									
Fort Pitt,	do.	32,623		32 623	168	80		1			7		
Glenshaw,	do.	18 000		18 000	275	34			120		5		
Grant,	do.	40 600		40,600	135	128			30		10		

TABLE No. 2—*Continued.*

NAMES OF COLLIERIES.	Location.	Total production of tons of coal.	Total production in tons of coke.	Total shipments in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number of coke ovens.
H. D. O'Neil,	Allegheny county,	67,400		67 400	220	121				1	7		
Horner & Roberts, Nos. 3 and 4,	do.	111.882		111.882	165	192	1	5		3	10		
Hays Street Run, Nos. 2 and 3,	do.	97,280		97,280	120	274		1		1	21		
Hasting's Slope,	do.	31,206		31,206	180	72			204	1	5		
Idlewood,	do.	5 760		5,760	105	28					2		
Jefferson,	do.	96.926		96,926	146	218				2	13		
Jones,	do.	16,391		16,391	57	111					6		
Leesdale,	do.	46,800		49.900	192	112					4		
Lovedale,	do.	54,573	6,536	54,573	154	134			150	2	9		30
Lower Walton,	do.	131,929		131,929	150	267		1		3	13		
Laurel Hill,	do.	315 000	23,000	280,000	310	437	2			15	33		51
Milesville,	do.	47,944		47,944	158	145			15	1	5		
Montours,	do.	104,509	10,000	104.509	240	137		1		2	12		50
Mansfield, No 1,	do.	62,502	5,296	54.023	142½	164				2	10		22
Mansfield, No. 2,	do.	129 672		127 552	204½	215	1	1			14		
Mansfield & Erie,	do.	19 950		19,950	124	51			15		5		
National,	do.	77.780		77,780	286	119	1	1	72	3	7		
Natrona,	do.	4,438	2 558		300	13			38	1	2		10
Nixon,	do.	42,840		42 840	200	94		4			5		
Old Eagle,	do.	118,137½		118 137½	155	198		2	575	3	14	1	
Old Bower Hill,	do.	23,728		23 728	153	52					3		
Ormsby,	do.	36.718		36,718	200	105				6	7		
Oak Ridge,	do.	69,596		69 596	223	110				1	3		
Ocean, No. 2,	do.	185,177		185,177	220	290		3	167		15		
Ocean, No. 4,	do.	56,868		56 868	97	175		1	60	1	9		
Ocean, No. 5,	do.	22,531½		22 531½	190	39			25		3		
Pacific,	do.	104.035		104 035	190	209		3	106		15		
Penny,	do.	22 600		22,600	80	61					6		
Powers, No. 2 and 3,	do.	65 000		65,000	270	157		2		2	9		
Pine Creek,	do.	9.000		8 375		51		1	200	2	3		
Robbins,	do.	45,358		40 356	115½	106				1	8		
Rock Run,	do.	36,335		36,800	140	101		1			8		

Rankinville,	do.	6,001	...	6,001	50	55	...	...	...	...	3	...	...
Street's Run,	do.	77,263	...	77,263	140	169	...	...	...	3	8	...	...
Stones,	do.	20,698	...	20,698	56	142	...		...	...	8	...	...
Summer Hill,	do.	87,308	...	87,308	249	148	...	1	20		8	...	...
Star,	do.	79,000	...	79,000	220	76	...		...	...	4	...	...
Sanford, No. 2,	do.	31,275	...	31,285	124	171	...	1	10	...	6	...	...
Snowden,	do.	70,200	...	70,200	159	143	...	1	170	1	6	...	...
Upper Walton,	do.	169,408	...	169,408	230	274	...	3	...	2	17	...	...
Venture,	do.	53,362	...	50,000	213½	155	...	...	...	3	9	...	...
West Elizabeth,	do.	39,715	...	39,715	134	123	...	...	...	...	22	...	...
Walton,	do.	133,579	...	133,579	200	246	1	3	...	3	15	...	...
Willow Grove,	do.	90,747	...	89,885	...	162	2	...	5	1	7	...	...
Total,	...	4,683,921	48,745	4,618,038	12,409	9,917	14	58	2,171	96	616	2	169

TABLE No. 3 —Showing the number of each class of employés at each colliery in the Seventh Bituminous Mine District, during the year 1888.

NAMES OF COLLIERIES.	Location—county.	NUMBER OF PERSONS EMPLOYED INSIDE.							NO. OF PERSONS EMPLOYED OUTSIDE.						Grand totals—inside and outside.
		Inside foreman or mine boss.	Miners.	Miners' boys under 16 years of age.	All company men.	Drivers and runners.	Doorboys.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	All company men.	Superintendent, bookkeepers and clerks.	Total outside.	
Aliquippa, Nos. 1 and 2,	Allegheny,	1	156	23	2	11	4	197	1	1	1	16	1	20	217
Amity,	do.	1	155	16	3	13		188	2	9	.	23	2	36	224
Atlantic,	do.	1	50		3	3	1	58	1	1	. . .	3	. . .	5	63
Buena Vista,	do.	1	90	3	4	5	1	104	1	1	. .	7	. . .	9	113
Bower Hill,	do.	1	75		1	5	2	84		1	. .	3		4	88
Bellwood,	do.	1	130	12	2	8	. .	153	1	2	2	10	1	16	169
Beck's Run,	do.	1	200	. .		14	2	217	1	3	4	20	2	30	247
Beadling,	do.	1	75	8	2	5	2	93	1	1	1	6	2	11	104
Beach Cliff,	do.	1	100		4	7	2	114		2	1	8	. .	11	125
Bellevue,	do.	1	130	12	2	11	. . .	156		2	2	10	2	16	172
Bridgeville,	do.	1	73	5	1	3	.	83	1	2	.	3	. .	6	89
Boyd,	do.	1	45	2	1	3		52	1	1		1	1	4	56
Bunola,	do.	1	80		6	5	2	94		2	1	5	1	9	103
Boston, No. 1,	do.	1	212	15	4	12		244	1	3	4	17	1	26	270
Boston, No. 2,	do.	1	85		2	5	. .	93	1	3	2	10	1	17	110
Beach Mount,	do.	1	60	. .	1	3		65	1	1	1	3	1	7	72
Camden,	do.	1	175	6	2	12	3	199	1	1	2	14	. .	18	217
Castle Shannon, Nos. 1 and 2,	do.	1	57	7	.	5		70	1	2		5	1	9	79
Camp Hill,	do.	1	40		1	5	. .	47	1	3	1	1	2	8	55
Cherry,	do.	1	38	3	1	2	. .	45	1	2	. . .	4	1	8	53
Dravo,	do.	1	67	2		4	1	75	1	1		3	1	6	81
Enterprise,	do.	1	205	23	14	8	6	257	1	5	5	9	4	24	281
Esen,	do.	1	150		4	8	4	167	1	2	2	5	2	12	179
Fox,	do.	1	20	. .		1		22	. . .	. . .	1	. .	.	1	23
Federal Spring,	do.	1	45	3	. .	3	2	54	. . .	1	. . .	2	1	4	58
First Pool, Mon. Gas Coal Company, No. 1,	do.	. .	. .	. .	. .	. .	. .	. .	. . .	. . .	. . .	. .	. .	. .	. .
Fort Pitt,	do.	1	62	. .	2	5	1	71	1	3	. . .	4	1	9	80
Glenshaw,	do.	1	22	2	2	5	. .	32	1	. . .	. . .	. .	1	2	34
Grant,	do.	1	100	7	3	7	3	121	1	1	. .	4	1	7	128
H. D. O'Neil,	do.	1	100	. .	1	7	. .	109	1	1	2	7	1	12	121
Horner & Roberts Nos. 3 and 4,	do.	1	145	12	2	10	4	174		2	1	14	1	18	192
Hay's Street Run, Nos 2 and 3,	do.	2	225	. .	.	18	. . .	245	.	3	3	21	2	29	274

Hastings Slope,	do.	1	55	2	. . .	5	1	64	. .	1	2	3	2	8	72
Idlewood,	do.	1	20	2		2		25	. . .	1	.	1	1	5	28
Jefferson,	do.	1	163	15	3	10	3	200	1	1	1	14	1	13	218
Jones,	do.	1	80	10		6		97	1	1		11	1	14	111
Leesdale,	do.	1	95	2	3	4	1	106	1	1		3	1	6	112
Lovedale,	do.	1	100	3	5	8	. . .	117	1	2	2	11	1	17	134
Lower Walton,	do.	1	220	.	5	13	. . .	239	1	4	2	20	1	23	267
Laurel Hill,	do	1	350	25	5	22	5	408	1	5	13	8	2	29	457
Milesville,	do.	1	125	5		4		135	. . .	6	1	6	2	10	145
Montours,	do.	1	110	. .	3	3	2	124	. . .	3	2	8	.	13	137
Mansfield, No 1,	do.	1	120	8	4	8	2	143		4	2	15	. . .	21	164
Mansfield, No. 2,	do	1	182		4	10	4	201	. . .	2		11	1	14	215
Mansfield and Erie,	do.	1	40	. .	1	4		46	1	1		3	.	5	51
National,	do.	1	100	1	2	6	1	111	1	2	2	2	1	8	119
Natrona,	do.	1	5	1	. . .	2	. . .	9	1	.	2	1	. .	4	13
Nixon,	do.	1	77	5	2	4	. . .	89	1	2	. .	2	.	5	94
Old Eagle,	do.	1	155	6	3	3	4	177	1	3	2	14	1	21	198
Old Bower Hill,	do.	1	42	3	1	2	. .	49	. . .	1	. .	1	1	3	52
Ormsby,	do.	1	70	10	4	5	. . .	90	1	2	4	7	1	15	105
Oak Ridge,	do.	1	95		2	4	. . .	102	. . .	2	1	4	1	8	110
Ocean, No. 2,	do.	1	25	5	7	12	1	276	1	3	.	7	1	14	290
Ocean, No. 4,	do.	1	144	4	5	8	1	163	1	1	. . .	10	. .	12	175
Ocean, No. 5,	do.	1	25	2	2	3	1	34	1	1	. .	3	. .	5	39
Pacific,	do.	1	175	7	5	10	2	200	1	2		6	. .	9	209
Penny,	do.	1	50	. .	.	5	. . .	56	1	. . .	.	4		5	61
Powers, Nos. 2 and 3,	do.	1	123	10	3	5	3	147	1	2	1	4	2	10	157
Pine Creek,	do.	1	85	4	1	2	.	43	1	2	1	3	1	8	51
Robbins,	do.	1	75	8	2	8	2	96	1	1	1	6	1	10	106
Rock Run,	do.	1	80	3	2	5	. . .	91	2	1	. . .	6	1	10	101
Rankinville,	do.	1	40	3	1	3		48	1	2	. .	3	1	7	55
Street's Run,	do.	1	130	10	2	9	1	153	. . .	1	2	12	1	16	169
Sones,	do.	1	120	. . .	2	8	1	132	. . .	1	1	7	1	10	142
Summer Hill,	do.	1	125	6	1	5	2	140	1	3	. .	8	1	8	148
Star,	do.	1	65		1	3	. .	70	. . .	1	. . .	4	1	6	76
Sanford, No. 2,	do.	1	159	4	1	5	2	163	1	1	. .	5	1	8	171
Snowden,	do.	1	110	20	2	5	2	140	1	1	1	4	1	8	148
Upper Walton,	do.	1	230		4	13	1	249	1	4	2	17	1	25	274
Venture,	do.	2	110	14	6	4	3	139	2	1	3	7	3	16	155
West Elizabeth,	do.	1	80	15	3	12		111	1	1	. .	9	1	12	123
Walton,	do.	2	200		5	15	1	223	1	3	3	15	1	23	246
Willow Grove,	do.	1	125	10	3	3	2	149	1	1	1	9	1	13	162
Total,		75	7,833	384	175	496	88	9 038	53	134	88	529	72	879	9 917

TABLE No 4.—List of fatal accidents occurring in and about the mines of the Seventh Bituminous mine district for the year ended December 31, 1888.

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	Number of orphans	Name of colliery.	Location—county.	Nature and cause of accident.
Feb. 17,	Alex McAllister,	Mule driver,	24			Bellwood,	Allegheny Co.,	Head crushed between car and side of entry.
Feb. 18,	James Lerul,	do.	23	1		Horner & Roberts, No 4,	do.	Crushed between a mule and car; died February 22.
March 3,	Hugh Grant,	Roadman,	28			Laural Hill,	do.	Crushed between coal car and roof of mine.
March 7,	Charles Worner,	Miner,	23			Walton,	do.	Killed by fall of slate.
May 21,	Ralph Hepplewhite,	Engine driver,	59	1		Enterprise,	do.	Fatally injured by bricks falling upon him while taking down ventilating furnace ; died three days after accident.
May 26,	Hancy Teninson,	Miner,		1	7	National,	do.	Killed by fall of slate and roof.
June 4,	A Adams,	Mule driver,	21			Mansfield, No 2,	do.	Killed by a kick on the head by his mule.
Aug. 29,	William Hess,	Miner,	58	1	3	Beck's Run,	do.	Killed by fall of coal
Sept. 6	Peter Swaltzer,	Miner boy,	15			Camden,	do.	Killed by fall of slate
Oct. 31,	William Kay,	Laborer,	24			Alliquippa,	do.	Was killed in the tipple from the trip breaking from the rope on the incline.
Nov. 9,	Julius Lefever, Sr.,	Miner,	57	1		Willow Grove,	do.	Father and son were killed at the same time in a room by a fall of horseback roof.
Nov. 9,	Julius Lefever, Jr.,	Miner boy,	15			do.	do.	
Nov. 9,	Daniel Rice,	Mule driver,	22			Essen,	do.	Lost his life by being crushed between coal cars.
Dec. 3,	Edward Hulmes,	Miner,	30			Laurel Hill,	do.	Was run over and killed with the dilly trip.

TABLE No. 5.—List of non-fatal accidents occurring in and about the mines of the Seventh Bituminous mine district for the year ended December 31, 1888.

Date of accident.	OF PERSON	Occupation.	Age.	Married.	Name of colliery.	Location—county.	Nature and cause of accident.
Jan. 4.	George Castle,	Mule driver,	25	No,	National,	Allegheny,	Slightly hurt by a coal car.
Jan. 23.	Lewis Llewellyn,	do.	17	No,	Nixon,	do.	Arm taken off by falling under moving cars.
Jan. 28.	Jacob Better,	Miner,	20	No,	Camden,	do.	Slightly hurt by fall of slate.
Feb 13.	Thomas Hillard,	do.	51	Yes,	Horner & Roberts, No. 4,	do.	Leg broken by fall of slate.
Feb 21.	Robert Thompson,	do.	25	No,	Old Eagle,	do.	Leg hurt by fall of slate.
Feb. 27,	Wm. Wilds,	Mule driver,	23	No,	Hays Street Run, No. 3,	do.	Hurt by coal cars.
Feb. 28.	Ambrose Rosy,	Miner,	38	No,	Walton,	do.	Leg broken by fall of slate.
March 2,	Mannus Noll,	do.	21	No,	Amity,	do.	Slightly hurt by fall of slate.
March 5,	John Layman,	do.	50	No,	Beach Mount,	do.	Leg broken by fall of slate.
March 12.	Peter Johnston,	do.		No,	Horner & Roberts, No 4,	do.	Hurt by fall of coal and slate
March 13.	August Missisausa,	do.		Yes,	Horner & Roberts, No. 3,	do.	Burned by an explosion of fire-damp.
March 24,	Aliner Jordan,	do.	28	Yes,	Walton,	do.	Leg injured by fall of slate
April 3.	George Blank,	do.	33	Yes,	do.	do.	Back injured by fall of slate.
April 4,	Hugh McGuan,	Mule driver,	23	Yes,	Boston, No 1,	do.	Foot hurt by a coal car.
April 13.	Lewis Bootles,	Miner,	50	Yes,	Amity,	do.	Slightly hurt by fall of slate.
April 15.	Richard Fowler,	do.	58	Yes,	Ocean, No 2,	do.	Two ribs and collar-bone broken by falling slate.
April 15.	Andrew Minty,	do.	48	Yes,	Powers, No. 3,	do.	Leg broken by fall of slate.
April 28.	Edward Willis,	do.	60	No,	Pine Creek,	do.	Leg broken by fall of roof.
May 1,	James Joy,	do.		Yes,	Montours,	do.	Leg hurt by fall of slate.
May 7.	Henry Sailliott,	do.	23	No,	Old Eagle,	do.	Hurt by fall of slate.
May 7.	Robert Knobban,	do.	35	Yes,	Summer Hill,	do.	Leg broken by fall of slate.
May 14.	George Lowther,	do.	23	Yes,	Pacific,	do.	Back injured by fall of slate.
May 16.	John Deller,	do.	16	No,	Mansfield, No. 1,	do.	Thigh broken by fall of slate.
May 16.	Charles Home,	do	42	No,	Powers, No. 3,	do.	Hurt by fall of slate.
May 19.	John Brown	do.	26	Yes,	Beach Mount,	do	Leg broken by moving cars.
May 29.	Joseph Caine,	do.	36	No,	Horner & Roberts, No. 4,	do.	Leg broken by fall of slate.
June 7.	Elmer Symeral,	do.	25	No,	Ocean, No. 4	do.	do do.
June 11.	Samuel Wallis,	do.	61	Yes,	Ocean, No. 2,	do.	Hurt by fall of slate
June 12.	Jeremiah Carl.	do.	23	No,	Fort Pitt,	do.	Elbow dislocated by jumping from moving cars.
June 13.	William Brown,	do.	45	Yes,	Nixon,	do.	Leg broken by fall of slate.
June 15	John Henry.	do	23	No,	Upper Walton,	do.	Hurt by fall of slate.
June 15.	John Wallace,	do.	33	No,	Beach Mount,	do.	do. do.
June 20.	Benj Jones,	do	55	Yes,	Nixon,	do.	Leg hurt by coal from a premature powder blast.
July 2.	William Brown,	Mule driver,	17	No,	Beach Mount,	do.	Leg broken by moving coal cars.

TABLE No. 5—*Continued.*

Date of accident.	NAME OF PERSON.	Occupation	Age.	Married.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
July 9,	Franz Absolom,	Miner,	47	Yes,	Beach Cliff,	Allegheny,	Leg crushed by fall of slate.
July 11,	John Cooley,	do.	22	No	Buena Vista,	do.	Leg broken by fall of slate.
July 12,	Samuel Woods,	do.	56	Yes,	Pacific,	do.	do. do.
July 16,	John Messner,	do.	16	No,	do.	do.	Foot crushed by fall of slate.
July 17,	Wm Richards,	do.	56	Yes,	Amity,	do.	Foot hurt by fall of slate.
July 25,	(Name not given),	do.			Snowden,	do.	Leg broken by fall of slate.
July 28,	Joseph Miller,	do.	18	No,	Beach Cliff,	do	Ankle dislocated by fall of slate.
Aug. 9	Henry Conaby,	do.	21	Yes,	Bower Hill,	do.	Leg broken by fall of coal
Aug. 17,	John Williams,	do.	58	No,	Ocean, No. 2,	do.	Leg broken by fall of slate.
Sept. 7,	Raymond Flourian,	do.	43	Yes,	Buena Vista,	do.	do. do.
Sept. 11,	J. Burns,	do.			Mansfield, No. 2,	do.	Foot hurt by fall of slate.
Oct. 5,	James Patterson,	do.	27	No,	Bunola,	do.	Both legs and collar-bone broken by fall of coal.
Oct. 11,	Henry Cline,	do.	34	Yes,	Camden,	do.	Hip dislocated by fall of slate.
Oct. 12,	George Smith,	do.	21	No,	Federal Spring,	do.	Leg broken by fall of slate.
Oct. 16,	Frank Slosil,	do.		No,	Sanford, No. 2,	do.	do. do.
Oct. 16,	Vensel Brunder,	do.	19	No,	Beck's Run,	do,	Hurt by fall of slate.
Oct. 20,	John Gray,	do.	23	No,	Nixon,	do.	do. do
Oct. 23,	Thomas Woodward,	Pump-man,	55	Yes,	Upper Walton,	do.	Burned by an explosion of fire-damp.
Oct. 29,	John Weis,	Miner,	34	Yes,	do.	do,	Leg broken by fall of slate.
Nov. 7,	Joseph Williams,	do.			Horner & Roberts, No 3,	do,	Leg broken and internal injuries received by fall of slate.
Nov. 10,	Jacob Hall,	do.	17	No,	Amity,	do,	Leg broken by fall of slate.
Nov. 21,	Frank Miller,	do.	27	No,	Rock Run,	do,	do. do.
Dec. 1,	Patrick Twigg,	do.	44	No,	Lower Walton,	do,	Leg broken by fall of coal.
Dec. 10,	George Gray,	do.			Cherry,	do.	Leg and several ribs broken by fall of slate.

EIGHTH BITUMINOUS DISTRICT.

Hon. THOMAS J. STEWART,

Secretary of Internal Affairs:

SIR: I have the honor to submit my Report of the inspection of mines of the Eighth Bituminous Coal District for the year ending December 31, 1888. This Report contains the amount of coal produced and the amount shipped, together with the amount of coke shipped, and other statistics necessary, with the exception of the total number of fatal and non-fatal accidents for the year. Having been appointed only on the 6th day of June last to fill the unexpired term of Mr. John M. Watt, I can only give the number from that date. Not knowing the total number of accidents, I have to refrain from comparisons with previous years. There have been five fatal and twenty-three non-fatal accidents since my appointment. Of the fatal accidents, three were killed by roof falling on them, one with coal, and one with a T iron rail, by a tracklayer. While taking up a curve, and in the act of drawing spikes, it sprung, hitting him on the abdomen. He only lived about twelve hours after the accident. Three of the others happened while the victims continued to work in places that were known to be unsafe and insecure. Of the 23 non-fatal, almost the same thing could be said. By taking a little more time and exercising more care, most of these accidents could have been avoided. While commenting on these accidents it brings to mind one of the requirements of the Mining act, wherein the mine boss, or his assistant, is required to visit the miners' places at least every alternate day, and as we believe such frequent visits have a tendency to lessen the number of accidents, we would urge them more frequently. This will not meet the views of some of our distinguished mine-foremen, who think that because of their having a certificate, they can delegate this requirement to an assistant, and hardly ever go in the mine themselves, while some of them go so far as to hire themselves to weigh all the coal that comes out of the mine, only borrowing a man for a few hours every alternate day to weigh, while he goes in the mine to visit the miners' places. This is a wilful misconstruction of the law. To these I would say that the meaning of the law in having assistants is that when the mine-

boss has done all he can with regard to carrying out the law and then is not able to comply or meet all the duties of his position, he calls for the aid of an assistant or assistants to carry out what he cannot accomplish.

Others having a higher opinion of themselves, think that, because they have a certificate, they can superintend several mines with assistants who have no certificates. I believe it is true that these examinations are making a better class of mine-bosses, if not making some of them too good. Such men hardly ever go in the mine themselves. There will be some amendments to the Mining law submitted to this session of the Legislature, and I expect these will make it unpleasant for such bosses.

The Sanitary Condition

of these mines is not as good as we would like to see. Although nearly all have one hundred cubic feet of air per minute per man passing through their mines, yet the circumstances require more. This is explained by the fact that the coal is thin. and has all to be blasted down with powder. Rooms, pillars and even stumps take powder to get down, and in most places the bottom rock has to be taken up to make height for mules and wagons, which requires additional powder. It requires a sweeping ventilation. Although I have to remark on the absence of black-damp, I would insist on having more air than one hundred cubic feet per minute for each person employed.

Drainage

at many of these mines is anything but satisfactory. It is quite common to see the water running in the middle of the road because of having no drain, and especially at places where they are necessitated to take up the bottom for height, no provision is made for drainage, and especially after rains, and, the cover being thin at most of the places, water comes through in abundance, and where else can it run, only in the middle of the road? While this is true, I do not say that the miners have to get their feet wet in going in and out to their respective places, but successfnl mining is only attended with good and dry hauling roads.

Improvements.

There has not been many improvements at these mines this year. A fifteen-foot Beazil fan has been built at Atlantic, No. 2, and gives good results. This makes only two fans in the district. The reason of this, I suppose, is because a shaft can be sunk with very little cost, and the ventilation moved with furnaces, and, although some of them have No. 1 furnaces, yet others have all sorts of contrivances erected at the bottom of the air-shafts for the purpose of having them act like furnaces. These generally give as good results as good furnaces,

and particularly when the air has to crawl over a mountain of ashes in getting to the fire. The principal coal bed mined to any extent in this district is the Lower Freeport D., although there are in active operation three other coal beds underlying this one. In giving a brief description of each mine with this report, it will be noticed which vein is operated.

I think the year that is past can be reckoned a year of great activity in the coal business, as there has been nearly three-fourths of a million tons of coal more produced than in 1887, while there was an increase of over one million tons over the previous year. The average of days worked for the past year is less than the year previous, being one hundred and seventy, as against one hundred and eighty-one, but an increase of mines operated, and next year will show another increase. There have been 104 mines operated. One has been abandoned, two have not been operated, and nine in the course of operating, but will be in active operation by spring.

Abstract of Mining Statistics for the Year Ending December 31, 1888.

	Tons.
Amount of coal produced,	5,513,866
Amount produced in 1887,	4,829,017
Increase in 1888,	684,849
Amount of coal shipped,	5,193,074
Amount of coal shipped in 1887,	4,678,815
Increase of shipments in 1888,	514,259
Amount of coke produced,	87,804
Number of mines operated during the year,	104
Number of mines finished,	1
Number of mines not worked,	2
Number of miners employed,	5,833
Number of miners' boys,	569
Number of persons employed inside,	7,717
Total number employed outside,	618
Total number of persons employed,	8,335
Average number of days worked (104) mines,	170
Price paid for mining, 2,240 pounds,	$0 50
Number of horses and mules,	774
Number of coke ovens in district not all in operation,	541
Number of kegs of powder reported as used,	12,805

Causes of Fatal Accidents.

By falls of rock,	3
By fall of coal,	1
By T. iron rail,	1
Total,	5

Causes of Non-Fatal Accidents.

By falls of coal,	7
By falls of rock,	5
By wagons,	9
By powder explosion,	2
Total,	23
Grand total,	28

Yours, respectfully,

BERNARD CALLAGHAN.

PHILLIPSBURG, Centre county, Pa.,
February 26, 1889.

Description of Mines.—Osceola District

Commences with Retort A, or No. 1 of the coal measures in this district. Average thickness 4′ 6″. Clean coal, with good roof and bottom. This mine is kept in first-class condition. Mine-boss, Samuel Twigg.

Black Diamond.—Is working B vein, or No. 2 of coal measures. A has been idle since last May. They are building a new side track outside; when completed will resume operations.

Columbia, No. 2.—Working D, or what is commonly called at this place "Moshanon Vein," variable in thickness from 4′ 6″ to 5′ 6″. The veins at this place are not solid hard coal all through, with irregular dip and rise. This mine was rather defective in ventilation at last visit. Some alterations have been made in the air shaft, and last report showed it improved.

Columbia, No. 1.—Is also working D vein, 4′ 6″ thick, but has not much solid coal to work and will soon be exhausted. The roof and bottom at this mine are bad, and the consequence is, bad drainage and bad hauling. There are so many falls to the surface that at my last visit I could not measure the correct amount of air passing through the mine.

Central.—This mine adjoins the workings of Columbia, No. 2, at its western side, and has a strip of the same kind of coal running on one side of it. They do not work any of this soft coal at present. This mine is in good condition, both as to drainage and ventilation. Average thickness of coal 5′. Mine-boss, W. S. Edwards.

Drane.—Working Moshanon or D vein. Average thickness about

5′ 6″. There has been an electric motor coal-cutting machine put up at this mine on trial. I went to see it working, and it would give good results at this mine; but the conditions in this mine are good for hand labor as well. Ventilation and drainage are first-class; 33,650 cubic feet per minute at outlet, and furnace not in operation.

Coaldale, No. 4.—Working D vein. Average thickness varying from 5′ 6″ to 6′ and over. Troubled with faults and swamps on one side and steep on the other. Ventilation very defective on left side, but they are driving to daylight, which will soon be completed and will make it a well-ventilated mine. L. Brubaker works it under contract at present.

Morgan.—This is only a small concern, working a piece of coal on outcrop and behind a fault of an adjoining colliery. Coal averages 5′ in thickness. Drainage and ventilation at last visit fair.

Logan.—Working D vein. Average thickness 4′ 6″. There is not much solid coal in this mine to work, but nearly all pillars and stumps. Ventilation at last visit fair; drainage not so good.

Mapleton.—Working D vein. Average thickness 3′ 8′. There is not much solid coal in this mine to work; it is nearly exhausted. Drainage good; ventilation rather sluggish at last visit, but it has been improved since.

Reading.—This mine is nearly exhausted; D vein; average thickness 4′. The condition of this mine is favorable under the circumstances.

Elizabeth. No. 3.—This mine is working B vein. Average thickness 4′ 8″. There is a bony seam about eight inches thick in the middle, which makes it hard to keep clean. Drainage at this mine is good; ventilation might be somewhat improved, but they are near their boundary line, the air having a long way to travel.

Laurel Run.—Working D vein. Average thickness 4′. This mine has a bad and very uneven roof. Condition is very good as to ventilation and drainage.

Victor, Nos. 2, 3, 4 and 6.—Nos. 2, 3 and 4 are working D vein, 4′ 6″ thick, and No. 6 E vein, 3′ 2″ thick. These mines do not work all at one time; generally keep one of them running full, and the others working with less than ten men. The condition of these mines might be better if they were running full time.

Lancashire, No. 2.—Is working D vein, 4′ 6″ thick, but has been working less than ten men all year, and consequently was not visited.

Atalanta, No. 1.—This mine is working E vein; average thickness 3′ 2″, and is working directly over Lancashire No. 1; both working at the same time and only 35 feet of strata between the two seams. Although this is not the safest method of mining coal there is nothing of a dangerous character developed yet, and the mine boss is very watchful, which is satisfactory so far. Ventilation and drainage favorable.

Houtzdale District.

Catharine.—Is opened in what seems to be a pocket of cannel coal. Thickness 6′ on one side, but gets thinner as far as has been driven in the opposite direction, being only two feet thick when they stopped working it. This mine was only opened last May, and at present is working with less than ten men.

Beaver Run.—This mine is working a piece of coal that Sterling, No. 1, could not reach from their opening on account of a large fault. The coal on this opening is from 5′ to 7′ thick; D vein. Another year will finish this place. Condition of mine at last visit was favorable.

Sterling, Nos. 1, 2, 3 and 4.—These mines have worked a large territory of coal. At No. 1 the coal is hauled with an endless wire rope, then hauled to the tipple with locomotive. At No. 4 a locomotive hauls the coal over a mile to the same tipple. The coal at this place was very thick at first openings, but now it is only about 4′, and sometimes less. With the use of the same wagon, they are necessitated to take up the bottom for height. This is always attended with bad drainage, the floor underneath being a soft fire-clay. A large furnace was built this summer, which gives a sweeping ventilation through it. At No. 4 the drainage is bad from same cause, and the ventilation was not so sweeping on my last visit. No. 2 is only working outcrop coal on a different hill, and is exhausting it. Average thickness of coal at this place from 5′ to 6′. Ventilation good.

Eureka, Nos. 5 and 6.—These mines are working D vein. Average thickness at No. 5, 3′ 8″, and at No. 6, 3′. These mines are working the coal on same property, but they are opened on each side of the railroad, and coal seems to dip on both sides. Steam power with a wire rope hauls the coal on one side, and the empty wagons take the rope back to a distance of 3,500 feet. The coal is hauled on the opposite side with string teams to a side track, a considerable distance, where the wagons are collected with single mules. Condition of these mines at last visit was favorable.

Eureka, No. 8.—Mine working D vein. Average thickness about 5′. This mine is troubled with bad roof; consequently takes a great many posts and requires close attention, but is kept in first-class condition. Mine-boss, John Allen.

Eureka, No. 9.—This mine is nearly exhausted, but is working a piece of coal at crop on opposite side of fault, and is working with less than 10 men.

Sobeiski.—This mine is working a piece of coal on crop that had been abandoned from Beaver Run. There is not any solid coal to work; all stumps and pillars. D vein, average thickness about 5′.

Pine Run.—This mine is working the B vein. Average thickness, 4′, and don't seem as good quality as D vein. The company built coke ovens for the purpose of making coke of it, but the reduction in the price of

coke last summer would not pay here, so they have been doing very little work since.

Atlantic, No. 2.—This is one of the nicest mines in the district. The coal is about 6′ thick, D vein, and is worked with the Osceola coal-cutting machines. The workings are well laid out, and the ventilating current is made with a fifteen foot Brazil fan, which can be run either to force or exhaust. At my last visit the fan was run at ninety revolutions and gave 50,960 cubic feet per minute, and $\frac{7}{10}$ inches water gauge. Mine-boss, Peter Cameron, Jr.

Shoff.—This mine is working D vein, with an average thickness of 4′. Ventilation and drainage good. Mine-boss, Jas. McGonigal.

Loraine.—This mine is working D vein. Average thickness, 6′. The pitch of the vein at this mine is very sudden and uneven. Drainage and ventilation favorable.

Pacific, No. 1.—This mine is working D vein, 4′ 6″ thick. The workings at this mine are very extended, but are well taken care of.

Pacific, No. 2.—This mine is being exhausted, there being no solid coal hardly to work but pillars and stumps, and there will not be many people suffer when it is finished. At my last visit there was no visible current at inlet.

Excelsior, No. 2.—This mine has been exhausted since August last.

Ocean, No. 1.—This mine is working D vein. Average thickness, 4′. A greater portion of this mine is troubled with bad roof. Workings are very extensive. Ventilation and drainage favorable.

Bessemer.—This is an old mine opening up in the new. They are driving through the old workings to gain a piece of coal on the other side. Coal averages 4′ 6″ thick, and they are mining with success.

Ferndale.—This is a small operation. Working some remnants of coal that were left from other openings. Average thickness, 4′ 6″. Ventilation and drainage could be greatly improved.

Eureka, No. 2.—This is an extensive mine. Working D vein. Average thickness, 4′ 6″. The workings are very flat, and light cover at far end. The wet weather retards these kind of workings, as it makes the roads too wet. The ventilation is by a furnace, and at last visit gave 30,200 cubic feet per minute.

Mount Vernon, No. 5—This mine is working D vein, with an average thickness from 4′ 8″ to 8″. The coal at this place is hauled with a tail rope about 3,500 feet. They have just put up a new engine house, and overhauled their machinery. The old engine house was burned, which threw them idle for six weeks. Condition of this mine at last visit very favorable for ventilation.

Atlantic, No. 1 and Ocean, No. 2.—These mines are connected inside, and are overseen by one foreman, although one is a slope and the other a shaft. These are very extensive workings. The coal varies in thickness from 4′ to 6′ clean coal, and at some places a divid-

ing slate intervenes, and both measures will assume a thickness of 8', but this dividing slate will carry the top lift away from the lower part, so that it becomes useless and unfit to mine. Ventilation and drainage at these mines, fair.

Excelsior, No. 3.—This mine is opened with a slope, and with the expectation of handling a large output of coal, but unfortunately for them they run upon a very large fault, and the coal thinned away to 8 inches for a long distance. Before they struck it they cut through this fault about 200 feet, and had just got coal at my last visit. If the coal does not turn out better after they mine through this fault the mine will soon be worked out, while their splendid structure will not be half worn. The ventilation at this mine is controlled by an exhaust fan, and is consequently good.

Excelsior, No. 4.—This mine is on the same property as No. 3, but on the opposite side of the hill, and it is the worst cut up mine with clay veins and faults I have ever seen. The main heading has been driven over 200 feet through a fault, with a very slight prospect of coal at my last visit. It is a pity this company should not get coal, as they try to run their workings in good shape. What coal they have averages in thickness, 4' 6".

Ramey.—This mine is newly opened on D vein. Average thickness, 2' 9". Only 23 miners were working at last visit. Ventilation and drainage were very good, although their furnace drift was too small to keep up ventilation as their workings extend, but they are driving now for a new one of larger size.

Webster, No. 4.—This mine is working D vein, with an average thickness of 2' 7". The thinness of the vein requires the taking up of 18 inches of bottom rock, which makes it difficult to mine and makes a soft bottom on headings. After the coal is hauled out of the mine it has to be taken up a steep slope outside to the tipple on account of railway being so much higher than the drift. Ventilation was fair, but drainage not so good.

Vulcan.—This mine is working D vein Average thickness, 4' 6". One part of this mine is troubled with bad roof from shallowness of surface cover, which makes the roads wet. Ventilation and other conditions good.

Yorkshire.—This mine was said in last report to be abandoned, but they have persevered with the work through a clay vein, and found the coal as good as it was before, and they will continue to the end. This is D vein, but has a slate in the middle of it about 2" thick, variable, 4' 6" clean coal. They are working less than ten men at present, but will soon have more employed.

Alexander.—This mine is working B vein, with an average thickness of 4'. This coal does not seem to be as good as D vein. Perhaps that accounts for it not working so steadily. I have visited this place

three times, and only found them at work one-half day. Ventilation and drainage were not as good as they should have been.

Elizabeth, No. 2.—This mine is working D vein, with an average thickness of about 5'. There is not any solid coal to work at this place—nothing but pillars and stumps. Condition of this mine was not very favorable for taking back stumps on account of it being worked on the old single heading system, and it is comforting to know that it will soon be worked out.

Franklin, Nos. 1 and 2.—These mines are working D vein. Average thickness, 4' 6". No. 1 is partly exhausted, and No. 2 has not much solid coal to work either, but has a large territory of stumps and pillars to work. The coal at this place is hauled with a wire rope, worked with a locomotive. Braced on top of friction drumwheel, takes the trip up to drift mouth, and then takes it to tipple. They had a local squeeze at my last visit. Condition of mine fair.

Eureka, No. 10.—There are two openings at this place; one termed Old hill and the other New hill. Old hill is being exhausted, and New hill has not much solid coal in it now. The coal of both places is hauled up a slope with engine power and wire rope, and handles a large quantity of coal. I had to complain of the air at New hill, but the mine-boss exerted himself and soon remedied it.

Ocean, No. 3.—Working D vein, 4' 6" thick. This mine could be in a great deal better condition, if it was better looked after. They have a furnace, but it is not kept burning. There was no visible current at inlet at my last visit. I think the furnace will be in operation the next time I visit there. Wilmer Reed, mine-boss.

Champion.—Is connected with Ocean, No. 3, and is attended by the same mine boss when they work, but that is very seldom. Since I came here, I never found it working in the three visits I made.

Ashland.—Is working D vein, 4' 6" thick. Ventilation and drainage are good. Daniel Jones, lessee.

Mt. Vernon, Nos. 1 and 2.—Working D vein, 4' 6" thick. No. 1 is the largest operation. I had to complain of the air at this place on my two visits, and it was remedied then with haste. No. 2 is only a small operation, and works less than ten miners when it does work, which is seldom.

Old Moshannon.—Has two openings on same vein D, with a difference of level of over 100 feet. Upper drift is being exhausted. Thickness of coal 4'. Lower drift has not any solid coal to work at present, only stumps and pillars, but is 6' thick. These mines are in very good condition.

Phillipsburg District.

Victor, No. 1.—This mine is working D vein, with average thickness of 4' 6." The coal at this mine is run through one hill with locomo.

tive, a distance of nearly one mile to the tipple. Ventilation and drainage at last visit were fair.

Glenwood, No. 1.—Working D vein, 4′ 6″ thick. They have the E vein on this property. Some of it has been worked, and they intend to open it up again in the spring. The condition of this mine has improved lately. I had to complain of the carelessness manifested by the management at this place.

Lancashire, No. 1.—This mine is also working D vein, but it is more variable in its thickness, being more troubled with faults. The bottom has to be taken up to give height, which also makes the drainage not as good as I would like to see it. Their furnace is hard worked to keep up the ventilation.

Colorado—This mine is also working D vein, 4′ 6″ thick. This mine is laid out in good shape. Ventilation and drainage were good, with the exception that on the dip side, the water had to run on middle of road for want of a drain.

Montana.—This is a new opening on E vein, 3′ 6″ thick. The vein below this is partly worked out and pillars drawn. This is the first attemp to work top vein after the lower vein has been worked out. I have instructed the mine-boss to be careful, and be sure to notify me if he sees any danger. At last visit this mine was in good condition.

Springhill.—This mine is nearly exhausted, and is working with less than ten men.

Derby.—This mine is working D vein, 4′ 6″ thick. There is not much solid coal now to work. The ventilation here is by natural means, and sometimes it is not so good as I would like. It has the middle part worked out, and the wet weather effects its drainage considerably. If it received more attention it might be better.

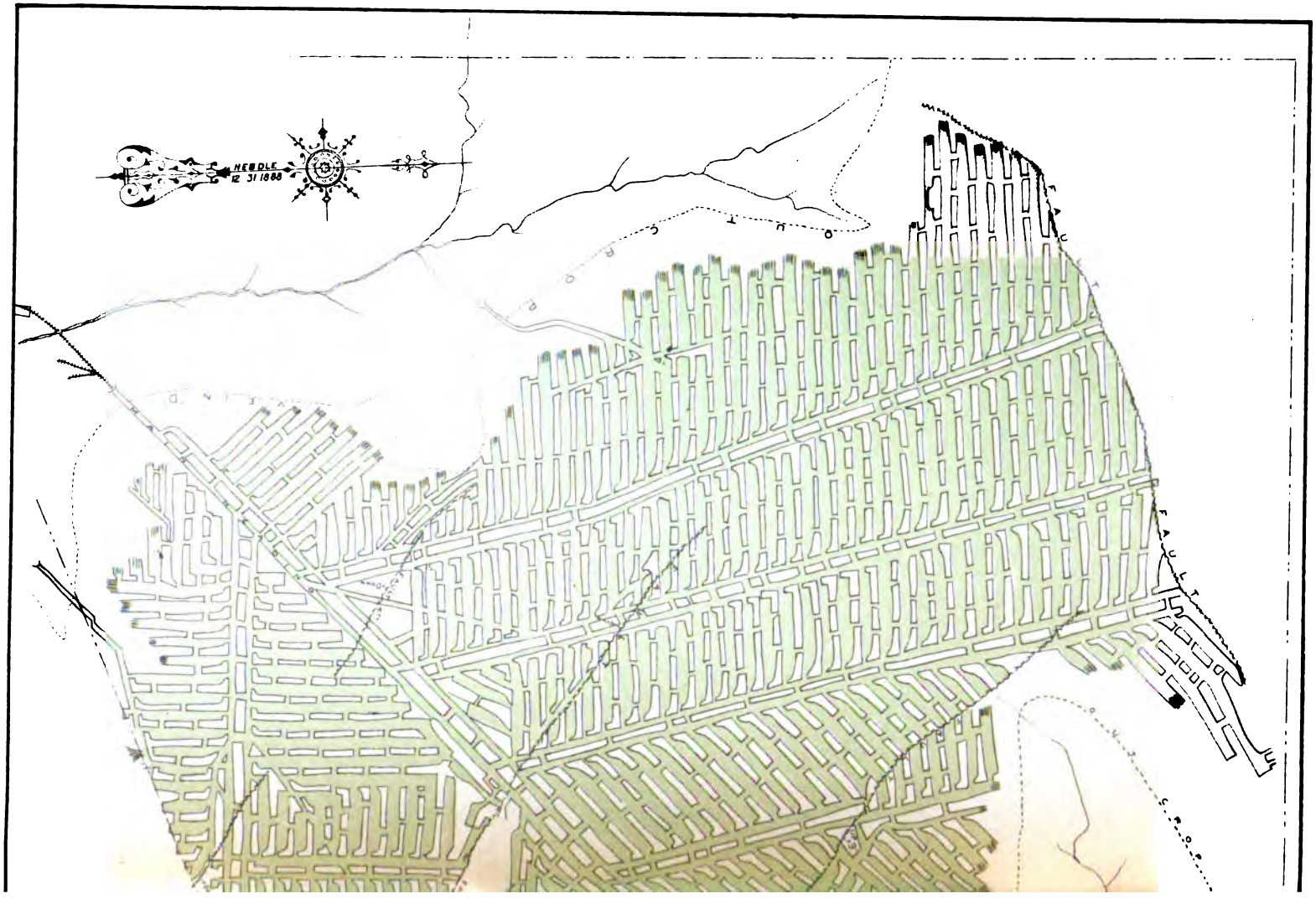
Baltic, No. 1.—This mine is working D vein, with uneven top, which makes the thickness vary, and there are plenty of clay veins to contend with. Ventilation and drainage at last visit were very favorable.

Baltic, No. 2.—Is connected inside with No. 1, but the coal is taken out another way, to a different tipple. This mine has not been opened long, and they had to stop several times on account of the want of air and drainage. It is getting in better shape now.

Cuba.—This mine is working D vein, also, but it is variable in thickness from 3′ to 3′ 4.″ They have driven one of their headings over 700 feet along a fault, and tried to get through it at several places, but were unsuccessful. Although this mine is hard to manage, it is well looked after.

Kentuck.—This is a new opening, working D vein, 4′ 8″ thick. If it is kept as good as it progresses, as it is at present, there will be nothing to complain of.

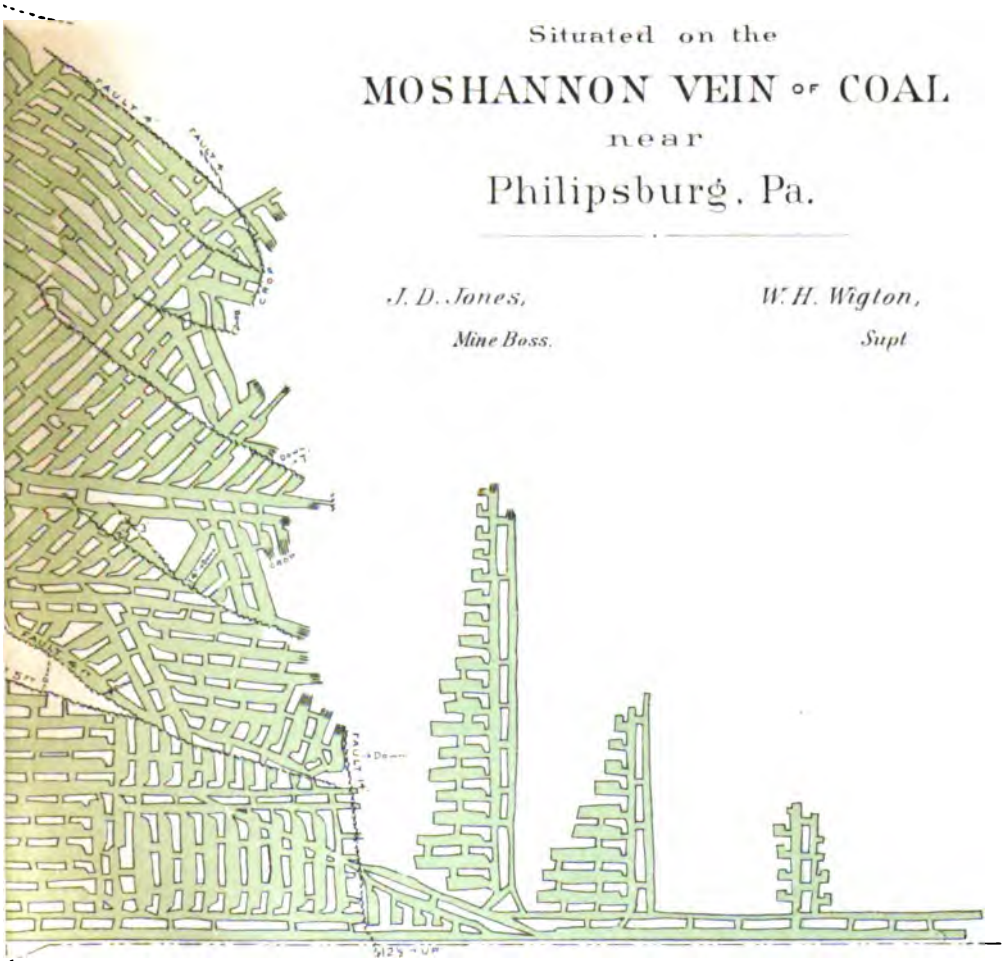
Morrisdale.—There are several openings at these works, operating D vein, with variable thickness, from 2′ 7″ to 4.′ The most of the


HEBDLE
12 31 1888

MAP
of
R. B. Wigton and Sons
ROTHROCK MINE
Situated on the
MOSHANNON VEIN of COAL
near
Philipsburg, Pa.

J. D. Jones,
Mine Boss.

W. H. Wigton,
Supt



coal is used at the mines for making coke. Ventilation and drainage in good condition.

Rothrock.—Working D vein, 4′ 6″ thick. Coal cutting machines are used at this place with seeming success where the roof is good, but they cannot be used where the roof is bad on account of their taking up too much room to work. This mine is kept in good condition.

Decatur.—This mine is working D vein, 4′ 6″ thick. This mine has a very large tract of good coal to work. Ventilation and drainage are up to requirements of the law.

Ashman.—This is a new opening, on D vein, nearly 5′ thick. Ventilation and drainage good.

Pardee, No. 3.—Working D vein, 4′ 6″ thick. This mine is up to the requirements of the law.

Pardee, Nos. 1 and 2.—No. 1 is pretty far extended. The coal is hauled out with tail rope system. No. 2 is opening at far end, to cut a portion of coal from No. 1. The two mines can give a large output, and are up to requirements of the law.

Coaldale, No. 3.—Working D vein, 4′ 6″ thick. This mine is troubled with large faults, but the situation is well understood by the foreman in charge, ventilation and drainage are well attended to.

Coaldale, No. 6.—Adjoins No. 5 but is not connected at present, on account of these faults. The coal at this mine is hauled with endless wire rope. The works are far extended, but are up to requirements of the law.

Coaldale, No. 5.—This is an extensive operation; D vein, 4′ 6″ thick. The coal is hauled to the tipple with endless wire rope. This mine is also up to the requirements of the law.

Empire.—This mine is being exhausted, nothing but pillars and stump to work. Although troubled with water and a local squeeze, they are living up to the requirements of the law.

Hawk Run.—This mine is working B vein; average thickness 3′ 4″, in good condition. Although the thinness of the vein necessitates blasting and the use of a great quantity of powder, this mine is kept up to the requirements of the law and is the only mine in this district where the mine boss inspects the places before the men enter them.

Guion.—This mine is working C vein, about 4′ thick, in very good condition, and although a new opening, they are progressing well and intend to comply with the law.

Glenwood, No. 2.—This mine is working D vein, 4′ 6″ thick and has a very thin cover on it. The territory is small and will soon be worked out. Ventilation and drainage very favorable.

Alder Run.—This is a small operation because of a small vein. The B vein, at this place is only abont 2′ 4″ thick. The coal is used at the mine for making coke. They have only started up after ten months idleness.

Kyler.—This mine is working B vein, 3′ 7″ thick, in good condition. Some of the coal at this mine is used for making coke and it seems to make a first class article. The mine inside is kept up to the requirements of the law.

Wells Run.—This mine is also working B vein, 3′ 6″ thick, in good condition. The dip side of this mine is difficult to drain, otherwise is kept up to the requirements of the law.

Snow-Shoe District.

Grassflat, Nos. 9 and 11, only in operation at present. These mines are working B vein, 3′ 2″. These mines are kept up to the requirement of the law, the best of any in the district.

Tunnel Hill, Nos. 1 and 2.—Are all that are in operation at this place, and will soon be worked out. It is the B vein, 3′ thick, and belongs to same company, and is kept in first-class condition.

Sugar Camp, Nos. 1, 2 and 3.—These mines are operated by Lehigh Valley Coal Company. Nos. 1 and 3 are working D vein, 5′ 6″ thick, with 6″ bony in middle. No. 1 is being exhausted. No. 3 is working B vein, 2′ 10″ clean coal, with 14 inches of bony coal on top that comes down with the coal, because of a good parting above it. These mines are kept in good condition and up to the requirements of the law.

Lucas Hill, No. 4.—This mine is working D vein, 4′ 6″ thick, with 6″ bony in middle. It is also in good condition as to ventilation and drainage.

Fountain.—This mine is working B vein, 3′ 8″ thick, and is in good condition, and up to the requirements of the law.

Karthaus District.

Karthaus.—This mine is working D vein, about 5′ thick. This mine struck a large fault, which necessitated going through the hill at one side, and to open up on the opposite side and drive back. While piercing the rock fault, the ventilation was not so good until they got through it.

Brittanic.—This mine is working C vein, 3′ thick. It was only opened in June last, and they hauled the coal with mules down a steep mountain, but they have an incline plane up now. They have their mine in very good condition.

Cataract.—This mine is working D vein, which varies in thickness from 3′ to 4′ 6″ and is very difficult to work on account of swamps and bad roof. Condition of this mine, with regard to ventilation and drainage, at last visit was favorable.

O'Shanter.—These mines are working C vein, 3′ thick. The openings are on each side of the ravine, and show a difference in the coal, 3 inches of cannel on one side and all bituminous on the other. These mines are in good condition.

Bloomington or Glen Richey.—These mines are working C vein, 3′

thick. These mines although thin veins, are in good shape, and up to requirements of the law.

Gazzam.—This mine is working D vein, from 2′ 1″ to 3′ 1″. This is a very difficult mine to work on account of swamps. They seem to be as regular as the waves of the sea. This is the thinnest piece of D vein worked in this district. The mine is kept in first-class condition.

Woodland.—Is working a cannel coal of good quality, 4′ 6″ thick. It is supposed that this is the lowest of the coal measures at this place. We are at a loss how to classify it, whether it has taken the position of the A or not. I had to complain of this mine not having sheter holes, and having broken timbers on main heading, but they are remedying it now. Their second opening is not completed yet. Ventilation poor.

Stewart.—Is working cannel vein, about 5′ thick, but they leave 9″ on bottom, because it is soft and might injure the sale of it. Although it looks to be the same as Woodland, and adjoining it, the coal is not so good a quality. Ventilation and drainage at this place are good.

TABLE No. 1—Showing Location of Collieries in the Eighth Bituminous Mine District.

NAME OF COLLIERY.	Name of operator.	Location—county.	Name of superintendent.	Post-office address.
Atlantic, Nos. 1 and 2,	Berwind White Coal Mining Company,	Clearfield,	W. A. Christ,	Osceola Mills, Clearfield county.
Ashland,	do. do.	do.	Daniel Jones,	Brisbin, Clearfield county.
Atalanta, No. 1,	C. B Houky, trustee,	do.	Lewis H. Eppley,	Osceola Mills, Clearfield county.
Ashman,	Lee & Ashman,	do.	Thos. J. Lee,	Phillipsburg, Centre county.
Alexander,	Madera Coal Company,	do.	T. A. Estep,	Madera, Clearfield county.
Alder Run,	Alder Run Coal Company,	do.	P. B. Zentmyer,	do. do.
Black Diamond,	W. J. Jackson & Co,	Centre,	W. J. Jackson,	Powelltown, Centre county.
Baltic, Nos. 1 and 2,	Baltic Coal Company,	Clearfield,	H. K Grant,	Phillipsburg, Centre county.
Brittanic,	Rees, Mortimer & Co.,	do.	George Rees,	Karthaus, Clearfield county.
Bessemer,	H. Liveright,	do.	T. M. Simpson,	Brisbin, Clearfield county.
Coaldale, Nos. 3, 5 and 6,	Coaldale Coal Company,	do.	Edward Hughes,	Phillipsburg, Centre county.
Coaldale, No. 4,	do.	do.	L. P. Brubaker,	do. do.
Colorado,	Jackman & Ellisworth,	do.	E. H. Ellisworth,	do do.
Cataract,	Berwind White Coal Mining Company,	do.	A. J. Cook,	Bellefonte, Centre county.
Central,	T. C. Helms,	Centre,	T. C. Helms,	Osceola Mills, Clearfield county.
Columbia, No. 2,	Mitchell, Lazar & Co.,	do.	J. L. Mitchell,	Tyrone, Blair county.
Columbia, No. 1,	do.	Clearfield,	do.	do. do.
Cuba,	Hon. James Kerr,	do.	Hon. James Kerr,	Clearfield, Clearfield county.
Catharine,	Blair Brothers,	do.	C. F. Blair,	Tyrone, Blair county.
Decatur,	John Nuttall,	do.	John Nuttall,	Phillipsburg, Centre county.
Derby,	Thomas Barnes and Brother,	do.	Thos. Barnes,	do. do
Drane,	T. C Helms,	do.	T C. Helms,	Osceola Mills, Clearfield county.
Empire,	Empire Coal Company,	do	John Ashcroft,	Phillipsburg, Centre county.
Elizabeth, Nos. 1 and 2,	Elizabeth Coal Company,	do.	C. F. Blair,	Tyrone, Blair county.
Elizabeth, No 3,	do.	Centre,	do.	do.
Eureka, Nos 2, 5, 6, 8 and 10,	Berwind White Coal Mining Company,	Clearfield,	W. A. Crist,	Osceola Mills, Clearfield county.
Eureka, No. 3	do. do.	do.	Alexander Gray,	Obelisk, Clearfield county.
Excelsior, No 3 and 4,	H. G. Fisher,	do.	Thomas Richards,	Houtzdale, Clearfield county.
Franklin, Nos. 1 and 2,	Berwind White Coal Mining Company,	do.	W. A. Crist,	Osceola Mills, Clearfield county.
Ferndale,	John Morris & Son,	do.	John Maurice,	Brisbin, Clearfield county.
Fountain,	Grane & Madill,	Centre,	John Madill,	Snow-Shoe, Centre county.
Grassflat, Nos. 9, 10 and 11,	Clearfield Bituminous Coal Company,	Clearfield,	Robert A. Shillingford,	Peale, Clearfield county.
Gazzam,	do. do.	do.	do.	do. do.
Glen Richey,	Bloomington Coal Company,	do.	C. E. Brown,	
Gleuwood, No 1,	Williams, Maurice & Co.,	do.	John M. Campbell,	Altoona, Blair county.
Glenwood, No. 2,	Silas Reese,	do.	Silas Reese,	Phillipsburg, Centre county.
Hawk Run,	Jones & Mull,	do.	John Mull,	do. do.
Karthaus,	Berwind White Coal Mining Company,	do.	A. G. Spears,	Karthaus, Clearfield county.
Kyler,	H C. Fishburn,	do.	Richard Moran,	Munsons Station, Clearfield county.
Kentuck,	Fryburger & Butterworth,	do.	John Butterworth,	Phillipsburg, Centre county.
Lancashire, Nos. 1 and 2,	Thomas Barnes & Brother,	do.	Thomas Barnes,	do do.
Laurel Run	I. M. Beacon & Co,	do.	George W. McGaffey,	do. do
Logan,	H. Liveright	do.	H Liveright	Osceola Mills, Clearfield county.
Loraine,	Beckart Brothers,	do.	David E. Conrad,	Houtzdale, Clearfield county.

Morrisdale,	R. B. Wigton & Sons,	do.	W. H. Wigton,	Philipsburg, Centre county.
Mapleton,	H. Liveright,	do.	H. Liveright,	Osceola Mills, Clearfield county.
Morgan,	do.	do.	do.	do.
Montana,	J. Swires & Co.,	do.	J. Swires,	Philipsburg, Centre county.
Moshannon,	Clearfield C. C. Company,	do.	John Langdon,	Huntingdon, Huntingdon county.
Mount Vernon, Nos. 1, 2 and 5,	do. do.	do.	do.	do. do.
Ocean, Nos. 1, 2 and 3,	Berwind White Coal Mining Company,	do.	W. A. Crist,	Osceola Mills, Clearfield county.
O'Shanter,	O'Shanter Coal Company,	do.	Hon. James Kerr,	Clearfield, Clearfield county.
Pardee, Nos. 1, 2 and 3,	George J. McGee,	do.	W. C. Lingle,	Philipsburg, Centre county.
Pine Creek, Nos 1 and 2,	Alder Run Coal and Coke Company,	do.	P. B. Zentmyer,	Madera, Clearfield county.
Pacific, Nos. 1 and 2,	Berwind White Coal Mining Company,	do.	W. A. Crist,	Osceola Mills, Clearfield county.
Reading,	H Liveright,	do.	E. C. Geundy,	do. do
Rothrock,	R. B. Wigton & Sons,	do.	W. H. Wigton,	Philipsburg, Centre county.
Ramey,	Thomas Barnes,	do.	Thomas Barnes	do do.
Sterling, Nos. 1, 2, 3 and 4,	Robert H. Powell & Co.,	do	James Campbell,	Houtzdale, Clearfield county.
Sommerville,	J. L. Sommerville & Co.,	Centre,	James L. Sommerville,	Snow-Shoe, Centre county.
Sugar Camp, Nos. 1, 2, 3, 4 and 8,	Lehigh Valley Coal Company,	do.	W. A Lathrope,	do. do.
Sobeiski,	Alice Wilkinson,	Clearfield,	John H. Wilkinson,	Sobeiska, Clearfield county.
Stewart,	Beech Creek Canal Coal Company,	do.	George H. Sharp,	Woodland, Clearfield county.
Tunnel Mines Nos 1 and 2,	Clearfield Bituminous Coal Company,	Centre,	Robert A. Shillingford,	Peale, Clearfield couny.
Vulcan, Nos. 1 and 2	R. B. Wigton & Sons,	Clearfield,	W. H. Wigton,	Phillipsburg, Centre county.
Victor, Nos 1, 2 3, 4 5 and 6,	Victor Coal Company,	do.	John Walton,	do. do.
Webster. No. 4,		do.	James Minds,	Ramey, Clearfield county.
Wells Run,	Sommerville & Co.,	do.	Jas. L Sommerville,	Snow-Shoe, Centre county.
Woodland.				

TABLE No. 2.—Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employés, number of persons killed and injured, number of kegs of powder used, etc., in the Eighth Bituminous Mining District for the year ending December 31, 1888.

NAMES OF COLLIERIES.	Location.	Total production in tons of coal.	Total production in tons of coke.	Total shipments in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Atlantic, No. 1,	Clearfield county,	174.461 2		173.843	248	252				4	37		
Atlantic, No. 2,	do.	67.268.32		67.219 04	75	75				4	12		
Ashland,	do.	22.500		22,500	153	49			220		5		
Atlantic, No. 1,	do.	30,220		30 220	198	64			160		7		
Ashman,	do.	94 112 1		94.112 1	67	61			35		2		
Alexander,	do.	9.561		9,561	123	37			75		2		
Alder Run,	do	1 960	1,306		34								
Brittanic,	do.	4 312		4,312	240	17			27		3		
Beaver Run,	do.	18 000		18 000	216	29					3		
Baltic, No. 1,	do.	60 300		60.300	202	116					12		
Baltic, No. 2.	do.	6.700		6 700	52	35					2		
Black Diamond,	Centre county,	8 977		8 977	80	65			80	1	4		
Bessemer,	Clearfield county,	2,089 2		2 060	45	13					2		
Coaldale, No. 3,	do.	191,123		191.123	287	270	1			5	21		
Coaldale, No. 4,	do.	13,073.2		13.073	91	52					4		
Coaldale, No. 5,	do.	204 718		204,718	286	252	1	7		2	17		
Colorado,	do.	79,986		79.986	207	98			395		13		
Cataract,	do.	112.424		112 424	220	192			834		30		
Central,	Centre county,	47,783		47.783	248	65			197		9		
Columbia, No. 1,	Clearfield county,	57,498.06		57 498 06	290	105			460		9		
Columbia, No. 2,	Centre county,	67,516 11		67 516 11	217	109			290		10		
Catharine,	Clearfield county,	7.050		7 000	140	11					2		
Cuba,	do.	42 585		42.585	195	98					7		
Decatur,	do.	65,138		65 138	215	89					13		
Derby,	do.	36 123		41.449	212	59			220		6		
Drane,	do.	32.544		32.544	135	78			147		7		
Empire,	do.	83 665		83.665	260	103				2	10		
Elizabeth, No. 2,	do.	25,000		24 700	219	24					2		
Elizabeth, No. 3,	Centre county,	45,000		45,000	300	80					9		

Eureka, No. 2,	Clearfield county,	190 560			190.444		268	265						31					
Eureka, No. 3,	do.	8.570			8.570		191	10			1		50	2					
Eureka, No. 5,	do.	76 962 04			76.433 2		282	100						10		4			
Eureka, No. 6,	do.	71 315 2			69.670 22		278	101						12					
Eureka, No 8,	do.	94 348 8			94 211.04		251	108						13					
Eureka, No. 10,	do.	173.010 72			171 601 92		258	222						22		3			
Excelsior, No. 1,	do.	9 177 28			9.177 28		191												
Excelsior, No. 3,	do.	75 304.32			75,304 32		211	99		1	1			11		4			
Excelsior, No. 4,	do.	87.624 94			87,624 94		215	132						8					
Franklin, Nos 1 and 2,	do.	146 603			146 603		257	182			4			32		2			
Ferndale,	do.	12 975			12 975		174	24						3					
Fountain,	Centre county,	12 000			12 000		100	47						3					
Grassflat, Nos. 9 and 11,	Clearfield county,	121 671		35 678	85 857		249	256		1	3		1,200	12				100	
Gazzam,	do.	79.805			79 143		159	220			2		528	9		1			
Glenwood, No. 1,	do.	106 440.4			106,440 4		175	140					262	15					
Glenwood, No. 2,	do.	32 086 3			32,086 3		200	87					100	5					
Glen Richey, Nos. 1 and 2,	do.	51.286			51,286		242	80			1			4					
Guion,	do.	10.772			10.772		120	40					215	2					
Hawk Run,	do.	33.400			33 400		203	52			2		255	9					
Kentuck,	do.	161.5			163 5		3	9					1	1					
Keystone, No. 6	do.	12 703 2			12 703.2														
Kyler,	do.	30.451		5 408	23.139		176	57					294	2				50	
Karthaus,	do.	55.000			55 000		180	108					300	14					
Lancashire, No. 1,	do.	59.334			65 362		209	118					400	11					
Lancashire, No. 2,	do.	24 754			28 330		160	6					160	10					
Laurel Run, No. 2,	do.	42.728			42 728		220	66					284	6					
Loraine,	do.	60.124			60.124		248	79					240	6					
Logan,	do.	78.635			78.635		250	90					304	14					
Morrisdale,	do.	81 250.4		24 457	44 978 4		219	115					541	10				106	
Mapleton,	do.	15,082			18 835		136	42					78	5					
Morgan,	do.	24 584			24 584		267	28					80	2					
Montana,	do.	6 262			6 202		61	46					45	3					
Mt Vernon, No 5,	do.	62 112.96			62 112 96		135	146		2	4		140	14					
Mt. Vernon, Nos. 1 and 2,	do.	36.615 84			36 615.84		231	64						5					
Moshannon,	do.	49 426 72			49 426.72		242	85						8					
Ocean, No. 1,	do.	57 067			56.941		223	115						15					
Ocean, No. 2,	do.	55,511 6			53.238 8		224	92						4		5			
Ocean, No. 3,	do.	45 289			45.289		207	77					450	4					
O'Shanter,	do.	50 354			50 354		222	108		1				6					
Pardee, No. 1,	do.	227.049			227 049		267	237		2			1,200	16		2			
Pardee, No. 3,	do.	10,000			10 000		65	56					35	4			S. E		
Pine Run,	do.	18 000		500	8,000		140	34						1				50	
Pacific, No. 1,	do.	137.388			137 312		269	222						25					
Pacific, No. 2,	do.	56.447 05			56 447 05		311	30						2					
Reading,	do.	28 215			28.215		268	33					103	4					
Ramey,	do.	3 218			3 441		40	47					35	2					
Rothrock,	do.	164,008			164 008		236	147					820	15					
Retort A, 1,	Centre county,	10 000			10,000		282	22						1					
Sterling, No. 2,	Clearfield county,	30 986			30.986		235	23						5					
Sterling,	do.	106 512			103 512		273	261		1				9		2			
Sommerville,	Centre county,	18 069			18 069		120	45			2			8					
Sobieski,	Clearfield county,	9,804 11			9,804 11		140	13					56	3					

TABLE No. 2.—*Continued.*

NAME OF COLLIERIES.	Location.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number of non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Sugar Camp, Nos. 1, 2, 3 and 11.	Centre county,	125 662 04	17 913 07	125 662 04	279	131					13		200
Sugar Camp, Nos. 4 and 8,	do.	20 844 09	2.643 10	20 844 09	241	85					4		35
Stewart,	Clearfield county,	15 000		14 000	60	73					4	1	
Spring Hill,	do.	5 454 12		5 454 12	151	9					1		
Shoff,	do.	19 155		19 155	111	43			28		2		
Tunnel, Nos. 1 and 2,	Centre county,	83 270		81 027	240	94			500		4		
Vulcan,	Clearfield county,	38 727 36		38 727 36	216	104			256		11		
Victor, No. 1.	do.	62. 27		62.027	160	110					5	1	
Victor, No. 2,	do.	13 022		13 022	239	9					1		
Victor, No. 3,	do.	20 927		20 927	133	42		1			4		
Webster, No. 4,	do.	74 569		74 569	245	132	1		365	1	10		
Wells Run,	do.	79 741		79 741	209	94		2	350		4		
Woodland, No 2,	do.	8 000		8.000	165	24					6		
Yorkshire,	do.	3 461		3,877	135	8			80		1		
Total,		5 513 866	87 804	5 198,074	17,610	7,717			12,805		774	5	541

TABLE No. 8.—Showing the number of each class of employés at each colliery in the Eighth Bituminous Mine District during the year 1888.

NAMES OF COLLIERIES.	Location—County.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.					Grand totals—inside and outside.
		Inside foreman or mine boss.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Blacksmiths and carpenters.	Engineers and firemen.	All company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Atlantic, Nos. 1 and 2,	Clearfield,	1	248	13	13	14	7	296	4	...	16	2	22	317
Ashland,	do.	1	36	4	1	2	2	46	1		1	2	4	50
Atlanta,	do.	1	53	3	1	3		61	1	...	2	1	4	65
Ashman,	do.	1	46	8	1	2	1	59	1	...	1	1	3	62
Alexander,	do.	1	28	3	.....	2		34	..	...	1	1	2	36
Alder Run,	do.	.	...	..	....	..			..			..	..	
Black Diamond,	Centre,	1	50	3	1	4	1	60	1	.	3	1	5	65
Bessemer,	Clearfield,	1	10	..	1	1		13		.	1	..	1	14
Brittanic,	do.	1	12	1	..	2	1	17	....	...	1	..	18	35
Beaver Run,	do.	1	22	..	....	2		26	.		2	1	3	29
Baltic, Nos. 1 and 2	do.	1	125	10		6	1	143		1	.	5	1	7	150
Coaldale, Nos. 3 and 6,	do.	1	212	15	4	16	8	256		3	..	10	2	15	271
Coaldale, No. 4,	do.	1	40	5	...	3	.	49		1	.	2	1	4	53
Coaldale, No. 5,	do.	1	192	21	4	15	6	239		2		10	2	14	253
Cataract,	do.	1	140	9	10	13	7	180		2		8	3	13	193
Central,	Centre,	1	43	14	..	2	1	61		1		2	1	4	65
Columbia, No. 2,	do.	1	84	4	4	6	2	101		2		5	2	9	110
Columbia, No. 1,	Clearfield,	1	83	4	3	6	2	99		1	...	4	2	7	106
Colorado,	do.	1	70	11	2	8	3	95		1		3	...	4	99
Catherine,	do.	..	8		..	1	.	9			..	..	.	2	11
Cuba,	do.	1	71	4	3	5	5	89		1	...	2	2	5	94
Decatur,	do.	1	57	14	3	5	2	82		2	...	4	2	8	90
Derby,	do.	1	44	8	1	4	1	59			..	1	..	..	60
Drane,	do.	1	56	7	1	5	3	73		1	..	3	1	5	78
Empire,	do.	1	80	5	3	7	1	97		1	..	4	1	6	103
Elizabeth, No. 2,	do.	1	17	1	1	2	.	22		.		2	1	3	25
Elizabeth, No. 3,	Centre,	1	60	3	1	9	3	77	..			1	2	3	80
Eureka, No 2,	Clearfield,	1	214	21	4	13	3	256		1	..	8	1	10	266
Eureka, No. 3,	do.	.	8	..		1	.	9	..			1	...	1	10
Eureka, No. 5,	do.	1	75	4	3	5	3	91		1	..	8	1	1	101
Eureka, No. 6,	do.	1	74	7	4	7	2	95		1	..	5	1	7	102
Eureka, No. 8,	do.	1	87	4	2	4	2	100		1	.	7	1	9	109

TABLE No. 8—*Continued.*

Names of Collieries.	Location—county.	Number of Persons Employed Inside.							Number of Persons Employed Outside.					Grand totals—inside and outside.
		Inside foreman or mine bo-s.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Doorboys and helpers.	Total inside.	Blacksmiths and carpenters.	Engineers and firemen.	All company men.	Superintendent, bookkeepers and clerks.	Total outside.	
Eureka, No. 10,	Clearfield,	1	175	14	5	18	3	211	1		10	1	12	223
Excelsior, No. 2,	do.	1	75	5	1	5	2	89	1		6	2	9	98
Excelsior, No. 4,	do.	1	120	5	1	4	2	133	1		2		3	136
Franklin, Nos. 1 and 2,	do.	1	128	17	7	15	3	171	2		9	1	12	183
Ferndale,	do.	1	14	4		3		22			1	1	2	24
Fountain,	do.	1	30	10	1	3		45	1		1	1	3	48
Grassflat, Nos. 9 and 11,	do.	1	175	4	10	11	9	210	3		38	6	47	257
Gazzam,	do.	1	114	12	6	7	4	144	3		12	1	16	160
Glenwood, No. 1	do.	1	120	5	2	6	2	136	1		3	3	7	143
Glenwood, No. 2,	do.	1	27	1		2		31			5	2	7	38
Glen Richey, Nos. 1 and 2,	do.	1	52	15	2	4	1	75	1		2	3	6	81
Golon,	do.	1	40		2	2		46			2	1	3	52
Hawk Run,	do.	1	36	3	2	4	2	48	1		2	2	5	53
Karthaus,	do.	1	80	10	2	6	2	101	1		7		8	109
Kyler,	do.	1	39	2	1	3	2	48	1		7	2	10	58
Kentuck,	do.	1	7	1				9			1	1	2	11
Lancashire, No. 1,	do.	1	87	16	2	4	3	113	1		3	2	6	119
Lancashire, No. 2,	do.		5					5			1	1	2	7
Laurel Run,	do.	1	46	7		4	2	60	1		3	3	7	67
Logan,	do.	1	68	6	1	7	3	86	1		3	1	5	91
Loraine,	do.	1	80	10	1	5		77	1		1	1	3	80
Morrisdale,	do.	1	108	2	2	6		119	1		11	12	131	
Moshannon,	do.	1	65	8	2	6		82	1		2	1	4	86
Mt. Vernon, Nos 1 and 2,	do.	1	48	5	1	4	2	61	1		2	1	4	65
Mt. Vernon, No. 5,	do.	1	100	25	1	9	2	138	1		7	1	9	147
Mapleton,	do.	1	32	3	1	2	1	40	1		1	1	3	43
Morgan,	do.	1	24	1	1	2		29	1		1		1	30
Montana,	do.	1	40	3		2		46			1		1	47
Ocean, No. 1,	do.	1	80	7	2	7	1	108	1		6	1	8	116
Ocean, No. 2,	do.	1	84	5	5	5	3	93	1		7	1	9	92
Ocean, No. 3,	do.	1	80	7		5	1	94	1		2	1	4	98
O'Shanter, Nos 1 and 2,	do.	1	81	6	3	5	5	101	1		4	2	7	108

Pacific, No. 1,	Clearfield,	1	175	14	5	13	3	211	1		10	1	12	223
Pacific, No. 2,	do.	1	26	...	...	2	1	30			1	...	1	31
Pardee, No. 1,	do.	1	209	27	4	19	11	271	2		12	3	17	288
Pine Run,	do.	1	25	...	...	2		28	1	...	5	...	6	34
Reading,	do.	1	26	2	1	2	...	32	1		2	...	3	35
Ramey,	do.	1	40	2	2	1	...	46	1	...	1	...	2	48
Retort A, 1,	Centre,	1	17	2	...	1		21	...		...	2	2	23
Rothrock,	Clearfield,	1	120	6	1	6	1	135	2	2	8	...	12	147
Sterling, No. 2,	do.	1	16	5	1	2		25	1	...	1	...	2	27
Sterling, No. 1,	do.	1	199	22	9	26	5	262	4	9	9	2	24	286
Sommerville,	Centre,	1	32	5	...	2	1	41	1		3	1	5	46
Sugar Camp, No. 1,	do.	...	28	4	1	2	...	35	...	...	2	...	2	37
Sugar Camp, No. 2,	do.	...	31	2	1	2		36	2	...	9	...	11	47
Sugar Camp, No. 3,	do.	1	112	14	4	7	2	140	2	...	17	3	22	162
Sugar Camp, No. 4,	do.	1	27	4	1	3	1	37	...			...	.	...
Sugar Camp, No. 8,	do.	...	8	1	1	1		11	...	...	...	...	.	...
Sugar Camp, No. 11,	do.	...	17	2	...	1		20	...	...	1	1	2	22
Sobeiski,	Clearfield,	1	10	...		2	...	13	1	.	...	1	2	15
Stewart,	do.	1	45	2	2	2	2	54	2	...	7	1	10	64
Springhill,	do.	...	9	...	...	1		10	.	...	1		1	11
Shoff,	do.	1	40	1	...	2	1	45	1		2	...	3	48
Tunnel, Nos. 1 and 2,	Centre,	1	79	4	3	4	3	94	1	.	...	...	1	95
Vulcan,	Clearfield,	1	90	4	6	4	...	105	1	.	4	1	6	111
Victor, No. 1,	do.	1	84	6	2	5	3	101	1	.	8	2	11	112
Victor, No. 3,	do.	1	30	3	1	3	2	40	1	.	2	...	3	43
Webster, No. 4,	do.	1	100	6	6	8	2	123	2	...	7	1	10	133
Wells Run,	do.	1	80	5	...	4	.	90	1	...	2	1	4	94
Woodland, No. 2,	do.	...	16	...	1	3	...	20	1	.	2	1	4	24
Yorkshire,	do.	...	6	...	...	1	...	7	...	...	1	...	1	8

TABLE No. 4.—List of fatal accidents occurring in and about the mines of the Eighth Bituminous Mine District, for the year ending December 31, 1888.

Date of accident.	Name of Person.	Occupation.	Age	Married.	No. of orphans.	Name of Colliery.	Location.	Nature and Cause of Accident.
Aug. 13, .	Joseph Ashcroft, ...	Miner, . . .	30	Yes,	1	Elizabeth, No 3, .	Osceola, Centre Co., . . .	Was killed while undermining a breast of coal that was open at one side. He had no sprag under it at the time
Aug. 28,	Hugh Morrison	do.	19	No, .		Webster, No. 4, .	Houtzdale, Clearfield Co.,	Killed by a fall of rock while mining his coal.
Aug. 13, .	John Londregon, . . .	Tracklayer, .	35	Yes, .	4	Sterling, No. 1, ...	do. do	While taking up a T-iron curve it sprung against him striking him on the abdomen. Death resulted in a few hours.
Oct. 17, .	Albert Ber„strom, . . .	Miner, . . .	28	No, .		O'Stanter, ...	Clearfield Co., ...	Killed by a fall of "horseback" while mining at his working place.
Nov. 14, .	Robert Marriott, ...	do. . . .	13	No, .		Eureka, No. 2, . . .	Clearfield Co., ...	Killed instantly while in the act of loading a wagon at his place.

TABLE No. 5.—List of non-fatal accidents occurring in and about the mines of the Eighth Bituminous Mine District, for the year ending December 31, 1888.

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Number of children.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
July 5,	John Muirhead,	Trapper,	14			Sommerville, No. 4,	Clearfield,	While attending at his door he fell asleep and a loaded trip coming out it ran into his door and one of the cars passing over him broke his leg.
July 10,	George Thomas,	Driver,	48			Atlantic, No. 1,	do.	Had his leg crushed between the wagons.
July 10,	Edward Dobson,	Miner,	39	M.,	6	Derby,	do.	Leg and three ribs broken by rock and slate falling on him while working.
July 12,	Adamson,	do.	22	M.,		Hawk Run,	do.	Was injured on head and back by a fall of slate by going in too soon after firing a shot.
July 12,	Zachariah Jones,	do.	13			do.	do.	Was hurt on head and back with slate by going in too soon after firing a shot. These parties were together.
July 15,	William Stokes,	do.	51			Ocean, No. 2,	do.	Was seriously hurt by coal falling on his leg and lower parts of his body while working under it.
July 26,	Joseph Hale,	do.		M.,		Gazzam,	do.	Right side cut and bruised by being knocked off the loaded wagons while riding on them.
Aug. 2,	Alfred Johnson,	Water-bailer,	18			do.	do.	Was badly burned by the explosion of about twelve pounds of powder.
Aug. 23,	George Cortrick,	Miner,	24	S.,		Pacific, No. 1,	do.	While taking out pillars some roof coal and slate fell on him injuring him on head and shoulder.
Aug. 25,	Jonathan Rothrock,	do.	50	M.,		Rothrock,	do.	Collar-bone broken and finger hurt while mining. Coal fell on him.
Sept. 17,	Lewis Culoir,	do.	30	M.,		Sommerville, No. 4,	do.	While lighting a squib the shot fired before he got away from it. Badly cut and bruised.
Sept. 22,	August Werner,	do.	31	M.,		Grassflat Mines,	do.	Leg broken by a fall of top coal while mining.
Sept. 25,	Steve Feefick,	do.	17	S.,		Morrisdale,	do.	Collar-bone broken by coal falling on him.
Oct. 13,	William Dawes,	Driver,	30	M.,		Ferndale Mine,	do.	Injured on hip joint while putting on a brake. Was caught between a wagon and the rib.
Nov. 9,	John Putkavie,	Miner,	25	S.,		Franklin, No. 2,	do.	Leg broken by a fall of roof coal.
Nov. 17,	Harry Calhoun,	Driver,	21	S.,		do.	do.	Foot hurt between the pit cars.
Nov. 21,	John Fife,	Miner,	27	S.,		do.	do.	Foot broken between the cars while riding out in the evening.
Nov. 23,	Charles Wagoner,	Driver,	45	M.,		do.	do.	Leg broken with cars.

TABLE No. 5—*Continued.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Number of children.	Name of Colliery.	Location—County.	Nature and Cause of Accident.
Nov. 22,	James Barr, ...	Miner, ...	26	M.,		Sommerville,	Centre, . . .	Collar-bone broken by a fall of coal.
Nov. 24,	Evan Davis, ...	Driver, ...	19	S.,	. .	Pardee, No. 3, . .	Clearfield, ...	Toes broken by wagons running over them.
Dec. 11,	Thomas Evans, ...	do.	15	S.,	. .	O'Shanter, . .	do. . . .	Fell before loaded trip, the cars bruising his leg.
Dec. 13,	Reuben Harris, ...	Miner, ...	17	S.,		Morrisdale, No. 8,	do.	Leg broken by fall of coal.
Dec. 20,	John Benly, ...	do.	30	M.,	. .	Pardee, No. 3, . .	do. . . .	Collar-bone broken and thumb cut off and other finger bruised by fall of coal.