REPORTS

OF THE

INSPECTORS OF COAL MINES

OF THE

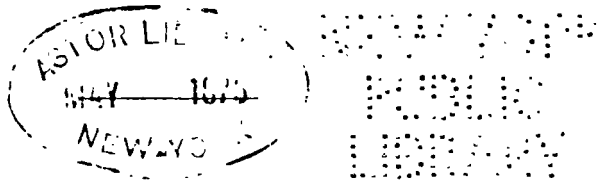
ANTHRACITE COAL REGIONS

OF

PENNSYLVANIA,

FOR THE

YEAR 1871.



HARRISBURG:
B. SINGERLY, STATE PRINTER.
1872.

CONTENTS.

GENERAL INDEX OF COLLIERIES

INDEX TO COLLIERIES OF THE FIRST, OR POTTSVILLE DISTRICT.

INDEX TO COLLIERIES OF THE SECOND, OR ASHLAND DISTRICT.

INDEX TO COLLIERIES OF THE THIRD, OR SHAMOKIN DISTRICT.

COMMUNICATION.

His Excellency, JOHN W. GEARY,

Governor of the Commonwealth of Pennsylvania:

SIR:—In compliance with the requirements of an act of General Assembly of the Commonwealth of Pennsylvania, approved the fifth day of April, A. D. 1870, entitled "An Act for the preservation of the records of the inspectors of coal mines in the mining district of Schuylkill, comprising the counties of Schuylkill, Northumberland, Columbia and Dauphin," respectively,—

I have the honor to herewith submit my annual report of all data, matter and thing that came under my notice; carefully tabulated statistics, derived from correct sources of general interest, both useful and instructive in its details to persons interested in the mining of coal, pointing out the variety of dangers opposed to the safety of persons employed in coal mines, the result of inadequate and bad ventilation, the evil effects of reducing, by a system of robbing, the strong supports of the mine, exposing the lives of valuable men by an unwarrantable system of producing coal, which will soon reduce a colliery to permanent destruction.

Hereto annexed are lists of the persons killed, maimed and injured; of the number of widows and orphans occasioned by mine casualties during the year, and the casualties that occurred through the district, and not in any way connected with coal mines; the number of killed and injured in the First, Second and Third districts this year and last; the number of collieries in operation and their tonnage; the number of steam engines in use and their power; the number of persons employed in and about the collieries; how these mines are ventilated; the sort of coal seams worked; of gases, air, water and steam; their constitution and character; the application of proper restoratives in cases of suffocation by gases; the names of parties who were restrained by injunction to operate collieries in contravention of law, with numerous subjects of interest, together with the reports of the respective inspectors and a transcript of Judge Harding's defence of the validity of the mining law.

Praying your Excellency to consider the dubious features embraced in some sections of the act providing for the health and safety of persons employed in coal mines, approved the third day of March, A. D. 1870, and

cause the same to be so revised as to place the whole law beyond the reach of cavil, as the requirements of the law, as it now stands, cannot be in the least objectionable even to the most sensitive of our operators, whilst a large and honorable majority of them are its advocates when properly administered.

Endeavoring to bring to this report as much local information as possible, I feel it my duty to collect as much foreign and national information, of all data, matter and thing, as the present advantages of this office will afford. I am pleased to inform your Excellency the office of clerk of the mining district of Schuylkill is becoming daily more interesting than had been anticipated, owing to the character of the documents, papers and information placed on its files, which make it advantageous for land owners, operators, mining engineers and the courts, and other interested parties, and still may be increased in usefulness. Desiring to discharge my duty properly in all things confided to my care, I most respectfully submit this matter to your Excellency's consideration.

P. F. M'ANDREW,
Clerk mining district of Schuylkill.

REPORT

OF THE

CLERK OF THE MINING DISTRICT OF SCHUYLKILL, 1871.

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

GENTLEMEN:—In compliance with the requirements of an act of General Assembly of the Commonwealth of Pennsylvania, approved the fifth day of April, 1870, entitled "An Act for the preservation of the records of inspectors of mines, comprising the counties of Schuylkill, Northumberland, Columbia and Dauphin, respectively,"—

I have the honor to herewith submit my annual report of all data, matter and thing, carefully collected from correct sources of information, as have come under my notice, together with that furnished me by the inspectors of mines of their respective districts, which I hope will meet your friendly consideration, containing, as it does, subjects both wise and useful to those interested in mines and mining, and recommends itself to the study of mine managers, miners and the student of the mine; a subject which has interested the governments of the mining countries of Europe, and has been created by them a distinct branch of study to better the preservation of the lives of these valuable subjects and the security of property, which, next to bread, interests not alone the mining country, but the people of surrounding countries. Fuel, food and raiment are the great necessities of our race; next the preservation of life. The wisdom of his Excellency, John W. Geary, assisted by the goodness of your honorable body, has made a most important addition to the laws of the Commonwealth for the better preservation of the health and safety of the life of its citizens, such as the mining community never before enjoyed. The large number of 129 lives that have been lost this year, and 406 persons who were maimed and injured, fully sustain the stern necessity of a stringent, clear and uncontrovertible mining law.

Resistance to the authority of the officers, whose duty it is to see the provisions of the mining law complied with, has, on several occasions, been made, creating an unwarrantable expense to the State. Over one-half the collieries of this district generate gases. Explosive gas, proto-carburetted hydrogen gas, black damp or carbonic acid gas, stone or after damp and white or mixed sulphuric acid gas, with falls of coal and top rock, with a want of proper ventilation and security, are the evils which maim and destroy the lives of valuable miners. These noxious airs alone are sufficiently deleterious to destroy life, even if stripped of their other destructive qualities.

The lists of casualties hereto subjoined will fully demonstrate the havoc made on life and limb, occasioned by bad ventilation and a negligence in not removing these deleterious elements, besides the great misery it ever afterwards entails upon the widows and orphans in our mining communities. It is hoped sincerely the recommendations made by his Excellency,

in his late message to your honorable body, will not fall in barren soil, but be so considered as to give tone and vigor to the present law as its great necessity fully requires.

I have assiduously labored, at no little expense and time, to bring to this report what might be general, useful and practical information, in the form of tabulated reports of deaths and injuries, the number of widows and orphans of the district, the coal tonnage of the district and of each sub-district and county, compared with the mortality in each respective district, lists of collieries and names of operators and land owners, tables of foreign casualties in British mines, compared with ours, the number and power of steam engines now in use at our mines, with sundry information for practical and general use.

To this please find annexed the reports of each respective inspector of coal mines of the district, which detail all matter of record and information which came under their several notice, setting forth the status, condition and detailed description of each colliery, the number and causes of the casualties in each, the amount of work performed, the difficulties met and resistance to their authority in enforcing the obligations of the statute law, all of which will be found under their appropriate heads by reference to the contents of this report.

From the records of such information, it will be shown that 213 collieries have been carefully inspected in detail, and on several occasions; that 129 persons lost their lives by mine casualties; that 406 persons received injuries, of which 170 persons were maimed for life, leaving 66 widows and 257 orphans.

INSPECTORS.

Frank Schmeltzer, inspector of Pottsville, or First district, reports the condition, &c., of seventy-six collieries.

John Eltringham, inspector of Ashland, or Second district, reports the condition of sixty-eight collieries.

David Edmunds, inspector of Shamokin, or Third district, reports the condition of sixty collieries.

The present general condition of all these collieries is minutely detailed in their respective order and place. It is to be greatly regretted that the number of deaths that occurred this year equal that of last year, but it is encouraging to learn that in the First district the deaths are less by 16, the injured less by 9, the widows less by 12 and the orphans by 46.

That in the Second district the deaths are less by 6, the injured are much greater, at 75 persons, whilst the widows are 18 less and the orphans 24 less.

But, unfortunately, circumstances in the Third district, over which its inspector had no control, increased the deaths to balance the decrease in the other districts.

To explain this it is proper to say, where deaths occur from explosions of gas, suffocation, falls of top slate and rocks and some falls of coal, &c., it is chiefly the result of badly managed mines and incompetent or inattentive and indolent mine bosses. But where deaths occur from explosions of powder and blastings, crushing by wagons, some falls of coal, &c., it is the result of wild ambition, inattention, ignorance and recklessness, very often on the part of the parties themselves; and in connection with this subject it will be proper to state that out of 124 verdicts rendered by coroner's juries, 119 juries exculpated the officers of the mine from blame, and only 5 juries inculpated the officers in charge of these mines; but this is not a true exponent of these cases. The circumstances and relations of employees

and mine officers, and the deceased individuals' connection with the cause of the accident, has its full weight in the deliberations of inquests about coal mines. It may be said with truth but very few operators, if any, are to be found who are so reckless of life as to neglect the safety of their employees. But it is a palpable fact that several rules of injunctions have been granted by the courts, restraining the employment of men in mines for the purpose of mining and producing coal, in contravention of the declared statute law of the Commonwealth, when such influence of law is forcibly disputed and opposed by the employers until an appalling spectacle of an unfortunate disaster reveals the situation of things, or the service of a rule of injunction by the sheriff prevents the operation of a mine, and yet these cases, when considered, and under certain circumstances, are rendered difficult of immediate relief. But it must be conceded that the parties who suffer death and great bodily injury, in very many cases, suffer wrongfully.

Humanity's voice speaks for the dead; the law of our excellent Commonwealth has come to the relief of those persons who are employed in her coal mines; a grateful people, with acclamations of applause, will ever thank our excellent Governor for his approval, and our humane and just Legislature, in both its branches, for their unbiased charity in promulgating a code of relief for the future government of mines and collieries in the deep anthracite mines.

STATISTICS OF DEATHS

Will exhibit that 95 persons were instantaneously killed in and about the coal mines of this district, and that 34 other persons, in like occupation, have died of their injuries; that these casualties have resulted in making 66 widows, with 257 orphans, whose sole dependence and maintenance came from the labor and earnings of dead father, brother or son, that often barely sustained their existence, coupled with the negligent expenditure of some and their lost time.

SUB-DISTRICT CASUALTIES OF 1871.

Districts.	Killed.	Maimed.	Widowed	Orphans.	Total.
Pottsville	30	118	18	65	231
Ashland	56	168	24	97	345
Shamokin	43	120	24	95	282
	129	406	66	257	858

SUB-DISTRICT CASUALTIES OF 1870.

Districts.	Killed.	Maimed.	Widowed	Orphans.	Total.
Pottsville	46	127	30	111	314
Ashland	62	93	38	121	314
Shamokin	21	78	13	48	160
In 1870	129	298	81	280	788
In 1871	129	406	66	257	858
		Inc. 108	Dec. 15	Dec. 23	Inc. 70

DISTRICT CASUALTIES FOR THE PAST THREE YEARS.

POTTSVILLE, OR FIRST DISTRICT.

	Killed.	Maimed.	Widows.	Orphans.	Total.
In 1869	56	86	30	150	322
In 1870	46	127	30	111	314
In 1871	30	118	18	65	231
	132	331	78	326	867
1871—decrease	16	9	12	46	83

ASHLAND, OR SECOND DISTRICT.

In 1870	62	93	38	121	314
In 1871	56	168	24	97	345
	Decr. 6	Incr. 75	Decr. 14	Decr. 24	Incr. 31

SHAMOKIN, OR THIRD DISTRICT.

In 1870	21	78	13	48	160
In 1871	43	120	24	95	282
	Incr. 22	Incr. 42	Incr. 11	Incr. 47	Incr. 122

TOTAL CASUALTIES FOR LAST THREE YEARS.

	Killed.	Maimed.	Widowed	Orphans.
1869	56	86	30	150
1870	129	297	81	280
1871	129	406	66	257
	314	789	177	687

It is to be regretted the decrease in the deaths in the First and Second districts are balanced by the increase in the Third district this year.

COUNTY CASUALTIES FOR THE LAST THREE YEARS.

	Schuylkill.				Northumberl'd.				Columbia.				Dauphin.			
	Killed.	Maimed.	Widows.	Orphans.	Killed.	Maimed.	Widows.	Orphans.	Killed.	Maimed.	Widows.	Orphans.	Killed.	Maimed.	Widows.	Orphans.
1869	56	86	30	150	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1870	112	252	70	250	14	35	7	26	2	9	1	.....	1	2	1	2
1871	102	339	57	162	20	54	8	26	2	.....	.....	.....	6	14	1	6
	270	677	157	562	37	89	15	52	4	9	1	.....	7	16	2	8

MONTHLY CASUALTIES IN DISTRICT IN 1871.

Months.	Killed.	Maimed.	Widows.	Orphans.	Total.
January	9	23	7	30	69
February	3	14	2	5	24
March	4	9	4	9	26
April	10	23	4	16	53
May	6	32	5	19	62
June	23	35	8	32	98
July	13	60	8	31	112
August	12	74	8	30	124
September	18	46	7	30	101
October	24	55	10	46	135
November	5	30	2	8	45
December	2	5	1	1	9
	129	406	66	257	858

CHARACTER OF DEATH CASUALTIES.

Killed or died of their injuries by accidents as follows, viz:

34 persons were killed by falls of coal.
7 .....do.....do....falls of rocks and top slate.
8 .....do.....do....falls in machinery, rollers and screens.
26 .....do.....do....explosions of gas.
5 .....do.....do....explosions of powder.
6 .....do.....do....discharges of blasts.
12 .....do.....do....being crushed by mine wagons.
4 .....do.....do....being crushed by mine timber.
27 .....do.....do....sundry causes.

129 persons lost their lives in and about the district mines.

CHARACTER OF THE INJURIES SUSTAINED.

82 persons were maimed by falls of coal.
14 .....do.....do.....falls of rocks and slate.
120 .....do.....do.....being burned by explosions of gas.
21 .....do.....do.....being burned by explosions of powder.
22 .....do.....do.....being burned by explosions of blasts.
49 .....do.....do.....being crushed by mine wagons.
13 .....do.....do.....being crushed by mine timber.
22 .....do.....do.....machinery, belts and wheels.
5 .....do.....do.....rollers.
1 .....do.....do.....fall of a cage.
1 .....do.....do.....fall of a pump rod.
13 .....do.....do .....sundry falls in slopes, &c.
1 .....do.....do.....explosion of a cylinder.
2 .....do.....do.....T rails.
1 .....do.....do.....kick of a mule.
39 .....do.....do.....sundry other accidents.

406 persons were maimed. Of this number 34 subsequently died of their injuries.

CHARACTER OF THE INJURIES SUSTAINED.

5 persons lost an arm each.
22 persons had an arm broken each.
4 persons had both legs broken each.
36 persons had one leg broken each.
9 persons had their thighs broken each.
3 persons lost both eyes each.
6 persons lost one eye each.
4 persons lost an arm and hand or both hands each.
14 persons had each their hands crushed.
20 persons had each their heads crushed.
5 persons had each their fingers cut off.
1 person had his toes cut off.
3 persons had each their sides crushed in.
5 persons had each one or both feet cut off.
1 person lost both feet and an arm.
3 persons had each their backs broken.
29 persons sustained sundry injuries.
170 persons were maimed for life.
236 persons sustained burns, bruises, crushes and injuries.

406 total injuries sustained.

DISTRICT COAL TONNAGE FOR THE LAST THREE YEARS AND THE PROPORTIONATE NUMBER OF TONS TO A DEATH.

Tonnage of 1869.	Tonnage of 1870.	Tonnage of 1871.	Tonnage in 3 years.
4,688,904 tons.	3,938,429 tons.	5,850,000 tons.	14,477,333 tons.
For each—	For each—	For each—	For each—
81,944 tons 1 death.	35,161 tons 1 death.	45,341 tons 1 death.	36,552 tons 1 death.
51,526 " 1 inju'd	15,628 " 1 inju'd	14,408 " 1 inju'd	18,348 " 1 inju'd
151,296 " 1 wid'w	54,700 " 1 wid'w	88,636 " 1 wid'w	81,793 " 1 widow
31,259 " 1 orph..	15,628 " 1 orph..	22,762 " 1 orph..	21,073 " 1 orph.
239 " 1 emp'd	187 " 1 emp'd	197 " 1 emp'd	376 " 1 emp'd

There are at present 30,500 persons employed this year; average working months eight, producing 5,850,000 tons of coal. If employed twelve months, would produce 7,800,000 tons of coal, not including the district consumption for the year.

FOREIGN STATISTICS OF LAST YEAR COMPARED WITH OURS.

In Great Britain the casualties are in the proportion of one death to every 103,000 tons, but are found, under the application of an enforced stringent law, to be decreasing rapidly.

I append the following proportions in these districts:

Northumberland	1 death to each	175,000	tons.
S. Durham	1 ..... do	176,000	"
West Lancaster and N. Wales	1 ..... do	32,000	"
Yorkshire	1 ..... do	113,000	"
Derby, Stafford and Cheshire	1 ..... do	128,000	"
Shropshire and N. Stafford	1 ..... do	99,000	"

Leicester and S. Monmouth	1 death to each	95,000	tons.
Somerset and Devon	1 ..... do	96,000	"
S. Wales	1 ..... do	98,000	"
Schuylkill in 1870	1 ..... do	40,000	"
Schuylkill district in 1870	1 ..... do	49,586	"
Schuylkill county in 1871	1 ..... do	43,137	"
Northumberland county in 1871	1 ..... do	34,076	"
Columbia county in 1871	1 ..... do	202,763	"
Dauphin county in 1871	1 ..... do	75,239	"
Schuylkill district in 1871	1 ..... do	46,034	"

The proportions of deaths in the counties of Dauphin and Columbia are much less than in the other counties and in many of the mining districts in Great Britain. From the excellency of the efficient discipline and regulations established in the mines of these counties, it is obvious the casualties are decreased in proportion to the enforcement of and obedience to the mine rules of working, managing and good government of the same. The fact that strikes beget necessity, which is a sure spur to wild ambition of the workmen when resumption takes place, accompanied by recklessness, boldness and rashness to make the most money in the shortest time, disregarding the rules of safety and good organization in mining coal, are too often the real cause of many of the casualties.

BRITISH MINING DISTRICTS.

The number of collieries in each, the force employed and the proportion of deaths to the tons of coal mined in each.

Districts.	No. of collieries.	No. of persons employed.	No. of tons of coal mined in each.	Lives lost.
Northumberland	175	32,000	11,400,000	69
S. Durham	171	37,000	15,000,000	87
Lancaster	292	36,000	7,054,000	293
Yorkshire	459	37,000	7,000,000	80
Nottingham and Derby, Warwick and Leicester	195	28,000	9,705,000	60
Shropshire and Staffordshire	215	21,000	7,699,000	61
S. Stafford and Worcester	550	28,000	6,000,000	104
Monmouth and Gloucester, Somerset and Devon	201	26,000	9,900,000	61
South Wales	300	29,300	6,200,000	104
Lancashire and N. Wales	208	32,000	9,000,000	237
Scotland, East	254	29,000	8,456,000	43
Scotland, West	203	21,160	6,253,000	43
Grand total	3,223	346,460	104,566,959	1,242
Schuylkill district in 1870	200	30,000	6,000,000	129
Schuylkill district in 1871	206	30,500	6,938,412	129

GAS AND ROCK FAULTS.

Gas and rock faults are the chief sources of the causes of death to miners in the Schuylkill region, and the unrestrained freedom of action which our miners are accustomed to, and a careless disobedience of the rules of mine regulation, as well as the irregularity of enforcing obedience to orders, are often the chief causes of many deaths in our mines, together with the imperfect knowledge many of our miners and workingmen have of the

nature and constitution of explosive gasses which are common to our anthracite coal mines, and the imperfect and inadequate ventilation of mines, are the consequences from which result these casualties. Enough cannot be said in condemnation of the loose superintendence and freedom evinced by mine bosses and the force employed in the mines. That out of 124 inquests held on bodies of persons killed in the mines, 119 juries rendered verdicts exculpating operators and mine bosses from blame.

COUNTY COAL TONNAGE FOR 1871.

Schuylkill, with.....	165 collieries, shipped.....	4,400,000 tons.
Northumberland, with ..	36 .....do	681,000 "
Columbia, with	8 .....do	405,000 "
Dauphin, with	4 .....do	451,437 "
Total.....	213 .....do	5,937,437 "

DISTRICT STEAM POWER.

Counties.	Engines.	Horse power.	Days working.	Total days worked in a year.	Tons of coal consumed at 1¼ tons per day.
Schuylkill	518	30,018	270	139,860	209,790
Northumberland	78	3,140	.....	18,900	28,350
Columbia.	30	2,121	.....	8,100	12,100
Dauphin	20	1,430	.....	5,400	8,100
	646	36,709	.....	172,260	258,340
Or 472 years' work of one engine, for domestic use					520,000
Or 472 years' work of one engine, all manufacturing.....					221,660
Total tons.....					1,000,000

MINING CASUALTIES, COMPARED WITH THE COUNTY CASUALTIES.

129 persons killed in mines.	73 persons killed in dist. counties.
406 persons maimed and injured do.	138 persons maimed and injured do.
66 widows ditto.	21 widows ditto.
257 orphans ditto.	71 orphans ditto.
858 mine accidents.	303 county accidents.

As per records of which are on my files.

The above brief summary of statistical information shows the number of casualties that are charged to accidents in and about the mines, whilst it also shows the number of casualties that have taken place in the district outside of collieries—of the county casualties, which are thus classified:

19 persons were killed by being run over by trains, &c.
6 persons were killed on the roads.
9 persons were killed by acts of violence.
2 persons were shot in broils.
1 person hung himself.
3 persons were killed by fall of an old drift.
1 person was killed at a fire.

2 persons were killed by falling from a carriage.
11 persons were drowned in sundry places.
4 persons died suddenly and found dead.
1 person hung himself.
5 persons were burned to death by fire.
2 persons were killed by upset of team wagons.
4 persons were killed by falls off houses, &c.
2 persons died from intemperance and exposure.
1 person was suffocated.

73 persons lost their lives by the above casualties.

There is one death to every 236 persons employed at collieries in Schuylkill district.

MONTHLY CASUALTIES

Of mortality and injuries in and about the mines of the mining district of Schuylkill for the year ending December 31, *A. D.* 1871.

Months.	Monthly number of deaths.	Monthly number killed	Monthly number died of injuries	Monthly number of widows	Monthly number of orph's.	Number of persons injured monthly	Total monthly casualties
January	9	6	3	7	30	23	69
February	3	2	1	2	5	14	24
March	4	4		4	9	9	26
April	10	9	1	4	16	23	53
May	6	3	3	5	19	32	62
June	23	17	6	8	32	35	98
July	13	10	3	8	31	60	112
August	12	9	3	8	30	74	124
September	18	8	10	7	30	46	101
October	24	20	4	10	46	55	135
November	5	5		2	8	30	45
December	2	2		1	1	5	9
Total	129	95	34	66	257	406	858

REMARKS.

The foregoing statistics will exhibit the number and manner of casualties for the year to its close. Very many, if not all, of these families were in indigent circumstances. Greater yet must be their distress at the losses sustained by the death of a father, son or brother, on whose earnings their whole support depended, but to consider the keenness of their distress thereafter it must be lamentable indeed.

Many of the maimed are incapacitated from self-support by reason of their injuries as shown above, and hence are but objects of charity in the community where they reside, consequently their humble firesides are the scenes of wailing and woe—of a family whose means could not afford a decent shroud for their beloved dead. Our people are alive to the relief of people in foreign lands, but philanthropy's voice is silent, and sympathy sleeps over these worthy but truly unfortunate people who often suffer at our country's gates.

TABLE No. 1.

Names of persons killed in and about the mines in the mining district of Schuylkill for the year ending Dec. 31, A. D. 1871.

Date.	Names of persons killed.	Names of the collieries.	Wife.....	Children...	Causes of deaths, remarks, &c.
Jan. 3...	Robert Bally	Raven Dale	.....	....	Died from effects of an explosion of gas.
4...	John Pugh	Forestville	1	2	Killed by an explosion of gas.
4...	William Pugh	....do	1	3	Killed by an explosion of gas.
9...	William Fitzpatrick	Greenberry	1	6	Died in a drift at Wolf creek—exposure.
10...	Jonathan Shaffer	Allen Fisher's	1	5	Killed by a fall of coal in a drift.
13...	Daniel G. Herbe	Tower City	1	9	Killed by a fall of top slate in the tunnel.
21...	Andrew Drehr	Centralia	1	1	Missing.
22...	John Dillon	Revenue	1	4	Died from effects of an explosion of gas.
24...	John Cullen	Lost Creek	.....	.....	Killed by falling into an outcrop breast.
30...	George Hermon.. 10 persons.	Shenandoah	.....	.....	Killed by bad slope fixture on drum.
Feb. 14...	John Fitzgerrold	Hickory, Old	1	5	Died from injuries received by fall of gangway timber.
17...	John Krakoakie	Buck Ridge	.....	.....	Killed by wagons on inside planes.
20...	Dennis Flood 3 persons.	Excelsior	.....	.....	Killed—crushed between schute and timbers.
March 9...	Thomas Banister	Tunnel slope	1	2	Killed by caving in of the air-course.
9...	Patrick Burns	....do	1	2	Killed by same cause while mining.
11...	John Morrissy	Glen Carbon	1	5	Killed by falling off the cage in slope.
16...	Marcus Daniels. 4 persons.	Union, E. Bast	1	.....	Killed by the explosion of a boiler.
April 2...	Henry Jones	Robinson's	.....	.....	Killed by a fall of coal in mines.
7...	Reuben C. Kreiger	Cameron	.....	.....	Killed by a fall of coal—(the last of three brothers similarly.)
9...	A miner	Robinson's at planes	...	.....	Killed by fall in the slope—(asleep.)
13...	Michael Conner	St. Nicholas	.....	.....	Died from injuries—run over by wagons.
14...	Zachariah Taylor, (boy,)	E. Franklin	.....	.....	Killed by an explosion of gas.
15...	Amser Baltzer	New Philadelphia	1	3	Killed—scull broken by explosion of gas and a fall.
20...	Thomas Brannan	....do	1	2	Killed by fall of dirt in a drift.
25...	Daniel Josephs	Glendon	1	4	Killed by a fall—forced a drill through his body.
26...	David Perong	Kohinoor	1	7	Killed by premature discharge of a blast.
27...	Benjamin Lewis 10 persons.	Lost Creek	.....	.....	Killed by a fall of coal while mining.
May 1...	James Harris	Alaska	1	2	Killed by gas in the gangway.

May	8...	Griffith Jones	Hill & Harris..	.....	.....	Died of injuries received in the tunnel.
	14...	George Smith	Lost Creek	1	4	Died of injuries received in the mines.
	16...	John Fogarty	Ellen Gower	1	8	Killed by a fall of coal.
	16...	George Gover..	Tunnel, No. 10	1	5	Died in the mines by choke damp.
	25...	Matthew Killy	Wolf Creek	.....	.....	Killed—run over by wagons in gangway.
		6 persons.				
June	1...	A miner	Enterprise	1	2	Killed by a wagon falling in slope.
	2...	John Dando..	E. Franklin..	.....	.....	Killed by discharge of a shot.
	2...	John Jeremiah	..... do	.....	.....	Killed by discharge of a shot.
	2...	Wm. R. Thomas	Lambert	1	3	Died from being burned by gas on 14th of May.
	2...	Benjamin Lovell	Locust Run	.....	.....	Killed by an explosion of gas.
	2...	Walter Wyatt.	.....do	.....	.....	Killed by an explosion of gas.
	2...	Alfred Lovell..	.....do	.....	.....	Killed by an explosion of gas.
	2...	Edward Boylan	Live Oak	.....	.....	Killed by an explosion of gas and powder.
	2...	Michael Comfort, (boy,)	.....do	.....	.....	Killed by an explosion of gas and powder.
	2...	Robert Thomas..	Eagle Hill.	.....	.....	Killed—crushed by wagons in the mine.
	3...	George Stonely..	Beachwood	.....	.....	Killed—run over by a wagon near the breaker.
	3...	John Oliver	Hill & Harris..	.....	2	Killed by a fall of coal.
	6...	John Taggart	Lost Creek	.....	.....	Killed by a fall of coal.
	14...	Michael Mack, (boy,)	Silver Creek	.....	.....	Killed by being caught between the screens.
	16...	Andrew O'Donnell	Bowman's.	1	3	Died from injuries received by a fall of slate.
	18...	Edwin C. Pass	Feeder Dam.	1	.....	Died from the effects of an explosion of gas.
	22...	Thomas Webb	St. Nicholas	1	4	Killed by fall down a breast.
	22...	Wm. Harris	Hailford.	1	4	Died in the smithshop.
	30...	Thomas Horan..	St. Nicholas	1	2	Killed by a fall of coal in the mines.
	30...	Thomas Connell	Reliance	1	6	Killed by a fall of rock in the mine.
	30...	George Schnepp, (boy,)	Rauch Creek	.....	.....	Killed—ground up in the rollers.
		21 persons.				
July	2...	Isaac Cox	Cameron	1	1	Killed by a fall of coal in cross-heading.
	3...	Martin Schitzler, (boy.)	Centralia	.....	.....	Killed in the cog-wheels while oiling.
	19 ..	Robert Eltringham	Furnace colliery	1	5	Killed by a fall of rocks in the mine.
	21...	John Gallagher	Girard colliery	.....	.....	Killed by a piece of coal—bled to death.
	21...	George Harris.	Schmoley's	1	7	Died of his injuries—lost an arm on 14th inst.
	21...	Thomas M'Andrew	Preston, No. 3.	1	4	Killed by a fall of coal in the mine.
	22...	Amos Gensell..	Brady	.....	.....	Killed in the mines.
	22...	James Humphries	Tunnel, No. 10	.....	.....	Killed by wagons in the gangway.
	22...	James Smith	Slope 2, L. C. Co	1	2	Killed by a fall of coal.
	25...	Frank Adams.	Bear Valley	1	4	Killed by an explosion of a blast.
	29...	Martin Rulley	Yeatsville.	.....	.....	Killed by a fall of coal.
	30...	Henry Arnold	East Franklin	1	3	Died—crushed by the pumps.
	30...	Bryan Flaherty	Swift Creek.	1	5	Died from effects of an explosion of gas.
		13 persons.				
August	3...	W. B. Maberry..	Tremont	1	4	Died of injuries received by a fall of coal 13th July.

TABLE No. 1—CONTINUED.

Date.	Names of persons killed.	Names of the collieries.	Wife.....	Children,	Causes of deaths, remarks, &c.
August 5...	John Workman..	Lorberry ..	1	2	Killed by a fall of slate.
5...	Mr. Walsh	Ellen Gower	1	7	Killed by a fall of coal.
5...	Patrick Tigue..	Raven Run ..	.....	.....	Killed by a fall of coal.
11...	Lawrence Corcoran..	Keystone	1	4	Killed—fell—the rope wound him on the drum.
12...	Michael Simons	Black Diamond	.....	.....	Killed by an explosion of powder.
13...	John Jones..	Big Lick	.....	.....	Died from effects of a crush February 10.
19...	L. Lichmanstine, (boy,)...	Girard colliery	.....	.....	Killed—crushed in the rollers.
19...	Wm. Jinkins...	Keystone	1	5	Died from effects of an explosion of gas.
26...	John Dixon..	Colorado	1	4	Killed by a fall of coal.
26...	Michael Gannon	Girard colliery	1	4	Killed by a fall of coal.
29...	James Stephenson	Monitor	1	.....	Killed—crushed by wagon and top timber.
	12 persons.				
Sept. 5...	——— .	Ellen Gowen	.....	.....	Killed by a fall of coal.
8...	Wm. Anspach ..	Thomaston ..	1	4	Died from injuries received by gas and powder.
8...	John Evans, (boy,)	Glen Carbon	.....	.....	Killed by coal discharged from a shot.
11...	A man	Hazle Dell	.....	.....	Died suddenly while shifting the chain.
11...	Thomas M'Avoy	Ellen Gowen	.....	.....	Killed by a fall of coal.
12...	Joseph Commons	Lancaster	.....	.....	Killed by a fall of top coal.
12...	John Gardner..	Pine Forest	1	.....	Died from effects of explosion of gas.
13...	Jacob Smith	Kohinoor..	.....	.....	Died from effects of explosion of powder.
17...	Wm. Madera..	Big Lick	.....	.....	Died from effects of explosion of gas.
18...	John Matrass	Garretson's	.....	.....	Drowned in the slope—fell in.
23...	John Foster.	Keystone..	.....	.....	Killed by falling into the air-shaft.
23...	Martin Tuoy	Lost Creek	.....	.....	Died from effects of being crushed by wagons.
25...	Thomas Moss	Buckville..	1	8	Died from effects of an explosion of gas.
26...	Patrick Devine	.....do.....	1	6	Died from effects of same explosion.
27...	John Hubor..	Bear Valley.	1	4	Killed by a fall of coal.
29...	James Dooley..	Wolf colliery	1	.....	Died from injuries received by fall of coal.
29...	John O'Brien..	Plank Ridge	1	8	Killed by a fall of coal.
30...	Correy Downes, (boy,)	Fellows' colliery	.....	.....	Killed by the machinery.
	18 persons.				
October 2...	Thomas Craven	Big Mine Run.	.....	.....	Killed on the plane—run over by wagons.
2...	Patrick M'Michael	Otter Red Ash	.....	.....	Killed by an explosion of gas.
2...	George Dunloss	.....do..	.....	.....	Killed by an explosion of gas.
2...	Jacob Yost	.....do..	1	2	Killed by an explosion of gas.

October	2...	Thomas Hay	....do	1	.....	Killed by an explosion of gas.
	2...	George Bence	....do	1	2	Killed by an explosion of gas.
	2...	David Hartnutt	....do	1	6	Died from effects of an explosion of gas.
	3...	John Moritts	Rauch Creek	1	2	Killed by a fall of coal.
	5...	John Smith	Locust Gap	.....	.....	Died from injuries received 12th August.
	10...	Thomas Landy	Delano colliery	1	2	Killed—crushed to death in the rollers.
	12 ..	Robert Thomas	Glen Carbon	1	6	Died from effects of a fall of coal.
	14...	John Curran	Beachwood	.....	.....	Killed by an explosion of gas.
	14...	James Davies	Burnside	.....	.....	Killed by a fall of slate in the mines.
	15...	John Brannan	Beachwood	.....	.....	Died from effects of an explosion of gas.
	15...	Hugh Rowan	Girard colliery	1	3	Killed at the mines.
	15...	Philip Bronsell	Big Mine Run	.....	.....	Killed by falling in the screens.
	15...	William Davis	Continental	.....	.....	Killed—kicked by a mule.
	16...	John Caughlin	Lehigh, No. 3	.....	.....	Killed by falling in the screen wheels.
	16...	Richard Dunkin	Brady colliery	1	4	Killed—crushed between collars and wagon.
	17...	James Mangan	Locust Gap	1	4	Killed between wagons and schute.
	23...	Michael Nolan	Phœnix, No. 3	1	6	Killed by a fall of coal.
	25...	Hugh Hogan	A. S. Wolf	.....	.....	Killed by a fall of coal.
	27...	Smith Trappe	Cameron	.....	.....	Killed—run over by a truck.
	30...	D. Freeman	Mais & Miller	.....	.....	Killed—a breaker schute fell on him.
		25 persons.				
Nov.	8...	George Rouse	Greenwood	1	5	Killed by a fall of coal.
	20...	James Storke	Delano	.....	.....	Killed by a fall of rocks.
	21...	Thomas Wyeth	Thomas colliery	1	1	Killed by breaking of slope rope.
	24...	Hugh Gribbins	Raven Run	.....	.....	Killed by discharge of coal from a blast.
	28...	A miner	J. O. Rhodes	.....	.....	Killed by a fall of coal.
		5 persons.				
Dec.	2...	Bartley Dean	Lost Creek	.....	.....	Killed by a wagon running over him.
	4...	John Fellows	Gilberton	1	1	Killed by a fall of coal.

TABLE No. 2.

Deaths in the mines of Pottsville district for the year ending December 31, A. D. 1871.

Date.	Names of persons killed.	Names of the collieries.	Wife.....	Children,	Remarks and causes of accidents.
January 3...	Robert Bally	Raven Dale	.....	.....	Killed by an explosion of gas.
4...	John Pugh	Forestville	1	2	Killed by an explosion of gas.
4...	William Pugh	....do....	1	3	Killed by an explosion of gas.
9...	William Fitzpatrick	Greenberry	1	6	Died in a drift from exposure.
22...	John Dillon	Revenue	1	4	Died from effects of an explosion of gas in November, 1870.
Feb. 14...	John Fitzgerrold	Hickory slope	1	5	Killed by the fall of a gangway collar.
March 11...	John Morrissy	Glen Carbon	1	5	Killed by falling off the cage.
April 15...	Amser Baltzer	New Philadelphia	1	3	Killed by an explosion of gas.
20...	Thomas Branan	....do....	1	2	Killed in a drift by fall of dirt.
May 1...	James Harris	Tamaqua	1	2	Died in the gangway by choke damp.
10...	George Gover	Tunnel, No. 10	1	5	Died in the mine by choke damp.
25...	Matthew Kelly	Wolf Creek	.....	.....	Killed—run over by loaded wagons.
June 2...	Ed. Boylen	Live Oak	1	.....	Killed by an explosion of gas.
2...	Michael Comfort, (boy,)	....do....	.....	.....	Killed by same explosion.
2...	Robert Thomas	Eagle Hill	.....	.....	Killed—crushed to death by wagons.
3...	George Stonely	Beachwood	.....	.....	Killed by a wagon running over him.
14...	Michael Mack, (boy,)	Silver Creek	.....	....	Killed in the screens.
18...	Edwin C. Pass 6 persons.	Feeder Dam	1	.....	Died from effects of an explosion of gas.
July 22...	Bryan Flaherty	Swift Creek	1	5	Died from effects of an explosion of gas.
22...	James Humphries	Tunnel, No. 10	.....	.....	Killed by the props and wagons.
22...	James Smith 3 persons.	Slope, No. 2, L. C	.....	.....	Killed by a fall of coal.
Sept. 8...	Wm. Anspach	Thomaston	1	4	Died of injuries—burned by gas and powder.
8...	John Evans, (boy,)	Glen Carbon	.....	....	Killed by coal discharged from a shot.
12...	John Gardner	Pine Forest	1	.....	Died from effects of an explosion of gas.
25...	Thomas Moss	Buckville	1	8	Died from effects of an explosion of gas.
26...	Patrick Devine 5 persons.	....do....	1	6	Died from effects of an explosion of gas.
Oct. 14...	John Curran	Beachwood	.....	.....	Killed by an explosion of gas.
14...	John Brannan	....do....	.....	.....	Died from effects of this explosion.
14...	Robert Thomas	Glen Carbon	1	6	Died from effects of a fall of coal on the 7th inst.
Nov. 8...	George Rouse	Greenwood, No. 1	1	5	Killed by a fall of coal.

TABLE No. 3.

Deaths in the mines of the Ashland, or Second district, for the year ending December 31, A. D. 1871.

Date.	Names of persons killed.	Names of the collieries.	Wife.....	Children.	Causes of deaths and remarks.
Jan. 24...	John Cullen.	Lost Creek	.....	.....	Killed by falling into an open breast at night.
30...	George Herman. 2 persons. [deaths.	Shenandoah, (Hood's,)	.....	.....	Killed by unsafe drum fixtures.
February...	No accidents resulting in				
March 9...	Thomas Banister	Tunnel colliery	1	2	Killed by the falling in of the air-course.
9...	Patrick Burns	....do	1	2	Killed by the same accident.
16...	Mark Daniels. 3 persons.	Big Mine Run	1	.....	Killed by an explosion of a steam boiler.
April 9...	A miner	Robinson's	.....	.....	Killed by falling down the slope in his sleep.
13...	Michael Conner	St. Nicholas	.....	.....	Died from injuries received while loading wagons.
25...	Daniel Josephs	Glendon	1	4	Died from injuries received in the tunnel.
26...	David Perong	Kohinoor shaft	1	7	Killed by the premature discharge of a shot.
27...	Benjamin Lewis 5 persons.	Philadelphia, No. 2	.....	.....	Killed by a fall of coal while mining.
May 8...	Griffith Jones	Hill & Harris	.....	.....	Died of injuries received in the tunnel.
14...	George Smith	Lost Creek	1	4	Died from injuries received in the mines.
16...	John Fogarty. 3 persons.	Ellen Gowen	1	8	Killed by a fall of coal.
June 2...	Benjamin Lovett	Locust Run	.....	.....	Killed by an explosion of gas.
2...	Walter Wyatt	.....do	.....	.....	
2...	Alfred Lovell	.....do	.....	.....	
3...	John Oliver	Hill & Harris	.....	2	Killed by a fall of coal.
6...	John Taggert	Lost Creek	.....	.....	Killed by a fall of coal.
22...	Thomas Webb	St. Nicholas	1	4	
22...	William Harris	Hartford	.....	.....	Died in the smithshop.
16...	Andrew O'Donell	Bowman	.....	....	Died from injuries received by a fall of slate.
30...	Thomas Horan 9 persons.	St. Nicholas	.....	....	Killed by a fall of coal in the mines.
July 3...	Martin Schitzler	Cambrian	.....	.....	Killed by being caught in cog-wheels.
19...	Robert Eltringham	Furnace	1	5	Killed by a fall of rocks.
21...	John Gallagher	Girard colliery	.....	.....	Killed—cut by a piece of coal.
21...	Thomas M'Andrew	Preston, No. 3	1	4	Killed by a fall of coal.
29...	Martin Reilley 5 persons.	Yatesville	.....	.....	Killed by a fall of coal.

TABLE No. 3—CONTINUED.

Date.	Names of persons killed.	Names of the collieries.	Wife	Children.	Causes of deaths and remarks.
August 5...	Michael Walsh.....	Ellen Gowen	1	7	Killed by a fall of coal.
5...	Patrick Tigue.....	Raven Run	.....	.....	Killed by a fall of coal.
11...	Larry Corcoran	Keystone	1	4	Killed by falling in slope—the rope wound him on the drum.
19...	Lewis Lichmanstine	Girard colliery.....	.....	.....	Killed by being crushed in the rollers.
19...	Wm. Jinkins	Keystone.....	1	5	Died from effects of an explosion of gas.
26...	John Dixon.....	Colorado...	1	4	Killed by a fall of coal.
26...	William Gannon..... ..... 7 persons.	Girard colliery.....	1	4	Killed by a fall of coal.
Sept. 5...	A boy...	Ellen Gowen.....	.....	.....	Killed.
11..	A man.....	Hazle Dell	.....	.....	Died suddenly while shifting slope chain.
11...	Thomas M'Avoy	Ellen Gowen.....	.....	....	Killed by a fall of coal.
13...	Jacob Smith	Kohinoor shaft.....	1	4	Died from effects of explosion of powder.
18...	John Matrass..	Beatty & Co.....	.....	.....	Drowned in the slope in 60 feet of water.
23...	John Foster.....	Keystone...	.....	.....	Killed by falling in the shaft, (up-cast.)
23...	Martin Tuoy.....	Lost Creek	1	6	Died—crushed by wagons and timbers.
29...	John O'Brien... ..... 8 persons.	Plank Ridge	1	8	Killed by a fall of coal.
October 2...	John Craven, (boy,)	Big Mine Run	.....	.....	Killed on the plane—run over by wagons.
10...	Thomas Landy.....	Delano colliery.....	1	2	Killed in the rollers—working for pleasure.
10...	Philip Bronsell..	Big Mine Run.....	.....	.....	Killed accidentally.
13...	Hugh Rowan	Girard	.....	.....	Killed.
16..	John Caughlin.....	Lehigh, No. 3	.....	.....	Killed in the screens.
16...	Wm. Davis	Continental..	.....	.....	Killed—kicked by a mule.
31...	Daniel Freeman.....	Stanton	.....	.....	Killed by fall of a coal schute.
Nov. 20...	Thomas Wyatt.....	Thomas's	1	1	Killed by discharge of a shot.
21...	James Stark	....	.....	.....	Killed by a fall of rocks.
24...	Hugh Gribbin.....	Raven Run	.....	.....	Killed by discharge of a blast.
28...	A miner.....	Shenandoah	.....	.....	Killed by a fall of coal.
Dec. 2...	Bartly Dean.....	Lost Creek.....	.....	.....	Killed—run over by a wagon.
4..	John Fellows..	Gilberton	....	....	Killed by a fall.

56 persons lost their lives, 9 of whom died of their injuries.

TABLE No. 4.

List of names of persons killed in the mines in the Third, or Shamokin district, for the year ending December 31, 1871.

Date.	Names of persons killed.	Names of collieries.	Wife.	Children.	Remarks.
Jan. 10...	Jonathan Sheafer	Fisher's	1	5	Suffocated in a counter schute.
13...	Daniel Herb.	Tower City	1	9	Killed by a fall of top slate.
Feb. 17...	John C. Krokoski	Buck Ridge	1	2	Killed by drift wagons.
20...	Dennis Flood	Excelsior	1	6	Killed by dirt car and timbers.
April 7...	Reuben Kriger	Cameron	1	4	Killed by a fall of coal.
14...	Zachariah Taylor	Big Lick			Killed by an explosion of gas.
14...	Wm. Mitchell	Williamstown			Killed by breaking of a slope rope.
May 30...	Thomas Kean	Enterprise			Killed by a wagon falling in slope.
June 2...	John Dando	Big Lick	1	5	Killed by a discharge of a blast.
2...	John Jeremiah	do.			Killed by a discharge of a blast.
10...	Lawrence Boylen	Locust Creek			Killed by a fall of rocks.
29...	Thomas Connell	Reliance	1	6	Killed by a fall of rocks.
29...	George Schnepp	Rauch Creek			Killed by breaker machinery.
30...	Isaac Cox	Cameron	1	1	Killed by a fall of coal.
July 22...	Amos Gensill	Brady	1	2	Killed by a fall of rocks.
August 4...	John Workman	Lincoln			Killed by a fall of loose dirt.
12...	M. Simons	L. V. Summit			Killed by an explosion of powder.
19...	Frank Adams	Bear Valley			Killed by an explosion of a blast.
29...	James Stephenson	Monitor	1		Killed by timber and slope wagon.
Sept. 12...	Joseph Commons	Lancaster			Killed by a fall of slate.
15...	Sylvester Betelyon	Trevorton	1	1	Killed by a fall of coal.
29...	James Dooley	A. S. Wolf			Killed by a fall of coal.
October 2...	Patrick M'Michael	Otto R. Ash			Killed by an explosion of gas.
2...	George Dunloss	do.			Killed by an explosion of gas.
2...	Jacob Yeost	do.	1	2	Killed by an explosion of gas.
2...	Thomas Hay	do.	1		Killed by an explosion of gas.
2...	George Bruice	do.	1	2	Killed by an explosion of gas.
3...	David Hartnett	Otto W. Ash	1	6	Killed by an explosion of gas.
3...	John Moritts	Rauch Creek			Killed by a fall of coal.
15...	Robert Dunkin	Brady			Killed by a fall of slate.
15...	Richard Dunkin	do.			Killed by a fall of slate.
17...	James Mangan	Cameron	1	4	Killed—crushed by schute and wagons.
23...	Michael Nolan	Phœnix, No. 3	1	6	Killed by a fall of coal.

TABLE No. 4—CONTINUED.

Date.	Names of persons killed.	Names of collieries.	Wife	Children,	Remarks.
Oct. 25...	Hugh Hogan	Locust Gap	.....	.....	Killed by a fall of coal.
27...	Smith Trappe	Cameron	.....	.....	Killed by a truck on dirt bank.

36 persons were killed outright.

NAMES OF PERSONS WHO HAVE DIED OF THEIR INJURIES.

Feb. 20...	John Jones	Big Lick	.....	.....	Died August 4—crushed by wagons.
May 25...	William Thomas	Lambert	1	2	Died June 12—explosion of gas.
June 23...	Thomas Whitiman	Williamstown	.....	.....	Died July 5—crushed by wagons.
July 28...	Henry Arnold	Franklin	1	3	Died July 30—crushed by pump rod.
August 5...	John Smith	Locust Creek	.....	.....	Died October 6—crushed by fall of coal.
Sept. 8..	Wm. Madera	Franklin, L. V	1	6	Died September 17—explosion of gas.
Oct. 3...	John Huber	Bear Valley	1	4	Died October 3—injured by fall of coal.
14...	James Davis	Burnside	.....	.....	Died same day—injured by fall of slate.

8 persons died of their injuries subsequently.

TABLE OF INJURIES.

Names of persons employed in and about the coal mines of the mining district of Schuylkill, whose casualties resulted in death, maiming and injury, for the year ending December 31, 1871.

Date.		Names of persons injured.	Names of collieries.	Remarks.
Jan.	3...	William James	Kear, M. H. G	Hand severely buised.
	3...	John Tracy	Forestville	Burned by an explosion of gas.
	3...	William Balley	Raven Dale	Burned severely by an explosion of gas.
	3...	Robert Balley	....do..	Burned mortally by an explosion of gas--died on 5th.
	3...	James Foyle	....do..	Burned severely by an explosion of gas.
	3...	James John.	....do..	....do....do....do.
	3...	James Davis	....do..	....do....do....do.
	4...	Thomas Davis	Forestville	....do....do....do.
	5...	Emanuel Hodgkise	St. Clair shaft.	Ankle fractured.
	5...	George Kerkley	Eagle Slope.	Injured while working at machinery.
	6...	Martin M'Andrew	Lost Creek	Leg fractured.
	8...	An Engineer	Maize & Lewis	Injured by bursting of cylender.
	8...	Patrick Daugherty	Tunnel Slope.	Eyes destroyed by a blast.
	9...	John Kelly	Beechwood..	Burned severely by gas.
	13...	William Tehen	Live Oak..	....do....do.
	14...	John Holey	Glen Carbon	....do....do.
	14...	Robert Bradley	Norwegian	....do....do.
	14...	William Degan	....do..	Burned severely by an explosion of gas.
	21...	George Cotheral	Fine Forest..	Eyes severely injured by an explosion of gas.
	21...	William Thomas	....do..	Five fingers lost by the explosion of gas.
	22...	John Dillon	Revenue	Burned severely by an explosion of gas.
	24...	James Martin	Locust Dale	Leg broken, and otherwise injured.
	28...	Henry Neighthamer	Keystone	Wrist and thumb dislocated.
		23 persons.		
Feb.	1...	Martin Kelly	Swatara	Ribs crushed by wagons in tunnel.
	7...	Thomas Colohan	Locust Run	Arm broken in the mine.
	9...	Thomas Cochlin	Wm. Penn	Leg broken in the mine by coal.
	13...	John Jones	E. Franklin.	Crushed in the mine—died 4th August.
	14...	John Fitzgerald	Hickory Slope	Mortally crushed by timber—died 14th inst.
	14...	Stephen Henk	Pine Forest..	Severely injured by an explosion of gas.
	14...	Richard Walsh	....do..	....do....do....do.

TABLE OF INJURIES—CONTINUED.

Date.	Names of persons injured.	Names of collieries.	Remarks.
Feb. 17...	John Holmes..	Daniel Webster...	Skull fractured by fall of coal.
17...	Charles Kearney.	Bittenbender	Nose and jaw fractured by fall of slate.
18...	Robert Quinn.	Daniel Webster.	Injured by fall of coal.
25 ..	James Carroll	Pine Knot.	Injured by an explosion of gas.
28...	Jonathan Williams..	Monitor.	....do....do.
28...	Williams's assistant	do..	....do....do.
28...	Dennis Flood.. 14 persons.	Excelsior.	Mortally injured—died 29th inst.
March 10...	J. Cunningham.	Daniel Webster.	Severely injured by an explosion of gas.
10...	James Maginnis	do.	Severely injured by concussion of this explosion.
10...	John Egan.	Norwegian.	Severely injured by an explosion of gas.
18...	Thomas Shelly.	Wm. Penn..	Hand nearly sawed off.
18...	Benjamin Davis.	Indian Run.	Side injured by fall of a plank.
20...	John Reese..	Beachwood.	Crushed by wagons and top rock.
22...	John Carlin..	Ellen Gowen.	Leg broken by fall of coal.
22...	Henry Jones	Mahanoy	Severely injured.
26...	Henry Brocius. 9 persons.	Lehigh, No. 3.	Eye severely injured by a saw.
April 6...	Thomas Griffith.	Big Mountain.	Thigh, head and ribs severely injured by fall of coal.
8...	Michael Dwyre...	E. Mahanoy.	Burned by the discharge of a blast.
8...	Thomas Dwyre.	do.	....do....do....do.
10...	Patrick Sharp	Anthracite	Burned by an explosion of gas.
14...	Zacharia Taylor.	Big Lick—Big Lick disaster.	Leg broken and burned mortally by gas—died 14th inst.
14...	Evan Evans, boss.	do.	Severely burned by gas.
14...	Jeremiah Splann..	do.	.... do.... do.
14...	Thomas R. Davis.	do.	Severely affected by after damp.
14...	Noah Simmons..	do.	....do....do.
14...	Thomas Williams	do.	....do....do.—died 14th inst.
14..	Samuel Beatman.	do.	.... do.... do.
14...	John R. Evans.	do.	.... do.... do.
15...	Daniel Murry.	New Philadelphia.	Slightly burned by gas.
20...	George Smith.	Lost Creek.	Severely injured by a fall of coal—died.
21...	Thomas Gilfillan.	Plank Ridge	....do....wagons.
21...	William Carpenter.	Mr. Robinson's..	....do....fall of slate.

	25	Henry Cook	Kohinoor shaft	Severely injured by a fall of slate.
	26	David Perong	do	Mortally injured by a blast—died.
	27	Robert Rowland	Oak Dale	Severely injured by a blast.
	27	Frank Opie	do	Slightly injured by a blast.
	27	George O'Boyle	Anthracite	Severely burned by an explosion of gas.
	27	Rodger Rodgers	do	do do do.
	29	William Grant	Hazle Dell	Severely burned by an explosion of blast.
		23 persons.		
May	1	Charley Graver	Colkett	Leg broken by fall of a dumper.
	4	William Sponsler	Williamstown	Leg broken by fall of a dirt wagon.
	4	Michael Botton	Baltaiser's drift	Severely injured by a fall of coal.
	8	Evan Jones	Tunnel, No. 10	Severely injured by a fall of a plank.
	10	Matthew Cope	Silliman's	Arm cut off by discharge of blast.
	10	Griffith Jones	do	Abdomen dangerously cut.
	10	Isaac Jones	Bowman's	Severely burned by powder.
	11	David Jones	Diamond	Severely burned by gas.
	11	William Merryman	do	do do.
	12	Philip Dolan	Kemble & Graber	Severely injured by breaking of slope rope.
	15	Gabriel Drake	Tower City	Severely injured—ribs broken.
	15	Joseph Hoof	Bowman's	Severely injured by fall of large mass of rocks.
	15	Abraham Abrams	Beatty's	Severely injured by noxious air.
	15	Simon Geckood	Colorado	Fingers cut off.
	15	John Conomy	Girard colliery	Fingers cut off by crush.
	15	Charley Ross	Preston, No. 3	Hand severely injured by fall of coal.
	16	Evan Davis	Live Oak	Severely crushed by a fall of rocks.
	16	William Jones	do	Severely burned by an explosion of gas.
	19	Frank Dormer	Phœnix, No. 2	Mortally injured by discharge of blast.
	20	John M'Kean, Sr	Phœnix, No. 1	Slightly burned by gas.
	20	John M'Kean, Jr	do	do do.
	23	Edward Scott	East Pine Knot	do do.
	24	Charley Becker	Kohinoor	Arm broken in the breaker.
	25	Oliver Shertle	Glen Carbon	Slightly burned by gas.
	27	James Brannan	Shenandoah	Head badly injured by fall of coal.
	27	Michael Dormar	William Penn	Arm broken by fall of a screen.
	27	Robert Hays	Otto	Dangerously crushed.
	27	Patrick Marion	Lorberry	Dangerously crushed by a fall of coal.
	29	A miner	Fowler's	Injured by a wagon.
	29	do	Locust Run	Injured by an explosion of gas.
	29	do	do	do do.
	29	Andrew Rhoads	Shenandoah City	Injured by a fall of coal.
		32 persons.		
June	1	James Maley	Live Oak	Fatally burned by an explosion of gas.
	1	Patrick Devert	do	do do.

TABLE OF INJURIES—CONTINUED.

Date.		Names of persons injured.	Names of collieries.	Remarks.
June	1...	Edward Boylen	Live Oak	Fatally burned by an explosion of gas—died.
	1...	Pierce Comerford	do	do do do.
	2...	John Dando	East Franklin	Fatally injured by discharge of a blast—died.
	2...	Jehu Jeremiah	do	Fatally injured by discharge of a blast—died 5th inst.
	2...	Frank Yeskie	Henry Clay	Thigh broken by fall of coal.
	3...	Anthony Loftis	Beechwood	Dangerously crushed by wagons.
	5...	J. Lally	Girard colliery	Legs broken by a fall of coal.
	5...	Thomas Lovelle	Lost Creek	Severely crushed by wagons.
	5...	Benjamin Williams	Hartford	Leg broken in two places by a fall of coal.
	5...	Philip Germand	do	Back broken—severely injured by wagons.
	10...	Jacob Hartz	Colkett	Severely burned by gas.
	10...	Henry Graber	do	do do.
	10...	Joseph Patterson	do	do do.
	16...	Michael Troy	Locust Gap	Severely injured by a fall of coal.
	16...	James Conroy	William Penn	do do.
	16...	Charley Seltzer	Kohinoor	Collar bone broken—crushed by wagons.
	16...	Thomas Powell	Shenandoah, West	Leg broken—dragged by wagons.
	16...	Andrew O'Donall	Bowman's	Mortally injured by fall of slate—died.
	16...	James Duyre	Tunnel Ridge	Face injured by fall of coal.
	17...	Edwin C. Pass	Feeder Dam	Mortally crushed and burned by gas—died.
	19...	Nicol M'Arthur	Henry Clay	Severely injured in fixing props.
	21...	William O'Brien	Excelsior	Thigh fractured by fall of a wagon.
	22...	Peter Heck	Langdon's	Thigh broken and head cut by fall of coal.
	22...	Ludwig Herr	Shenandoah City	Thumb cut off by fall of coal.
	26...	Michael Pooler	Kohinoor	Back injured by a wagon.
	26...	Patrick Roach	Hartford	Injured by a fall of coal.
	26...	Thomas Brown	do	do do.
	27...	William L. Jones	Glen Dower	Dangerously injured by explosion of gas.
	27...	John M. Thomas	do	do do do.
	27...	Patrick Johnson	Nutting & Lewis	Severely injured by a fall of coal.
	27...	Joseph Lawler	do	Severely injured by the screens.
	28...	Henry Rudler	William Penn	Severely injured by a fall of coal.
	30...	Lewis Weller	Shenandoah City	do do.
		35 persons.		
July	2...	Anthony Godfrey	Locust Gap	Severely injured by a fall of coal.

July	2...	Dan. Foley	Locust Gap	Arm severely cut by a fall of coal.
	2...	Mr. Monaghan	Branch, 4	Leg severely cut by a fall of coal.
	2...	Jerry M'Cabey	Branch, 5	Leg broken in two places by a fall of coal.
	3...	John Kurtz	Shenandoah City	Leg broken by a rolling log.
	3...	Edward Kerns	Indian Run	Severely hurt by a fall of coal.
	5...	Michael Duggan	Lehigh, No. 3	Arm broken by fall of the cage.
	5...	George Smith, Jr.	do.	Arm and face injured by fall of screens.
	5...	Thomas M'Glaughlin	Enterprise	Leg broken—crushed by wagons.
	5...	Henry Davenport	Beechwood	do. do.
	8...	Bryan Flaherty	Swift Creek	Mortally injured by explosion of gas—died.
	8...	James Kelly	Hartford	Dangerously injured by fall of coal.
	9...	William R. Williams	Pyne	Slightly injured by gas explosion.
	9...	David Williams	do.	do. do.
	11...	Patrick King	Schemolie's	Head and arms severely injured by wagons.
	11...	Joseph Cooper	Straw	Severely injured by an explosion of gas.
	11...	Alexander Smith	do.	do. do.
	12...	Jacob Hauck	L. Rauch Creek	do. do.
	13 ..	William Watkins	Colkett	Arm broken by a fall of coal.
	13...	Reamer, a boy	L. Rauch Creek	Seriously injured by wagon and props.
	13...	William B Mayberry	Tremont	Mortally injured by wagons and props—died.
	13...	Patrick Conry	Girard colliery	Leg broken by fall of coal.
	13...	John Carden	Heaton's colliery	Fatally injured in the body.
	13...	Isaac Scelton	Knickerbocker	Leg broken by a piece of coal.
	14...	Daniel R. Davis	Pyne	Burned severely by gas.
	14...	William Philips	do.	do. do.
	14...	Patrick Kennedy	Hickory shaft	Hand lacerated in cog wheels.
	14...	George Harris	Schemolie's	Arm lost, and fatally crushed—died on 21st inst.
	15...	Frank Coffee	Straw	Arm broken by a fall.
	16...	George Graver	Colkett	Seriously burned by an explosion of gas.
	16...	Herman Focht	L. Rauch Creek	Leg broken by a fall of coal.
	16...	Michael Gallagher	Otto Red Ash	Seriously injured by fall of wagon.
	16...	Thomas Keating	do.	do. do.
	16...	Patrick Moor	do.	do. do.
	17...	John H. Williams	Indian Run	Seriously injured by sledge.
	17...	William Moyer	Shenandoah City	Leg badly sprained by a log.
	17...	John Lowery	Raven Run	Leg broken by a fall of coal.
	18...	Arndt Hovercost	Bowman's	Severely injured by a fall of coal.
	18...	Domnick Joice	Shenandoah City	Shoulder injured by a fall of coal.
	18...	Daniel Conner	Trevorton	Severely crushed by a wagon.
	19...	Henry Cummings	Eagle	Severely crushed by a fall of coal.
	20...	Michael O'Hara	Centralia	do. do.
	20...	Joseph Perry	do.	Slightly crushed by a fall of coal.
	20...	William Jones	do.	do. do.

TABLE OF INJURIES—CONTINUED.

Date.	Names of persons injured.	Names of collieries.	Remarks.
July 20...	Samuel Richards	Hazle Dell	Leg broken by a fall of coal.
20...	Daniel Lawler	M'Neal	....do....do.
21...	Ralph Lee	Elmwood	Arm broken and severely injured.
21...	Henry Arnold	Franklin	Severely crushed by the pump rods—died.
24...	Richard Murphy	Suffolk	Arm broken by a fall of coal.
24...	William Dodds	Tunnel Ridge	Arm broken and leg severely injured by a fall of coal.
24...	Hart, boy	Preston, No. 3	Severely hurt—fell off a trestle.
24...	John O'Donnell, Jr.	Girard colliery	Arm badly crushed in cog wheels.
25...	Edward G. Nolan	Live Oak	Severe sprain of the wrist.
28...	Lawrence Little	Norwegian	Foot crushed by wagons.
28...	Patrick Kelly	Beachwood	Both legs shockingly crushed by wagons.
28..	Robert Bradley	Norwegian	Severely burned by an explosion of gas.
28...	A miner hurt	Lawrence's	Chain broke, with five men in a wagon.
28...	John D Evans	Shenandoah	Arm broken by a fall.
29...	Jacob Bissell, Jr	Locust Run	Seriously injured by a timber.
29...	James Hirst	Norwegian	Seriously burned by an explosion of gas.
	60 persons.		
August 1...	Anthony Keppler	Lawrence.	Severely crushed by wagons.
.2...	James Olwer	Hill & Harris	Hands severely cut by a fall of coal.
2...	John Harris	Suffolk	Head severely cut by falling in cage pit.
2...	Thomas Larkin	St. Nicholas	Collar bone broken—fall off a horse.
2...	James Boyle	Alaska	Dangerously burned by gas.
2...	Thomas Moor	....do	Leg broken by a fall of coal.
2...	John Harrison	....do	Eye lost by an accident.
3...	John Holden	Eagle	Arm crushed by a wagon.
3...	Charles Heiser	Preston, No. 2	Badly crushed by wagons.
3...	A miner at	St. Nicholas	Severely burned by gas.
3...	John Mongo	Lawrence	Leg severely crushed by wagons.
4...	John Hoban	....do	Arm broken.
4...	James Ormsby	Maise & Lewis	Dangerously crushed by fall in schute.
5...	Thomas Lynch	Otto	Severely cut by wagon falling in slope.
5..	Frank Zernoltz	....do	Fatally injured by wagon falling in slope.
7...	Thomas Hughes	West Pine Knott	Dangerously burned by powder.
7...	Daniel Hughes	....do	....do....do.
7...	Thomas Holohan	Locust Run	Arm broken.

7...	Thomas Kennedy	Colorado	Severely injured by a fall of coal.
10...	Miles Henry	Anderson's	Fingers cut off—jambed by wagon.
10...	George Athy	Colkett	Badly burned by an explosion of gas.
10...	James Bigg	Rauch Creek	Hand badly cut by a piece of coal.
11...	Christian Schamper	Williamstown	Severely hurt by fall of top rock.
11...	Henry Smith	Colkett	Foot injured by a log.
12...	Wm. Hennessy	Nutting & Lewis	Ankle sprained by fall of coal.
12...	Samuel Swann	Lancaster	Badly burned by powder.
12...	James Harper	do	do do.
12...	John Smith	Locust Gap	Arm crushed by a wagon—died.
13...	Edward Harrison	Big Mine Run	Face severely injured by a shaft.
13...	Peter Weldner	Tunnel	Mortally injured by fall of fly-wheel.
16...	Matthew Shaw	Lehigh, No. 3	Seriously hurt by wagons.
16...	Calvin, a boy	Knickerbocker	Arm broken—fell of the breaker.
16...	J. Thomas	Eschelman's	Severely burned by powder.
16...	Samuel Mason	Bowman's	Shoulder cut by fall of coal.
16...	Robert Weightman	Beatty's	Toes crushed by wagons.
17...	Patrick Downey	Keystone	Leg broken by a fall in schute.
19...	Philip Thomas	L. C. Co.	Severely injured by a fall of coal.
19...	Thomas Loftes	Diamond	Skull fractured—fell off mule.
19...	Samuel Deen	Keystone	Severely burned by gas.
19...	Benjamin Week	do	Severely injured by an explosion of gas.
19...	William R. Jinkins	do	Fatally injured by an explosion of gas—died.
19...	James Sargeant	do	Seriously do do.
21...	James Sheridan	Tunnel, No. 10	Back severely hurt by fall of coal.
21...	David Fury	Burnside	Arm crushed by wagons and props.
23...	Mr. Omelose	Eagle	Severely burned by gas.
23...	John K. Jones	St. Clair shaft	do do do.
23...	Daniel Hurley	do	Slightly do do.
23...	Robert Thomas	do	do do do.
23...	Mr. Conners	Feeder Dam	Severely do do.
23...	Mr. Melody	do	do do do.
23...	William Curry	Preston, No. 4	Severely hurt by falling in an air-hole.
23...	Isaac Thomas	Locust Gap	Leg broken by prop timbers.
24...	Wm. Jones	Wm. Penn	Leg broken in two places by fall of coal.
24...	Dennis Sullivan	Enterprise	Thigh fractured by fall of timber.
24...	Henry Smith	Donaldson	Foot seriously injured.
24...	William Brannan	do	do do.
25...	Thomas O'Brien	St. Clair	Fingers cut off by T rails.
25...	John Crowell	Silver Creek	Severely injured by a fall of coal.
26...	Peter M'Cue	Mine H. Gap	Severely burned by gas in the heading.
26...	Thomas W. Davis	Indian Ridge	Hip dislocated by wagons.
26...	Joseph Miller	Robinson's	Leg broken by a fall of coal.

TABLE OF INJURIES—CONTINUED.

Date.	Names of persons injured.	Names of collieries.	Remarks.
August 26...	Patrick Nulty	Honey Brook	Head severely cut by a fall of coal.
26...	Peter Perry	Bouman's	....do ....do ....do.
26...	James Wood	Locust Gap	Legs crushed in the rollers.
28...	Dennis Murphy	Furnace	Body crushed by a fall of rocks.
31...	Jacob Smith	Kohinoor	Mortally burned by powder—died.
31...	His assistant	....do	Severely....do .... do.
31...	Richard Armer	Knickerbocker	Body crushed by a fall of coal.
31...	Brown, a boy	Hazle Dell	Head severely injured by fall of rail.
31...	Thomas, a boy	....do	Leg broken by fall of rail.
31...	Peter Boultier	Hickory Ridge	Collar bone broken by a fall of coal.
	71 persons.		
Sept. 1...	John Hawkins	St. Clair shaft	Hand broken by wagons.
1..	William Anspach	Thomaston	Mortally burned by powder—died on the 8th.
1...	John Anspach	....do	Severely...do.....do.
1...	Michael Taney	....do	....do ....do.....gas.
1...	Harry Minich	Colkett	Severely crushed by wagons in slope.
2...	Wm. Starkey	No. 1, shaft,	.....do .....do .....fall of rocks.
3...	Peter Grow	Gilberton	.....do .....do ..... fall of coal.
5...	J. Heartzean	Mais & Lewis	Ankle broken by wagons.
5...	A. German	Rhoades's	Crushed by wagons.
5...	Alfred Miller	Big Mine Run	Fingers cut off by wagons.
6...	William Madera	Williamstown	Mortally injured by gas—died.
7..	Martin Gilford	Robinson's	Injured by a fall of coal.
7...	Young, a boy 14 yrs. old	Heaton's	Leg cut off.
8...	Reese Evans	Glen Carbon	Severely injured by a blast.
8...	John Gawley	Tuscarora	Leg broken by fall of timbers.
9...	Enoch Schmeltzer	Reliance	Dangerously hurt by fall of coal.
9...	Martin Tuoy	Lost Creek	Mortally crushed by wagons—died.
10...	Charley Hostman	Mais & Lewis	Dangerously crushed by wagons.
11...	Thomas M'Avoy	Ellen Gowen	Mortally crushed by fall of coal—died.
11...	John Moses	Pine Forest	Slightly burned by gas.
11...	John Gardner	....do	Mortally burned by gas—died.
11...	Andrew Henigan	....do	Slightly.....do .....do.
13...	Michael Wilson	East Mahanoy	Dangerously injured by fall of rocks.
18...	Michael M'Donald	Preston, No. 3	Leg broken.

18...	John Purcell	Colorado	Nose broken by fall of coal.
18...	George Saint	Lost Creek	Eyes injured by lighted lamp.
19...	Patrick Monagham	do	Severely injured by falling in schute.
19...	Walter Kenny	Girard	Back injured by fall of slate.
20...	J. Radcliffe	Suffolk	Eyes lost by a piece of coal.
20...	Matthew Natrass	Honey Brook	Arm cut off oiling pulleys.
20...	Richard Mason	do	Severely injured by a fall of coal.
20...	J. C. Walker	Tamaqua	do do wagons.
22...	Thomas Moss, (boss)	Buckville	Mortally burned by an explosion of gas—died.
22...	Patrick Devine	do	Fatally do do do do.
22...	Mr. Cavanagh	do	Slightly do do of gas.
22...	Thomas Delaney	do	Dangerously burned. do do.
24...	John Brannan	Norwegian	Severely crushed by wagons.
27...	Martin Roland	Oak Dale	Hip brokon by a fall of coal.
27...	Wm. Cavanagh	Colkett	Eyes severely injured by a blast.
27...	James Dooley	Locust Gap	Mortally injured by a fall of coal—died.
28...	George Evans	Rauch Creek	Slightly burned by gas.
29...	Thomas Schuck	Alaska	Severely injured by a fall.
29...	James M'Andrew	Beechwood	Legs and back crushed by a wagon.
29...	Jacob Evans	Live Oak	Face and neck crushed by a blast.
29...	Thomas Brannan	do	Breast and shoulders crushed by a blast.
30..	Samuel Samuels	Ashland	Head severely burned by gas.
	46 persons.		
October 2...	Stephen Weaver	Monitor	Dangerously injured by a fall of coal.
2...	James Crow	Atto Red Ash	Mortally burned by gas—died.
2...	David Harlnutt	do do	do do do do.
2...	Andrew Gavan	do do	Head cut and burned by gas.
2...	William Devine	do do	Severely burned and hurt by gas.
3...	Peter Stanton	Swatara	Fingers broken by fall of castings.
3...	Patrick Caniff	do South	Slightly burned by gas.
3...	Heikes S. Harvey	L. Rauth Creek	Severely burned by powder.
3...	Moses Bateman	Montelius's	do do do.
5...	Hopkins, a boy	Franklin	Severely jamed by slope wagons.
7...	Robert Thomas	Glen Carbon	Fatally injured by a fall of coal—died.
7...	John B. Powell	do	do do do do.
7...	Miner	Tunnel Ridge	Severely injured by discharge of a blast.
7...	Miner	do	do do do do.
9...	John Rilley	Phœnix, No. 3	Hands and face injured by discharge of powder.
10...	John F. Klinegina	Lost Creek	Leg broken by discharge of a blast.
10...	William Walters	Wm. Penn	Head severely cut by falling in a schute.
10...	John Leffler	Tunnel Slope	Foot severely crushed by fall of a coal bank.
10...	William Leebic	do	Mortally crushed by fall of a coal bank—died.
11...	James Laughley	Lost Creek	Injured by falling into an air hole.

TABLE OF INJURIES—CONTINUED.

Date.		Names of persons injured.	Names of collieries.	Remarks.
Oct.	12...	James Taylor.....	Wiggan & Co.....	Thighs and back severely injured by a fall of coal.
	12...	John Brannan.....	Hartford.....	Thigh fractured severely by a fall of coal.
	12...	Neal Kennedy.....	Buckville.....	Seriously burned by gas.
	12...	Thomas Cathcrson.....	.....do.....	.....do..... do.
	14...	Con M'Cue.....	Beechwood.....	Dangerously burned by gas.
	14...	Edward Nolan.....	.....do.....	Seriously.....do.....do.
	14...	William Lucit.....	Pine Forest.....	Slightly .....do.....do.

CLAIMS OF CHARITY.

We find in the Auditor General's annual report for the year ending November 30, A. D. 1871, the following charitable appropriations and expenditures, viz:

To pensions and gratuities, page 122	$92,561 79
To charitable institutions, page 124	336,866 09
To soldiers' orphans' schools, page 125	508,245 33
To common schools, page 125	648,959 84
To houses of refuge, page 133	76,250 09
To penitentiaries, page 134	104,538 93
The total of these items amounts to	1,767,422 09

Then, in view of the beneficent intentions of these public charities, which are so laudably important to humanity, we are encouraged by that charitable feeling of mercy evinced by our excellent Governor and our humane Legislature, that they will feel themselves called upon by the sense of justice and public sympathy to cause such an appropriation to be made at this present session as will, in part at least, relieve the wants of the widows and orphans of the miners who lost their lives in mining coal. These unfortunate poor are neglected and permitted to suffer silently in want, and permitted to reluctantly become inmates of the poor houses, when, by the aid of a small pittance, they would energetically cling to their children and contrive, by their industry, to rear them up under their own care and better their moral and social condition, rather than by poverty be forced to abandon them to their unfortunate fate.

The rates at which the necessities of life and clothing are sold in the mining regions are exceedingly exorbitant, whilst under more favorable circumstances these poor people could scarely maintain themselves without resorting to retailing drink, which subterfuge they are by necessity, but reluctantly, compelled to adopt, knowing that these resorts will become the haunts of the intemperate, licentious and depraved of the community, whose acts they are powerless to compel or control.

Our statistics show that there are some sixty-six widows, the wives of deceased miners, and two hundred and fifty-seven orphans, the most of whom require relief, as do the widows and orphans of soldiers, charitable institutions, houses of refuge, penitentiaries, State Normal schools, etc.; that the sum of $40,000, or so much thereof as may be necessary, should be appropriated for the relief of these destitute persons, as shown by the following table:

Age of widows.	Quarterly amounts.	Annual amounts.	Age of orphans.	Quarterly amounts.	Annual amounts.
20 to 30	$30 00	$120 00	2 to 4	$8 00	$32 00
30 to 40	28 00	112 00	4 to 6	10 00	40 00
40 to 50	26 00	104 00	6 to 8	12 00	48 00
50 to 60	24 00	96 00	8 to 10	14 00	56 00
60 to 70	20 00	80 00	10 years	16 00	64 00

It will be seen by the foregoing lists that there are sixty-six widows and two hundred and fifty-seven orphans, whose average sums will amount to $1,848 per quarter for widows, which will equal $7,392 per annum, and the

total sum of such an appropriation would amount to $20,000 per annum. Legislation in favor of such an appropriation might be based on a tonnage tax collected of the carrying companies, who could pay the money into the State treasury quarterly, for the relief of these poor people. Such misfortunes as these will constantly occur in the coal regions, which human power cannot control. However this may be, we think the sum mentioned, if judiciously managed, will relieve our distressed people and lessen the taxes of the citizens. Neither the operators or consumers could, with any degree of reason, refuse this slight tonnage tax, as it would not reach over cent. per ton, and reasonable defence could not be advanced against this measure of relief. The sum asked for is but a small one, and could not be objectionable. The sum needed could be collected by the coal transporting companies for the State. By direction of the State Treasurer any bank or banks designated by him may pay the sum due to widows, etc., upon presentation of proper checks, signed by the president judges of courts of the proper counties, which will make the labor light.

SUBSISTENCE STATISTICS (EXTRACTED FROM CONSUL KARTWRIGHT'S) IN PHILADELPHIA AND SCHUYLKILL COMPARED WITH ENGLAND.

Articles of subsistence.	Present cost.....	Weights & measures per week.	Price.....	Philadelphia.....	Schuylkill.....	England.....
Flour per barrel	$8 00	21 lbs.	$ 90	$ 62	$ 90	$1 62
All meats	18	20 "	3 60	3 10	3 60	1 62
Lard	12½	4 "	48	44	48	2½
Butter	45	2½ "	1 05	65	1 05	72
Cheese	16	3 "	48	16	48	27
Sugar	14	2½ "	76	70	76	18
Molasses	30	1½ qts.				
Milk	10	2 "	50	58	50	42½
Coffee	30	1 lb.				
Tea	1 00	¼ "	25	25	25	40½
All fish	10	2 "	20	25	20	27
Soap	8	2 "	22	22	22	4½
Starch	12	¼ "				
Salt	4	¼ "				
Pepper	10	¼ "	8	6	8	4½
Vinegar	5	¼ qt.				
Eggs per doz	40	¼ doz	20	12	20	4½
All fruit	16	1 lb.	16	21	16	4½
Potatoes	1 00	8 "	32	47	32	54
Vegetables	20	1 "				
Fuel	3 00	1-5 ton.	60	75	60	15½
All lamp oils	12	1 qt.	12	15	12	11½
Other articles	8	.....	8	21	8	13½
Rents	1 75	1 week	1 75	3 50	1 75	1 35
Taxes	12	1 "	12	10	12	.....
All sorts of clothing	2 16	1 "	2 16	2 00	2 16	54
				14 54	14 03	8 54
Philadelphia mechanic per week earns at steady time				$15 98	$14 54	$1 44
English do do do				9 72	8 54	1 18
Schuylkill miner, unsteady time				14 00	14 03	Dr. 03
Schuylkill laborer, unsteady time				12 00	12 00	.....
Schuylkill outside laborer, unsteady time				9 00	9 00	.....

COMPLETE COAL STATISTICS FOR 1871.

The following is the quantity of coal sent to market by the different individual operators engaged in mining in the mining district of Schuylkill. These returns are not what might be termed official gross returns, and are the only portion of our statistics that we cannot announce as official. This failure occurs from a want of order and regularity in a subject which, above all others, deserves the careful attention of the public. Some of these shipments differ widely, as some embrace the shipments from January to January, others from December to December, and others again from November to November. This statement we trust will explain exceptions taken by outsiders of the correctness of our coal statistics. I am prepared to furnish a correct sheet of coal statistics for 1872. The following will exhibit the names of the different firms, and the number of tons shipped in 1871.

LIST OF COLLIERIES—THEIR LOCATION.

Together with the names of land owners and operators, and the number of tons of coal mined for the year ending Dec. 31, Anno Domini, 1871.

No.	Names of collieries.	Location of colleries.	Names of land owners.	Names of operators.	No. of tons shipped in 1871.
1	Live Oak	Mine Hill Gap	Jos. Patterson & Son	Wm. Prout	8,755
2	Pine Knot, 2	Coal Castle	Dundas	Pine Knot Coal Company	50,121
5	Manchester, 2	Wadesville	Witherill and others	C. Frantz	21,980
6	Norwegian	Mt. Laffee	do do	Schweers & Brown	22,400
7	Raven Dale	Raven Dale	Baber & Lewis	Whitley & Comp	35,494
8	Feeder Dam	Mill Creek	Witherill and others	Mammoth Vein Company	9,093
9	St. Clair shaft	St Clair	H. C. Casey and others	Wm. Kendrick	53,686
10	Thomaston shaft	Thomaston	Manhatton Coal Company	T. H. Shollenberg	23,346
11	Eagle Hill	Eagle Hill	Baber & Innis	Jas. C. Oliver	41,187
12	Eagle	St. Clair	Witherill and others	G. W. John & Bro.	52,806
13	Pine Forest shaft	Crow Hollow	do do	G. W. Snyder	46,369
14	Phœnix, No. 1	Phœnix Park	Phœnix Park Company	Morgan Williams	13,705
15	Beechwood	Mt. Laffee	Joseph Patterson	J. K. Sigfried and others	55,697
16	Oak Dale	Glen Carbon	Dundas & Richardson	John Lencas & Company	56,000
17	Glen Carbon	do	do do	do do	40,287
18	Monitor, No. 1	Wadesville	Witherill and others	Rowland & Company	25,935
19	Greenwood, 1	Greenwood	Greenwood estate	Eugene Borda	30,000
20	Greenwood, 2	do	do do	do	36,341
21	Lambert	New Philadelphia	N. Phil. Mining Company	S. Morgan & Company	16,218
22	Butler	Silver Creek	Valley Furnace Company	Murry & Winlack	9,489
23	Swift Creek	Tuscarora	Bast & Kentucky Bk.	Wm. Hopkins	4,385
24	Alaska	Tamaqua	Tamaqua Coal Company	Alaska Coal Company	24,026
25	Wolf Creek	Minersville	Wharton and others	Kear & Ansty	34,535
26	Silver Creek	Silver Creek	Valley Furnace Company	Williams & Reese	33,250
27	Commercial	New Philadelphia	Bast & Commercial Bank	Abraham Focht	30,253
28	Kentucky	Tuscarora	Tamaqua Coal Company	Schall & Denohoe	17,333
29	Reevesdale	Reevesdale	do do	Jas. Glenn & Son	389
30	Bull Run	Bull Run	Lehigh Coal and Nav. Co.	L. C. & Nav. Company	80,000
31	Glentworth	Eagle Hill	Baber & Innis	Jas. Ryon & Wren	18,421
32	Forestville	Forestville	Manhattan Coal Company	D. Hock & Company	26,925
33	New Kirk	New Kirk	Tamaqua Coal Company	Fry & Shoemaker	14,463

34...	Glen Dower	Glen Carbon	Manhattan Coal Company	T. H. Shollenberg	40,000
35...	Forestville, B. Best	Forestville	do do	D. Hock & Co.	10,923
36...	Jackson	St. Clair	Witherill and others	A. Jackson	6,900
37...	Evans	Crow Hollow	N. America Company	G. Evans	600
38...	Taggart	New Castle	Pott & Bannan	John Taggert	3,400
39...	Hecksecherville	Hecksecheville	Mannatton Coal Company	John Wadlinger	4,223
40...	Hickory Slope	St. Clair	Witherill and others	Wm. Draper	10,022
41...	Kear	Mine Hill Gap	Dundas estate	Kear & Bros	47,911
42...	Summit Hill	Summit Hill	Lehigh Coal and Nav. Co	L. C. & N. Company	64,000
43...	Coal Dale	Coal Dale	do do	do do	78,000
44...	Peach Mountain	Tuscarora	Bast & Kentucky Bank	B. Rowbotham	6,199
45...	Llewellyn	Phœnix Park	Phœnix Park Company	J. O. Maley	3,744
46...	Buck Mountain	St. Clair	Witherill and others	John R. Deehm, (idle)	
47...	Anthracite	Tamaqua	Tamaqua Coal Company	M. Bartholomew	4,278
48...	Diamond	Tuscaror	do do	J. Sullivan	700
49...	Gate Vein	New Philadelphia	Valley Furnace Company	Helm & Company	6,130
50...	Sharp Mountain	Yorkville	Richardson & Wood	Baltaizer & Co	1,800
51...	do	Pottsville	do do	Joseph Wood	1,000
52...	Tamaqua shaft	Tamaqua	Tamaqua Coal Company	J. Whitstone	20,416
53...	do drift	do	do do	do	4,000
54...	Williams's drift	N. America	N. America tract	Charles Williams	300
55...	Big Tracy	do	do	Wm. Keighner	2,000
56...	Peach Mountain	do	do	Wm. Clark	200
57...	Little Tracy	do	do	John Reese & Co	200
58...	Big Tracy, No. 2	do	do	P. & R. R. R. Co	800
59...	Mammoth shaft	Delaware	Delaware Coal Company	do	Sinking.
60...	do do No. 2	do	do do	do	Sinking.
61...	Tracy drift	East Delaware	Witherill & Seitzinger	C. Berluchy	200
62...	Little Tracy, No. 2	do	N. America tract	Joseph Picton	1,000
63...	Wabash	Reevesdale	Tamaqua Coal Company	J. Donaldson & Company	45,850
64...	Revenue	Mt. Laffee	J. Patterson, *et al.*	Pomroy & Rickert	3,027
65...	High Mines	Tamaqua	Greenwood estate	G. Whitstone	5,636
66...	Leurs Vein	N. America	N. America estate	Lewis Faust	100
67...	Palmer	Phœnix Park	Phœnix Park Company	J. Wadlinger	2,000
68...	Little Tracy drift	East N. America	Delaware Coal Company	C. Conner	700
69...	Spruce Forest	St. Clair	Richardson estate	Lucas & Dennings, (idle)	
70...	Washington	Tamaqua	Tamaqua Coal Company	J. W. Krall	1,677
71...	Tunnel, No. 10	Bull Run	Lehigh Coal and Nav. Co	Lehigh Coal and Nav. Co	
72...	Buckville	Buckville	Tamaqua Coal Company	Moss & Abblett	16,349
73...	Tuscarora	Tuscarora	do do	A. Pardee, (idle)	
74...	Thomaston slope	Thomaston	Manhattan Coal Company	T. H. Shollenburg	10,000
75...	Taylorsville	T. H. H. Taylorville	do do	do (new)	2,000
76...	Grampus	New Kirk	Tamaqua Coal Company	Bohanan & Larer	4,609

LIST OF COLLIERIES, &c.—CONTINUED.

No.	Names of collieries.	Location of collieries.	Names of land owners.	Names of operators.	No. of tons shipped in 1871.
77...	Hickory shaft	Wadesville	Wetherill and others	William Draper	4,793
78...	York Farm	Pottsville	H. C. Carey and others	Job Rich	1,200

Shipments	1,349,949	tons.
Local consumption	450,000	"
Screenings and land sales	20,051	"
Total tons in First district	1,820,000	

COLLIERIES IN THE SECOND OR ASHLAND DISTRICT.

No.	Names of collieries.	Location of collieries.	Names of land owners.	Names of operators.	No. of tons shipped in 1871.
1...	Continental	Centralia	Girard estate	Gorrell & Audenried	78,536
5...	Prestons, 1, 2, 3 and 4	Girardsville	Preston Coal and Iron Co.	Agard & Moody	127,527
6...	Tunnel	Ashland	Phila and Reading R. R. Co.	J. K. Siegfried	5,411
7...	Colorado	Colorado	Girard estate	Philadelphia Coal Company	128,245
8...	Bee Hive	Shenandoah	do.	do.	18,316
9...	Grant	Mahanoy	Delano Land Company	J. Yocum	22,539
10...	Oak Hollow	do.	do.	Gorman & Son	36,938
11...	Ellen Gowen	Maple Dale	Phila. and Mahanoy Coal Co.	J. C. Scott & Sons	50,368
12...	Suffolk	St. Nicholas	do.	Suffolk Coal Company	40,069
16...	Honey Brook, 1, 2, 3 and 4	Honey Brook	Honey Brook Coal Company	M'Creary and others	146,000
17...	Silver Brook	Silver Brook	Dillworth & Mitchell	Hosea & Longstreet	36,000
18...	Mahanoy City	Mahanoy	Phila. and Mahanoy Coal Co.	Hill & Harris	44,404
19...	Copley	do.	Delano Land Company	Lentz & Bowman	94,027
20...	East Mahanoy	do.	Kear & Patterson	Pomroy & Rickert	20,357
21...	Girardsville	Girardsville	Girard estate	Agard & Moody	124,420
22...	West Lehigh	Mahanoy	M'Neal Coal and Iron Co.	J. O. Robinson	27,587
23...	Hoffman	do.	Delano Land Company	Hardy and others	18,044

24...	Glendon	..... do	Delano Land Company	J. B. Boylen	54,192
25...	Barry	Yatesville	M'Neal Coal and Iron Co.	M'Neal Coal and Iron Co.	22,031
27...	M'Neal, Nos. 1 and 2	..... do	..... do	..... do	60,000
28...	Knickerbocker	..... do	Phila. and Mahanoy Coal Co...	Knickerbocker Coal Company,	41,766
29...	Trenton	Delano	Delano Land Company	Wooley & Barton	18,236
30...	Draper	Gilberton, West	Gilbert and others	William Draper	87,531
31...	Stanton	Mahanoy Planes	..... do	Miller & Maize	2,000
32...	Hannon	Ashland	Phila. and Reading R. R. Co...	Hannon and others	600
33...	Cambrian	..... do	..... do	Lewis and others	19,249
34...	Locust Run	..... do	Locust Mt'n Coal and Iron Co.	G. S. Rappler	45,187
35...	Elmwood	Mahanoy	Phila. and Mahanoy Coal Co...	Lee & Wren	8,491
36...	Cuyler	Raven Run	Girard estate	Heaton & Bro	52,239
37...	Girard Mammoth	..... do	..... do	J. Donaldson	39,444
38...	Reno	Mt. Carmel	Coal Ridge Iron and Coal Co..	Longstreet & Berton	21,498
39...	Shenandoah City	Shenandoah	Bowers and others	James Neil, trustee	74,007
40...	Lost Creek	Shenandoah, West	Girard estate	Philadelphia Coal Company...	84,738
41...	William Penn	..... do	..... do	Griscom & M'Manus	56,425
42...	Thomas	Shenandoah, North	..... do	Thomas Coal Company	72,257
43...	Union, No. 1	Centralia	..... do	J. Ryon & Company	46,438
44...	Turkey Run	Shenandoah	Gilbert & Sheafer	Jonson & Doyey	54,198
45...	Indian Ridge	..... do	..... do	William Kendrick	5,225
46...	Furnace	Gilberton	..... do	Atkins & Brother	33,999
47...	Primrose	Mahanoy	Delano Land Company	Caldwell & Co	66,904
48...	Keystone	Locust Dale	Phila. and Reading R. R. Co...	William Kendrick	33,912
49...	Locust Dale	..... do	Locust Mt'n Coal and Iron Co.	Locust Mt'n Coal and Iron Co.	31,959
50...	E. S. Silliman	Mahanoy	Phila. and Mahanoy Coal Co...	Rommel, Hill & Harris	22,686
51...	Lawrence	Mahanoy Planes	Gilbert and others	Jacob Lawrence	47,400
52...	Girard	Girardsville	Girard estate	Beatty & Garrettson	42,605
53...	Kohinoor	Shenandoah	Gilbert & Sheafer	R. Heckscher & Co	55,398
54...	Plank Ridge	..... do	Bowers and others	W. Grant & Lee	97,642
55...	Gilbert	Gilberton	Gilbert and others	Gilberton Coal Company	62,534
56...	Centralia	Centralia	Locust Mt'n Coal and Iron Co.	J. M Freck	72,787
57...	Excelsior	Ashland	Phila. and Reading R. R. Co...	J. Cleaver	15,268
58...	St. Nicholas	St. Nicholas	Phila. and Mahanoy Coal Co...	F. & E. D. Denison	65,906
59...	Bear Run	..... do	..... do	Wiggan & Treibles	49,703
60...	Bear Ridge	Mahanoy Planes	Girard estate	Day, Huddel & Co	2,055
61...	New Boston	New Boston	New Boston Coal Company	New Boston Coal Company	8,336
62...	Union, No. 2	Big Mine Run	Bast & Commercial Bank	E. Bast	58,780
63...	Big Mine Run	..... do	Locust Mt'n Coal and Iron Co.	Taylor & Lindsay	19,383
64...	Mahanoy	Mahanoy	Delano Land Company	Bedford, Cox & Co	37,098
65...	Hazle Dell	Centralia	Locust Mt'n Coal and Iron Co.	R. Gorrell	95,825
66...	Tunnel Ridge	Mahanoy City	Phila. and Mahanoy Coal Co...	George W. Cole	59,390
67...	Hartford	..... do	Kear & Patterson	W. Patterson and others	22,326

LIST OF COLLIERIES, &c.—CONTINUED.

No.	Names of collieries.	Location of collieries.	Names of land owners.	Names of operators.	No. of tons shipped in 1871.
68...	Coal Run	Shenandoah	Girard estate	Benizer & Co	54,289
69...	Eagle, No. 2	Centralia	....do	Philip Brenzle	19,732
70...	Focht & Altar	Mahanoy	Delano Land Company	Focht & Whittaker	32,080
71...	Maize & Lewis	Shenandoah	Gilbert & Sheaffer	Maize & Lewis	24,787
72...	Beaver Run	Mahanoy	Delano Land Company	Peter Bowman	23,167
73...	Boston Run	....do	Kear & Patterson	Althouse & Focht	59,769

Shipments	3,088,965 tons.
Local consumption	350,035 "
Screenings and land sales	10,000 "
Total tons	3,449,000

COLLIERIES IN THE THIRD, OR SHAMOKIN, DISTRICT.

No.	Names of collieries.	Location of collieries.	Names of land owners.	Names of operators.	No. of tons shipped in 1871.
1...	Enterprise	Shamokin	Enterprise Coal Company	Enterprise Coal Company	42,949
2...	Daniel Webster	....do	Northumberland Land Ass'n	J. B. Henry	15,959
3...	Stuartsville	Stuartsville	Locust Mountain C. and I. Co.	Wm. Montelius	104,264
4...	Coal Mountain	....do	Susquehanna and C. Mt. Co.	F. Rhoades & Co	21,045
5...	Frank Gowen	Shamokin	Bell's heirs	Boughner & Shepp	19,895
6...	Luke Fidler	....do	Burnside Coal and Iron Co.	Minersville R. R. and Min. Co.	52,314
7...	Reliance	....do	Mt. Carmel and L. M. C. Co	Mt. Carmel and L. M. C. Co.	60,306
8...	Lancaster	....do	Northern Central R. R. Co	Smith & Kaiser	7,533
9...	Black Diamond	Lykens Summit	Lykens Summit Coal Co	W. H. Schmoely	5,204
10...	Franklin	Rauch Creek	De Klein and others	Henry Keil	42,746
12...	Helfenstine, 2	Helfenstine	Helfenstine & Bros	Gordon & Smith	5,091
13...	Kalmia	Red mountain	Fishing Creek estate	Philips & Sheaffer	16,095
14...	Greenback	Mt. Carmel	Northumberland Land Ass'n	Ginterman & Gorman	32,540
15...	Big Mountain	Shamokin	Big Mountain Improvem't Co	J. B. Langdon	60,934

16...	Short Mountain	Williamstown	Summit Branch R. R. Co	Summit Branch R. R. Co	94,458
17...	Franklin	....do	.....do	....do	40,000
18...	Big Lick	.....do	.....do	.... do	107,640
19...	Buck Ridge	Shamokin	Renshaw & Johnson	May & Patterson	92,782
20...	Trevorton	Trevorton	P. and R. and L. V. R. R. Cos.,	J. E. Rathbun & Co	30,616
21...	Excelsior	Shamokin	Fulton Coal and Iron Co	Excelsior Coal Company	56,819
22...	George Fales	.....do	.....do	Shamokin and B. V. Coal Co...	16,402
23...	Shamokin	.....do	Hays, Kelso and Keller	Weaver & Martin	12,455
24...	Hickory Swamp	.....do	Northern Central R. R. Co	Shamokin Coal Company	54,487
25...	Lambert	.....do	Shamokin Coal Company..	William Brown	12,697
26...	Burnside	.....do	Big Mountain Improve't Co....	Isaac May	54,574
27...	Bear Valley	Carbon Run	Carbon Run Improvem't Co...	Shamokin and B. V. Coal Co...	55,093
28...	Mt. Franklin	Mt. Carmel	Fulton Coal Company	A. R. Fisk & Co.	4,170
29...	Margie Franklin	Shamokin	.....do	Enterprise Coal Company.	8,914
30...	Henry Clay	.....do	.... do	Robinson & Guiterman	54,856
31...	Caledonia	.....do	Henry Saylor	Michael Schwink & Althouse..	13,838
32...	Brookside	Brookside, Schuylkill	Monson & Williams	Savage & Kauffman	44,349
33...	Williamstown	Williamstown	Summit Branch Railroad Co ...	W. B. Fowler, General Agent..	235,986
34...	Brady	Shamokin	Fulton Coal Company	Guiterman & Gorman	20,633
35...	Mariam	Locust Gap	Locust Dale Coal Company	Locust Dale Coal Company	20,000
36...	Phœnix, No. 2	Phœnix Park	Phœnix Park Company	E. A. Packer	21,460
37...	Phœnix, No. 3	.....do	.....do	John C. Northoll	14,989
41...	Otto, Nos. 1, 2, 3 and 4.	Branch Dale	Manhattan Coal Company	Cain, Hacker & Cook	93,234
42 ..	Colkett	Donaldson	Tremont Coal Company	Owen, Eckel & Colkett	32,190
43...	Eckert	.....do	.....do	Lewis & Nutting	31,816
44...	Middle Creek	Middle Creek	.....do	Tremont Coal Company.	15,817
45...	Pyne	Swatara	Manhattan Coal Company	C. M. Shoemaker, Ageut	44,096
46...	Locust Creek	Shamokin	Locust Summit Improve't Co.,	Carter & Gorman	8,000
47...	A. S. Wolff	Locust Gap	Locust Gap Iron and Coal Co.,	Kimble & Graber	30,000
49...	Hickory Ridge	Shamokin	Northern Central Railroad Co.,	J. B. Langdon	9,033
50...	Franklin	Helfenstine	Helfenstine & Bros	R. Douty	27,628
51...	Marshall	Shamokin	Northumberland Land Ass'n	W. J. Reese & Co	1,226
52...	Locust Gap	Locust Gap	Locust Gap Iron and Coal Co...	Kimble & Graber	16,903
53...	Cameron	Trevorton	Cameron & Packer	John Haas & Co	123,019
54...	Tower City	Tower City	Monson & Williams	Savage & Althouse	20,687
55...	Monitor	Locust Gap	Locust Gap Iron and Coal Co...	G. W. John & Bro	38,281
56...	L. Rauch Creek	Rauch Creek	Swatara Coal Company	Miller, Graff & Co	92,383
57...	Lincoln	Lorberry	.... do	Levi Miller & Co	39,662
58...	Green Mountain	Mt. Carmel	Green Ridge Coal Company	Samuel Johns & Sons, (idle,)	
59...	Straw	Swatara	Helfenstine and others	Murray & Winlack	250
60...	Clinton	Shamokin	Northumberland Land Ass'n	Bechtel & Kolp	4,348
61...	Fisher's drift	Tremont	Tremont Coal Company	Allen Fisher	700
62...	Coal Ridge	Mt. Carmel	Coal Ridge Coal and Iron Co..	Burton & Bros	32,436

LIST OF COLLIERIES, &c.—CONTINUED.

No.	Names of collieries.	Location of collieries.	Names of land owners.	Names of operators.	No. of tons shipped in 1871.
63...	West End	Donaldson	Treasont Coal Company	Owen, Eckel & Colkett	10,909
64...	Eureka	do.	do.	do.	12,190
66...	Diamond	Forestville	Manhattan Coal Company	Whittaker & Co.	17,053
67...	Locust Summit	Shamokin	Locust Summit Coal Company	Carter & Gorman	10,005
68...	Isaac Taylor	do.	Northern Central Railroad Co.	A. Morton	1,232
69...	Dundas, No. 6	Sharp Mountain	J. Dundas	Abandoned	

Shipments	2,266,532	tons.
Local consumption	300,443	"
Screenings and land sales	10,025	"
Total tons mined	2,577,000	

RECAPITULATION OF THE DISTRICT TONNAGE FOR THE YEAR 1871.

First or Pottsville district:

With many old works	1,349,949	tons.
Local consumption of all sorts	450,000	"
Screenings and small land sale mines	20,051	"
Total tons mined in the district	1,820,000	

Second or Ashland district:

With all new works	3,088,965	tons.
Local consumption of all sorts	350,035	"
Screenings and land sale mines	10,000	"
Total tons mined in the district	3,449,000	

Third or Shamokin district:

With few old works	2,266,532	tons.
Local consumption of all sorts	300,468	"
Screenings and land sales of all sorts	10,000	"
Total tons mined in the district	2,577,000	

THE COAL TONNAGE FOR EACH COUNTY IN THE MINING DISTRICT OF SCHUYLKILL, COMPLETE, FOR THE YEAR ENDING DEC. 31, 1871.

165	collieries in Schuylkill county mined	5,380,819	tons.
40	collieries in Northumberland county mined	1,544,068	"
10	collieries in Columbia county mined	472,029	"
4	collieries in Dauphin county mined	506,084	"
219	Grand total tons of coal mined in the district	7,846,000	

CUMBERLAND COAL TRADE FOR 1871.

[*Furnished by C. Black, Esq., Mining Engineer—Miners' Journal.*]

	Tons—1870.	Tons—1871.
By Baltimore and Ohio railroad	1,112,938	1,494,814
Chesapeake and Ohio canal	604,437	850,339
Total tons	1,717,375	2,345,153

Increase in 1871, is 629,778 tons over last year's shipment.

The foregoing tonnage was furnished by the following companies:

Names of mine or company.	Total tons shipped.	1871. Increase.	1871. Decrease.
Consolidated Coal Company	505,527	121,820	
Maryland Coal Company	333,042	73,688	
American Coal Company	225,654	23,375	
Borden Mining Company	207,650	59,413	
George Creek Coal and Iron Company	192,087	113,384	
Hampshire and Baltimore National and Va. mines,	161,963	57,972	
Midlothian Coal and Iron Company	127,936	91,718	
Virginia Coal Company	81,218	53,183	
Franklin do.	80,447		3,002
Potomac do.	79,715	8,920	
Piedmont do.	79,037	8,022	
Big Vein do.	78,870	17,086	
Atlantic and George Creek Company.	62,632	11,867	
Swanton Mining Company	45,865		8,548
Spruce Hill Coal Company	31,663	12,257	
Barton do	31,478		11,276
Lincoln do	10,799	10,799	
G. Creek and Mining Coal Company	9,564	2,761	
Cumberland Coal and Iron Company			9,049
Central C. M. & M. Company			4,161
Cook Mines			2,151
	2,435,153	666,265	38,187
		38,187	
Total increase, tons		628,078	

LITTLE SCHUYLKILL COAL TRADE.

Names of operators.	Mines.	Tons shipped.	Names of operators.	Mines.	Tons shipped.
E. Borda	2	66,341	G. W. Cole	1	59,390
Mr. Bartholomew	1	4,271	Suffolk	1	40,067
G. Whitstone	1	5,638	Hill & Harris	1	44,496
Reevesdale	1	389	B. L. Eschelman	1	22,236
Fry & Co.	1	14,463	Focht & Whittaker	1	32,080
Moss & Abblett	1	16,349	Kickerbocker	1	41,766
Sharp Mountain	1	20,416	Jones, Ward & Oliver	1	4,533
Alaska	1	24,036	Lee & Wren	1	8,491
J. W. Krell	1	1,677	Pomroy & Eckert	1	20,359
Bohanan & Larer	1	4,609	Yocum	1	22,539
John Donaldson	1	45,850	Thos. Gorman	1	34,958
St. Nicholas		65,906	Peter Bouman	1	23,167
Ellen Gowen	1	50,363			
					676,890
From Mahanoy and Shamokin regions					138,318
Total tonnage					815,208

TONNAGE OF LATERAL RAILROADS IN SCHUYLKILL COUNTY FOR THE YEAR ENDING DECEMBER 31, 1871.

Railway lines.	1870.	1871.	Increase.	Decrease.
Mine Hill and Schuylkill Haven	1,447,151	1,763,138	315,987	
Mahanoy and Broad Top Mountain	1,265,122	1,782,777	517,655	
Mill Creek	169,722	216,194	46,472	
Schuylkill Valley	156,507	183,470	26,963	
Mount Carbon	160,765	134,213		26,552
Little Schuylkill	530,489	815,208	284,719	
Lorberry Creek	75,193	153,500	78,307	
Good Spring	123,555	155,297	31,742	
	3,928,505	5,203,797	1,301,845	
Lehigh and Mahanoy	295,246	498,123	203,077	
	4,223,751	5,701,920		
Union	198,747	308,798	110,051	

Increase tonnage of lateral railroads in 1871 is 1,588,421 tons.

BROAD TOP SEMI-BITUMINOUS COAL TRADE IN 1871.

Exhibition of amount of coal shipped to market from this region.

Names of collieries.	Tons shipped.	Names of collieries.	Tons shipped.
Coalmont		Mansion	
Cumberland	2,407	Mount Equity	15,793
Crawford	11,788	Duval shaft	55,174
Powelton	60,164	Cunard	9,941
Barnet planes	14,489	Mount Eagle	22,468
Barnet	26,022	Scott	5,628
Dudley slope	6,311	Edge Hill	2,005
Blair	15,200	North Point	
Union	4,610	Fulton	4,653
Mooredale	21,210	Delaware	
Broadtop	28,680		
Carbon	6,644	Total in 1871	319,625
Cooke	6,455		

Increase tonnage in 1871, 6,200 tons.

NOTE.—Nineteen collieries employ 648 hands, 398 miners houses, 619 mining breasts; tonnage per day 3,250 tons; estimated value of colliery improvements is $765,000. Philadelphia coal company and R. Gorrell shipped 7,495 tons over the above.

LEHIGH VALLEY RAILROAD.

The total anthracite tonnage of the Lehigh Valley railroad in 1871 was 2,889,074 tons, and 355,096 tons of bituminous coal, making a total coal tonnage of 3,244,170 tons.

Supplied by the following sources:

	1870.	1871.
Wyoming region	588,596	573,581
Hazleton region	2,007,027	1,317,821
Upper Lehigh region	12,002	23,113
Beaver Meadow region	703,634	480,436
Mahanoy region	295,164	498,123
Mauch Chunk region	2,164	7,888
Sullivan and Erie region		8,811
Broad Top region		355,096
Total tonnage	3,608,587	3,244,170

Its distribution along the line of the railroad in 1871:

Packerton	61	Roberts Iron Company	3,544
Lehighton	1,742	Hope rolling mill	2,247
Parryville	17	Allentown	21,772
Carbon Iron Company	29,993	Jordan Manufacturing Co.	1,669
Kittatinny	355	Glenn Iron Company	
Lehigh Gap	68	East Pennsylvania railroad	5,521
Slatington	6,106	Lehigh Iron Company	14,163
Rock Dale	393	North Pennsylvania railroad	171,814
Laurey's	137	Bethlehem	5,536
Spring Mills	255	Lehigh Zinc Company	21,121
White Hall	305	Bethlehem Iron Company	51,240
Ironton	8,073	Freemansburg	459
Lehigh Valley Iron Company	47,055	Ridington	424
Thomas Iron Company	32,310	Chain Dam	80
Hockendauqua	61	Colrain Furnace	18,565
Catasauqua	1,184	Easton Manufacturing Co.	16
Crane Iron Company	74,750	Glendon Iron Company	44,056
Manufacturing Company	8,238	Easton	3,517
Foglesville	2,250	Phillipsburg	10,088
East Penn Iron Co.	5,412	Port Delaware	202,158
Fullerton	1,710	Belvidere	525,857
Copley	796	Central railroad	541,567
Allentown furnaces	47,451	Morris and Essex	174,826
Furnace	2,550	Andover iron works	24,601
Lehigh rolling mill		Warren foundry	5,715
Allentown rolling mill	43,211	Lehigh Valley railroad	41,150

Forwarded east by railroad from Mauch Chunk 2,210,272

PHILADELPHIA AND READING RAILROAD.

Points of supply and distribution of anthracite coal from Schuylkill county and bituminous from Harrisburg, and anthracite from Harrisburg, Dauphin, Allentown, Alburtus, Oreland, and Willow Street wharf, on the Philadelphia and Reading railroad, for the year ending Nov. 30, 1871; tons received from various lateral railroads in Schuylkill coal region.

	Tons.
Schuylkill Valley railroad	109,484
Mill Creek railroad	148,373
Mahanoy and Shamokin railroad	1,389,474
Total at Port Carbon	1,647,331
Mt. Carbon railroad	77,142
Mine Hill and Schuylkill Haven railroad	984,253

	Tons.
Schuylkill and Susquehanna and Auburn railroads	808,022
Little Schuylkill railroad	699,836
	3,716,584
Harrisburg and Dauphin	256,303
Allentown and Alburtus	7,033
Oreland and Willow Street wharf	46,297
	4,026,217
Bituminous at Harrisburg	558,234
As per subjoined statements annexed	4,584,451
Coal passed over laterals for shipments	958,324
Shipped west, via Northern Central railroad	343,667
Consumed on laterals	136,133
Grand total	6,002,575

Where delivered on line of road and branches of Philadelphia and Reading railroad:

	1870.	1871.		1870.	1871.
Jonestown	4,649	17,255	Derry	735	619
Union Forge	420	311	Swatara	5,794	5,191
Mifflin	.....	21	Hummelstown	3,915	4,005
Dauphin	.....	726	Paxton	248	154
Port Carbon	.....	584	Harrisburg	2,820	58,530
Tamaqua	239	1,731	Exeter	813	584
Ringgold	69	53	Birdsborough	27,890	33,802
Ashland	10	10	Monocacy	.....	3,554
Manayunk	.....	191	Douglassville	5,979	2,376
Conshohocken	.....	65	Pottstown	56,645	61,712
Norristown	.....	81	Limerick	2,444	2,210
Frowertown	.....	307	Royer's Ford	2,741	2,557
Pottsville	11,523	16,828	Phœnixville	85,572	93,507
Schuylkill Haven	18	11	Perkiomen Junction,	8,313	7,975
Landingville	949	893	Valley Forge	743	935
Auburn	24,484	31,860	Port Kennedy	5,119	6,380
Port Clinton	551	1,030	Norristown & Bridgeport	182,916	188,499
Hamburg	4,774	3,767	Rambo Kilns	4,525	4,140
Shoemakersville	2,260	1,781	Swede furnace	20,834	22,312
Mohrsville	1,489	1,080	W. Conshohocken	15,840	20,031
Leesport	6,969	3,961	W. Manayunk	.....	7,171
Tuckerton	725	1,595	W. Falls	41,157	32,504
Reading, E. Pa. B'ch	202,451	230,965	Niceto'n & Germant'n	155,602	214,286
Reading & Columbia	.....	87,691	Philadelphia—		
Sinking Spring	99,331	63,020	Via Belmont	195,799	209,761
Warnersville	1,357	1,385	Via Columbia b'ch,	237,775	280,600
Robesonia	11,429	13,778	Via Richmo'd b'ch,	155,202	166,388
Womelsdorf	2,642	1,809	Richmo'd for shipm't	1,893,055	2,311,393
Sheridan	13,616	11,220			
Richland	1,772	1,784	Total paving freig't	3,605,857	4,363,159
Myerstown	7,346	6,035	Coal for Co.'s use	145,133	221,291
Lebanon	88,693	94,599			
Annville	3,610	3,814	Grand total tonnage	3,750,990	4,584,450
Palmyra	2,424	1,710			

Of the above amounts of coal delivered on the line and at the city, there were 867,860 tons of anthracite and bituminous coal received at Harrisburg, which was distributed as follows:

Delivered on the line	210,294
Delivered at Philadelphia	158,352
Delivered at Port Richmond	482,093
Consumed by the company	17,157
	867,866

REPORT OF THE LEHIGH AND MAHANOY RAILROAD COAL TONNAGE, 1871.

Lehigh Branch	1	18,236	Coal Mountain	1	13,804
Hoffman	1	18,044	Caledonia	1	13,838
Malvern, Cox & Co.	1	37,098	Forest	1	1,484
Copley	1	94,029	West Lehigh	1	27,587
Glendon	1	54,192	Shamokin	1	5
Primrose	1	66,904	Reno	1	21,698
Harris, Hill & Rosnel.	1	25,681	Rathbun	1	11
M'Neal Co., Nos. 1, 2, 3.	1	82,031	Dunn colliery	1	85
Lehigh	1	14,588	Lancaster	1	10
New Boston	1	8,336	Sundries	1	1,510
					498,123
From Northumberland county					27,958
Total tonnage by Lehigh and Mahanoy railroad					526,081

Destination of Coal.

The following distribution of coal shipped from Port Richmond:

Countries and States.	Tons shipped.	Countries and States.	Tons shipped.
New Brunswick	8,238	District of Columbia	56,875
Canada	4,713	Virginia	38,624
Maine	86,092	North Carolina	3,751
New Hampshire	40,071	South Carolina	10,304
Massachusetts	903,470	Georgia	8,625
Rhode Island	171,375	Florida	1,364
Connecticut	92,500	Alabama	5,346
New York	525,218	Louisiana	6,625
New Jersey	150,225	Texas	1,196
Pennsylvania	191,896	West Indies	7,055
Delaware	13,403	S. America	263
Maryland	2,799		
Total tonnage shipped			2,343,026

Of this tonnage there was sent to the New England States:

New England States...tons.	1,406,502	South of Philadelphia...tons,	148,912
N. York and N. Jersey....do...	575,447	Foreign Southern ports..do...	10,269
Pennsylvania.....do...	191,896		
Total distribution			2,343,026

SCHUYLKILL NAVIGATION.

The following distribution of coal at points along the line of the Schuylkill Canal navigation, now managed and directed by the Philadelphia and Reading railroad company:

	1870.	1871.		1870.	1871.
Mt. Carbon	35	54	Port Kennedy	.....	103
Schuylkill Haven	1,290	853	Norristown	2,130	2,096
Orwigsburg landing	146	53	Conshohocken	1,365	3,033
Auburn	5	10	Spring Mill	9,190	13,980
Hamburg	3,337	3,373	Salem, N. J	355	3,037
Mohrsville	6,465	2,159	New Castle, Del	1,511	2,455
Shoemakersville			Brandywine, do	3,381	4,908
Felix Dam	.....	5,564	Wilmington, do	15,774	22,346
Reading	25,601	31,383	Marcus Hook	.....	293
Yost landing	422	109	Chester	6,145	11,853
Birdsborough	4,283	7,869	Gloucester, N. J	2,016	6,378
Monocacy, &c	.....	7,657	Darby	965	2,056
Port Union	137	100	Baltimore	.....	353
Pottstown	1,067	449	Phil'a and vicinity	142,986	320,671
Spring Mill	9,120	2,486	N. York and...do	246,783	541,209
Royer's Ford		7,166			
Phœnixville	689	1,331	Total tonnage	526,804	1,010,171

Of the above quantity, 94,813 tons were delivered on the line of canal at points short of Philadelphia, and 53,478 tons were sent south from Philadelphia; 320,671 tons were shipped to Philadelphia and vicinity, and 541,209 tons were shipped east of Philadelphia.

Coal trade of the line between Pottsville and Philadelphia, and on the Lebanon Valley railroad.

	Road.	Canal.	Total.
1870	1,072,400	116,764	1,189,164
1871	1,128,227	94,813	1,223,040
Showing an increase in this year's shipments of			33,876

Of the above quantity, there were delivered at the following iron works along the line of the Schuylkill Canal navigation, as follows:

	Road.	Canal.	Total.
Hamburg	3,767	3,373	7,140
Leesport	3,961	5,784	9,745
Reading	230,965	31,383	262,348
Birdsborough	33,802	7,869	41,671
Douglasville	5,829	7,657	13,486
Pottstown	61,712	449	62,161
Phœnixville	93,507	1,331	94,838
Port Kennedy	6,380	103	6,483
Bridgeport and Norristown	188,499	2,096	190,595
Conshohocken	20,081	3,033	23,114
Spring Mill	.....	13,988	13,988
Swede's furnace	22,312	.....	22,312
Robesonia	13,773	.....	13,773
Sinking Spring	63,020	.....	63,020
Lebanon	94,599	.....	94,599
	842,207	77,066	919,273

The quantity of coal sent to Philadelphia in this year :

	Road.	Canal.	Total.
In the year 1871	923,539	320,671	1,244,310
In the year 1870	785,535	163,265	948,800
Increase in 1871			295,510

The receipts of coal at Port Richmond for these years were as follows :

In 1871	2,311,393 tons.
In 1870	1,899,055 "
Increase in 1871	413,338 "

	1870.		1871.	
	Loss.	Gain.	Loss.	Gain.
On line of traffic		152,111		33,866
At Philadelphia	155,348			295,410
At Port Richmond	409,917			418,348
East by canal	69,606			294,426
	634,871	152,111		
	152,111			
Loss in 1870	482,760	gain in 1871		1,042,050

The Bloomsburg, Towanda and M'Intyre coal trade is as follows :

	Bloomsburg.	Towanda.	M'Intyre.	Districts.
1870	733,035	271,335	17,808	1,022,178
1871	815,079	318,335	106,130	1,239,544
Tons increase in 1871				217,366

Foreign coal trade, as received from the United States Bureau of Statistics, at Washington, for the fiscal year ending June 30, 1871, by Mr. Edward Young, Chief of the Bureau of Statistics.

Where imported from.	Tons.	Value.
England	96,363	$299,721
Scotland	15,966	42,201
Ireland	697	1,857
Canada	165,432	402,519
Other British North American possessions	97,371	237,940
British West Indies	3,794	7,083
Australia	62,264	133,211
Cuba	431	1,166
North German Union	180	666
France	285	639
American French possessions	59	175
Brazil	86	354
Hayti and San Domingo	60	180
Chili	1,037	4,999
All other Portuguese possessions	17	64
Total, rating at $2 55 per ton	444,542	1,132,775

NORTHERN CENTRAL RAILWAY.

The following is the coal tonnage of the Northern Central railway for the six years ending December 31, 1871, which has been furnished by Mr. E. L. Du Barry:

Years.	Way trade.	Baltimore.	Total.
In 1866	177,954	100,110	278,064
1867	304,567	148,810	453,377
1868	455,345	175,334	630,679
1869	414,665	146,534	561,199
1870	534,858	173,948	708,806
Total	1,887,389	744,736	2,632,125
There has been received in 1871			792,513
Grand aggregate tons received, is			3,424,638

Coal was received from the following points:

	1870.	1871.
Lykens Valley	359,102	335,556
Trevorton	5,349	.....
Shamokin	108,815	182,467
Danville and Hazleton railroad	.....	1,870
Lackawanna and Bloomsburg railroad	235,539	222,519
	708,805	792,412
		708,805
Increase in the tonnage of 1871		83,607

The above general data, received from all sources, may be considered correct; some of these firms, railway and canal lines, close their fiscal year's in November and December, but great pains have been taken to get the foregoing figures officially correct.

A STATISTICAL SUMMARY OF THE MINING DISTRICT OF SCHUYLKILL FOR THE YEAR ENDING DECEMBER 31, A. D. 1871.

	First dist. Pottsville.	Second dist. Ashland.	Third dist. Shamokin.
Visits to collieries	246	189	124
Visits to inquests	27	44	40
Visits to First and Second districts	10	30	20
Total number of visits, (official,)	283	263	184
Miles traveled	4,441	4,241	6,566
Slopes in operation	59	62	42
Shafts in operation	9	4	1
Lifts sunk	132	98	61
Number of drifts	28	74	57
Steam fans	37	36	27
Furnaces	3	11	12
Naturally ventilated	33	12	23
Steam jet ventilation	3	7	2
Steam engines in use	243	232	171
Horse power in use	16,012	12,823	7,874
Number of persons killed	19	47	33
Number died of injuries	11	7	10
Number injured	109	159	120
Number of persons employed at the collieries	6,144	6,853	6,514
Number unemployed and partly idle	2,000	2,000	1,500
Number absent or removed	1,800	1,250	500
Total number in the mines of the district	9,944	10,103	8,514
Collieries inspected	77	69	67
Number of collieries partly idle	14	8	10

Grand aggregate, 730 visits made, 15,248 miles traveled; 163 slopes, 14 shafts, 291 lifts, 159 drifts, 100 steam fans, 26 furnaces, 68 natural ventilations, 12 steam jet ventilations, 646 steam engines, 36,709 horse power; 99 persons were killed, 28 died of injuries, 406 were maimed or injured, 19,511 persons employed at collieries, 5,500 persons partly employed at collieries, 3,500 persons absent or unemployed; 213 collieries in active operation and 32 collieries partly.

COUNTY STATISTICS OF THE POWER USED AND FORCE EMPLOYED, AND THE NUMBER OF SLOPES, SHAFTS AND DRIFTS WORKED, ETC.

	Schuylkill county.	Northumberland co.	Columbia county.	Dauphin co.
Visits made	626	74	20	10
Miles traveled	12,942	631	126	1,549
Slopes worked	141	18	7	4
Shafts worked	13	.....	.....	.....
Lifts sunk and worked	250	22	10	8
Drifts worked	102	52	4	1
Steam fans used	81	13	4	2
Furnace ventilation	14	9	2	1
Natural ventilation	52	13	1	2
Steam jet ventilation	12	.....	1	.....
Steam engines	518	78	30	20
Horse power	30,018	3,140	2,121	1,430
Persons killed	73	16	6	4
Persons died of injuries	21	4	.....	3
Persons maimed	334	49	11	12
Persons employed in the mines	14,285	3,151	935	1,140
Persons partly employed in mines	4,000	700	200	150
Persons absent or removed	3,500	200	100	50
Collieries partly idle	24	6	2	.....
Active collieries	164	33	8	4

Aggregate, 730 visits had been made, 15,248 miles had been traveled; 170 slopes, 13 shafts, 290 lifts and 159 drifts are worked; 100 steam fans for ventilation are used, 26 furnaces, 68 natural, with 13 steam jects, are used to ventilate these collieries; 646 steam engines, of 36,709 horse power; 99 persons were killed, 28 persons died of injuries, 406 persons were maimed and injured, 19,511 persons are actively employed, 5,050 persons are partly employed, 3,850 persons are absent or removed; 32 collieries are partly idle and abandoned, and 209 collieries are in active operation.

Owing to a strike, which lasted from the 15th of January to the 4th of June, the colliery force had become disorganized, and afterwards but partially represented. Many absentees and removals took place during the season; over a proper enumeration the inspectors had but little control but by estimate.

FOREIGN CASUALTIES.

Compared with those in Schuylkill county are West Lancashire and North and South Wales. There was one life lost to the average number of hands employed in the following years:

1861	299 lives lost.	1866	216 lives lost.
1862	249 " "	1867	280 " "
1863	314 " "	1868	343 " "
1864	354 " "	1869	309 " "
1865	321 " "	1870	354 " "

In ten years the number of lives lost were 3,039 men, but the whole number of lives lost in the English mines, in ten years, were 10,627. Of these casualties there arose, from

Explosions of gas	2,267 deaths.
Falls of coal and roof	4,164 "
Shaft accidents	1,505 "
Surface accidents	775 "
Miscellaneous accidents	1,916 "
Total number of deaths	10,627

Accidents by explosions are very destructive, but those arising from falls of coal and rock are more numerous, exhibiting the same result as in this region.

MALES EMPLOYED IN COAL MINES.

In English mines there were the following number of males employed, for the following years:

1865	315,451	1868	346,820
1866	320,663	1869	345,446
1867	333,116	1870	350,894

REMARKS ON MISTAKEN MINING COURSE.

It will be observed the general suspension which took place throughout the district on the tenth of January, lasted until the fifteenth of June, without intermission or conciliation, consequently most all the collieries were idle and the miners scattered all over the different counties, which had a tendency to check casualties in this district. Such general and local sus-

pensions are truly fruitful sources of local distress and poverty, which distress extends its influence among various classes of people outside of the mining counties and towns. It is to be deplored that these acts are so commonly resorted to, as they have no reasonable paliation among the numerous industrial public, although there may be potent sources of justification with partisans. Where there are so many thousands of the poorer classes, who are compelled to maintain their families on the very slender resources of manual labor and the public credit system of suppliers, who are often the advocates, and principal gainers, in the end, in such struggles where labor contends against capital, labor really makes war upon itself, while the profits intended to be derived from these means fall vastly short of the profitable anticipations of the masses.

Suspensions produce an acerbity of feeling between the contending parties, which overcomes reason and good feeling, when, by a humane forbearance, by both sides, these differences could be happily adjusted by a resort to amicable conciliation and arbitration, based on as satisfactory a condition as the existing circumstances of the coal trade and market rates abroad would admit of. Too many instances of this kind are known to us in all branches of home industry, as well as in the coal business.

A reduction in the value of a commodity results from a production over its marketable demand. When this is the case, to remedy its bad effects a resort is frequently had to diminish the supply by employing a less force, while by increasing the manufacturing and national means of consumption would be the proper remedy applicable to the interests of the country. To reduce the mining force of the coal regions would work many evils to that class of laborers, as favoritism, in that case, would monopolize all the works and throw out of employment a large force, whose condition would be lamentable, but who, under present circumstances, receive their full share of the profits of labor; were it otherwise, these persons, as a class, would come to grief.

The action of the committees of the Anthracite Board of Trade and that of the Workingmen's Benevolent Association was contemplated favorable of good results, they being competent to determine a proper basis which would adjust the difficulties complained of; yet their labors proved unsatisfactory to the miners, who accordingly declared a general suspension of mining necessary throughout the whole region. This action on the part of the miners was accomplished in a peaceable manner, local complaints were mere trifles.

The committees found their action powerless in the hands of the coal brokers, who refused to purchase coal at such figures as would remunerate the producer and miner. This course broke down the tonnage of the railroad companies, who, to recover themselves to some degree, declared a rise in tolls on anthracite coal generally, with such modifications as the increase in tonnage would justify. This course was complained of, which brought about the celebrated coal controversy at Harrisburg last winter. The business became paralized, and detrimental to all.

These troubles terminated on the fourth of June, by the miners accepting the $2 75 basis, graded up and down to $2 25 per ton. This arrangement circumscribed the miners' wages to $12 50 per week, with his chances to decline in a ratio as 8 is to 10. All other weekly wages to submit to a like modification. Finally the whole region reluctantly resumed operations in conformity with these terms. The railroad companies, in accordance with their promises, reduced their charges to satisfactory figures, and business once more opened with the customary clash and din of other times,

and continued, with trifling exceptions, to the close of the year, with commendable harmony and good feeling.

The manner in which the deliberations of these boards were conducted, deserves great credit. Some few collieries were operated during this suspension, at small profits, as the charges were high to transport the coal to market; though the cost of doing so was, necessarily, largely enhanced, the expenses on the railways were much the same as when a moderate traffic was carried on. Many of the collieries were so circumstanced, that little revenue could be derived from their operations, even when under more favorable circumstances; the requirements of the leases, and condition of the mine, often forced the operator to totally abandon the colliery. The miners in such cases are, as a class, the sufferers, as well as the employer. Such examples are not few within the district. There are four parties properly identified with the coal interests of the district, viz:

First. The land-owners, many of whom, by legislative enactments, are prohibited from mining coal, and consequently are forced to let the collieries to operators.

Second. The lessee, who risks thousands of dollars on the chances of the coal veins being productive.

Third. The miners, whose maintenance and interests are mainly identical with the successes and prosperity of the colliery.

Fourth. The transportation companies who furnish facilities for carrying on the trade of the mine, without which the territory would rest a forbidden wilderness to man.

The coal dealers are the plague spot and curse to all these interests, as they risk nothing, are even supplied with wharfage, and the article delivered in their hands, and through whose fingers the dollars have to pass, with all the demurs, protests, complaints and inventions, kindred to the character of swindlers in other callings, that the operators often, after fruitless endeavors to extricate themselves, are compelled to submit to vexatious pickings and discounts, delays and demurs, whilst at home the claims of his employees, urged by their necessities, come clamering; add to this his rentage, toll and freight bills, colliery expenses, &c., and whatever favorable impressions the appearance of large collieries may make on the stranger's mind, there are numerous vexatious obstacles and pecuniary disappointments in coal mining, that many are not aware of. While there are a few who become successful miners, their success is often the result of mere accident. Apart from all this, the situation and condition of the miner is, by far, the worst. By force of circumstances he is compelled to seek the means by which to maintain his family, by digging coal in the mine, he being a total stranger to any other avocation; here he is surrounded on all sides by a thousand perpetual dangers threatening his existence, by inhaling noxious gases and poisonous vapor, that surely ruins his constitution, and unfits him for any other service. Besides, he being surrounded in his spirit prison, under the contumely of a sullen boss and exacting time-keeper, the morning greetings of wife and children, whilst his thoughts may wander for their love and welfare, and how he may best conduce to the discharge of his duty in the maintenance of that family is, of itself, a harrowing spectacle to imagine, and few who are found outside of his own calling, are imbued with feelings of charity for his perilous situation, and the welfare of his wife and children. Whilst *qua si* philanthopists, seeking notoriety in Pagan lands, have an inviting field for their boastful charity at home, if they but contemplate the very large number of christian widows and orphans left by christian miners, whose lives were sacrificed in the labor of the mine; these unfortunate people are thus committed to the pub-

lic charities of the miners themselves; philanthropy's voice is seldom if ever heard in their behalf, hence their condition is extremely pitiable.

EXPLOSIONS—MEDICAL TREATMENT AFTER EXPLOSIONS.

A report of a South Shield committee goes into a lengthy explanation of the condition in which miners meet their death by explosions, the proportionate quantities of the gases which create explosions, and the nature of fire-damp.

After an explosion, the sort of air occupying the space is called after-damp. This after-damp is composed of 8 parts of nitrogen, having a specific gravity of 0.9722, 2 parts of aqueous vapor, and 1 part of carbonic acid gas, its specific gravity 1.5277. The latter, being heavy, keeps to the bottom of the mine, and is often found eight inches deep on the floors of gangways, etc. Hence it is inferred that when the men, after an explosion, attempt to leave the mine through an atmosphere of after-damp, they are first rendered partially insensible by the nitrogen, which takes the place of atmospheric air, and then, falling, they come in contact with a still more deleterious gas, the carbonic acid gas—black or choke damp, a positive poison—inhaling which to a small extent, they pass rapidly into a state of asphyxy, owing to the state to which their systems have been previously reduced.

Two practical inferences are thus deduced. First, where carbonic acid gas is found abundant the lights are suddenly extinguished, and burn with a dull red flame as they approach it, warning the miner to retire, as here flame is extinguished before life; but when there is a large admixture of nitrogen the lights will continue to burn, as in sulphurated hydrogen, even when the miner has been struck down, life in this case being extinguished before the flame.

The asphyxy arising from nitrogen and completed by carbonic acid gas might probably suggest a different system of medical treatment from that hitherto pursued. The symptoms of asphyxy are readily known by the sudden suspension of respiration and pulsation of the heart, the stoppage of all sensitive functions; the countenance becomes swollen and marked with red spots, the eyes protrude, and the features discomposed.

The most prompt means to succor an asphyxy person must be continued until it is ascertained that life is completely extinguished, or the person restored. The following general remedies should be adopted:

Immediate removal into fresh air; undress and dash the body with cold water; water slightly acidulated with vinegar should be administered in small quantities; clysters of two-thirds water and one-third vinegar should be applied, and followed with a strong solution of common salt or of senna and epsom salts; blow fresh air into the lungs with the nozzle of a bellows in one of the nostrils, and compressing the other with the finger. Should the body retain its natural warmth, and still these remedies have no effect, blood should be let, the necessity of which will be clearly indicated by the redness of the face, swollen lips, and protruding eyes. Should the jugular vein suspend its functions, a resort must be had to open the foot. The last effort to save life is to make an opening in the trachea, and force air into the lungs by means of a bellows. These remedies must be applied with the greatest promptness. The cessation of the pulse and absence of respiration are not certain signs of death; nor should all be regarded as dead whose breath or pulmonary transpiration does not bedim the clearness of the eyes or of the looking-glass; nor those whose limbs appear stiff and rigid.

In giving these instructions, the same committee express the hope that some of these remedies may be judiciously practiced, instead of injurious plans being adopted, until the arrival of medical practitioners, who will find the patient prepared, uninjured, for his professional skill, and his object facilitated—not obstructed, by the previous treatment the patient has received. Under our own experience we have seen patients suffering from the effects of noxious gas, who had been pronounced dead and dying, who were in that comatose condition placed under a covering of earth some five inches thick, saturated with cold water, and who in each instance recovered; while others, similarly situated, and left exposed to the light and fresh air, and bathed with cool water, died from the poisonous effects of the explosion. Instantaneous application of these remedies is eminently necessary, before the patient assumes that languid state, or death will make sure of his victim and restoratives will be given in vain. I have tried this latter remedy upon my own son, and it proved successful, while his companions, similarly affected, but left exposed, died.

Most all our miners are acquainted with the destructiveness of these gases, and it is to be the more surprising that many of them are so very incautious and even reckless in their conduct while working among them. From habit they become accustomed to danger and singularly careless and even reckless in their operations. This is to be the more regretted from the fact, that our statistics show the large number of deaths and accidents that occur are generally attributed to carelessness.

DRAINAGE OF COAL MINES.

The proper drainage of a mine is very essential to its perfect stability and a practical economy of mining purposes. This part of the work of a mine is done where the coal seams are found in high lands, by means of the adits or drifts opened in the seams, giving a slight elevation to the gangway as the work advances, the water forming a stream outward, and serves for an air-passage and traveling road for miners; and the drainage of the surface waters for deep slope, or shaft lifts, open hereafter on these veins, and the preservation of these adits are of important advantage to the future working of the deeper lifts.

In deep lifts there are various patterns of pumps used, such as suction and force pumps, and also buckets, where such means can be advantageously put in operation, and are said to be less expensive and render better satisfaction. Among the pumps in use is the Cornish (bull pump.) It holds the highest rank, and is much less liable to get out of order than pumps of other patterns. The steam pumps now in use are said to be very effective, but the steam being led down the shafts or slope by means of cast iron pipes to the bottom, to where the cylinder is placed, the heat created by the exhaust steam and steam pipes soon acts on the surrounding surface of strata and timbers, and decomposition at once takes place, and therefore this pump is objectionable. The pole pump is often used. It is one of the most expensive and occupies greater space than any of the other patterns, yet their use is continued at many of our mines.

In relation to pumps, and the various hydraulic machines employed in mines for drainage purposes, we must refer to the many authorities who have written on that subject, both in Europe and America. Our limited time and present means at hand prevent us from rendering a more intelligible description, but would refer the reader to Mr. John Taylor's descriptions of pumps in the Mining Review, p. 302.

Causes which vitiate the air in mines.—It is eminently necessary to have a full supply of fresh air in mines to preserve the workmen from accident resulting from gases. The vitiation of the air is caused by respiration combustion of lamps and explosions of powder, the spontaneous decomposition of mineral substances, such as the sulphurets which change into sulphates, the coal which generates spontaneously its carbon, the corruption of the timbers, the natural disengagement of gases which penetrate the rocks, its accumulation in cavities and old workings. The gas thus disengaged disposes itself in the openings according to the order of density, as follows:

CONSTITUTION AND SPECIFIC GRAVITY.

Carburetted hydrogen, (fire-damp,)	558
Nitrogen gas, (azote)	976
Atmospheric air	1,000
Sulphurated hydrogen	1,191
Carbonic acid gas, (black-damp)	1,524

The general means used to remove these elements out of the mine before they become prejudicial to health, or become sufficiently diffused with fresh air as to become deleterious or explosive, is called ventilation. But such means do not always suffice, and it is necessary to produce artificial means for their sudden disengagement and to restore the equilibrium; they should always be recognized, so as to be able to diminish the cause of their production.

In a mine where no particular method is used to renew air, the respiration of the workmen, and combustion of lamps, are not slow to modify it sensibly. In fact, a working man respires an average of 210 gallons of air per hour; a horse 1,680 gallons per hour, and a lamp's combustion 26 gallons per hour. The man obsorbs, in part, oxygen, and substitutes for this oxygen, in the same space of time, 6½ gallons of carbonic acid gas, his lamp, operating nearly with the same intensity as his respiration, produces as much carbonic acid, and augments besides the proportion of unconnected azote. When this mixture attains the one-tenth to the one-fourteenth of the volume of air, the lamp ceases to burn, and overwhelms the miner with oppression; but temperament and habit greatly varies his condition to respire it, and from this cause some men can pass through when the mixture is 20 per cent., though it should never exceed five per cent. It has a great tendency to isolate after generation, and then cause an instantaneous asphyxia. Azote is known by the red light of the lamp flame, which soon extinguish it, renders respiration difficult, produces heaviness of the head, a hissing in the ears, and indicates a different mode of action to that of carbonic acid. The light is extinguished when the mine air contains no more than 15 per cent. of oxygen; (the atmospheric air contains 21 per cent. of oxygen, and 79 per cent. of azote.) It is at this proportion of 85 per cent. of azote, that asphyxia or suffocation is caused.

Proto carbonated hydrogen, or fire-damp is, of all the gases, the most dangerous; not by asphyxia, which it can nevertheless produce, when it is not mixed with its volume of air, but from its inflammable properties. It is disengaged from stagnant waters and decomposed vegetable matter; it penetrates certain rocks, such as the coal series, and the saliferous strata, where it is condensed. It is more abundant in fat coals than in dry coals; it disengages itself in crushed works or crevices, and displaces scales of

coal with a rustling hissing noise. The cracks and fissures of coal and rock, and even the floor of the mine, give out this gas abundantly. Its presence can be easily detected by a light which dilates, elongates and changes blue, which can be seen by placing the hand between the top of the light and the eye. The mixture will explode with detonations, when mixed with 6 times its volume of air. When the miner perceives this bluish limbus, he should extinguish his light, and retire to report its presence to the officers of the mine. Carburetted hydrogen gas is somewhat difficult of ignition. The gauze on the safety lamps cools the gauze sufficient, that a sudden ignition cannot take place, as it requires the metal to assume a white heat before ignition takes place; unless a spark of heated surface exceeds the temperature of 1,500 degrees, it cannot explode explosive gas.

We have drawn freely from standard works, and from our own practice and experience in the mines of this district, matter which is comprised in this report, in relation to deleterious gases, the management of mines, the remedies needed in resusitating persons affected by choke-damp, and other necessary subjects relating to mining, and the means resorted to for the drainage and ventilation of mines. We think the report would be incomplete without adverting to subjects so intimately connected with the mining of coal and with the safety of men employed in the mines, whose lives are hourly imperiled, and who are exposed to accidents inseparable from its extraction and so peculiarly attendant on this particular branch of mining economy.

The subject of mining coal economically in our high dipping veins is often misunderstood by managers of mines, while, under the present reckless system of working them, often more than one-half the coal is left behind. This is frequently the result of ignorance on the part of mine bosses, often of recklessness, occasioned by pecuniary embarrassment, and sometimes from a desire to take advantage of high markets, to make most money by a large increase of shipments. This causes a permanent injury to the community, although, in some instances, the party perpetrating the wrong may reap a transient benefit. The injury to the land-owner and the coal trade is obvious. To the lessee, although more remotely, it is likewise an injury; he may temporarily increase his shipments and make large profits, yet, by a course of reckless mining, his colliery is thrown into such a condition that his subsequent expenditures, in his futile endeavor to repair his mine, will be found largely to overbalance any profits he may have received. He will also sustain a loss by the diminished value of his improvements, resulting from a less amount of coal being mined than he has the capacity to prepare. But to the miner and laborer a very great injury results. He who calculated on the permanency of the mine by proper working, has invested his savings in the purchase of a home for his family in the locality where he naturally would expect his labor to continue, but by improper management he finds the work that should have continued for twenty or thirty years abandoned in eight or ten, and the operation transferred to a distant locality. From this cause his earnings are cut off, his property diminished in value and frequently abandoned, as his necessities require him to remove to a laboring locality. Often this results in the unsettled state of society, which has, with some degree of truth, been complained of. The consumers of coal have, to some extent, been the sufferers by this cause. The mines must, of course, be opened deeper, and the cost of producing coal is necessarily increased and the price must be enhanced. Now this matter has been well understood in Europe, where stringent provisions have been made by law to prevent what is there understood and universally regarded as a public injury. But of late years our legislatures have been

coming forward in an advanced position, and have placed public officers over the mines of the anthracite coal fields of the State, whose duty it is to inspect each coal mine, to direct the proper working of the same, to see them properly ventilated and to see that proper and adequate safety and protection are afforded to the persons employed in working these mines. These inspectors annually report the condition of each colliery, the number of accidents and the cause of the same; they also report on all other matters and things that come under their notice, and prohibit the improper or unsafe working of the mines, even by injunction or other means, and have general supervision over all the mines and mining machinery, and do many other things, on behalf of the Commonwealth, for the safety of the lives of miners and workingmen therein employed.

MINE INSPECTORS.

This staff of officers is composed of excellent, practical and intelligent men, appointed in conformity with the act of General Assembly of the third of March, A. D. 1870, having energetically contributed to the welfare of the miners and workingmen, and are doing incalculable good service since their appointment to the mining population. Their late report shows the amount of duty performed, the condition, &c., of the collieries, and matter of general interest to persons employed in coal mines.

Although many of our collieries are tolerably well ventilated, it must be understood there are some that have but very temporary arrangements for this purpose in mines that generate large quantities of gas. The persons in charge of such mines are those who generally have but very limited practice and little education, and who possess but small means of observation, and to this class the advice of a properly qualified inspector will be to them an incalculable boon. Yet many persons are found among these mine bosses who, from sheer prejudice, are unwilling to profit by such examples.

Our mines generally generate both explosive gas and choke-damp, which so frequently produce such awful destruction of life, and therefore our necessities require stringent attention in supplying sufficient ventilation to warrant them safe. Most of our mines are furnished with section fans of the Beadle pattern, but many are imperfectly located, and the air-courses are often disadvantageously situated, as the drafts are too distant and the excavations extensive, which require the best skill and practical knowledge on the part of the managers to control the fresh air in proper splits and convey it to the workmen, from whence it must pass out of danger to the out-cast shaft. No real dependence can be placed on the current of air, but on its purity depends the safety of the men, as in long traverses they collect an amount of impurities, and although its velocity may appear satisfactory to the miners, it may be so far surcharged with noxious mixtures as to make it both deleterious and dangerous, and even explosive in the highest degree. Some of our mines are extended to great depths, and their mode of ventilation must also assume an important aspect, and should be conducted on the most approved modern principles. As these excavations advance, sufficient openings should be adopted for the freedom of the air-splits to regularly traverse the mine.

The way for a mine inspector is perfectly clear, and his appointment is most certainly the means of doing much good in all the departments and minutia of mining, as well as in effecting proper ventilation and safety of men. But what paliation can be given for the many terrible calamities that daily occur, which seem to challenge the skill, ingenuity, experience and

practice of our mine managers and the so-called mining engineers of our anthracite coal regions? There is no question as to their numbers and talents, but so far the evidence furnished of their ability and usefulness, and the good service rendered the mining community, and the improvements made in mining our valuable coal, is lamentably small. The antiquated methods, practiced by ignorant and incompetent mine bosses in ventilation and mining and development of mines in olden times, still prevail to a great extent, whilst some corporations have attempted to improve on the old system of development of mines at great cost, but have given their management to inexperienced and incompetent persons, and the collieries are worked so grossly wrong that their early destruction is a consequent result. These remarks may be considered out of place, but the real interest of the operators, miners and the community at large demands palpable truths, which cannot be refuted by such cases to which they may be applicable. Such mine managers have given no evidence to become reconciled to or controlled by the advice of our government inspectors of coal mines, but often resist that which is really to the true interest of the colliery.

But the awful sacrifice of human life, and the distress it entails on the laboring community, who are the victims of accidents and terrible explosions, oppresses us with the sad reflection why the mighty efforts of man have not as yet coped with these calamities. The cause is well known, but the remedies applied to mitigate the evil are totally inadequate. The partiality shown to pecuniary interests, like superstitious prejudice, prevails over duty and charity, and compels us to speak truths. Who has gazed on these terrible scenes of death and mourning without being touched with awe and a desire of justice? But these misfortunes are of so common occurrence in the anthracite coal mines that really the employers seldom evince any concern.

However much the question of security of mines and ventilation may be avoided by those who have capital invested in collieries, the question must be decided in favor of sufficient and ample openings from the surface to admit atmospheric and discharge mine air. The stability of the mine depends chiefly on its strong supports while excavation advances. The yield of coal extracted from these supports in the return mining is large and inexpensive. The practical success of such a system of working deep mines would largely reduce the sacrifice of human life and reward capital, for a mine so excavated as to destroy its natural supports in the production of coal, cannot be protected by any structures of timber, however strong; it must yield to superincumbent pressure and decay, which is always a prolific source of expenditure. Often this item of expense alone is so great that the abandonment of the colliery or bankruptcy is the result, when, by an economical system of mining, this could be totally avoided.

MINING OF THE DIPPING COAL VEINS.

The system of mining adopted in our high dipping veins is that of pillar and breast working. This is commenced at the bottom of the slope or shaft openings, leaving only a meagre pillar often for its support. These breasts are generally 30 feet wide and mined up to the next upper lift, the pillars commonly being 12 to 16 feet thick. Air headings are cut through these pillars at intervals of some 30 feet for the purpose of ventilation, but in the extremity to furnish a larger supply, as the prices advance, a resort is had to skipping or mining off these pillars to take a temporary advantage of the market, thus reducing the pillars and increasing the amount of timber for proping up the strata, which, when undermined, will, from its own

weight and the action of gas, eventually crush every form of support, and with undisputed sway prevent the further mining of large bodies of coal that may remain inside of the crush, which, together with the timber and labor, becomes a total loss. These crushes become receptacles for gas. It destroys the permanent air-ways and is dangerous to the safety of the miner and a fruitless experiment to repair, and a standing menace to the profitable working of the colliery afterwards.

A safer system, involving less expense, might be adopted by opening all the necessary gangways and tunnels to approach adjacent veins, and establishing permanent air-ways and out-lets, and preparing and opening breast-work on to the territorial line of the tract, which, for the first year or two, may not yield so large a supply of coal, but the succeeding years would yield largely, with but a fraction of expense compared with the old method. In the return mining the rocks and debris and impurities could be left inside for support. Ventilation could be properly conducted and noxious gases better controlled. The coal in the distant veins should be extracted first, and when abandoned the tunnels should be permanently closed. The cleaning of the coal would be less expensive, the article would command a better price, being free from impurities, and the latter years of the colliery would yield largely and profitably to its close.

SCIENTIFIC AMBITION.

Scientific ambition has resulted in marvelous discoveries in this century—more so than in all time past. First in these discoveries is chemistry, which has conferred on our race untold blessings and prosperity. Still there is a large field open to science, and which exclaims in mournful tones its assistance and aid. This we call the mourning of the miner, and the voice of thousands of comrades from their graves even call on science to come to the rescue of the living, who are alike doomed to dig and delve in the deep mine, amid all sorts of danger known to scientific minds. In this connection we will quote from a work on the nature of fire-damp by a Mr. Dickinson: That imperfect ventilated openings are the most dangerous things in a mine, the gas generated in them being commonly mixed with a sufficient portion of fresh air, rendering it explosive at all times, and states the effect is to quicken the pulse. He tried his own pulse before entering the mine and found it at 78; that after entering the fire-damp it rose to 84, and the pulse of others rose to 120 and 126, and found that a person can survive but a few minutes in this gas. That this gas was explosive at its edges; that to be explosive it required one part of fire-damp and seven parts of air; that one part of fire-damp and fifteen of air rendered it harmless. From the marvelous advance in scientific knowledge much good might be anticipated from improvements in apparatus and in the practical experience of thinking men; that fire-damp dangers might be overcome and destroyed. Sir Humphrey Davy took up this subject, and in his experiments found that pure sub-carburetted hydrogen gas required twice its bulk of pure oxygen gas to consume it completely, and that it would, for this effect, require ten times its bulk of atmospheric air, which contains but two of oxygen, to render the fire-damp explosive; then ten volumes of pure air to one of this gas renders it the most powerful explosive mixture.

The mixture of less or more atmospheric air renders it less explosive, i. e., 3 above or 3 parts below impair it, and here Davy drew a conclusion that below 6 times and above 14 times the volume of gas becomes inexplosive. Scientific men since then are acquainted with these results, but these experiments had been made with gases conveyed from a distance, which might

have the effect of impairing their quality, are conclusions which science yet did not dispute. Davy maintains it is the carbon the fire-damp contains which enables it to emit more light during combustion than pure hydrogen. It consists of 4.3 grains of hydrogen gas, combined with 12.9 grains of carbon, in 100 cubic inches, a fact which should not be overlooked; and that 1 volume of carbonic acid gas combined with 7 of the explosive mixture deprived it of the power of exploding altogether. Hence we are aware that a stream of carbonic acid gas discharged on flame destroys its inflammable quality, and experiments of this sort have proved successful in some instances. Extravagant speculators in our district claim to improve on all the preceding experiments of the scientific men in existence, but so far their experiments prove to be of no account, further than have their names to be paraded before the credulous and simple public. We see nothing in these subjects of theirs, as new conceptions, to warrant investigation, but visionary and hopeless ideas. Though the claims of humanity are loud, and the field of inquiry extensive, for this great protective conception, they are laggard in coming to the rescue with their gifts of scientific knowledge, and so we must set these persons down where they properly belong; this we maintain to be but simple justice to the real men of science, who have so completely defined the nature and quality of these gases as to be correctly understood by the world as they are at present.

STEAM BOILERS.

The material to be used for the construction of steam boilers should be the best charcoal iron, manufactured from bloom iron, carefully inspected by competent persons during its process of manufacture, and stamped, as proof of its genuineness. The boiler-makers should be directed to detect all defects that could come under their notice, and report the same to a proper person; and when constructed, their safety and strength should be properly proved by hydraulic test. The water-gauges should be so arranged that no doubts could be entertained as to their fitness; the valves properly set, the beams and poises stamped, and a steam gauge attached to each pair of boilers; the water to be pure, and the boilers so arranged as to be considered perfectly safe under the care of a competent engineer. Many serious accidents might be avoided, and many lives might be saved, by careful attention.

I will respectfully ask the attention of stationary engineers in particular, and owners and superintendents in general, to the very many serious dangers attendant upon the use of steam boilers, as is well known to all experienced persons. I will not consider or describe all, but only the most serious of them, viz: The formation in steam boilers of what is commonly known to engineers as scale or incrustation. This is a hard substance, formed out of the earthy salts contained in the water, which attaches itself firmly to the whole inner surface of the boiler. It soon destroys the fiber of the metal, and causes a great loss in fuel, expensive delays in cleaning, and, not unfrequently, explosions. These facts are well understood by those who use hard or mineral water for steam purposes, but I wish to simply state a few facts bearing on this subject.

Experiments made by the most accomplished and scientific engineers have established beyond peradventure the following very useful and highly interesting facts, viz:

"Scale, being a non-conductor of heat, the presence in a boiler of one-sixteenth of an inch is a loss of about fifteen per cent. of the heat in fuel." The boiler plates never get hotter than the water when it is in contact with

them, whatever may be the outside temperature, and the water never gets hotter than some 330° under the pressure of 100 pounds. Clean boiler plates would last for years, but when covered with scale, and thus removed from direct contact with the water, they soon become so overheated as to deteriorate in quality and quantity. Explosions frequently occur by the cracking of this scale under a high head of steam, by allowing the water to come in contact suddenly with the overheated plates. Many are the expedients resorted to to remove this scale, by powders, etc., but are often as injurious as the scale itself, being chiefly composed of ascetic acid, the effect of which on the boiler and valves is most pernicious. All will readily admit it is much better to remove from the water all foreign matter which forms scale, before the water passes into the boilers, and at the same time avoid auxiliary boilers, and to entirely avoid or prevent the formation of a scale by supplying pure feed water for the boilers.

The passage of the exhaust steam through the feed water to heat it will obviate the great objections to hard water for steam purposes, as it has the ability to destroy the acidulated matter suspended in the water and render it pure, as is the fact with sea water, which separates the saline substance of sea water by distillation, and renders the water pure and fit for use. No one can doubt the purifying of water by distillation, and while the exhaust steam is the chief medium, and is within the reach of all, it can be cheaply utilized, and there is no doubt of its good effect if properly and carefully applied. This is not an experiment, but an established reality.

HINTS TO ENGINEERS.

Avoid the common practice of running in more water at one time than what is necessary for a supply, as such practice involves an expenditure of coal not necessary, and materially checks the action of the steam.

Blowing off the water when the steam is high cannot be too severely condemned, as the sudden cooling of the plates causes their contraction too rapidly, and if the rent or rivet seams are weak they will ultimately yield to the action of the steam. It is much better to draw off the water at blood heat, and clean your boilers frequently and well.

Boilers should be set one-half inch inclination to every ten feet of their length, and the air current should have a velocity of some twelve feet per second.

In the firing of steam boilers, the fresh coal should be placed in front of the fire until it becomes well ignited, after which it may be properly distributed over the grate to advantage. A heavy draft of air while coaling a fire is very injurious.

Water in steam boilers should be constantly attended to; the gauge cocks should be often examined and kept well cleaned. Should the water be by any accident found too low, the safest way is to draw out the fires, cool the boiler and re-fill it before raising steam; this plan will certainly avoid an explosion. Suffer no night fires under boilers, as the water will be acted upon by evaporation, and attempting to supply this want may cause an explosion and loss of life and property. An intelligent engineer will not precipitate an explosion by any hasty acts of his; he will rather consult safety by calculating the disasters that must follow haste and precipitancy.

STEAM BOILER EXPLOSIONS EXPLAINED.

A report on steam boiler legislation, made to the British Association for the Advancement of Science, at its meeting last year, by some of the oldest

practical men of science in England, such as Sir William Fairbairn and Sir Joseph Witworth, states that for every explosion due to the boiler-minder in neglecting the proper water supply and care, six explosions are due to the boiler-maker or boiler-owner, from making bad boilers and using bad boiler plates, and bad mending and repair work. This committee expressed their conviction that explosions are not due to accidents; that they are not at all mysterious, but that they arise from the simplest causes, and may be prevented by the exercise of prudence, common care and common knowledge. Boilers, as a general thing, burst simply from weakness. Competent inspection is fully adequate to detect the weakness of the boiler in time to prevent explosion, then whether that weakness arises from malconstruction or defective condition, or gross negligence of the owners in permitting careless and incompetent persons to keep them.

Steam, being the vapor of water, or the elastic aeriform fluid generated by heating water to the boiling point, when produced under the common atmospheric pressure, its elasticity is equivalent to the pressure of the atmosphere, and is called low steam; but when it is heated in a confined state its elastic force is rapidly augmented, and is then called high steam. On the application of cold, steam instantaneously returns to the state of water, and thus forms a sudden vacuum. From this property, and from the facility with which an elastic force is generated by means of steam, this constitutes a mechanical agent at once powerful and the most useful, tractable and manageable to be found, as is seen in the vast and multiplied uses of the steam engine.

Steam is invisible, and is to be distinguished from the cloud or mist it forms in the air, that being water in a minute state of division, resulting from the condensation of steam.

CONSTITUTION OF WATER BY WEIGHT AND MEASURE.

Oxygen, 88.9 by weight and 1 by measure; hydrogen, 11.1 by weight and 2 by measure.

One cubic inch of water, evaporated under ordinary atmospheric pressure, is converted into 1,700* cubic inches of steam, or, in a unit of measure, nearly one cubic foot, and it exerts a mechanical force equal to the raising of 2120.14 pounds one foot high. 27.2222 cubic feet of steam, at the pressure of the atmosphere, weigh one pound avoirdupois.

A pressure of one pound upon a square inch will support a column of mercury, at a temperature of 60°, 2.0376 inches in height; hence it will raise a mercurial siphon gauge one-half of this, or 1.0188 inches.

The velocity of steam, when escaping into vacuum, is about 1,550 feet per second, or 1,057 miles per hour nearly, when at an expansive power equal to the atmosphere. When at 10 atmospheres the velocity is increased to 1,780 feet per second, or 1,214 miles nearly per hour, and when flowing into the air, under similar circumstances, is about 1,600 feet per second, or 1,091 miles per hour nearly, or the pressure of 20 atmospheres.

The volume of a cubic foot of water evaporated into steam is 1,700 cubic feet; hence $1 \div 1{,}700 = 00058823$, which represents the density or specific gravity of the steam at the pressure of the atmosphere.

SPECIFIC GRAVITY OF STEAM.

The specific gravity of steam compared with air is as the weight of equal volumes. Thus the weight of a cubic foot of steam, at the pressure of the

* Pole's Formula makes it 1,712 cubic inches.

atmosphere, is 257,353 grains, and the like volume of air, at 34°, is 527.04 grains. Hence 257.353÷527.04=.4883, which is the specific gravity of steam compared with air, and with water it is .00058825.

To compute the pressure of steam, when the height of the column of mercury it will support is given:

RULE.—Divide the column of mercury in inches by 2.0376, and the quotient will give the pressure per square inch in pounds.

EX.—The height of a column of mercury is 203.76 inches; what pressure per square inch will it contain?

203.76÷2.0376=100 pounds.

To compute the temperature of steam:

RULE.—Multiply the 6th root of its force in inches of mercury by 177, and subtract 100 from the product; the remainder will give the temperature in degrees.

EX.—When the elastic force of steam is equal to a pressure of 49 inches of mercury, what is its temperature?

NOTE.—To extract the 6th root of a number, ascertain the cube root of its square root.

Thus, $\sqrt{}$ of 49=7, and $\sqrt[3]{}$ of 7=1.9129×177—100=238°.58.

To compute the pressure of steam in inches of mercury when the temperature is given:

RULE.—Add 100 to the temperature, divide the sum by 177, and the 6th power of the quotient will give the pressure in inches of mercury.

EX.—The temperature of steam is 132°; what is its pressure?

Thus—100+312=2.3277^6=159 inches.

177

By careful study of the foregoing examples by persons in charge of steam boilers, it may be found of great advantage to enable them to better understand their critical profession.

To compute the volume a cubic foot of water occupies in steam:

RULE.—To 459 add the temperature in degrees, and multiply the sum by 76.5; divide the product by the elastic force of the steam in inches of mercury, and this quotient will give the required volume.

NOTE.—When the force in inches of mercury is not given, multiply the pressure in pounds per square inch by 2.0376;

Or 1+00202 p.×(t. 32) 18,329=Volume. P. represents the pressure per square inch, and t. the temperature.

EX.—The temperature of a cubic foot of water, evaporated into steam, is 376°, and the elastic force is 357 inches, what is its volume?

459+376×76.5=63,877.5=178.93 cubic feet.

357.

To compute the velocity with which steam flows into a vacuum:

RULE.—To the temperature of the steam add the constant 459, and multiply the square root of the sum by 60.2; the quotient will give the velocity in feet per second.

EFFECT OF EXPANSION WITH EQUAL VOLUMES OF STEAM.

The theoretical economy of using steam expansively, is as follows:—A like volume of steam being expended in each case, and expanded to fill or supply the increased spaces:

Point of cutting off.	Expansion. Number.	Mean pressure of steam.	Gain per ct. in power.	Point of cutting off.	Expansion. Number.	Mean pressure of steam.	Gain per ct. in power.
.1	10.	3.302	230.	.5	2.	1.693	69.3
.125	8.	3.079	208.	.6	1.66	1.507	50.7
.166	6.	2.791	179.	.625	1.6	1.47	47.
.2	5.	2.609	161.	.666	1.5	1.405	40.5
.25	4.	2.386	139.	.7	1.42	1.351	35.1
.3	3.33	2.203	120.	.75	1.33	1.285	22.3
.333	3.	2.099	110.	.8	1.25	1.223	20.5
.376	2.66	1.978	97.8	.875	1.143	1.131	13.1
.4	2 5	1.916	91.6	.9	1.11	1.104	10.4

In this illustration, no deductions are made for a reduction in the temperature of the steam while expanding or for loss of back pressure. The same relative advantage in expansion as above given, whatever may be the initial pressure of the steam.

Gain in fuel, and initial pressure of steam required when acting expansively, compared with non expansion or full stroke:

Point of cutting off.	Gain in fuel.	Initial pressure required.		Point of cutting off.	Gain in fuel.	Initial pressure required.	
		Cutt'g off.	Full st'ke			Cutt'g off.	Full st'ke
Stroke.	Per cent.	Pounds.	Pounds.	Stroke.	Per cent.	Pounds.	Pounds.
⅛	11.7	1.01	1	⅜	49.6	1.32	1
¼	22.4	1.03	1	½	58.2	1.67	1
⅓	32	1.09	1	⅝	66.6	2.6	1
⅜	41	1.18	1				

The relative effect of steam during expansion is obtained from the preceding rule.

The mechanical effect of steam in a cylinder is the product of the mean pressure in pounds, and the distance it has passed in feet.

The pressure at the end of a stroke, or at any given point of a stroke performed when the steam is cut off.

The per cent. of gain by expansion is obtained by multiplying the relative expansion by 100.

The back pressure is the force of the uncondensed steam in a cylinder, consequent upon the impracticability of obtaining a perfect vacuum, and is opposed to the course of the piston. It varies from 3 to 5 pounds per square inch.

ILLUSTRATIONS.—The initial pressure of steam admitted into a cylinder having a stroke of 9 feet is 50 lbs. per square inch, cut off at ⅓ the stroke, the back pressure being 2 lbs.; what is the relative effect of the steam, its mechanical effect, its mean pressure upon the piston at the end of the stroke, at ⅔ of the stroke, and the gain per cent.?

The back pressure is here assumed at two pounds per square inch, (hyperbolic log. 9÷3) +1=2.009 relative effect, 2.009×50÷3—2=30.78 lbs., and 9×30.78=277.02 lbs. Mechanical effect, 50÷3—2=14.66 lbs. at the end of the stroke, 50÷2—2=23 lbs. at ⅔c the stroke, 1.099×100=109.9 per cent. There is an economy in the use of superheated steam when mixed with steam of about 10 per cent.

When the pressure of steam flowing full stroke is given, its initial pressure can be ascertained by multiplying the unit in the last column of the

preceding table by the pressure of the steam. The results there given are theoretical. In practice, from the resistance to expansion of the back pressure in a cylinder, from the loss of temperature by cooling, and from the friction of the passages, these results are materially reduced.

To compute the gain in fuel:

RULE.—Divide the relative effect of the steam by the number of times the steam is expanded, and divide one by the quotient; the result is the initial pressure of steam required to be expanded to produce a like effect to steam at full stroke.

Divide this pressure by the number of times the steam is expanded, and subtract the quotient from one; the remainder will give the gain per cent. in fuel.

EXAMPLE.—When steam is cut off at one-half the stroke of the piston, what is the gain in fuel?

Relative effect=1.693, number of times of expansion=2.1693÷2=.8465, and 1÷.8465=1.18 initial pressure, then 1.18÷2=.59, and 1—.59=41 per cent. gain in fuel.

The preceding rules and illustrations in this subject are especially intended to assist persons having in charge stationary engines and steam boilers, to enable them to more intelligently understand the various modes by which to compute and ascertain to a nicety the different subjects connected with the requisite knowledge of controlling, managing and superintending stationary engines and steam boilers, and the saving of fuel, &c., all of which is necessarily devolving on them to understand.

POWDER.

Its constitution, compared with steam, is as follows:

Its history is of early date among the Chinese and Hindoos, when Europe of to-day was sunk in semi-barbarism. Appolonius, in writing of a nation of Oxydracae, a people inhabiting the territory lying between the Ganges and the Hyphasis, whom Alexander the Great declined to war against, as they always conquered their assailants by, what appeared to the invaders, lightning and thunder. They also repulsed Herculus and Bacchus, who over-ran India and Egypt. The invention of powder, in Europe, has been attributed to a German Monk, in the 14th century, named Schwartz or "Black Monk;" and also to Friar Rodger Bacon, who is the author and compiler of the English language, and who compiled it from seventeen different languages, and taught and spoken in the 13th century. Schwartz's claims to its European invention is of no value, as he lived in the following century. These facts are not the less remarkable, when such learned Doctors of Divinity are the inventors of this wonderful agent.

It is also singular that the composition and properties of the constituents of powder should remain unchanged from the earliest discoveries to the present time.

Powder is constituted of nitre, charcoal and sulphur. According to Benton, the proportions used by the United States government are—nitre 76, charcoal 14 and sulphur 10. The parts performed by these elements, the same authority says, are shown by the following table:

Composition of powder, to wit:

	Before combustion.	After combustion.
3 of carbon	3 parts of carbon	3 of carbonic acid gas.
6 of oxygen, 1 of nitrogen	1 part nitrate of potassium,	1 of nitrogen gas.
1 of potassium, 1 of sulphur	1 part sulphur	1 of sulphite of potassium.

Powder can be made by nitre and charcoal alone, but not so powerful as when sulphur is combined; besides, the grains are friable, and have an affinity to the absorption of moisture, and leaves a large portion of dreg. Sulphur does not contribute directly to its explosive force, by furnishing a material for a large amount of gas, but by uniting with the nitre it creates a large amount of heat, and prevents the carbonic acid from uniting with the nitrate of potassa or nitre, and forming a solid compound with the carbonate of potassa. It is to the heat, and carbonic acid gas thus formed, that powder mainly owes its explosive force. Nitre does not absorb atmospheric moisture ordinarily—a very prime quality in its ingredient—but is decomposed when strongly heated, and oxygen is evolved at first, nitrogen is then giving off, and paroxide of potassium remains. When heated with combustible material, it becomes completely deprived of its oxygen; this is the part it plays in powder. Charcoal is an absorbent of oxygen, and very combustible. In burning, a large amount of carbonic acid is evolved. If pulverized and heated, it absorbs so much of the oxygen of the atmosphere, and so rapidly, as often to ignite by spontaneous combustion.

The explosion of powder is a deflagration, in which the combination of the ingredients is completed at once, the whole instantly passing into a gaseous state by the influence of heat. These gases are combinations of carbon, of the charcoal, with the oxygen, of the nitre; the sulphur decomposes the nitrate of potash, by combining with its metalic base, and thus setting free an atom of oxygen for producing more corbonic acid gas, which greatly increases its effect. The better these ingredients are pulverized and mingled, the greater its explosive property is increased. This should be thoroughly understood by the manufacturer, in order to produce a good quality of powder; and when this is not the case, the article will always be inferior, and the evil effect produced on the human system by inhalation of its smoke, is very deleterous, especially to persons employed in mines.

MINE ATMOSPHERE

Gradually seizes on animal vitality as well as matter; the smoke and dust commingled with the air of the mine is greatly influenced by atmospheric action in producing putrefaction and decomposition, which generates contageous effluvia of a parasitical nature, and is noxious to health and life. The mine air is full of floating spores, which gradually become impregnated with acidulated vapor; these particles assume a poisonous combination, and are deleterious to the blood. The constant putrefaction of decomposing matter produces different gases, on whose vitiated effluvia these floating spores are parasitically sustained, and in fact produced; they are too minute in form to be considered of any serious injury to the proper development of organic blood. The respiratory organs of the human system conduct this poison into the blood while the body is in a cooling state, which tends to destroy the coloring matter of the blood, as it would the

substance and vitality of a plant. When, by exercise, the system is heated, the lungs require a larger supply of air to sustain it, and consequently consume and discharge large quantities of this noxious air, surcharged with ammoniacal pungency, which attacks the vital corpuscles of the blood. When carburetted hydrogen gas is present in the mines, these sporey particles have a greater affinity to oxidation and poison. When this sort of air explodes its temperature is increased to some 1,500° of heat, and will expand to 1,700 times its former volume; blood heat, at 98°, receives 1,400 per cent. of a suddenly heated charge; the lungs are suddenly distended by this expansion, and so sudden is the action of the heat and pressure on the subject, that the system is incapable of resisting the violence of the shock. The poison discharged into the blood by this action corrodes the sensibility of the flesh and blood, and destroys the organization of the fleshy textures of the anatomical elements of the injured parts, and utterly subverts the re-formation of genuine flesh.

CARBONIC ACID GAS, (BLACK-DAMP.)

It consists of one prime equivalent of carbon = 6.125 + 2 of oxygen = 16.026, whose joint sum is = 22.121, represents the atomic weight or combined ratio of this acid in the neutral or proto-carbonate salts. Its natural form is gas, the specific gravity of which is 1.5245, compared to atmospheric air 1.000, and being so dense that it may be poured out of one vessel into another. From its existing copiously in a solid state in limestone, coal, etc., Dr. Black called it fixed air, and it is as 1 to 1000 volumes of air. Carbonic acid gas is subtle, and is found in subterranean caverns; it issues in copious currents from fountains and mines, and is called choke-damp from its suffocating quality. Its presence may at all times be detected by its extinguishing lights by its mephitic property. Its presence in water gives it a pleasant taste, but becomes vapid when it is evaporated. Carbonic acid gas occurs in nature combined with salifiable bases, as in carbonates of soda, baryta, strontia, magnesia, zink, lead, ore, coal, etc. Its substance may be separated by strong ignition, or by affinity of muriatic, sulphuric or nitric acids. It is formed whenever animal or vegetable substances are burned with free access of air, from their union with carbonaceous principle with atmospheric oxygen. It is formed particularly in cases of fermentation, and is also generated in the breathing of all animals, from four to five per cent. in volume of the inhaled oxygen being converted at each expiration into this gas, which contaminates the air and renders ventilation necessary to life and health. It is destitute of color, has a sourish, suffocating smell, an acidulous, pungent taste, imparts to moist litmus paper a redish tint, and weighs 46½ grains per 100 cubic inches and 802½ grains per cubic foot, a little more than 3¾ ounces avoirdupois; a cubic foot of air weighs two-thirds that quantity, or 527 grains. Under a pressure of 40 atmospheres it can be converted into a liquid state, and may be solidified by its own sudden spontaneous evaporation. Now if air contains over fifteen per cent. of this gas, it becomes unfit for respiration or combustion. Animal life is then destroyed under its influence. But to guard against accidents by this gas, it is first proper to introduce lights and observe its action on them, before a person should carelessly risk his life under its influence. It may be pumped out of its situation, or forced out by strong currents of air. Slakened lime may be used as a purifier. Our coal mines largely generate this gas, but very few cases of accident occur, of late years, among our miners from the effects of choke-damp.

CARBURETTED HYDROGEN GAS (FIRE-DAMP)

Is a compound of carbon and hydrogen, of which there are several species, such as oil gas, olefiant gas, oil of turpentine, petroleum, naptha, napthaline, coal gas and caoutchoucine. All of these gases are explosive, but in mines that generate this gas a change in the atmosphere causes a change also in the gases in the mine. As air is elastic, it is capable of being pressed into the strata as the gas rushes out, which balances the atmospheric weight after the pressure of gas therein is reduced below it. The air works in and out of these stratas and mingles with the gas, as both are elastic, because the same reduced weight which causes gas to generate will also, under an increased weight, force it back. The atmospheric weight is seldom ever steady, but works backward and forward like the breathing of an animal. The stratas under these reductions give of gases pure or mixed as these changes occur, giving off both until the explosive gas is exhausted, after which the black-damp only is discharged. These changes may be noticed in fissures of coal, stone or rocks by applying the flame of a lamp to them, which will indicate the change or weight of the atmosphere, and the miners' working places are more or less affected by such changes, and it is therefore necessary that the ventilation of mines should be governed by rules in unison with these atmospheric changes to insure a successful ventilation of a mine that generates noxious or explosive gas. The barometer will indicate these changes, but will not show before the extra discharge of gas commences, but both changes may be seen at the same time. Where the mercury moves upwards, there is a greater weight of the atmosphere, and diminishes as it moves downward. Where the mercury appears to move downwards, it indicates the strata to give off extra gas. Fire on the barometer denotes the generating of large quantities of gas, and the miners are constantly in danger of life unless there is a sufficient current of pure air circulating to dilute and render harmless these gases. But the greater danger is observable when a sudden fall in the barometer and a corresponding rise in the thermometer occur at the same time. These changes are signs of imminent danger. The changes in the pressure of the atmosphere vary from 14 lbs. to 15 lbs. per square inch. When the gas is reduced in the strata, under the pressure of 14 lbs., and the atmosphere suddenly changes to its former weight, 15 lbs., the atmosphere itself is then pressed into the strata to occupy the space of the escaped gas. Gases are constantly generated in mines, and as the air passes on its course it accumulates these gases until it is delivered at the out-let. In no part of the mine should stagnant air be permitted to remain, as it is the more dangerous from its constant generation of gases. Two cubic feet of explosive gas weigh a little more than one of air, it being much lighter. It will occupy the highest situations in vacuo, and will escape through any available crevice sooner than air.

EXPLOSIONS OF GAS.

Discharges of explosive carburetted hydrogen gas are of very frequent occurrence in our mines, and many are the melancholy examples of this dread scourge to be met with among our hardy miners. This state of things is not to be wondered at when it is known that the heat of this gas, when it explodes, is raised to 1,500 degrees Fahrenheit; its flash is so instantaneously communicated and so penetrating that its force or violence cannot be confined or resisted until its gaseous properties are consumed. By its sudden expansion the air of the mine is impelled so precipitately that works of extraordinary strength are demolished and annihilated, every object is

vulnerable to its consuming flames and yields to its influence. The miner who, by any miraculous means, escapes its raging fury, will surely fall a victim to the noxious, suffocating, deadly influence of its after-damp. The air is deprived so suddenly of oxygen and vital properties, by its high rarified temperature, that it is rendered exceedingly deadly. The unfortunate miner who is forced to breathe this gas after-damp is instantaneously thrown into a comatose state; he becomes deprived of all consciousness, pulsation ceases, the system is paralyzed, and the victim expires in any posture in which he may be placed; apparantly without a struggle his spirit passes away. Unfortunately, such deaths are numerous in our mines, and poverty and sorrow are sure consequences. Often very little commiseration is extended to the widows and little orphans, in the calamity thus suddenly brought upon them by culpable negligence or bad management, rashness or ill government of the mines. The dangers are numerous, and often neglected until surprised by an accident; then all is astir to correct the evil, while none are willing to acknowledge their culpability or blame for the maiming or death of the victim.

Here we append an illustration of the different temperatures of heat at which certain bodies become liquified, to show to what a destructive extent the person of the miner is subjected to under the explosion of fire-damp.

In designating the effect of heat on various bodies, we adopt Fahrenheit scale for all purposes.

TABLE OF EFFECT UPON DIFFERENT BODIES BY HEAT.

Cast iron thoroughly melts at (Fahrenheit)	2,754°
Fine gold melts at	1,983°
Fine silver melts at	1,850°
Copper melts at	2,160°
Brass melts at	1,900°
Welding heat of wrought-iron at	1,950°
Common fire at	790°
Gun powder flame at	950°
Fire-damp flame (carburetted hydrogen gas) at	1,500°
Zinc melts at	740°
Lead melts at	594°
Bismuth melts at	476°
Tin melts at	421°
Mercury melts at	39°
Human blood heat at	98°
Water boils at	212°

Thus it will be seen by the foregoing table the degrees of heat which produce the liquefaction of metals. Compare these temperatures with the heat of the human blood, and even inhumanity itself must shudder with pity at the direful torture the miner must undergo by the shock of an explosion of carburetted hydrogen gas, besides the chances of being suffocated by after-damp. Really his calling is but a forlorn hope at best, besides the destitution it entails on those whose maintenance depends on his earnings.

ATMOSPHERIC AIR.

The quantity of oxygen in equal volumes of air at different temperatures is described thus: Dry air, at 85°, contains 10 per cent. less oxygen than when at the temperature of 32°. When saturated with vapor it contains

12 per cent. less, hence if an average supply of 1,500 cubic feet of air per minute is required in winter to supply a certain number of men, 1,650 cubic feet of air will be required in summer.

One hundred cubic inches of atmospheric air at the earth's surface, when the barometer is at 30 inches, will, at the temperature of 60°, weigh 30.5 grains, being 830.1 times lighter than water. Its constituents consist of 20 parts of oxygen, 80 parts nitrogen, and in 10,000 parts there are 4.9 parts of carbonic acid gas (black-damp.) Its main pressure is found to be 14,706 lbs. avoirdupois per square inch on the earth's surface, but is subject to and controlled by atmospheric action. 13.29 cubic feet of air weigh 1 lb. avoirdupois, and 1 ton of air will occupy 29,769.6 cubic feet of space, its ratio of expansion, and all other elastic fluids, for all temperatures, are uniform from 33° to 212°. They expand from 1,000 to 1,376, equal to $\frac{1}{479}$ =.002087 for each degree.

MINE AIR—CONSTITUTION OF.

The heat of the temperature at the surface of the globe is estimated at 50°. The extremes of natural heat are said to be from 70° to 120°, and of artificial heat, 90° to 36,000°. The mine air is surcharged with a less or greater amount of carbonic acid gas, or black-damp, and varies according to situation and circumstances, and averages from 5 to 28 per cent., and in many localities to 85 per cent. Most generally it is impregnated with a percentage of carburetted hydrogen gas and vapor. The average temperature of our deep mines is about 60°, and for every 10° above 32° it loses 2 per cent. of its oxygen. We then assume that the mine air, at 60°, loses 6 per cent. of its oxygen, and is constantly saturated with vapor at that temperature, approximately estimating at 20 per cent. in a mine, which still reduces its percentage of oxygen to 16 per cent. less, from 480 parts at 32° to 516 parts at 60° temperature. The average condition of our well ventilated common mine air in winter loses 16 per cent. of its oxygen and expands some 36 parts at 60° temperature; hence, if an average of 3,000 cubic feet of atmospheric air per minute be required to supply a certain number of men in winter, it will require 5,000 cubic feet of air per minute in a mine to supply the requisite quantum of oxygen for the supposed number of men employed. To this supply we may include $\frac{2}{5}$ m. or 2,000 cubic feet more for waste, animals and lights, or 7,000 cubic feet per minute in winter, while in summer it will require 7,500 cubic feet of air per minute to produce the needed quantum of oxygen to supply the same number of men, &c., to properly sustain respiration. In mines where large bodies of carburetted hydrogen gas are generated, ventilation should be accelerated and the supply augmented, and the leakages so secured that each working department should be supplied with its proper proportion of fresh air near its working face, and be made to return through the upper headings and old workings, out of reach of men and animals, to its proper out-let openings, so that the air which ventilated one district should not, on any pretence, be used to ventilate another district. The rapid motion of the air in a mine where large bodies of gas are generated should not at all be considered safe; on the purity of such air alone safety depends, together with the well organized government of the men employed. Where this is not the case, and the workmen disregard safety by taking momentary advantages of trifling opportunities, the probabilities are nine in ten that serious injuries are the result. But there is no reasonable excuse for permitting such conduct where an intelligent mine boss is in charge.

GOVERNMENT OF MINES.

The good government of a mine is of utmost importance to all persons connected therewith; it is the principle result of practical ability and prudent care, and should be studied by persons in charge of a colliery. He should adopt such needful regulations of the mine, see to the enforcement of these rules, and compel their observance for the safety of his workmen and the interest of his employer, as should be necessary. He should be conversant with all the workings of the mine and mining machinery, ventilation, quantum of gases generated therein, and have a practical knowledge of controlling ventilated gaseous mines with safety. He should permit no standing gas left in any locality, and conduct sufficient supplies of fresh air into the different working places for the health of his workmen, and conduct it therefrom up through and out of these separate districts, without danger or annoyance to the miners. The air used to ventilate one district of a mine ought not to be used to ventilate another, as it will carry with it the noxious properties of the former, loaded with impurities, and dangerous to man. The permanency of the mine should be his study, by directing strong pillar work through to the boundary line, having proper regard to the inclination of the dip and drainage. The supply of coal furnished by these strong pillar works, in return mining, would adequately repay the proprietor for such mining. The cost of timber is much less, and other expenditures correspondingly lighter. Where steam engines can be used to advantage, they are preferable to animal power, are less expensive, and render better satisfaction. The mine boss should have a proper mining education, to enable him to correctly understand his duty, and report monthly, or oftener, on the progress made, the expenditure, the condition of the mine, of ventilation, and the coal tonnage that could be supplied, with the condition of stock, machinery, force employed, keep an adequate supply of mining material on hand for immediate use, see to the condition of the buildings and tenements, see that all performed their duties properly, and were paid for their labor, see that all things are in their proper place and carefully used. A failure in any of these requisites in a mine boss, is a real loss to all parties, and a lamentable want in his profession or calling. His accounts should be properly kept and daily entered—mistakes are inexcusable.

GOVERNMENT OF WORKMEN.

The workingmen, and all employees, should, for their good and safety, observe and obey the mine regulations, and respect the instructions given by persons that are in authority, if competent. It should be their duty, while working in any part of the mine, to keep their working place safe and in proper order, and if, at any time, they found themselves unable to do so, they should immediately report the fact to the mine boss, or to the person delegated with power to act.

No person should hastily enter his own, or another's working place, until he first ascertains from the officer in charge, that such place is safe and free from explosive gas or black-damp, and after cautiously entering the same, it should be his duty to carefully examine the place, to test the correctness of such officer's report, and if, on such examination, he ascertained the place to be unsafe and dangerous, he should quit the place, and report its actual condition to the principal officer, who should forthwith investigate the conduct of the subordinate officer, and if found derelict in the discharge of his duties, to be peremptorily dismissed, and his situation forfeited.

Every person, or body of persons, working in any place where fire-damp is generated, or other noxious gas, (stone or white-damp,) should keep at least one good safety lamp lighted and suspended in a proper place, higher than the other lamps are carried, so that any accumulation of gas can be instantly detected, and the necessary precaution used for its safe removal, without endangering the men.

That every person discovering fire-damp in his working place should immediately remove all lights to a safe situation, and report the result of his discovery to the proper officer, whose duty it would be to apply the proper remedies for its safe removal, without delay.

Every person employed and working in a mine where explosive gas is evolved should make a very close and careful examination of his place with the aid of a safety lamp, and ascertain if it is free from explosive gas, etc., and also take the same precaution before and after each discharge of powder, and ascertain the actual condition of the locality. to know whether it is or is not safe to work in.

Any of the mine officers who may receive notice from any person working in a mine of the actual presence of explosive gas in his working place, or of any other danger, whatever be its character, should give the matter complained of his immediate attention, and afford relief.

Every person using a safety lamp should, at quitting his work, return it to the person whose duty it is to examine its condition, have it cleaned and see that it be in proper order for use on a succeeding working shift; and the use of any safety lamps, other than those which have been inspected, should be strictly prohibited on any pretence whatever.

That the persons who may be descending or ascending any slope or shaft should avoid all manner of hasty bustle or unnecessary hurry, in their efforts to ride up or down such places on the means used for conveying men into or out of the slopes or shafts, as such incautious haste often results in death or serious injury; and it should be the duty of the engineers having charge of such hoisting and lowering tackle and machinery, together with the mine bosses, to carefully examine the same before the men are permitted to use such means of descent or ascent in the slopes or shafts aforesaid.

Any breach of the governing rules and regulations of a mine should be deemed a finable offence, and dismissal should follow a repetition of the act. No person, apparently under the influence of intoxicating drink, should be permitted to work in a mine, nor persons who are subject to unnatural fits of sickness, who might by their unaccountable acts endanger the lives of their fellow-workmen. The employment of wicked disturbers of good order should be prohibited.

The employees in and about collieries should have a discretionary regard for the property of their employers, and should, as a matter of justice and right, cultivate good feeling among themselves and the officers in authority. On the other hand, the general conduct of employers and their bosses towards their workmen should be conciliatory and respectful, using all classes with equal fairness and justice, compromising all difficulties that circumstances may bring to the surface, and affording medical relief to the injured men, assistance in defraying the burial expenses of deceased miners, and relieving the wants of the widows and orphans whom dire misfortune places at their mercy. No man's religion or his nationality should ever be a bar to his receiving employment and equal justice at the hands of his employers and the officers in charge. Should this state of things be cultivated among this class of people it certainly would be a great benefit.

When we open the pages of the histories of other lands, we there read with regret of the barbarous and cruel servitude exacted by employers; that a poor man's life was a life of suffering—the very instruments in the hands and at the bidding of their tyrant masters to crush and humble themselves and their posterity in mental and corporal bondage for centuries. The strong men were used in war on sea and land; the humble were used as the beasts of burden; the wicked consigned to slavery, and the brave consigned to exile or death, the offspring claimed as a hostage and the estate confiscated. This barbarous scourge unhappily ruled over the human race in every land and in all times; and in every generation, with but very slight abatement, the faggot, the pillory and the lash had been unsparingly applied by the very savages who claimed to rule by divine right of kings.

This state of things is, happily, giving place to new-born ethics and higher enlightened charity, and every species of the old tyranical bigotry is yielding to reason, civilization and science. And we may not risk even the slightest rebuke for apparent immodesty in asserting that a new history of the world and of our triumph has been opened, and that the good men of every tongue have been rapidly contributing their enlightened gifts to its pages ever since the glorious discoveries by Columbus and the proud victories of Washington. The sublime distinctions which the present and future generations shall attribute to the claim and names of these pillars of our race shall live forever. Columbus overturned the superstitious impossibilities of the past by combating theory and ignorance and discovering a virgin world to all, while Washington conquered tyranny and slavery and established a virgin constitution on a basis of liberty, equality and fraternity, the logic of which this day is of greater strength, supremer power, and more endurable than all the past evidences of man. Man being a free agent by natural law, and alone responsible for the measure of his intelligence, his desires and necessities being numerous, and the vicisitudes of his life diversified and variable, his nature is agrarian, selfish, avaricious and covetous; knavish, tyranical, cruel and violent; outrageous, fierce, furious and passionate; vindictive, villainous, wicked and depraved. In this state he is the lowest animal in all creation; the most filthy, the most degraded and dangerous of all; a cruel fiend, a terror and scourge on earth, and a mocker of the Deity who created, formed and endowed him with all the attributes of devil and angel. Discipline, example, cultivation and education transmute this creature morally, intellectually and physically. These faculties, when properly cultivated by religious precept and civilization, will elevate this wonderful creature to almost the dignity of an angel. Our race from early date, then, may be divided into two classes—the savage and civilized, and these again into the following order, thus: The rulers and subjects, the governing and the governed, the tyrants and serfs, the autocrats and plebeians, the crafty and simple, the rich and poor, the inheritor of the soil and the tiller of the earth. Out of the 1,200,000,000 of human beings that inhabit the earth, necessity compels seven-eights of that number to rely on and become subject to the rest. Why this? The governing power, through state craft, by its policy, forces the masses to submission by its tyranny, taxation and privation. It fabricates out of these masses an army scourge to overawe and intimidate the remainder, and the avaricious instincts of the rulers of the people are such, that each section of the race dreads the encroachments of its neighbors, and places the weak eternally in fear of the powerful. And thus it is from age to age.

The auspicious influence of Christianity, as far as it has pleased Almighty God to diffuse it among our race, has indeed enabled man to realize his inferiority and menial state, and by culture and education he becomes elevated to the dignity of the man. Man's necessity creates a new source of employment, and the obligation of the ruling power is to originate a new development. The natural resources of a country are but the gifts of a bountiful God, and the development of these resources is the work of man. Now, in order to reduce these sources of wealth to a practical result, the capitalist and speculator seek out their fellow-beings who, from direct necessity, are compelled to live by employment; they are legions, and are in the field for a price; they are classified in the order of their skill; they are employed, and are directed in their avocations and become subject to the will of the employer and director. No more are they their own free agents; they are the subordinate agents in the hands of their employers. We should shudder with astonishment at man's wonderful power of endurance, and at the large amount of service he is capable of performing, and the varied and numerous fields of labor open for employment and exercise. To contemplate this, and with what ill success the past generations have improved their condition in life, is truly astonishing.

I believe the measure of our understanding and happiness has been apportioned to every one as seemeth good to the Creator, and through Him knowledge has been communicated to our race, and that our poverty must bear with submissive patience—toil and disappointment shall be the reward of ignorance—whilst education and cultivation lends its charms to craft, cunning, superiority, distinction and wealth. Under the power of these influences, he becomes superior to his fellow-beings that trudge and toil for him. Rapacious desires often take vengence on him for the calamities he brings upon others. Often whole nations are doomed at his nod. Trace the various callings of the servile hosts of man, and portray them in their true colors, and amongst them all, we find none so full of danger as that of the miner; his avocations are doomed. He it is that must delve a life of labor in the deep damp gaseous mine, amid every sort of unhealthy air, shut out from the light of day and its pure atmosphere. Thousands of perils constantly surround him, and yet how intrepidly he advances through these wild caverns, when taken into consideration the cares of a family, and their filial claims on his earnings, together with his parental solicitude for their welfare. Human reason must accord to him a full measure of pity, and none but a savage would deny him his just rights. The sailor, inured to the dangers of the deep, and the soldier to the tumult of war, are objects of pity, and the nation supplies their wants, relieves their distress, and cares for their orphans and widows with food and raiment; but how widely different it is with the miner, his widow and orphans, when cast away by misfortune on the cold dry shore of poverty, with none to hear their cry, or come to their relief.

MINING AS AN OCCUPATION.

Take any other occupation of man and compare it with the miner's and it will be found entirely incomparable and more easy, for he is constantly subjected to dangers, always instantaneous, and in every inconceivable form. Inured to these vicissitudes of life, he trudges on apparently unconscious of impending dangers. With his safety lamp in hand he enters these dreadful grooves and caverns, exploring the localities that generate gases, which are eminently destructive to animal life. The crushing sounds of cracking rock and timber fall keenly on his ear. He readily perceives danger and

boldly advances to discharge his duty, but the solidity of the surroundings is yielding to the unsupportable pressure of the superincumbent weight above him. He ascertains his proximity to danger, and, perchance, is instantly overwhelmed and crushed to death, or burned to a crisp by explosions of carburetted hydrogen gas.

His parental ties with his family and the world are suddenly sundered forever. Distress and misery overshadow his household, (often a mere hovel,) and his family is cast adrift on the cold charity of a few poor persons of their kind. The commiseration of a liberal people, and the fostering patronage of our good laws, are evoked in their behalf. I may, with some degree of impunity, risk an apparent reflection by a supposed inclination to ask the sympathy of a generous public for this unfortunate class, yet charity, with her thousand blessings, inspires me to speak for these orphans, hundreds of whom are self-unsta ning, and whose cases invite the friendly consideration of this government to afford them relief by contributing to their maintenance by a moderate appropriation, based upon the tonnage of marketed anthracite coal, which might be collected by the executive officers of the carrying companies, and paid quarterly to the State Treasurer, without inconveniencing the producing and consuming classes. The amount per ton would be a small one. The object is a laudable one, and could not at all be objectionable. The sums thus paid to the Treasurer might be on deposit six months in advance of calls, which claims may be fixed by the Legislature, and warrants for the same to be signed by the president judges of the proper counties, the holders of the check certificates, the widows, orphans or guardians, and to be properly registered, and the banks of these counties to be directed to discharge these claims quarterly, as the law shall direct. We think this plan would obviate the inconveniences that often arise from other modes of charitable distribution of funds, and not subject the money to pass througb agencies, having full confidence in our judiciary to satisfactorily mete out justice to each.

At present very many of these distressed widows are forced to resort to distasteful expedients and exceptionable to their sense of honor and feeling, by opening drinking shops, in the hope that they can keep around them their little families. But the dissipated and unruly haunt these unprotected resorts to carry out evil doing and villainy. Their condition would indeed be quite different had they better means of support. Their industry and energy would be prompted to act uprightly and independently, or their pensions should cease whenever misused or misapplied.

It is worthy of commendable notice to know, with the large mixed population in the anthracite coal regions, and the large number of distressed persons among them, and the numerous resorts of dissipation that abound, that so very few violations of law or breaches of public peace occur. Such has been the case of late years, and it is the consequent result of religious influence and moral training. The sociality of the different nationalities and the sense of fraternization and equality among the people cause evil-doers to be so circumscribed that they become outcasts in society. The public verdict is so strong against them, and is more potent than the law itself and far more dreaded, that society soon gets rid of these unfortunate persons, and they, in return, submit to the better order of things, and cast aside their folly and evil habits.

STRIKES—THEIR CONSEQUENT RESULTS.

The law of encroachment evoke the opposite, or the law of resistance; that of oppression, evokes rebellion; that of coercion, evokes resentment,

and that of maladministration, evokes revolution and retribution. These are the evils which produce discord among the miners and operators in the anthracite coal regions of Pennsylvania, and is coeval with the coal trade from its commencement.

These evils exist, and through their influence destroys the true basis of harmony that should be perpetuated between the employer and employed throughout the coal regions of the State, and tends to eventuate in the destruction of the interests of both parties, i. e. labor and the capital which gives it employment. These two elements are the grand conditions, when properly and profitably utilized, for the building up of a nation; and the nation that does not cultivate and protect these sources of wealth will become a nation of paupers and aristocrats. These two elements may run to extremes, and thereby seriously endanger other interests by agitation and exorbitant demands, when the demand and supply is below a medium equilibria. But strikes should not be the means used to accomplish a reconciliation between those parties; it should be effected by the miners, their employers and an umpire. But there are adventurers in the coal trade, at all times, that cannot be trusted on honor or word, whilst there are others who proved themselves to be models of integrity and justice, in whom the workmen have implicit confidence and faith.

CLASSES AFFECTED BY STRIKES.

There are six classes of citizens who suffer from strikes in the coal region.

The first is the miner who earns nothing, but spends his little savings, which is to the detriment of his little family, who are compelled to work while yet too young, debarring them from ever rising up from the thrall of the mine, but are doomed to delve in the very place where their delicate constitutions are short lived; that little family is very soon broken up and scattered, with no better prospects at last than at first. This is, consequently, the teachings of imprudent counsel, whilst the high road to a better condition is open to all who may seek a more congenial employment.

The operator loses by compulsory expenses incurred, whilst nothing is produced to render any profit from his mine, whilst he is bound by stipulations of a lease, to conform to sundry enactments, which compels him to pay monthly rents on a specific shipment, whether the coal is produced or not. He is to keep the mines in working order, feed his stock, continue the pumping out of water, consume coal oil and keep mechanics and hands; this is a heavy expense to bear during strikes.

The land owner is no gainer in the long run; he, too, must eventually defray expenses of improving the mine for some new tenant, and the damage to mines, mining material and buildings, soon consumes his profits, and in all this affair the miner is no gainer.

The industrious manufacturing and producing classes of citizens throughout the entire country are crippled by the non-supply of fuel, and whilst they, in a measure, must lay idle, the products of other countries flow in upon our markets, and consequently our mechanics must stand idle, and suffer want and privations.

Many of the coal consuming public on these occasions become great sufferers, as the price of fuel runs up beyond their ability to purchase their wants. This class of people have to suffer a coal famine when they are least prepared for it, and when we consider the large number of families who maintain themselves by handling coal, which is the chief source of their support, and see what numbers of people are employed on railroads, at shipping ports,

in way trade, coasting trade, and coal handling generally, we find that they are losers by suspensions, as well as the miners themselves. All losses occasioned by strikes are losses that cannot be recovered, and to this class of people they cause a permanent pecuniary loss; then, to make a balance of the imaginary profits derived by the miners on these occasions, I think, will be against them, though evident proofs are at hand to show that very often this action of the miners is forced upon them by circumstances over which they have no control, as in coal mining and marketing, like in other business, there are good and bad agencies, and these evil agencies the miners are compelled to resist, and have no other means of resistance than to quit work and abide the consequences.

Suppose our government became involved in a war with a powerful adversary, and our miners would in that event take advantage of the situation of affairs, what would be the state of our navy? It might be answered, like that of France lately. In such a case, would not the humble miner be of vastly greater service to the State than the speculator, who is always its deadliest enemy?

In the very best governed nations of the world there is always enough of a rebellious element to come into action at any favorable opportunity, and can this country be an exception? To dole out justice to the deserving classes, and to ameliorate their condition, should be the interest of every good government.

EMPLOYERS.

The interest of a coal operator would be to cultivate a spirit of kindness towards his employees, and in return he would gain their confidence and respect. He should not jeopardize their lives for trivial gains, but ought to protect them in their dangerous employment; and should be the arbiter in adjusting their complaints, and see that some are not placed above the others, but classed in accordance with their skill and industry, and that each person receives his proper proportion of wages, according to his work. In some instances this is not the case. There are some employers who are not daily in the mine, and some who seldom go into the mine, and who get all their information from hearsay of the bosses; consequently they may have only a crude knowledge of what is going on inside, and no doubt there are many clashing interests inside among the different parties that would not bear an impartial investigation. Favoritism, and a lack of mining ability on the part the bosses, are often the evils complained of, which matters seldom come to the notice of the employer until too late to be remedied. There are some persons who have the audacity to pass themselves off as mine bosses who lack the very first, and indeed all the requisites of a mine boss, and numbers of excellent operators and miners are ruined by such characters, who parasitically attach themselves to the honest employer and, vampire like, drain his resources. This language may be considered severe by some, yet we speak of but plain facts, which cannot be controverted, and the Schuylkill region must have lost millions of dollars and millions of tons of coal by such frauds.

The interest of the employer is to obtain skilled workmen, and it would also be his greatest interest to secure the services of competent, practical and educated mine bosses, who would be honest, just and upright to man and master, and who understood the various matters concerning the management of mining, and mine and men government.

I here refer to the sayings of the wise: "That the eyes of the master do more work than his hands."

MINE BOSSES.

It would add greatly to the interests of the operators, land owners and coal producing public at large if mine bosses would be persons of good practical experience, and have or possess the requisite qualifications of mining engineers. The position is an arduous one, involving very serious difficulties, and such that ignorant men cannot grapple with. Affording protection to the lives of the workingmen, the stability of the mine, the proper service of mining machinery, the supply of coal necessary to yield a proper revenue sufficient to pay a healthy percentage on the investments, the proper ventilation, drainage and working of the mine, sufficient material for immediate use, nothing to be in confusion or disorder, intelligent and accurate measures and accounts, to be constantly present and first in all dangers, to see that no man should suffer a wrong or suffer no man to wrong his employer, to place no man in danger until he inspected the location personally and decided its condition, belong to his many duties; he should not, above all, favor creeds or nationalities, as is often the case, nor keep incompetent persons as fire bosses, who may endanger the lives of his men and the destruction of property by their false reports; he should stand an examination by a board, composed of two practical operators and two mining engineers, whose duty it should be to grant him a certificate in accordance with his class in mine boss-ship before he should undertake the management of a colliery. For failures in these requirements the miners should report him to his employer, and, if forced upon them, it would not be wrong for them to object to his continuance over them, as the miners are the greatest losers by the bad management of mines. There are at present several cases on our record where the juries of inquisitions have rendered verdicts charging bosses and fire bosses, or both, with neglect and incompetency, and where disasters result from such neglect and incompetency. It must be very strong evidence of wrong management within where so many valuable lives may be sacrificed by these acts. By giving this subject publicity we may no doubt incur the displeasure of a few, yet it is our duty to cast as much light into dark places as will reveal the wrong doer and encourage the worthy man.

It is proper to say the mining district of Schuylkill has very many excellent operators and mine bosses, who always have done justice, and are now doing all that can be reasonably expected of them, regarding what is right, but it is not of this class that we refer to above.

MINERS AND WORKINGMEN AT MINES.

Of all the qualifications of man there is none whatever so highly commendable as honesty. This one quality embraces all the other good parts that combine to make a man, and sinks beneath the world's foundation the venal and corrupt of our race. To be low in estate is unfortunate, but to be honest is above price. Our humble miners and mine laborers are, as a generality, among this class of our citizens, but, unfortunately, unseen difficulties arise between themselves and their employers regarding the price of wages that often lead to unprofitable conflicts, and generally end with the miner and mine laborer being the losers, notwithstanding the temporary advantages he may suppose to have gained at the close of the disputes. But mining coal, like other branches of national industry, will prosper much better by a steady course of trade and constant employment than by any activity or influence it may be vainly supposed to receive from stoppages by strikes, which are a positive embarrasment rather than a stimulative to the pecuniary interests of the miners.

The interests of the mining public are co-ordinate with the interests of the employer, and for real benefit they should harmoniously act together in keeping the colliery steadily in operation; any discordant councils should be rejected. Resort should be had at all times to amicable conciliation, and no influence should induce parties to repudiate what would appear fair and equitable. Any colliery that we know of may be kept steadily shipping coal, provided all parties be willing to act justly and to yield some small points in controversy, and bear with the ups and downs of the times, so that their employment may be constant and profitable to all. Coercion is slavery in the abstract, and will sooner or later throw down its shackles. Often we injure our cause by too much zeal on our part to triumph, while prudence would dictate that the fewer conflicts which arise between the operator and his workingmen the more prosperous will be the cause of each. A nation so full of industry as ours, and yet comparatively young, with such liberal institutions, and humane rulers conducting its government and people, can no where else be found; our population composed of so many mixed nationalities, and our domain so varied and extensive; our national and commercial marine so extensive, our home production and market so healthy, it would be to the interest of all to labor for our national wealth, as the miner's boy has the same highway open to fame and distinction as the son of the rich man. If mining will not pay a man, he has the homestead in the national domain open to him; if this cannot be desired, there are thousands of other channels of industry, all over the country, inviting labor, which will really reward a person as well as mining coal. But to attempt the usurpation of powers which are not legally his, is a fatal mistake.

The Philadelphia and Reading railroad company has lately leased the Schuylkill canal navigation, together with all its equipments, rights and franchises, for a term not exceeding nine hundred and ninety-nine years. Under its present management the coal of the whole line is now shipped on board of boats at Schuylkill Haven docks, and thus by a concentration of its shipping to one point, where railway accommodation is available, the business is more readily handled, and the necessary but useless expenditures incurred in maintaining the other shipping stations are abolished, the force of employees, officers and repairs are reduced. Now that this great inland improvement is under the lash of a competent chief, a very small outlay would soon make of this canal a grand link between the coal region and our seaboard, through which vessels of large draught could pass from the Hamburg docks to any port on our shores. To make the canal navigable for such draughts, it is only necessary to take advantage of the deep valleys, constructing them into large vessels as natural reservoirs, and the valley of the Schuylkill would afford a canal of any depth and breadth necessary for large propellers to pass through, while the maintenance of these improvements would be but a trifling expense. Any person conversant with the construction of the shipping docks in Liverpool can readily see how rapidly large vessels can be loaded, handled and put to sea there. With the geographical advantages afforded by our mountain ranges, no alarm need be felt about a sufficient supply of water at all times, and the docks could be so constructed as to readily load out any large vessel in a few hours' time; such vessels could reach tide-water in thirty-six hours on their outward trips. Coal thus shipped would not be subject to re-handling at other points, which would subject it to additional waste and cost in its carriage; and as for the trifling difference in the different sorts of ash, I am of opinion the coals would give better fuel by being mixed, and be much less subject to clinker or run to waste.

The present condition of the coal market in the Schuylkill region is, and indeed has been for years, embarrassing to the interests of our people. The geographical position of our sister coal counties on our eastern boundary, with the ability of the wealthy coal corporations in that region, cause such superior commercial influence in the coal market that our individual operators are left as mere spectres in the back-ground, subject to all the disadvantages that arise under strikes, the fluctuation in the coal trade, and maintenance of collieries, as will be explicitly exhibited by the following figures:

For each mine-car loaded, handled, hauled and delivered at the foot of slopes and shafts, viz:

Approximated cost per ton of 2,240 lbs., (dirt, rocks, slate and coal mixed,)	$ 85
To handling, cleaning and hauling outside the same	35
To all manner of bills to colliery account	40
To all inside openings and their attendant cost	32
To an average rent on royalties on coal lands	46
To an average toll on lateral railroads	30

This, at a basis of $2 75 per ton at Port Carbon=$2 68. To this must be added loss of animals, breakage in machinery and incidental expenses, together with freights and tolls to New York, which, from this exposition it will be seen, unless a colliery is exceedingly favorably circumstanced, it is impossible to make our deep mines pay, without the price of coal is up to paying figures. The enormous expenditures incurred in developing our deep mines, in former years, have driven our large coal companies out of the business, and left the lands waste, the mines idle, and the buildings to rot. Very many melancholy evidences can be met with in the Schuylkill valley to-day. The petty little land-sale drifts, suffered to be worked on their surfaces, have consumed all the young and old timber, which, had it been properly protected for the last twenty-five years, would now be of intrinsic value to new developments.

A new order of things must take place for the redemption of our mining interests, which will be sufficiently powerful to grapple with this monster, and create a new form of things that will redeem the region and make it prosperous and interesting. There is not an equal amount of territory in the State or nation, which affords greater facilities and advantages to the investment of capital in any and all of the different branches of business, such as furnaces, rolling mills, nail mills, cotton mills, potteries, machine shops, agricultural manufactories, boot and shoe manufactories, and any other business that requires water or steam power for its purpose. Its coal, water and railway facilities cannot be excelled elsewhere. There need be no doubt but that hands, for any or all of these enterprises, can be obtained, if only capitalists will open to us a business for our surplus population, which would then become self-sustaining, which is not the case at present in many localities.

Below will be found a table giving the elevations of different points of interest in the mining district of Schuylkill above the elevation of mid-tide on the Delaware river at Philadelphia, as kindly furnished me through the courtesy of Franklin B. Gowen, Esq., president of the P. and R. R. R. Co., from surveys furnished by the company's honorary staff of civil engineers. First, the late lamented Joseph Byers, R. C., Pottstown; Chas. Byers, R. C. M. and B. Mountain railroad; William H. Biens, R. E. Mine Hill railroad, Pottsville; Gen. Henry Pleasants, C. E. on construction and development of mines, Pottsville; Henry K. Nichols, R. C. E. Schuylkill Val-

ley railroad, Pottsville, and James F. Smith, Esq., R. C. E. Schuylkill navigation canal, Reading. From such very valuable statistics our information will be found to be correct and useful, and, at the request of several gentlemen in the region and abroad in sister counties, we again copy this valuable information in this year's report.

Table of elevations of points on the line of the Mine Hill railroad and its laterals above mid-tide at Philadelphia.

Locations above mid-tide.	Feet above mid-tide.
Schuylkill Haven Junction, Nav. crossing	520
Westwood, old colliery, junction	663
Westwood and Muddy Branch junction, Weaver's colliery	697.75
D. Hoch & Co 's colliery, head of West Branch	873.11
Cain, Hacker & Cook's colliery, Otto, Muddy Branch	853.11
Junction, Swatara and Middle Creek railway	817.11
Swatara Falls colliery, Claud, White & Co	1,019.14
Tremont coal company's colliery, Middle Creek	1,015.14
Junnction, T. and Mt. Eagle R. R., at Fisher's mines, Tremont,	758.15
Henry Heil colliery, Upper Rauch creek	1,139.19
Wm. & Thos. Kear's colliery, head of Wolf creek, Minersville	788.9
Wm. & Thomas Kears' colliery, north side of Mine Hill gap	841.10
East Pine Knot colliery, Laurel run siding	881.10
T. H. Schollenberg's colliery, Thomaston	967.115
Lucas Denning & Co's colliery, Dundas and Richardson siding,	1,033.13
T. H. Schollenberg's colliery, Glendower	1,200.135
Head of Mine Hill planes, Broad mountain	1,519.185
Foot of Mine Hill planes, north side of Broad mountain	802.205

NOTE.—The Kear and Ansty slope, at Wolf creek, is sunk to the depth of 1,520 feet, on a 33° angle, which will equal 828 feet perpendicular. Thus the difference of level at the bottom of this slope and mid-tide on the Delaware river is 39.1 feet; the slope bottom is deeper than mid-tide.

Table of elevations at different points in Ashland basin and vicinity.

Locations.	Feet above mid-tide.
Pioneer colliery, first in Ashland at drift level	853.225
T. & L. Herman colliery, foot of Big Mine Run planes drift level,	988.245
J. E. Winkoop's colliery, head of...do.....do	1,279.25
J. Ryon & Anderson.....do.....do.....do	1,285.25
Robert Gorrell, Hazle Dell colliery, Columbia co.	1,355.225
Jos. M. Freck's colliery, Centralia.....do	1,425.26
Wm. Kendrick's Keystone colliery, Locust Dale	1,025.25
Locust Dale colliery, G. H. Potts & Co., Columbia co.	1,086.25
Meriam colliery, Locust Summit, G. W. John & Bro., Col. co.	1,330.27
Graber & Kemble, Locust Gap, Northumberland co	1,190.28
Locust Gap colliery, Locust Gap creek	1,090.28
Junction of Mine Hill and Shamokin Valley railroad	1,025.00

The above elevations have been furnished me by William H. Biens, R. E. M. H. & S. H. R. R., from surveys lately made by that company; which railway and branches, with rolling stock, equipments, rights and privileges, etc., have been leased to and now operated by the Philadelphia and Reading railroad company.

Table of elevations at different points above Mount Carbon.

Locations.	Feet above mid-tide.
Junction of Mt. Carbon and P. R. R. at Mt. Carbon	591.2
Upper Danville and Pottsville railroad at Wadesville	790.48
Beechwood colliery, Mt. Laffee, Potts & Co.	847.78
G. S. Repplier's colliery, junction, Mill Creek railroad	876.1
Port Carbon crossing	627.8
Pottsville, in front of the Pennsylvania hall, Centre street	603.75
Middle Port	712 9
Tuscarora	895.7
Mountain Link Summit, east of Tuscarora	1,024.8
Tamaqua, centre of town	787.5
St. Clair shaft, on the furnace level	706.1
G. W. John's, St. Clair, Eagle colliery	827.9
Sharp Mountain colliery, Van Winkle and Desocarres	1,273.6
E. Mahanoy junction, near the tunnel, on L. V. R. R.	1,093.
E. Mahanoy tunnel, east end	1,312.2
E. Mahanoy tunnel, north end, (length of tunnel 4,500 feet,)	1,334.
Hartford colliery, Mahanoy city	1,235.
St. Nicholas, Waste House run	1,140.9
Top of Broad mountain, near New Boston colliery	1,723.

The above elevations have been kindly furnished me by Henry K. Nichols, R. E. Pottsville, from surveys in his office.

By James F. Smith, Esq., R. E. Schuylkill Nav. company, Reading:

Surface of water at lock No. 1, at Port Carbon	618.63
Surface of water at Silver Creek dam, Silver creek	1,510.63

Distance from Philadelphia 101 miles; the water has a fall of 892 feet in 7 miles, or 127¼ feet per mile.

A comparison of these elevations will be found very interesting to engineers and others interested in coal lands, and to persons locating new improvements, for general reference.

The following table of elevations has been furnished me through the courtesy of C. E. Byers, Esq., C. E. and superintendent Broad Mountain R. R.:

Locations.	Feet above mid-tide.
Pinegrove depot	512
Lorberry junction	611
Terminus of branch to Rauch Creek breaker	1,001
Switch junction, Miller & Graff's new breaker, Lor. Ex. R. R.	1,278
Terminus of Switch Back, Miller & Graff's new breaker	1,364
Tremont depot	764
Junction of Heil & Detter's branch of Good Spring railroad	764
Terminus of Heil & Detter's junction, at Owen & Long's breaker,	917
Owen & Long's breaker drift, at terminus of branch	1,012
Donaldson, water-level	923
Nutting & Lewis's breaker, junction of branch with G. S. R. R.	1,101
Nutting & Lewis's branch, terminus of Good Spring railroad	1,177
Good Spring station	1,320
Lykens Summit Coal Company's slope, level	1,428
Keffer's, Summit station	1,463

Locations.	Feet above mid-tide.
Tower City station, at Savidge & Althouse's slope	1,350
Brookside station, at Savidge & Kauffman's slope	1,275
Junction of Lorberry Extension and Lorberry railroad	1,134
From survey made on the principal points on the extension of the Mahanoy and Shamokin route:	
Head of Mahanoy planes	1,479
Foot of Mahanoy planes, north side of mountain	1,124
St. Nicholas colliery	1,155
Ashland depot	881
Oakland	940
Ashland Summit, near Cambrian mines	1,155
Potts's colliery, Locust Dale	1,095
Kendrick's Keystone colliery, Locust Dale	1,025
Ben. Franklin, west of Helfenstein	1,175
Locust Swamp Summit, near Locust gap	1,238
Montelius colliery, near Mt. Carmel, Northumberland county	1,072
Coal Ridge colliery, No. 2, Northumberland county	1,131
Preston mines, No. 1, at Girardsville	1,090
Cuyler mines, Raven run, near Girardsville	1,360
Col. J. J. Conner's colliery, now Agard & Moody's, Girardsville,	1,051
S. E. Griscom's William Penn shaft	1,073
R. Heckscher's Kohinoor shaft, Shenandoah	1,240
Continental colliery, Columbia county, Goodrich & Co.	1,366
Centralia colliery, Columbia county, J. M. Freck	1,465
New Boston slopes, Schuylkill county	1,520
Greenback mines, Shamokin region	895
Shamokin depot, Northumberland county	730
Trevorton colliery, Trevorton, Northumberland county	760

The difference of elevation between the above points may be of great interest for comparisons made in the depths of the slopes or shafts, and the basins already developed will show the difference of levels and mid-tide. Engineers can readily designate the position and depth of the coal veins in the several basins, and clear up many perplexing notions of old miners. The numerous contractions and expansions of the coal veins and basins, their various angles of dip, and over lappings, are very remarkable features of their general aspect and geological structure.

The annual report of Franklin B. Gowen, president of the Philadelphia and Reading railroad company, for the year 1871, goes to show that the year's management was marked with success, counter to the disadvantages which crowded upon it for a time.

The gross earnings of the road, from all sources, amounted to $12,562,843. The net profit derived from the same was $5,006,940, being an increase over the net profit of the earnings of 1870 of $1,944,359.

The gross expenses were 60 $\frac{1}{10}$ per cent. of the gross receipts. Paid interest of bonded debt, bonds and mortgages, &c., $837,274 at 10 per cent.; in dividends and capital, $3,156,707, a total of $3,993,981, which, with taxes, &c., deducted from $5,006,944, clears a balance of $789,555. All manner of profits exceeded those of previous years. The company controls at present 1,266 miles of single track; its real estate in coal lands exceeds 70,000 acres, a loan of $25,000,000, secured by first mortgage; $6,000,000 will cover

bonds issued; $12,000,000 have been issued for land department. The coal tonnage of the year exceeds 6,002,573 tons. A coal tonnage of 187,767 tons passed over the road in one week in June, and for the weeks in July, each averaged 179,360 tons.

The whole healthy condition of its management is very creditable throughout. The stockholders, appreciating this fact, have again placed the management and working of the colossal engine in the hands of the gentlemen who are so deservedly entitled to their former positions, with the satisfaction of having officers fully capable to discharge the high duties devolving upon them by their company, their station and the community generally. I do not wish to flatter, but to appreciate the service and ability of any capable and good public servant.

WEIGHT OF COAL IN TONS PER ACRE, FROM ONE FOOT TO FORTY FEET THICK.

Thickness.		Three inches.	Four inches.	Five inches.	Six inches.	Seven inches.	Eight inches.	Nine inches.	Ten inches.	Eleven inches.
One foot	1,519.25	1,899.06	2,025.66	2,152.27	2,278.87	2,405.48	2,532.08	2,658.69	2,785.29	2,911.89
Two feet	3,038.50	3,418.31	3,544.91	3,671.52	3,798.12	3,924.73	4,051.33	4,177.94	4,304.54	4,431.14
Three feet	4,557.75	4,937.56	5,064.16	5,190.77	5,317.37	5,443.98	5,570.58	5,697.19	5,823.79	5,950.39
Four feet	6,077.00	6,456.81	6,583.41	6,710.02	6,836.62	6,963.23	7,089.83	7,216.44	7,343 04	7,469 64
Five feet	7,596.25	7,976.06	8,102.66	8,229.27	8,355.87	8,482.48	8,609.08	8,735.69	8,862.29	8,988.89
Six feet	9,115.41	9,495.32	9,621.92	9,748.53	9,875.13	10,001 74	10,128.34	10,254.95	10,381.55	10,508.15
Seven feet	10,634.76	11,014.57	11,141.17	11,267.78	11,394.38	11,520.99	11,647.59	11,774.20	11,900.80	12,027.40
Eight feet	12,154.01	12,533.82	12,660.42	12,787.03	12,913.63	13,040 24	13,166.84	13,293.45	13,420.05	13,546.65
Nine feet	13,673.27	14,053.08	14,179.68	14,306.29	14,432.89	14,559.50	14,686.10	14,812.71	14,939.31	15,065.91
Ten feet	15,192.52	15,572.33	15,698.93	15,825.54	15,952.14	16,078.75	16,205.35	16,331.96	16,458.56	16,585.16
Eleven feet	16,711.77	17,091.58	17,218.18	17,344.79	17,471 39	17,598.00	17,724.60	17,851.21	17,977.81	18,104.41
Thelve feet	18,231.02	18,610.83	18,737.43	18,864.04	18,990.64	19,117.25	19,243.85	19,370.46	19,497.06	19,623.66
Thirteen feet	19,750.27	20,509.89	20,763.09	21,016.31	21,269 51	21,522.73	21,775.93	22,029 15	22,282.35	22,535 55
Fourteen feet	21,269.52	22,408.95	22,788.75	23,168.58	23,548 38	23,928.21	24,308 01	24,687.84	25,067 64	25,447.44
Fifteen feet	22,788.77	24,308.01	24,814.41	25,320.85	25,825.25	26,333.69	26,840.09	27,346.53	27,852.93	28,359.33
Thirty feet	45,577.56	46,716.99	47,096.79	47,476.62	47,856.42	48,236.25	48,616 05	48,995 88	49,375 68	49,755.48
Forty feet	60,770.08	62,289 23	62,795.72	63,302.16	63,808.56	64,315 00	64,821.40	65,327.84	65,434.24	66,340.64

CHICAGO ANTHRACITE COAL TRADE OF 1871.

The amount of coal received at Chicago for this year reached the total of some 300,000 tons. This coal passes through the city of Erie, Pa., and Buffalo, N. Y., via the lakes. The freight from Erie is about 50 cents, and from Buffalo 75 cents per ton. The Chicago retail price of anthracite coal is $12 per ton for the different sizes, while the Boston retail price is only $10 per ton.

The amount of anthracite coal received at Buffalo in 1871 was 321,000 tons. Of this amount Shamokin sent 89,000 tons, Scranton region 102,000 tons and Carbondale 30,000 tons, while the Wilkesbarre and Lehigh regions sent 100,000 tons; total 321,000 tons.

The freight from Buffalo to Elmira on Shamokin coal was $2 00 per ton. The railway and canal transportation on Scranton coal to Buffalo was two cents per ton, and on western roads 95 cents per ton; the discharging rate paid by boatmen out of this sum was 12 cents per ton, making the charges of transportation equivalent to $3 95 per ton by approximate average. The charges per ton from Pittston would be $4 50 per ton, over a route of 300 miles, or 1½ cents per ton per mile. Carbondale coal is transported by rail; the transportation rates are 1 cent per mile. The facilities for transportation, and increase of trade, will largely exceed that of last year. The prices paid at Buffalo for anthracite coal, at 2,000 pounds per ton, is $7 25 for retail. The coal receipts, from all sources, at Buffalo were—anthracite 321,000 tons, bituminous 210,000; total, 531,000 tons.

The prices paid at New York, Philadelphia and Buffalo do not materially differ, in either the anthracite or bituminous coals; but experience proves that both in domestic consumption and furnace uses, &c., the anthracite coal, as a fuel for all purposes, is the cheapest, the most economical and satisfactory.—*Daily Journal.*

THE MAMMOTH SHAFTS.

The Philadelphia and Reading railroad company's improvements on the Delaware coal company's tract at the east mines, two miles north of Pottsville, are of the first magnitude in their construction and details. The present improvements are but to serve as temporary structures, which are to be superseded by substantial brick buildings when the E seam is properly developed. The company has engaged the services of Gen. Henry Pleasants as their mining engineer. A large amount of surface had to be first removed in order to secure a solid foundation. The necessary excavations ensued and are rapidly approaching completion. The location is well selected and even desirable, which will eventually re-pay any necessitated expenditure. The plans are practically devised, in accordance with the measures of the coal seams. These shafts are associates, and are connected with a draining slope, used solely for the purpose of carrying off all surface waters from the antiquated levels and slope lifts formerly operated by the Delaware and North American companies. The shafts are 200 yards apart. A water tunnel, driven from the terminus of the slope, conveys all the water from the shafts to the pumps, relieving the shafts from any such incumbrance. Both shafts are to be made available for hoisting coal, though one of them is to be used for men and mining material. The steam power at present in use is fully adequate for their purpose. The mode adopted by Mr. Pleasants for excavating these shafts is both economical and expeditious, reducing the cost by the former method fully one third. The Diamond drill is substituted for the purpose of perforating the stratas. These perfora-

tions are to be filled with sand, and sufficient depths of these borings will be emptied of sand to accommodate the blasting in the shafts. The loose material being removed, the blasting is renewed, and so continued until the final completion of the excavation. When the E seam has been reached, the under-ground plan for opening the mine is calculated to excel anything of the kind yet attempted in this country. Ventilation and safety will receive such attention as will warrant mining operations safe, and egress and ingress secure and easy, although the depth estimated to reach the basin at this point of the third basin is 1,500 feet. From all information furnished by local measures this hypothesis is correct.

With the facilities afforded by these extensive improvements, it is estimated that 500,000 tons of coal can be annually shipped from the colliery. Should these coal seams prove as large as they generally have elsewhere, it can be safely calculated to produce profitable mining for a long number of years, there being scarcely any limit to the eastern and western boundary. The locality for stocking the refuse and slate is ample. An inclined plane for this purpose will be erected on an elevated eminence, which will accommodate the colliery for years. The surface is well calculated for agriculture, and miners can produce land on reasonable terms, at a proper distance from the improvements.

This associate shaft is but the commencement of what may be a tier or series of like improvements all along the valley of the Schuylkill, east and west, and may extend to Williamstown. This would seem to be the most practical way of developing the deep basins around Pottsville, where enormous fields of coal lie untouched, and which may yield a large supply for centuries. Now that this mammoth company have undertaken to demonstrate, by practical development, these deep basins, which have been the stumbling-block of theorists for a number of years, in the course of a few years the mask will be removed from visionary speculation, and the proper solution given to all theoretical inventions

A List of Maps of Coal Mines furnished by Operators, now on file in the office of the Mining District of Schuylkill, for the year ending December 31, A. D. 1871.

MAPS IN POTTSVILLE DISTRICT.

1. Glendower..... 1 slope.
2. Glen Carbon..... 2 slopes.
3. Oakdale ..... 2 shafts.
4. Heckscherville..... 1 shaft, 1 slope.
5. Thomaston..... 1 "
6. Pine Knot ..... 2 slopes.
7. Mine Hill Gap ..... 1 slope.
8. Spruce Forest..... 1 "
9. Phœnix, No. 1..... 1 "
10. Wolf Creek. ..... 1 "
11. Live Oak.. ..... 1 "
12. Beachwood.. ..... 1 "
13. Eagle. ..... 1 "
14. Monitor ..... 1 "
15. Manchester.. ..... 2 slopes
16. Hickory ..... 1 shaft.
17. St. Clair ..... 1 "
18. Pine Forest ..... 1 "
19. Forestville ..... 2 slopes.
20. Feeder Dam ..... 1 slope.
21. Ravensdale..... 1 "
22. Eagle Hill..... 1 shaft, 1 "
23. Glenworth..... 2 slopes.
24. Lambert..... 1 slope.
25. Gate vein..... 1 shaft.
26. Silver Creek..... 1 slope.
27. Commercial ..... 3 slopes.
28. Norwegian..... 2 slopes, 1 shaft.
29. Butler ..... 1 slope.
30. Swift Creek..... 1 "
31. Alaska ..... 2 drifts.
32. Summit Hill ..... 1 slope.
33. Bull Run ..... 1 "
34. Coaldale ..... 1 "
35. Kentucky ..... 1 "
36. New Kirk ..... 1 "
37. High mines..... 1 "
38. Tamaqua ..... 1 shaft.
39. Greenwood ..... 1 slope.
40. Greenwood, No. 2..... 1 tunnel.
41. Reevesdale, No. 2..... 1 slope.
42. Buckville. ..... 1 "
43. Wolf Creek..... 1 "
44. Duncan..... 1 "

MAPS IN ASHLAND DISTRICT.

1. Focht & Althouse ..... 1 slope.
2. St. Nicholas ..... 1 "
3. Suffolk.. ..... 6 drifts.
4. Tunnel Ridge ..... 1 slope.
5. Glendon ..... 1 "
6. Oak Hollow ..... 1 "
7. Copley..... 1 "
8. Bear Run..... 1 "
9. Primrose ..... 1 "
10. Stillman ..... 1 "
11. Wiggan ..... 1 "
12. Turkey Run..... 1 shaft.
13. Gilberton..... 1 slope.
14. Cuyler ..... 1 drift.
15. Shenandoah City ..... 1 slope.
16. Shenandoah, West..... 1 "
17. Plank Ridge ..... 1 shaft.
18. Grant. ..... 2 drifts.
19. M'Neal, No. 1. ..... 1 slope.
20. M'Neal, No. 2 ..... 1 "
21. Barry ..... 1 "
22. Wm. Penn ..... 1 shaft.
23. Ellen Gowen ..... 6 drifts.
24. Girard ..... 1 shaft.
25. Coal Ridge ..... 1 slope.
26. Silver Brook ..... 1 shaft.
27. Honey Brook. ..... 4 slopes.
28. Reno ..... 1 slope.
29. Hoffman ..... 1 "
30. Colorado ..... 1 slope, 2 drifts.
31. Preston, No. 1 ..... 1 slope.
32. Preston, No. 2 ..... 1 "
33. Preston, No. 3 ..... 1 "
34. Preston, No. 4 ..... 1 "
35. Lost Creek ..... 1 "
36. Knickerbocker ..... 1 "
37. Thomas. ..... 1 "
38. Girard Mammoth. ..... 2 drifts.
39. Keely Run.. ..... 1 shaft.
40. Union ..... 1 slope.
41. Big Mine Run ..... 1 "
42. Focht & Whittaker..... 1 "

MAPS IN SHAMOKIN DISTRICT.

1. Short Mountain..... 1 slope.
2. Big Lick. ..... 1 "
3. Williamstown..... 1 "
4. E. Franklin ..... 1 "
5. Locust ..... 2 slopes.
6. Brookside.. ..... 1 slope.
7. Tower City ..... 1 "
8. Franklin, Schuylkill ..... 2 slopes.
9. Middle Creek. ..... 2 slopes.
10. Pyne ..... 2 "
11. Phœnix, No. 2..... 1 slope.
12. Phœnix, No. 3..... 1 "
13. Otto, No. 1..... 1 "
14. Otto, No. 2..... 1 "
15. Otto, No. 3..... 1 "
16. Diamond.. ..... 1 "

Some 16 maps furnished in this district have not been returned.

IMPROVEMENTS IN THE POTTSVILLE DISTRICT IN 1871.

Collieries.	Operators.	Remarks.
Taylorville	T. Shollenberg	Put up two 90-horse hoisting engines, sunk 2 lifts and built a new breaker.
Heckscherville	J. Wadlinger	Put up two 60-horse engines, built 2 engine houses, sunk a pump slope, sunk a lift in the hoisting slope, built a breaker, put up two 90 horse pumping engines and erected a 40-horse steam fan for better ventilation.
Thomaston slope	T. Shollenberg	Put up two 60-horse hoisting engines, sunk a slope and 3 lifts, built a breaker and put up a 40-horse engine for better ventilation.
West Pine Knot	Pine Knot company	Put up a 500-horse Bull pump, sunk a slope, 3 lifts for drainage and built an engine house.
Coal Castle	Thomas Egan	Opened a drift on the Jugular vein.
Phœnix Park	J. O. Maley	Opened a drift on the Peach Mount. vein.
St. Clair	Wm. Draper	Built a breaker and put up a 40-horse engine.
New Castle	J. Taggert	Opened a drift on the D. vein.
Minersville	J. H. Thomas	Opened 2 drifts, built a breaker, put up a 20-horse engine and opened a drift on J. vein.
St. Clair	A. Jackson	Opened a drift on F. vein and built a new breaker.
New Philadelphia	S. Morgan	Put up a 60-horse hoisting engine and house, put up a 25-horse breaker engine and a 10-horse fan.
Buckville	Abblett & Co	Put up a 40-horse steam pump.
Reevesdale	J. Donaldson	Put up a 20-horse steam fan.
Greenwood	Pardee & Co	Put up a 40-horse steam fan and engine house.
Bull Run	L. C. Navigation Co	Sunk a slope, put up two 60-horse hoisting engines, built an engine house, put up a 40-horse steam pump and a 20-horse fan and a fan house.
Tuscarora	J. Sullivan	Opened a drift on the J. vein.
St. Clair	Hickory Coal Co	Re-opened the old Hickory slope, built a breaker and made other improvements.
East mines	P. and R. R. R. Co	Are sinking 2 shafts and 1 slope, with ample steam power to complete the same.

No further improvements reported from this district.

IMPROVEMENTS IN THE ASHLAND DISTRICT IN 1871.

Collieries.	Operators.	Remarks.
Keystone	Wm. Kendrick	Sunk a slope and put up two 60-horse engines.
Locust Dale	S. Harris	Put up two 15-horse engines to run an 18-feet fan.
Continental	R. Gorrell	Put in 4 new slope steam boilers.
Preston, No. 2	Moody & Co	Sunk 2 slope lifts and putting in engines.
Girard	T. Garrettson	Sunk a slope and increased breaker.
Lawrence	J. Lawrence	Increased breaker and put up a 60-horse pump.
Boston Run	Wm. Draper	Completed a slope, built a breaker and put up two 60-horse engines.
	Focht & Althouse	Built a slope house.
	Johnson & Donaldson	Are sinking a slope.
Cuyler	Heaton & Bros	Opened a drift on north dip of the E. vein.

IMPROVEMENTS IN ASHLAND DISTRICT—CONTINUED.

Collieries.	Operators.	Remarks.
Girardville	Agard & Moody	Opened 2 drifts, built 3 large schutes and a dirt plane, are sinking a slope, building a large breaker and using 2 drift locomotives.
Lehigh, No. 3 and Colorado	Philadelphia Coal Co.	Completed 3 slope lifts, increased the breaker and are putting in a pump in No. 2 slope.
Bear Ridge	Mowery & Co.	Sunk a lift, put up a 60-horse pump and changed the slope machinery.
Stanton	Maize & Miller	Sunk a slope and built a double breaker.
Gilberton	Williams, agent	Put in 6 new steam boilers.
Bear Run	Wiggan & Co.	Sunk a slope and put up 2 50-horse engines.
Ellen Gowen	Scott & Sons.	Repaired the breaker, &c.
M'Neal	M'Neal Coal Co.	Are sinking 2 shafts and 1 slope lift.
West Lehigh	J. O. Robinson	Sunk 2 slopes, put up two 50-horse engines and 6 boilers.
Excelsior	J. Cleaver	Sunk a slope and increased its capacity.
Copley		Opened a drift on the B. seam and two on C. seam, put up an 80-horse engine and built a breaker.
Cambrian	Lewis and others	Sunk a slope, enlarged the breaker, are putting up a fan and steam pump, have 5 steam engines—aggregate power 155 horse.

No further improvements reported in this district.

NORTH PENNSYLVANIA RAILROAD COAL TRADE IN 1871.

In 1870, transported over the line	429,158 tons.
In 1871, transported over the line	227,440 "

LYKENS VALLEY COAL TRADE.

Amount mined and sent by railroads	406,894 tons.
Amount mined and sent by canals	74,444 "
Total shipments	481,338 "

BOSTON CITY COAL CONSUMPTION.

In 1871, for city use	931,821 tons.
Average price, $6 28 per ton; equivalent to	$5,751,835 00

LONDON CITY (ENGLAND) COAL CONSUMPTION.

Received in 5,686 ships	2,762,712 tons.
Received by railroads	4,449,141 "
Received by canals	6,615 "
	7,218,468 "
Price per ton, $5 28; equivalent in gold value to	$38,113,511 04

PHILADELPHIA CITY COAL CONSUMPTION.

Received by railroads	1,731,342	tons.
Received by canals	320,671	"
	1,052,013	"
Average price per ton, $4 75; equivalent to	$9,747,061	75

NEW YORK CITY AND VICINITY COAL CONSUMPTION.

Received by railroads	2,752,013	tons.
Received by canals	500,000	"
	3,252,013	"
Average price per ton, $5 50; equivalent to	$17,886,071	50

BALTIMORE CITY COAL CONSUMPTION.

Received by railroads	1,000,000	tons.
Received by canals	600,000	"
	1,600,000	"
Average price per ton, $6 10; equivalent to	$9,760,000	00

OFFICIAL EXPENSES OF THE CLERK OF THE MINING DISTRICT OF SCHUYLKILL, FOR THE YEAR ENDING DECEMBER 31, A. D. 1871.

DR.

To 834 official letters, at 5 cents	$41 70
26 official trips, horse hire	74 36
26 official telegrams	6 80
Printing, stationery, pens, inks, envelopes, etc.	31 90
One year's office rent, No. 179	85 00
One year's gas rent	9 00
One year's house rent, No. 439	95 00
One year's water rent	5 00
One year's office fuel, (four tons coal.)	13 50
Office books, record of deaths and accidents, etc.	8 00
Bill heads and money certificates	6 50
Contingent expenses incurred	48 50
	425 26

Have traveled on business 2,262 miles; thus:

Four round trips to Ashland by railway	320	miles.
Four round trips to Girardsville by railway	290	"
Eight round trips to Tamaqua and beyond by railway	280	"
Six round trips to Harrisburg by railway	852	"
One round trip to Shamokin by railway	104	"
By railway	1,846	"
Twenty-six round trips by horse and carriage	416	"
Total	2,262	"

INJUNCTIONS.

Aug. 5, 1871.—Commonwealth of Pennsylvania, suit *ex relatione*, Frank Schmeltzer, Inspector of Mines, *vs.* James C. Oliver. In equity.

Aug. 7, 1871.—Commonwealth of Pennsylvania, suit *ex relatione*, Frank Schmeltzer, etc., *vs.* Windlack, Murry & Randall. Proceedings in equity.

Dec. 1, 1871.—Commonwealth of Pennsylvania, suit *ex relatione*, Frank Schmeltzer *vs.* Schweers & Brown, operators of Norwegion colliery. Proceedings in equity.

Dec. 11, 1871.—Commonwealth of Pennsylvania, suit *ex relatione*, David Edmunds *vs.* Lykens Summit coal company, operators of L. S. colliery. In equity.

Legal expenses of attorney, prothonotary and sheriff in the preceding suits, $286 78.

Attest:

P. F. M'ANDREW,
Clerk Mining District of Schuylkill.

REQUIREMENTS OF THE MINE VENTILATION ACT OF MARCH 3, 1870.

Persons in charge of mines are required to furnish me their answers to the following questions contained in the mining law, viz:

SECT. 1.—1. Have you intelligent maps of your mines and workings for inspector's use, as required by law?

2. Have you furnished statements of mining progress and improvements to the inspector?

3. Have you abandoned any lift or level in your mines without due notice to inspector of such act?

SECT. 2.—4. Have you neglected to furnish the necessary information on the condition of your mines to the inspector, being requested to do so?

SECT. 3.—5. Have you two safety in-lets and out-lets for ingress and egress always available, in case of accident, to secure the safety of miners?

6. Have you unfinished in-lets or out-lets, or air courses, not heretofore completed, or in progress of completion?

7. Have intervening lands prevented the execution of safety roads in your mines, when the safety of miner's lives may be involved?

SECT. 6.—8. Have you a suitable place where miners may change dress and wash in, if required?

SECT. 7.—9. Have you an adequate amount of ventilation circulating in splits in each working district of your mine, as required by law?

10. What mode or apparatus do you use to produce ventilation in your mines in summer and winter?

SEC. 8.—11. Have you a competent practical boss miner and firemen, who do their duty to your miners and mines properly?

SEC. 9.—12. Have you to use safety lamps; in what condition kept, and if kept locked for better safety?

13. Does your mines generate noxious gases?

SEC. 9.—14. Do you need bore holes in certain places to protect miners from the dangers of lodgement, wat r or gas?

SEC. 10.—15. Have you in use, or need of speaking tubes in shaft or slope, for better safety of men?

16. Have you secured your drums by brakes, horns and flanges, with proper machinery attached, to keep the ropes in safe position?

17. Have you employed persons under 12 years of age to work in your mines?

SEC. 11.—18. Have you provided careful, trustworthy, competent and intelligent engineers and firemen to handle your engines and machinery with care?

19. Have you permitted persons, not engineers in good practice, to meddle with engines and machinery in the place of competent engineers?

SEC. 12.—20. Have you neglected to notify inspector and coroner in cases of death or accidents to your miners or hands?

SEC. 13.—21. Have you had your boilers examined, as required by law, by competent persons, and the report of their condition recorded?

22. Have you wholly secured all dangerous places about your establishment to prevent accident?

SEC. 14.—23. Have you furnished intelligent maps and plans, showing the situation of buildings, roads, streams, and how the same are secured from danger?

24. Have you ascertained the complement of air traversing gangway, and reported the same monthly?

INSPECTOR'S REQUIREMENTS.

1. Have you sufficient covers on cages or carriages, if in shaft, to secure men from injury or death?
2. Have you a spreader chain on crosshead attached to slope and shaft ropes sufficiently safe?
3. Have you safety catches in use? If so, have you proved them to be secure and good?
4. Have you good ropes or chains in use, and adequate brake power to command them in case of accident to machinery?
5. Have you air courses of sufficient section area to admit of sufficient ventilation?
6. Do you permit persons to ride on loaded wagons or cages out of your mines, when traveling roads are available?
7. Do you permit more than (10) ten persons to ascend or descend on cage or wagon in slope or shaft at any time?
8. Do you measure the quantity and motion of air in face of gangways weekly, and record the same?
9. Do you, as manager or operator, understand your duty to your men in case of death or injury?
10. Have you ascertained all dangerous places from caving in of mines, and fenced the same securely?
11. Do you fully understand the meaning of the mining act of 1870, and the penalties it imposes for neglect or failures to comply; and further, the right of action by the heirs of any person that may lose their lives thereby, as provided by law?

12. Have you prescribed your own rules and regulations for the government of your mines, and posted the same rules and regulations in conspicuous places in and about the colliery, that all your men may fully understand your instructions and mode of government of the same, and carry the same into effect; or do you permit unskilful persons to work where gases are evolved, where, by their ignorant acts, they may endanger the lives of your men and property?
13. Have you employed or entrusted any persons, other than intelligent and practical persons, to do duty as top and bottom men in your slope or shaft, and whom you know will take an interest in doing justice to your property and the safety of men, and enforce the rules and duties prescribed for them?
14. Have you discharged reckless or incompetent persons from responsible stations, knowing them to be such, and again restored them to places where their acts may endanger the safety of men and property?
15. Are you satisfied that your mines are properly managed for the security of your men, and your own interest, under the present system, or does it require some improvement and time to effect the desired and benefitted change?

————— ————, *Superintendent.*

————— ————, *Boss Miner.*

DEAR SIR:—I hereby notify you to comply with the requirements of the mining law, passed and approved the third day of March, A. D. 1870, and especially in all things that are herein marked deficient, or consider yourself open and subject to the operations of the law itself, as approved for in many sections, but particularly in sections five and twenty-four.

FRANK SCHMELTZER,
Inspector of mines, No. 1 district.

VENTILATION LAW SUSTAINED.

OPINION OF HON. GARRICK M. HARDING, PRESIDENT JUDGE OF LUZERNE COUNTY, DELIVERED AT WILKESBARRE, 1871.

Commonwealth, ex relatione, and Thomas M. Williams, Inspector of Mines for the Middle District of Luzerne and Carbon counties, vs. Samuel Bonnell, Jr., William L. Lance, Sr., Walter W. Lance and De Haven Lance. No. 6, October Term, 1871.—In Equity.

These proceedings have been instituted in this court under the provisions of the act of General Assembly of the Commonwealth of Pennsylvania, entitled "An Act providing for the health and safety of persons employed in coal mines, approved the third day of March, A. D. 1870."

The bill sets forth that the relator is the inspector of mines for the middle district of Luzerne and Carbon counties, and that Samuel Bonnell, Jr., is the owner of a coal mine in the county of Luzerne, within the limits of said district, and also within the jurisdiction of this court.

It charges that the mine is worked through a single shaft, and that the seams or strata of coal which are thus being worked have no communication with any second opening or out-let, whereby other means of ingress or egress are available to the persons there employed in mining.

It charges that Samuel Bonnel, Jr., employs persons to work in the said mine for the purpose of mining coal for market, and that such persons, to the number of twenty and upwards, are there daily engaged in mining, raising and shipping coal in contravention of law.

It charges that Samuel Bonnell, Jr., has not provided and maintained a metal tube from top to bottom of said shaft suitably calculated and adapted for the passage of sound therein, and through which conversation may be had between persons at the top and bottom of the shaft; nor has he provided a sufficient cover over the carriage used for the purpose of letting down and hoisting up persons employed in said mine.

It charges, finally, that William L. Lance, Sr., Walter W. Lance and De Haven Lance are employed in superintending, managing and conducting the business of said colliery.

The bill concludes with a prayer that an injunction may issue from the court to restrain the said Samuel Bonnell, Jr., William L. Lance, Walter W. Lance, De Haven Lance, and all the agents, servants and workingmen of Samuel Bonnel, Jr., and all other persons deriving authority from him or his said superintendents, from working the said colliery, or permitting any person to work therein, except such persons as may be adjudged sufficient by the relator in driving a second out-let into the said mine, until full compliance with the provisions of the act before referred to has been made by the said Samuel Bonnell, Jr.

On presentation of this bill, prepared as it was in conformity with our rules of equity practice, we granted a preliminary injunction, and also the customary rule to show cause why the same should not be dissolved, returnable within five days after notice to the defendants.

In obedience to the rule and notice the defendants appeared in court, some of them personally, and all by council, and asked that the injunction be dissolved. They make no formal denial of the allegations contained in the bill, but predicate their requisite mainly on the unconstitutionality of the act under which the proceedings had been taken. They further press on our consideration the manifest hardships and the great pecuniary loss to which they will be subjected in the use of their own property, if the provisions of the act of assembly in question be strictly enforced; and the effect on them, it is said, will not be a tithe of the loss which must invariably be sustained throughout the length and breadth of this great coal region in case this law shall be literally carried into operation. Millions of capital, it is urged, invested here in good faith under former laws, must remain unproductive for months, and thousands of laborers must suffer in idleness, with hunger and want across their very hearth-stones already, if the sole attention of operators must be given to strict compliance with the said act.

We are not unmindful of some of the probable effects which may flow from the stringent enforcement of this law, nor are we insensible to the responsibility devolving upon us in connection with it; but we were placed here to take the responsibilities incident to the position, and not to *shirk* them. We shall, accordingly, dispose of the questions raised under this law, alike novel in its features and destitute of analogies, yet vastly important in its general scope and effect, to the best of our ability. We can bring nothing to our aid, except an honest judgment, grounded in ordinary common sense.

With regard to the constitutionality of the law, we shall enter into no extended review. It has been well said by an eminent jurist, late Chief Justice of our State, that a constitution lays down certain great fundamental principles, according to which the several departments is called into existence to govern the people; but all auxiliary rules which are to give effect

to these principles must, from the necessity of the case, come from the Legislature; and further, that it is for this very reason that the Constitution establishes a Legislature.

If the Commonwealth of Pennsylvania, through her Legislature, can police our towns and cities, why may she not police the coal mines within her border? If, through her Legislature, she can attach conditions, rules and regulations, which are to be observed by her citizens in the use of their own peculiar property, what is there about coal mines, or the owners thereof, that should specially exempt them from her supervision and control? If she recognizes as part of her organic law, applicable to the property of her citizens, the rule, long ago grew into a maxim, *sic utere trio ut alienum non loedas*, why may she not make it equally applicable to the *lives* of her own citizens? That act, as we view it, is nothing more nor less than a mandate to the operators of coal mines, that they shall so work them as not to injure the health, nor endanger the lives of persons employed in and about them. Of its constitutionality we have not the slightest doubt; it stands upon the statute book, known of all men, as the offspring of "Avondale." Of its propriety and necessity, the law making power was taught not a moment too early, and we may say now, that had its provisions been faithfully observed by the coal operators, or stringently enforced by the officer whom it called into existence, there would have been, in all probability, twenty more living, industrious, producing human beings, and fifty less widows and orphans in "West Pittston," than there are to-day.

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

While we admit there is a want of clearness in this section, nevertheless a careful examination of the section, as a whole, cannot fail to elicit its true meaning. And, first, it stops outright, after a period of four months from

its date as a law, the working of every mine or colliery which has but a single opening. But there is one condition under which such a mine or colliery may still be operated; it is, that every seam or stratum of coal wherein mining is carried on shall be in communication with a second out-let, separated by a natural strata of not less than one hundred and fifty feet in breadth—that is, the openings or out-lets shall be apart on the surface, at the points of ingress and egress, at least one hundred and fifty feet. And the reason is clearly obvious; the out-lets are to be sufficiently remote from each other, so that in case of destruction, by fire or otherwise, of the necessary erections about one out-let, the other may be available for use for the safety and convenience of egress of the persons employed where the destruction has taken place.

By the terms of that act it is immaterial whether these two out-lets belong to the same mine or not. All that is positively enjoined is a second safe and convenient out-let or means of exit for the persons employed in the mine in case of accident.

Any mine or colliery, therefore, having but a single shaft or slope, but being in communication with a second out-let, and having the additional requisites for the safety of the persons employed therein, such as a metal tube from the top to the bottom of the shaft, through which conversation may be freely had, and having also an improved safety-catch and a sufficient cover over head on every carriage used for lowering or hoisting men with, or other gearing connected with the drum, such as proper "flanges or horns" and an "adequate brake," when "steam or water-power" is used for "lowering or hoisting persons," as prescribed in the tenth section of the act, may be operated to its full capacity, and coal may be cut or mined therein and prepared for and sent to market with as much freedom as though the act had not been passed.

There are some other general requisites prescribed in the act which must be observed, but they are of minor importance, and their observance will be prompted as much by the interests of the operators and their workmen as by the fact that the law with respect to them is mandatory.

And herein we say, without reserve or qualification, that *under no other state of things* can a coal mine or colliery, which has but a single shaft or slope, be worked and operated in producing coal for market. And further, that the "owner, lessee or occupier" of such a coal mine or colliery, or any agent who has the "care or direction" of such coal mine or colliery, and who persists in working it in contravention of the plain and reasonable requirements of the statute, as before explained and referred to, is guilty of flagrant and inexcusable wrong; and any inspector of mines who, being cognizant of the fact, but nevertheless permits or suffers such working to be carried on, is "grossly neglectful of his duties."

No matter though it may be urged that operators, lessees and agents of mines or collieries of this character are doing all they can to drive these second out-lets, and that the work in each case is of great magnitude, requiring larger outlays both of capital and labor, but also that time of wide limit is necessary for their completion severally; still, however true this may be, when violations of this law, as alleged in this bill, and which have not been formally contradicted, are brought up to our notice, and the power of the court is invoked to check them, we can officially only know what the law is, and knowing it, in the discharge of our duty we shall administer it, albeit this colliery, and a dozen others like it this region, be brought to a stand still.

And further, in regard to the suggestions as to the cost in capital and labor, and the necessary expenditure of time, in making compliance with

the provisions of this law, we say that the act itself gave four months from the date of its passage (March 3, 1870) for the very purpose of rendering compliance on the part of the operators practicable and possible; but in the case before us, for causes which have not been satisfactorily explained, not only have the four months gone by, but eleven other months have followed them; and yet, in the language of this bill, these defendants are there. or, until the granting of the injunction, were there, with their workingmen and servants, "engaged in working, mining, raising and shipping coal, and carrying on the usual and ordinary business of said mine daily."

Assuming that the law gave only four months for making a second opening, was the enactment of an impossibility so far as this particular colliery was concerned; what are we to judge, when the fact was brought to our notice, that fifteen months have passed by, and no second opening has yet been reached? Is a second opening impossible? Such a proposition will hardly be urged affirmatively. We are left, then, to conclude that the owner and the agents of the colliery have acted either on the assumption that because a second opening was not possible within the four months, and because a lenient inspector had not prohibited them from working on beyond the limits as fixed by the statute, therefore it was not necessary that they should be in a hurry about a second opening at all, or, more probable still, in view of the recent suspensions and the probable activity in the coal market consequent on resumption, they would drive on their colliery in the usual manner, hoping for and expecting continued indulgence on the part of the inspector, and taking the chances for the rest.

The recent calamity at West Pittston, as it seems to us, ought to have admonished these wrong doers, (and we trust it may admonish others, in like cases offending, if there be any such in the region,) that *taking the chances* in violating this plain and reasonable statute means nothing short of assuming responsibilities which shock the law-abiding public, and which *may* result in spreading sorrow and gloom around many humble firesides and in casting a shudder over the land.

The defendants, as we have said before, though they may make formal denial of the charges as set out in the bill, nevertheless they raise in their argument what amounts to a partial denial of the main averments. They admit that they are working in the mine and taking coal therefrom for market, but they claim that they have a right to do so, at least to the extent of the product of the labor of not more than twenty men. They say, in other words, "that a second opening can be had through coal," and that while they are exclusively engaged on such second opening. necessarily a large amount of coal is cut in the gangway or gangways, which is hoisted out of the shaft, and which, being their own exclusive property, they are sending to market. They produce before us an elaborate map of their mine and workings, which, we have no doubt, correctly represents the whole interior order of things. We observe that not one, but several gangways were headed in the direction of the point where the second opening was to be struck, as well on one side of the shaft as the other, and although they were wide and somewhat serpentine in their character, and penetrating into an extensive area of coal, still, novices as we are in such matters, we could not resist the conclusion that while these many wide, serpentine, deep-penetrating and double gangways might all be necessary for a successful "second opening through coal," still they certainly afforded most ample and extensive fields for mining and producing coal for market. And here we are brought to the consideration of the proviso, under which, it is contended, the work was permissible which has been carried on in this mine since the

expiration of the four months immediately succeeding the passage of the act, and prior to the service of the injunction.

By the positive terms of the third section of the act, every mine having but a single shaft or slope, and being without a communication with a second out-let, is under the legislative ban, and its owners or occupiers were forbidden to work it; if the owners or occupiers in such condition, in defiance of the law and reckless of the consequences, continued with their operations, that it became the imperative and sworn duty of the inspector for the proper district to proceed against such owners or occupiers in the manner provided by the terms of the fifth section of the same act, which is in these words: "Any of the courts of law or equity of this Commonwealth, having jurisdiction where the coal mine or colliery proceeded against is situate, upon application of the inspector of coal mines and collieries of the proper district, acting in behalf of the Commonwealth, shall prohibit by injunction, or otherwise, the working of any mine in which any person is employed in working, or is permitted to be for the purpose of working, in contravention of the provisions of this act, and may award such costs in the matter of the injunction or other proceedings as the court may think just."

In short, such mine should have been unconditionally stopped; at least its owners or occupiers should have been restrained in the use of it, within the strict limits of the statute. That such has not been the case, unfortunately for a number of poor fellows and their destitute families is, we fear, too true; disobedience of the law on the one hand, and a failure to enforce it on the other, have wrought already enough of disaster.

If there are any more such mines or collieries thus worked and operated within the borders of our jurisdiction, we need only say, that this court will always be open, and its process and power will always be at the call of the proper officers, whom this act itself has created, for the actual purpose, amongst other duties, of closing up at once such unlawful man-traps.

We wish not to be regarded as uncharitable. We recognize in this business the weakness of human nature. We are aware of the temptations, and even the difficulties, which the owners or occupiers of such mines are obliged to encounter. In addition to the gains and savings to be derived from the continued and uninterrupted working of their property—often in themselves a sufficient inducement to warrant the risk of violating, or at least of *chancing* a violation of a statute bristling all over with pains and penalties—come the pleadings and beggings of the miners themselves, who have left hungry families at home, for the privilege of being allowed to go to work, promising to release the operators from all responsibilities, and taking upon themselves all the risks and dangers attendant on the position they thus voluntarily and anxiously seek.

Nor are we unmindful of the corresponding difficulties which beset the inspectors of mines. In most cases they have been selected from among the miners themselves, and the wants and necessities of those people are appreciated by them, when they are besought by the miners and laborers for lenity towards the operators, in order that the wolf may be kept away from the door at home, no matter how delicate and keen may be the sense of official duty, it must be necessarily dulled by such contact. But they are the sworn officers and ministers of the law, which, in one sense, was made to protect these men even against themselves; and no amount of sentiment or sympathy should be allowed to swerve them from a faithful performance of and a strict discharge of all their duties under the law. There is no middle course with honor to themselves.

We have seen that all mines or collieries of the character above described, were to be stopped on and after the expiration of four months, as provided

by the statute. We have seen, also, that there was one condition, namely: If a second opening could be had through coal, on which their working could be continued.

But to what extent is such further workings permissible? This becomes, under the views which the defendant's council have taken of the case, an important question, which it becomes our duty to pass.

The beginning of the proviso to section third of the act, it will be remembered, is as follows: "*Provided*, That a second opening can be had through coal;" and then it branches off upon the subject of other openings, such as tunnels or shafts, omitting to point out any specific directions as to the extent to which such second openings may be driven, or the force that may be employed therein. But further on in this proviso this language occurs: "This section shall not apply to opening a new coal mine or colliery, nor to any *working* for the purpose of making a communication between two or more shafts, slopes or out-lets, so long as not more than twenty persons are employed at any one time in said new working."

With all due respect for the opinions of the council for the defendants, we are constrained to say, that we fail to discover the slightest ambiguity in this part of the enactment. Very true, it might be drawn with greater precision and clearness; but yet the *body* of the law is tangible there, and its *spirit* is so plain and distinct, that a *way-faring man* ought to discern it.

The proviso is simply cumulative in its character. The section, of which the proviso forms a part, *in terms* prohibits the working of a mine or colliery having but a single shaft or slope, while the proviso follows, modifying the ban in many important particulars. For instance, it prescribes how a tunnel or shaft, when either shall become necessary as an additional opening, may be driven. It numbers and times the shifts, and makes the inspector the judge as to the least number of men to be employed on each shift, all of which is plain and understandable. It then restricts the otherwise sweeping provisions contained in the section itself, by adding, that they shall not apply to the opening of a new mine, nor to any working for the purpose of making a communication between two or more shafts, slopes or out-lets, so long as not more than twenty persons are employed at any one time.

Now the outset of the proviso, as will be seen, makes permissive the working of a mine or colliery already closed by the terms of the section itself, but only on one condition, namely: That the working shall be for a second opening through coal. Such working must, therefore, be necessarily towards an out-let, and that out-let may be another shaft or another slope, or it may be an out-let to be reached at the surface by following through coal to the out-crop of the seam or stratum, wherein the work was carried on at the time the mine or colliery as such was stopped.

If we omit, then, in the proviso all that is cumulative and does not refer to other specific matters, and only that relating to a second opening through coal—and the terms openings and out-lets are clearly synonymous—the language of the proviso will be thus: "This section will not apply to any working for the purpose of making a communication between two or more out-lets so long as not more than twenty persons are employed at any one time in said workings."

Adopting this as the correct interpretation of the statute, the inquiry is still extended as to how the twenty persons shall be permitted to work. We are aware that there exists a difference of opinion on this subject among lawyers as well as laymen, and that in many instances in this coal region operators, while keeping within the limits of twenty persons in working through coal for a second opening, have, in accordance with their own con-

struction of the law, worked fifteen or eighteen persons in cutting coal for market, while only five, or oftener only two, have been employed in driving for a second out-let.

Though we do not assume positively that therein lies the explanation why so many mines or collieries in the region are yet without a second out-let, still such an explanation is not at all unreasonable, and must stand for what it is worth. At all events, such working, if, indeed, it is still carried on, had better cease at once. It is without even the merit of shrewdness for its authors. On the contrary, it can be regarded little better than a stupid attempt at dodging the law, and the earlier, perhaps, a lesson in the pains and penalties of the act is learned, therefore, the better it will be for everybody.

As we have shown before, this working with not more than twenty men for a second opening through coal constituted the only condition under which certain mines and collieries, otherwise closed up by the provisions of the statute, could be worked at all. It cannot be claimed, however, that this permissive working can be carried on with any other view or for any other purpose than mentioned in the act. Cutting coal for market, therefore, whether with one man or twenty men, except in so far as it is a necessary incident of driving on through a seam or stratum towards a second out-let, is not only not a declared purpose of the statute, but, on the contrary, it is in direct and absolute contravention of the express terms thereof.

And in this connection we hold, further, that even where large quantities of coal are necessarily cut in driving for a second out-let, if it has to be hoisted through a single shaft or slope, and broken and screened by the machinery, erected, as is usually the case, directly over the mouth of the shaft, before it is ready for market, then such coal cannot be regarded, in all cases, as a necessary incident of driving for a second out-let. In some instances it may be regarded, so far as hoisting it out of the mine and getting it out of the way of the workmen is concerned, but in other instances it cannot in any case be so considered. For example: A colliery may not have been long in operation, and consequently the area in the seam or stratum at the foot of the shaft, where the mining has been exclusively carried on, may not be sufficiently large to receive the coal necessarily cut in advancing to a proposed second out-let, and therefore the hoisting of such coal out of the mine could be regarded in no other light than as essential to the convenient and successful pushing on of such second out let.

But, then, if it should not all be ready for market, we can discover no warrant in the act, either expressed or implied, whereby the operator, *even with the permission of the inspector of mines*, would be authorized in starting his breaker and screens if they were connected with the hoisting gearing and driven by the same power, and erected over the shaft so that the destruction of one would be the destruction of all, and thus preparing coal for market. We repeat again, that under the law such a mine can only be worked for a single purpose of reaching a second out-let; and, as we understand it, breaking, screening and preparing coal for market, even though it had been cut in the manner before referred to, is not within the spirit of the act, and it is certainly not within its terms.

It follows, therefore, as a matter of course, that all coal that may be cut in driving for a second out-let, and which is hoisted out of a shaft or slope in order to make further room for a more convenient working, and which is prepared for market where it is thus brought out, is no longer touched by any legislative ban, but, on the contrary, it is the untrammelled property of the operator, who may do with it as he sees proper.

Again, for example: Another colliery may be operated for years with but a single shaft or slope, and the seams or strata at the bottom thereof may have been exhausted to such an extent as to afford an ample stocking-ground for all coal cut for a second opening, and thus the necessity of hoisting the same, in order to make room for the workmen and for the more rapid prosecution of the working, may not exist. True, to take out such coal would be vastly more convenient and much less expensive to the operator; and further, all of it so taken out and ready for the market, as before explained, might be made at once available, but to every act of hoisting it would involve so many risks, inseparably connected with operations of this character, particularly where the hoisting gearing, and all the cumbrous erections pertaining to a colliery, where connected together, and constructed as they now are, directly over the shaft or slope.

To the construction to be put judicially upon the law, as it bears upon the subject matter in this immediate connection, we have given the most earnest study and thought. We have sought for a construction which would harmonize the known great interests of the operators in this behalf, with the safety of the miners and laborers in their employ; but, staring us in the face at every step of our investigation, were the plain literal terms of the enactment itself, conforming in full rigor to its title—"An Act providing for the health and safety of persons employed in coal mines"—and we therefore have been obliged to adopt a construction, stringent though it be, alike in conformity therewith.

It follows, then, that coal cut in mines and collieries under circumstances as last referred to, cannot be hoisted out of the shafts or slopes if a sufficient stocking ground exists within the mines themselves.

It is further charge against Samuel Bonnell, Jr., one of the defendants in this bill, and the owner of this mine, that he "has not provided and maintained a metal tube from the top to the bottom of said shaft, suitably calculated and adapted for the free passage of sound therein, through which conversation may be held by and between persons at the bottom and top of said shaft, nor a sufficient cover over head on the carriage used for lowering and hoisting persons employed in said mine; nor has he attached or caused to be attached to the drum, worked by steam, and used for lowering into and hoisting out of said mine persons employed as aforesaid, an adequate brake," etc.

The tenth section of the act applies to every coal mine or colliery in the region, whether worked by a single shaft or slope, or whether in communication with one or more other shafts, slopes or out-lets; and its language, so far as it relates to the subject matter of this charge, is as follows: "The owner or agent of every coal mine or colliery opened or operated by shaft or slope shall provide and maintain a metal tube from the top to the bottom of such shaft or slope, suitably calculated and adapted to the free passage of sound therein, through which conversation may be held by and between persons at the bottom and top of the shaft or slope, and also provide * * * a sufficient cover over head on every carriage used for lowering and hoisting persons; * * * an adequate brake shall be attached to every drum or machine, worked by steam or water-power, that is or will be used for lowering or raising into or out of any said mines, and the main link attached to the swivel of the wire, or any other rope, shall be made of the best quality of iron, and tested by weights, or otherwise, satisfactory to the inspector," etc.

Further, in the same section appears the following: "The neglect or refusal of any person or party to perform the duty provided for and required to be performed by sections six, seven, eight, nine and *ten* of this act, by

the parties therein required to perform them, shall be taken and be deemed a misdemeanor by them, or either or any of them, and upon conviction thereof they, or either or any of them, shall be punished by imprisonment and fine, or either, at the discretion of the court trying the same."

We need hardly say that this section is as much a part of the law as any other section of the act, and that its observance is as clearly enjoined, both upon the operators and the inspectors, as legislative mandate and intendment can possibly make it. *It is the law, and must be obeyed.*

We believe now that we have passed upon all the features of this act of assembly which have been presented by the bill in this case. We have done so somewhat at length, for the reason that the bill in the main raises most, if not all, the really important questions that can arise under the law as a whole, and for the further reason that there is a general wish among operators, miners, mine inspectors, and the business public at large that the act in question should receive a judicial construction.

There is, perhaps, a single other feature of the law which we ought now to notice, and that relates to the duty of the mine inspectors. We have often been approached by these officers, (always, however, in a proper spirit and with the best intentions,) who, in their zeal to discharge their duties faithfully, were desirous of obtaining from us some instructions relating to the construction of this law, and to the duties and responsibilities it imposes on them.

Except upon some general matters, we have declined to advise them, further than that they should employ some gentleman of the bar in whom they had confidence, and should consult with him freely upon all matters pertinent to their positions respectively. Any other course on our part, as we conceived, would have been *extra judicial*, and therefore improper.

We say to them now, however, that having been selected for the position they hold because of their superior knowledge in all that relates to mining and the proper and safe working of mines, and having severally taken upon themselves the solemn obligations of an oath, well and faithfully, and to the best of their judgment and ability, to discharge the duties of their offices respectively, their first care should be to ascertain what their duties are under the law; and having done this, their next should be to see, and that, too, without any gauze of favor or fear over their eyes, that the operators in the region, over whom they are put to exercise a sort of police control, conform all their mines and working—not a part of it, but all—to the letter of the law. In this only is there even comparative safety for their fellows; in any other course, experience has shown, there is danger and death.

In conclusion, we point them to the sixteenth section of the act, under which the court may have duties to perform, and we would further remind them that, in so far as *our* duties are concerned, we shall not have one construction of the law for the operators and another for the inspectors, but, on the contrary, whenever the power of the court shall be invoked thereunto through legitimate channels, we shall enforce *all* its provisions, irrespective of interests or parties, as we understand them.

The sixteenth section, before referred to, is in these words: "It shall be the duty of the court of common pleas of the proper county, whenever a petition, signed by not less than fifteen respectable coal operators or coal miners, or both, setting forth that any inspector of coal mines and collieries grossly neglects the duties, or that he is incompetent, or that he is guilty of malfeasance in office, to issue a citation, in the name of the Commonwealth, to the said inspector to appear, at not less than fifteen days' notice on a day fixed, before said judges, when the said court shall proceed to inquire and investigate the allegations of the petitioners; and if the court

find that the said inspector is grossly neglectful of his duties, or that he is, by reason of causes that existed before the appointment, incompetent to perform the duties of said office, the court shall certify the same to the Governor, who shall declare the office of the district vacant, and proceed, in compliance with the provisions of this act, to appoint a properly qualified person to fill the office; and the cost of the said investigation before the court shall be borne by the removed inspector," etc.

We say, finally, and once for all, that in the discharge of our duties arising under the provisions of this act, and with no other motive than that springing from a sense of official obligations, we shall, whenever the occasion may arise, and as long as this law remains upon the statute book, administer it strictly and in accordance with its plain and unmistakable terms.

And now, to wit: July 3, 1871, after due consideration of the complainant's bill, and after hearing the arguments of council, the injunction heretofore granted in this case is hereby continued until the further order of the court.

GARRICK M. HARDING,
President Judge of the Courts of Luzerne county.

H. W. Palmer, Esq., for relator; A. Ricketts, Esq., and General E. S. Osborne, for defendants.

The above very able opinion of the learned Hon. Garrick M. Harding has favorably recommended itself, as a high legal document, to public consideration with all classes. His impassioned review of the law and its salutary requirements for public safety and for protection of the mining classes, as set forth in the body of the act, renders this one of the ablest opinions on our State records. The act is the work of a patriotic Legislature, unfolding its legal assistance to a deserving people in distress, and the charge of the court is clear, comprehensive and forcible; its diction is free from perplexities, designedly to please or provoke; its judicial research, acquired by long experience, has taken exalted grounds, in conformity with the spirit of the act; with profound wisdom and judgment it defines the obtuse and mooted technical exceptional objections of the act; with clearness and ability, and with admirable firmness, it sustains the Legislature and the law; and to speak truly, the judge himself is a type of eminent intellect and a profound jurist.

P. F. M'ANDREW,
Clerk of the Mining District of Schuylkill.

REPORT

OF THE

INSPECTOR OF MINES OF THE FIRST, OR POTTSVILLE, DISTRICT, FOR 1871.

His Excellency, JOHN W. GEARY,

Governor of the Commonwealth of Pennsylvania:

SIR:—In compliance with the requirements of an act of the General Assembly, approved the third day of March, A. D. 1870, providing for the health and safety of persons employed in coal mines, etc., I have the honor to herewith submit my annual report for the First, or Pottsville, district of the mining district of Schuylkill, for the year ending December 31, A. D. 1871.

Your Excellency, by reference to the tabulated reports hereto attached, will observe that 76 collieries have been examined, and statements, as to their general condition, have been made herein, showing their extent, the condition of ventilation, their shipments, steam power, the class of coal veins worked and the force employed. Also carefully prepared lists of casualties, showing the number of deaths and injuries that took place during the year, and the character of these injuries, the number of widows and orphans caused by these casualties, which, indeed, are to be deplored.

I am happy to imform your Excellency, that there are 16 deaths less in the mines of this district this year than last; 9 maimed person, 12 widows and 46 orphans less this year. Of the deaths, 30 persons were killed, as follows:—3 by falls of coal; 3 by mine wagons; 14 by explosions of gas; 8 died of injuries, and 2 by other accidents, leaving 18 widows and 65 orphans.

It is known that most all the mines in my district generate explosive and deleterious air. Most all the collieries are old, many of which are sunk the third or fourth lift, which still increases the chances of casualties, if not disasters. Coupling this with the slight knowledge many of our modern miners have of the art, and the skill necessary that a miner should possess, who turn out from the laborer of yesterday, to a miner of to-day, together with the chances of earning more money, may stimulate his ambition so far as to forget the dangers that surround him; whilst in this unguarded instant, the fatal moment flashes, and instantly he is numbered with the dead, when a moment of careful exercise for his own safety, would ward off the calamity.

The system pursued by most all the operators in robbing or reducing the pillars upon whose strength the permanency of the mine depends, is a subject deserving severe condemnation; though it may appear profitable,

the increased expenditure that must necessarily follow, will largely exceed any profits or advantages gained by the robbing process.

The reluctancy with which many of the mine bosses complies with the requirements of law is reprehensible, and frequently results in the loss of many valuable lives, and destruction of property. To attempt to gainsay its assertion would be futile, in the face of the many glaring evidences afforded, of its truth, in the anthracite coal regions.

Another matter which we desire to bring to your Excellency's attention, is the practice pursued by deputy coroners of empanelling jurors, who may be employees at the collieries where disasters and death result from accidents, etc. We find in our practice, often, undue zeal evinced, or partisan influence exercised in the deliberations of such bodies, as prejudice, interest and favoritism may sway, and therefore suggest that jurors be selected from amongst disinterested parties outside of coal mine influences, who will administer justice in both cases.

We respectfully beg leave to concur in the same views your Excellency has taken regarding the permanent support of the superincumbent pressure of the upper strata of the mine by strong pillars, which would counteract many dangers that could arise from such influence. This, and a timely compliance with the requirements of law, would greatly add to the safety of those employed in coal mines, as disasters, death and serious injuries are the result of unnecessary delays. Dire necessity, evoked by neglect and refusal of some parties to comply with the requirements of the statute law, compelled us to resort to the courts for writs of injunction, to restrain some of our operators from working their collieries in contravention of law. In this we were successful, though it involved an unnecessary expenditure; which costs, we think, should be borne by the refractory parties.

We think also, that in mines that generate explosive gas freely, stringent supervision should be enforced over the miners, and that precautionary measures be taken, which would secure the safety of the hands, who are there employed for the purpose of mining and working. With due respect to many operators, and their agents, in my district, I would say they have, at all times, given me satisfaction, and that others have given satisfactory evidence of good intentions to comply with the requirements of law, by affording the necessary relief to their employees in making such improvements as appeared to us proper and necessary. Maps of most all the collieries in my district have been furnished, which are valuable guides to the coal mine inspector in his explorations and examination of the mines. The monthly reports of the condition of steam boilers and ventilation, as required by law, is not as satisfactory as was anticipated. The use of speaking tubes in the mines of the district have not, as yet, come into general use, though their practicability have been satisfactorily demonstrated in other localities, but in this district, our operators evince a reluctancy in their use. The use of safety lamps is more general, and their condition better than heretofore.

The ventilation of our deep mines is receiving much better attention than it ever did before, and as a great measure of necessity is forcing its practical usefulness on the attention of our mine bosses.

The employment of persons under twelve years of age is generally prohibited, but the training of young persons in the practical school of the mine is a step in the proper direction, and I think preferable to adult training. Regarding the working of slopes and shafts in this district, as to safety of persons employed to work therein, is satisfactory; the machinery and tackle is generally much better protected, stronger, and receives more attention than had been the case formerly. The casualties that arise from explosions of gas and falls of coal may be accounted for in the proportion

as the mine may be managed for safety. The want of timely timbering of doubtful places results seriously, and negligence in not promptly removing explosive gas out of its lodgments before permitting incompetent, or even the most vigilant, persons to enter localities where those gases accumulate, is nothing less than inviting the casualty and loss of life which otherwise might be happily avoided.

In conclusion, I will say it affords me great pleasure to inform your Excellency that the general condition of our collieries is much better at the close of the year than had been the case before the operation of the mining law went into effect. The duties of the mine inspector are indeed arduous, and even hazardous, but to consider this duty had been properly discharged, and that the welfare of the miner and those employed to work in the mine be benefited by his conduct and efforts, will repay him a thousand fold, besides, the consciousness of having discharged the duties of his office to the best of his ability, under all circumstances, is to him great satisfaction.

POTTSVILLE, OR FIRST DISTRICT.

List of names of persons who were killed and died subsequently of injuries in the district for the year ending Dec. 31, 1871.

Date.	Names of the killed.	Names of the collieries.	Wife	Children.	Remarks.
anuary 4...	John Pugh	Forestville	1	2	Killed by an explosion of gas.
4...	William Pugh	....do	1	3	Killed by an explosion of gas.
4...	Robert Bally	Raven Dale	.....	.....	Killed by an explosion of gas.
9...	William Fitzgerrold	Wolf Creek	.....	.....	
22...	John Dalton	Revenue	1	4	Killed by an explosion of gas.
Feb. 14...	John Fitzgerrold	Old Hickory	1	5	Killed by fall of a slope collar.
March 11...	John Morrisey	Glen Carbon	1	5	Killed by a fall off a slope cage.
April 15...	Amser Baltzer	N. Philadelphia	1	3	Killed by an explosion of gas.
20...	Thomas Branan	.....do	1	2	Killed by a fall of a drift.
May 1...	James Harris	Alaska	1	2	Smothered in the gangway.
16...	George Gover	Tunnel, No. 10	1	5	Suffocated by noxious air.
25...	Matthew Kelly	Wolf Creek	.....	...	Killed—run over by loaded wagons.
June 2...	Edward Boylen	Live Oak	1	.....	Killed by an explosion of gas.
2...	Michael Comfort, (boy,)	... do	.....	.....	Killed by an explosion of gas.
2...	Robert Thomas	Eagle Hill	.....	.....	Killed—crushed by wagons in gangway.
3...	George Stonely	Beachwood	.....	.....	Killed—run over on outside track.
14...	Michael Mack, (boy,)	Silver Creek	.....	.....	Killed—crushed in the coal screens.
18...	Edward C. Pass	Feeder Dam	1	.....	Died from effects of an explosion of gas.
July 22...	Bryan Flaherty	Swift Creek	1	5	Died from effects of an explosion of gas.
22...	Joseph Humphries	Tunnel, No. 10	.....	.....	Killed by a crush of props and wagons.
22...	James Smith	L. Nav., No. 8	.....	.....	Killed by a fall of coal.
Sept. 8...	William Anspach	Thomaston	1	4	Died from effects of an explosion of powder.
8...	John Evans	Glen Carbon	.....	.....	Killed by a discharge of a shot.
12...	John Gardner	Pine Forest	1	.....	Died from effects of an explosion of gas.
26...	Thomas Moss	Buckville	1	8	Died from effects of an explosion of gas.
26...	Patrick Devine	... do	1	6	Died from effects of an explosion of gas.
Oct. 12...	Robert Thomas	Glen Carbon	1	6	Died from effects of a fall of coal.
14...	John Curran	Beachwood	.....	.....	Killed by an explosion of gas.
14...	John Branan	.... do	.....	.....	Died from effects of an explosion of gas.
Nov. 8	George Ronse	Greenwood	1	5	Killed by a fall of coal.

22 persons killed and 8 died of injuries received.

CHARACTER OF CASUALTIES.

3 persons were killed by falls of coal.
3 persons were killed by mine wagons.
14 persons were killed by explosions of gas.
1 person was killed by an explosion of powder.
1 person was killed by fall of a cage.
1 person was killed by the discharge of a blast.
1 person was killed by machinery.
1 person was killed by the fall of an old drift.
1 person was killed by a fall of timber.
2 persons were killed by suffocation.
1 person was killed by being run over by a drift wagon
1 person died of severe injuries.

30 lives were lost in the district to the close of the year.

Names of persons maimed and injured in the mines of Pottsville district for the year ending December 31, 1871.

Date.	Names of persons injured.	Names of collieries.	Remarks.
January 3...	William James	Vine Hill Gap	Hand severely crushed.
3...	John Tracy	Forestville	Burned by an explosion of gas.
3...	William Bailey	Ravensdale	Died from effects of an explosion of gas.
3...	Robert Bailey	....do	Died from effects of an explosion of gas.
3...	James Foyle	....do	Burned by an explosion of gas.
3...	James John	....do	Burned by an explosion of gas.
3...	James Davis	....do	Burned by an explosion of gas.
4...	Thomas Davis	Forestville	Burned by an explosion of gas.
9...	John Kelly	Beachwood	Burned by an explosion of gas.
14...	John Haley	Glen Carbon	Burned by an explosion of gas.
14...	Robert Bradley	Norwegian	Burned by an explosion of gas.
14...	William Degan	....do	Burned by an explosion of gas.
21...	George Cotherl	Pine Forest	Eyes burned by an explosion of gas.
21...	William Thomas	.... do	Five fingers cut off by an explosion of gas.
21...	William Jehan	Live Oak	Severely burned by gas.
22...	John Dillon	Revenue	Mortally burned by gas.
Feb. 14...	Stephen Hink	Pine Forest	Severely burned by gas.
14...	Richard Walsh	....do	Severely burned by gas.
25...	James Carrol	.... do	Severely burned by gas.
28...	J. Williams	Monitor	Severely burned by gas.
28...	His assistant	....do	Severely burned by gas.
March 20...	John Reese	Beachwood	Crushed by wagons.
22...	John Carlin	Anthracite	Leg broken by a fall of coal.
April 10...	Patrick Sharp	....do	Severely burned by an explosion of gas.
15...	Daniel Murray	New Philadelphia	Severely burned by an explosion of gas.
27...	Robert Rowland	Oakdale	Severely injured by a blast.
27...	Frank Opie	....do	Slightly injured by a blast.
27...	George Boyle	Anthracite	Severely burned by an explosion of gas.
27...	Rodger Rodgers	....do	Severely burned by an explosion of gas.
May 4...	Michael Bolten	Baltaiser's	Severely injured by a fall of coal.
8...	Evan Jones	Tunnel, No. 10	Severely injured by a fall of planks.
20...	John M'Kean	Phœnix, No. 1	Severely injured by an explosion of gas.
20...	John M'Kean, Jr	....do	Severely injured by an explosion of gas.
2[illegible]...	Edward Scott	Pine Knot	Slightly injured by an explosion of gas.
25...	Oliver Shertle	Glen Carbon	Slightly injured by an explosion of gas.
27...	W. L. Jones	Glendower	Severely injured by an explosion of gas.
27...	John M. Thomas	....do	Severely injured by an explosion of gas.

TABLE OF INJURIES—CONTINUED.

Date.	Names of persons injured.	Names of Collieries.	Remarks.
June 1...	James Maloy.	Live Oak	Fatally injured by an explosion of gas.
1...	Patrick Devitt	.....do	Fatally injured by an explosion of g s.
1...	Edward Boylan.	.... do.	Fatally injured by an explosion of gas.
1...	Pi rce Connolort.	.... do.	Fatally injured by an explosion of gas.
3...	Anthony Loftes.	Beachwood	Severely crushed by wagons.
17...	Edward C. Pass.	Feeder Dam	Mortally injured by an explosion of gas.
July 8...	Henry Devenport	Beachwood	Leg broken by wagons.
8...	A boy.	Short Mountain	Injured by a blast.
8...	Bryan Flaherty.	Swift Creek.	Mortally injured by an explosion of gas.
19...	H. Cummings	Eagle	Severely injured by a fall of coal.
25...	Ro ert Bradley.	Live Oak	Severely burned by an explosion of gas.
25...	Edward Nolan	.... do	Severely burned by an explosion of gas.
28...	Patrick Kelly.	Beachwood	Both legs broken by a wagon.
28...	Lawrence Little	Norwegian.	Foot badly crushed by a wagon.
29..	James Hirst	.....do	Severely burned by an explosion of gas.
Aug. 2..	James Boyle	Anthracite..	Severely burned by an explosion of gas.
2...	Thomas Moor	.....do	Leg broken by a fall of coal.
2...	John Harrison	.... do	Eye destroyed by an accident.
3..	John Holden	Eagle.	Arm injured—run over by a wagon.
7..	Thomas Hughes	West Pine Knot	Severely injured by an explosion of powder.
7..	Daniel Hughes.	.....do	Severely injured by an explosion of powder.
19...	Philip Thomas.	L. C. Nav. Co., 10.	Head injured by a fall of coal.
21..	James Sheridan.	.... do	Back injured by a fall of coal.
22...	M. Omelose	Eagle.	Severely injured by an explosion of gas.
23...	John K. Jones	St. Clair Shaft .	Severely injured by an explosion of gas.
23...	Daniel Hurley	.....do	Slightly injured by an explosion of gas.
23...	Robert Thomas .	.....do	Severely injured by an explosion of gas.
23...	Michael Conners.	Feeder Dam	Severely injured by an explosion of gas.
23...	Michael Melody.	.... do	Severely injured by an explosion of gas.
25...	Thomas O'Brien	St. Clair Shaft	Fingers cut off by T. rails.
25..	John Carroll	Butler colliery.	Severely injured by a fall of coal.
26..	Peter M'Hugh...	Beechwood ..	Severely injured by an explosion of gas.
Sept. 1..	John Harkins	St. Clair Shaft	Hand crushed by wagons.
3.	William Anspach	Thomaston.	Severely burned by an explosion of powder.
3...	John Anspach	.... do	Severely burned by an explosion of powder.
6...	John Gawley	Buckville.	Leg broken by a fall of prop timber.
8...	Reese Evans.	Glen Carbon	Severely injured by discharge of a blast.

	11...	John Moses	Pine Forest	Severely injured by an explosion of gas.
	11...	John Gardner	....do	Mortally injured by an explosion of gas.
	11...	Andrew Hinigan	....do	Slightly injured by an explosion of gas.
	20...	J. C. Walker	Tamaqua	Dangerously crushed by wagons.
	22...	Thomas Moss	Buckville	Dangerously burned by gas—died.
	22...	Michael Cavanaugh	....do	Severely burned by gas.
	22...	Thomas Delaney	....do	Slightly burned by gas.
	23...	Patrick Divine	....do	Mortally burned by gas—died.
	26...	John Branan	Norwegian	Severely crushed by wagons and props.
	27...	Martin Boland	Oak Dale	Hip broken by a fall of coal.
	27...	Thomas Branan	Oak Hill	Face injured by an explosion of a shot.
	29...	Thomas Schuck	Alaska	Injured by a fall.
	29..	James M'Andrews	Beechwood	Leg and back severely injured.
	29...	Jacob Evans	Live Oak	Slightly injured by a discharge shot.
October	2...	Joseph Weaver	Monitor	Severely injured by a fall of coal.
	7...	Robert Thomas	Glen Carbon	Mortally injured by a fall of coal—died.
	7...	John B. Powell	....do	Severely injured by a fall of coal.
	12...	Neal Kennedy	Buckville	Slightly injured by an explosion of gas.
	12...	Thomas Catherson	Beechwood	Slightly injured by an explosion of gas.
	14...	Con. M'Hugh	....do	Dangerously injured by an explosion of gas.
	14...	Edward Nolan	....do	Slightly injured by an explosion of gas.
	14...	William Lucied	Pine Forest	Severely injured by an explosion of gas.
	16...	Lupton Hodges	....do	Slightly injured by an explosion of gas.
	16...	Peter Post	Eagle	Severely injured by an explosion of gas.
	23...	John Engleberger	....do	Fatally injured by an explosion of blast.
	25...	Patrick Denney	Norwegian	Back severely injured.
	26...	James Doolin	....do	Body severely crushed.
Nov.	11...	John Donohoe	Eagle Hill	Severely burned by an explosion of gas.
	11...	The fire boss	....do	Severely burned by an explosion of gas.
	22...	John Harrison	St. Clair shaft	Severely burned by discharge of blast.
	27...	Charley Sharp	Buckville	Severely burned by an explosion of gas.
	27...	Hugh O'Donnell	....do	Slightly burned by an explosion of gas.
	27...	John Nolan	Tunnel No. 10	Thigh broken by a fall of coal.
	27...	John Downe	Bull Run	Thigh broken by a fall of coal.
	27...	John Daily	....do	Thigh broken by a fall of coal.
	30...	A miner	New Philadelphia	Fingers cut off by slope rope.
Dec.	14...	William M'Avoy	Thomaston	Burned by an explosion of gas.
	14...	James Adams	....do	Burned by an explosion of gas.

No. 1.—Live Oak Colliery.—*William Prout, Operator*

Description.—This colliery is situated in West Mount Laffee, at the Mine Hill gap, on the estate of Joseph Patterson, of Philadelphia. It consists of a double track slope, sunk two lifts on the south dip of the E vein, 960 feet deep, at an angle of 16½°; the new lift is 375 feet deep. Considerable expenditure has been made during the last year in repairing the old lift. The E and Seven Feet veins are worked, in this colliery, by a tunnel open in from the E vein. There are 1,600 yards of a run to the eastern boundary line of the tract, and some 200 yards westward. The present condition of the mine is not quite satisfactory. The coal runs from 30 to 40 feet thick, and rather soft in the breast workings. Great difficulty is experienced in keeping proper gangway communication in consequence of its frequent crushings, and ventilation is often impeded, which results in deaths and injuries from explosions of carburetted hydrogen gas, which is here generated in large quantities, and which occasions some trouble in enforcing compliance with the provisions of the law. From the soft nature of the coal it is difficult to prevent its crushing. In several places large grooves are open from this cause, and consequently render the working of the mine a difficult matter, yet satisfactory prospects of improvements have been taking place lately, which warrants the belief that its permanency will be successfully established.

Gangways.—The west gangways are worked out to the boundary line. The east gangways are still continued, with breast-work and headings in operation. The production is not quite satisfactory, as the difficult management of the mining operation is a bar to a remunerative supply of coal.

Ventilation.—A 20-horse power steam fan is used to produce ventilation, but is unsatisfactory, owing chiefly to the narrow air-courses used and the crushing of the pillars, which destroy the permanent air-ways and cut off the proper supply, and on many occasions endanger the lives of those who are employed in the mine. However, I have directed the necessary measures to be taken to remedy this evil, and shall see that a due compliance with the provisions of the law shall prevail, so that no serious disaster shall occur.

Engines in use.—A 90-horse 2-column pump is used, a 50-horse hoisting engine, a 25-horse breaker engine for preparing coal and a 20-horse steam fan=185 horse, with 10 good steam boilers and suitable machinery and tackle, now in good order.

Remarks.—On June the 2d I found the supply of air insufficient in the eastern district, being but 2,160 cubic feet per minute. The outside temperature was 82° and inside 74°; difference 14° against the natural equilibrium of air circulation. The barometer receded from 29° outside to 28° in the gangway face, showing that the state of the air was dangerous, and that operations conducted by the Davy lamp should only be resorted to. The large amount of explosive gas generated in this mine compelled the prohibition of the use of naked lamps, as the slightest disregard or neglect of the rules of the mine might momentarily involve the sacrifice of the lives of the men. In this I am the more resolved to secure to the miner that protection and safety due to him in his hazardous and dangerous employment, and their continued appeals for relief while working in these dangerous deep mines, surrounded, as they are, by every chance of becoming victims to these accidents.

No. 2.—West Pine Knot Colliery.—*Pine Knot Coal Co., Operators.*

Description.—This colliery is situated west of New Castle, on the estate of Mr. Dundas. It consists of a double track slope, sunk 237 yards deep on the south dip of the E or Mammoth vein, at an angle of 65°; four seams of excellent coal are worked in this mine by tunnels open on the main gangway. The E vein yields 16 feet of coal, the south vein 5 feet, the Crosby vein 6 feet, and the Leller vein 5 feet, producing 32 feet of workable coal; the colliery has been in operation 32 years. The Wadlinger colliery has been on fire these past two years, which prevented the working of the west gangways of the Pine Knot, which is one lift of 110 yards under it; the slope level is hermetrically sealed off, to prevent the smoke or gas to reach the workings, and the production of coal on the west side is prevented in consequence of this fire. The workings on the east side are connected with the working of the East Pine Knot mines by a counter gangway, which is open 600 yards east of the slope. A tunnel opens into the Church vein from the mammoth gangway; from this tunnel the gangway is worked in 300 yards, with schute and breast work; in this gangway will be erected pumps. In this opening an ingress and egress safety road will be established for miners use, and a safe out-let is also open on the Crosby gangway, 150 yards east of the tunnel; which gangways and breasts are in good condition.

Gangways.—There have been 6 gangways open in this mine, but those on the west side have been suspended, owing to the fire that threaten the colliery from the Wadlinger mines, on the west.

Ventilation.—A — horse steam fan is used to ventilate this mine. I found its operation very effective in most of the mines, except where the proper connections failed to be made, yet preparations were then making to remedy this trouble, and in the fall, with such appliances to furnish air, ventilation would be good.

Engines.—The steam power in use is adequate to the wants of the colliery; a 90-horse engine is used to hoist coal; 2 engines are used for pumping—one a 90-horse and the other a 60-horse; a 20-horse breaker engine for preparing coal, and a 20-horse fan=280 horse steam power in use.—There are 17 steam boilers in use, and their condition, owing to the arrangement of the water, is considered safe, with their tackle and machinery in good order, and well attended to.

Remarks.—Ventilation is receiving due attention, the air is conducted down the slope, and in by the gangways to the working places, thence through the breasts and headings to the out-cast air course to the fan. The condition and ventilation in the Church gangways was not then satisfactory, and I directed a force to be employed here at once, to timber and repair this district, and such places as required attention. After due examination and inquiry, I deemed it necessary to direct a proper compliance with the requirements of the act of Assembly, and afterwards visited the colliery, to see whether these instructions were complied with, as is required by law.

No. 3.—East Pine Knot Colliery.—*Fuller & Co., or the Pine Knot Coal Co., Operators, Maj. L. S. Baldwin, Manager.*

Description.—This colliery is situated west of New Castle, in the First district, and is some 31 years in successful operation. It consists of a double

track slope, sunk 235 yards deep on the south dip of the E vein, at an angle of 65°. Four veins of coal are operated in this mine. The character of mining done is gangway, heading and breast work, which is generally considered a safe operation; the same operators work the West Pine Knot colliery. The coal in the E vein is 16 feet thick; that in the south vein is 5 feet; that in the Crosby vein 6 feet, and the Lellar vein 5 feet=32 feet thick of coal. All these veins are opened in gangways, running east and west, are connected by tunnels, and lie in the Glen Carbon basin. The old lifts are nearly exhausted, and the drainage is complete under the operation of powerful steam pumps, which is satisfactory.

Gangways.—There are 5 gangways open in the mine=to 2,100 yards, and some 126 hands are employed in the mine. The west gangways, approaching the West Pine Knot colliery, are used as ingress and egress roads, in case of necessity, for the miners' safety. The condition of these mines looks well, and a desire to comply with the requirements of law is evinced by the company.

Ventilation.—This is effected under the operation of a steam fan, the slope being used for an intake, at the bottom of which the air is divided into splits, brought in east and west in the gangways to their faces, thence up into the workings, and made to return through headings open in the pillars, coming out at the fan out-cast shaft; the air is made to traverse the tunnels and to ventilate the working districts and finally communicate at the fan out-cast—a plan to ventilate these mines which is commendable. Though explosive gas is largely generated, the present means of ventilation, with the attention given to its proper supply, is fully adequate.

Engines in use.—There are eight steam engines in use: A 450-horse pumping engine; one 90-horse slope hoisting engine, and two 90-horse engines for hoisting; a 30-horse engine to hoist men and material, in a separate slope for that purpose; a 30-horse breaker engine, a 20-horse dirt plane engine, and a 10-horse fan engine; in all=810 horse power. There are nineteen steam boilers in use, and the tackle and machinery are all in good condition.

Remarks.—I forbid the use of naked lamps in places where explosive gas is evolved, and recommended the necessary precaution regarding the safety and health of those employed in the mines; also the proper securing of machinery, and the employment of competent firemen in the mines.

Nos. 4 and 5.—Manchester Colliery.—*Christian Frantz, Operator.*

Description.—This is a double colliery, situated at Wadesville, on the estate of Messrs. Wetherill & Seitzinger. The colliery consists of two slopes, each a single track. The south slope is sunk 600 feet deep on the H or Orchard vein, on a south dip of 15°, the coal of which is 6 feet thick; three gangways are open in this mine; the character of mining done is principally robbing out the works. The north slope is sunk 135 feet deep on the south dip of the Lewis or Little Orchard vein, at an angle of 16°. These slopes are some 600 yards apart. Portions of these gangways are abandoned. The character of mining done is also robbing out the coal. The amount of gas that is evolved does not necessarily give any serious annoyance, as the modes used for ventilation are nearly adequate, but not fully up to the legal requirements; the air-courses not being of ample area, renders ventilation difficult, as furnaces on a small scale cannot afford

proper ventilation, and a resort to them in mines of large dimensions will prove utterly futile.

Engines.—A 40-horse engine is used at the south slope to hoist and pump by, and a 40-horse engine at the north slope for a similar purpose; a 35-horse engine runs the breaker. There are 10 boilers used; their condition has not been reported to me; and the arrangement of water at the breaker is not quite satisfactory, but ordinarily so of the working of the mine.

Remarks.—Under present circumstances a favorable report cannot be given of matters connected with the safety of men or the proper condition of these mines. Respecting ventilation, it was found inadequate. The up-cast air-ways were too small, the gangways needed check-doors to turn the air current, and the successful working of the mine required the operation of a steam fan. The air in the north slope was insufficient for proper ventilation. There are south and north dips worked in this mine, the gangway of which required some substantial repairs, and the lower lift I found also in bad condition. The wagons on the plane are run to the gangway by means of sprags, which are very unsafe, as an accident to them may result in a loss of life and the destruction of the gangway. I found it necessary to direct the manner of ventilating this part of the mine and repairing the works. Maps of these mines have been furnished me, and I consider them correct.

No. 6.—Norwegian Colliery.—*Messrs. Schweers & Brown, Operators.*

Description.—This colliery is situated north of Pottsville, on the estate of Seitzinger & Wetherill. It consists of 3 slopes and 1 shaft opening. The 2 south slopes and shaft are at present idle; the north slope is in operation; is 100 yards deep, on an angle of 70°, with 3 gangways in operation, with breast and headings working, with 72 men. All the coal in the shaft workings has been extracted and the mine allowed to fill with water. The other slopes are sunk 2 lifts each and tunnelled to the Red Ash vein, the coal of which has been extracted, and permitted to fill with water. The conduct of the operators, in disregarding a compliance with the law, gave no little annoyance to the miners and to myself, which forced me to apply to the courts for relief. Through opposite council, the authority of the Commonwealth in such cases had been disputed, and an injunction was issued against the firm restraining them from further prosecution of work.

Gangways.—The only mining done at present is that done on the No. 3 slope, the character of which is very dangerous, as the old works are full of water, and the miners are advancing towards this dangerous element.

Ventilation is but partially successful, even with the operation of a 10-horse steam fan, although carburetted hydrogen gas is largely generated, and complaints are constantly made by the miners of their dangerous position.

Remarks.—After repeated remonstrances made to this firm for the necessary relief to their miners, and to a compliance with the requirements of the law, for a proper ventilation of their mines and the safety and health of their miners, little or no effort had been made to comply with my instructions; finally, for the sake of the safety of miners and those employed in working in the mine, I was forced to apply for an injunction which would restrain their employment of men for the purpose of working in this most dangerous mine. The grievance set forth in my prayer in equity is composed of eight counts, a repetition of which, in this place, is unnecessary,

but shall be rigorously enforced until a proper compliance with the dignity of the law is satisfactory. Other needed instructions for repairs and proper drainage had been given, and for a safe out-let for miners, in case of danger, to escape by, had been given. Visits to this colliery are frequent, but of little relief so far, while legal decision is pending.

No. 7.—RAVENSDALE COLLIERY.—*Whittlecy & Co., Operators.*

Description.—This colliery is situated at Ravensdale, north-east of Port Carbon, on the estate of ——— ———. Is fifteen years in operation. It consists of a double track slope of three lifts 300 yards deep, sunk on the south dip of the Primrose vein, the coal of which runs from 8 to 20 feet thick. Two gangways are working on this colliery. The ingress and egress road is open for the travel of miners 75 yards west of the slope. Four visits of examination have been made to this mine. Ventilation had been found inadequate; the west gangway was in bad condition from the effect of crushes of the coal seam; the eastern district I found in good condition for working. Large quantities of explosive gas are generated in these mines.

Gangways.—The east gangway is 500 yards long, with 11 breasts working; the west gangway is 450 yards long, with 11 breasts working. The character of mining done is considered safe.

Ventilation.—This is produced by the operation of a 20-horse-power steam fan. The slope is used for an intake, and the air passes in east and west in splits on the gangway, thence up into the inside breasts, and returning through the breasts and pillar headings to the out-cast; the west air crosses the slope in an over-cast, which communicates with the fan out-cast. This method of ventilation I approved of, but owing to gross neglect the air in passing onward leaked in the batteries, etc., and a proper quantum did not reach the working places.

Remarks.—I served notices on the company, requiring them to comply with instructions for the necessary improvement as regards safe out-lets, proper ventilation of the mine, and the keeping in order the needed repairs, requiring new slope rope and the security of the drum gear, and to employ two competent men as fire bosses to take charge of the ventilation and the management of gas, who should report to me monthly. By a severe explosion a Mr. Moss, one of the operators, with others, lost his life; hence a necessity exists to enforce obedience to the law. The colliery being a large one, with excellent improvements, having steam engines of some 920-horse power in use, and from the large amount of gas generated, it requires the strictest attention of good, practical men to conduct the mines with safety.

No. 8.—FEEDER DAM COLLIERY.—*Geo. W. Pomroy, Operator.*

Description.—This colliery is situated north of Port Carbon, on the estate of the North America company, has been 15 years in operation, and consists of a double track slope opening; sunk 2 lifts on the south dip of the J or Diamond vein, at an angle of 20°. The character of work done is breast and gangway mining, and considered safe; the coal is strong and quality good. This mine generates a large quantum of explosive gas, and the mode of ventilation therein is scarcely adequate to prevent explosions.

Both of these lifts are operated, and they require an excellent arrangement of the air to supply a proper amount for the health and safety of the men. There are proper ingress and egress roads for the use of miners.

Ventilation.—This subject is controlled under the operation of a 6-horse steam fan, which, for such mines, is considered inadequate; several important changes have been made in ventilation under our instructions, and should the rules of the mines and our instructions be properly regarded, it would add greatly to the safety and health of the men.

Engines.—Three engines of an aggregate power of 43 horse are in use, whose condition, and that of their boilers, is considered good, although no official report, to this effect, has been made to me.

Remarks.—Several visits have been made to this colliery for examination as to the state of the mine, and to investigate charges of negligence, preferred by the workmen, in not procuring proper ventilation and security for their safety. It will be seen, in connection with this fact, that the mine boss lost his life by an explosion of gas, and that others were injured. I have directed proper measures to remedy these complaints, which will prevent further casualties, if properly adhered to. From my visit, on the 6th December, I am able to state a favorable progress.

No. 9.—St. Clair Shaft Colliery.—*William Kendrick and John Dovey, Operators.*

Descriptions.—This colliery is situated at St. Clair, on the estate of Henry C. Corey & Lea. Has been 18 years in operation, consists of a double track shaft, sunk 500 feet deep on the E or Mammoth vein; the head-house, braker and engine buildings are all attached. The powerful engines and strong machinery connected with this colliery are fully adequate for any amount of work required. This great enterprise was first originated by Mr. Alfred Lawton, and sunk to the G or Primrose vein. Mr. Enoch Maginnis succeeded Mr. Lawton, and sunk it to the E or Mammoth vein, under whose superintendence and operation the colliery was successfully conducted for several years. Its present owners have operated the colliery since 1870; its product of coal may be safely set down at 10,000 tons per month. The character of mining done is considered safe; the openings are very extensive, including three lifts; its gangways and planes exceed 9 miles in length. Although this mine generates explosive gas largely, yet, under the operation of a steam fan, ventilation is tolerably satisfactory.—The company, at all times, evinces a desire to comply with the requirements of the law. These gentlemen being practical miners, and fully understanding the necessity of safe and well ventilated mines, are, at all times, ready to render satisfaction.

Gangways.—There are four principal gangway openings, with numerous branch and lateral gangways and incline planes. The character of mining done is breast work, gangway and robbing old districts, which is considered a safe operation under the system of coal mining.

Ventilation.—This operation is performed by a steam fan, the old Kirk & Baum slope being used for a down-cast, the air divided into east and west splits in the Seven Feet vein, ventilating all the districts in this vein; thence it passes into a tunnel into the E or Mammoth vein, and ventilates this underlying vein east and west; thence into a tunnel and up into the upper lift of the Seven Feet vein, and ventilates the east and west districts; it then is forced in through the third tunnel on the second lift of the E vein, and

ventilates all these districts; returns in the seven-foot tunnel and down the first plane to the seven-foot gangway, and along the head of the west plane to a monkey gangway, to its face, and through these openings and down the west plane to the foot of the shaft, to the location of the steam fan, and here it is forced up the shaft. The improvements of Mr. Humphrey's are a success. Though a large amount of gas is generated, and the supply was not then sufficient, yet on the whole ventilation was not so very bad.

Engines in use.—They equal 705 horse power. Drainage is produced by a 500-horse steam pump; 120-horse hoisting engine; a 30-horse breaker and a 30-horse dirt plane engine, 10-horse feed pump, 10-horse steam fan and a 5-horse smithing engine. There are 13 good steam boilers in use, and work at 70 lbs. per steam gauge; the water is so arranged as to be considered safe. Mr. Jonathan Bowin's management of these mines and machinery is satisfactory.

Remarks.—The method adopted to ventilate the mines is not in conformity with natural law. The air is first made to ventilate the upper lift workings, thence brought down to the lower lifts, where its temperature is highly increased; this increased temperature, from its expansion and rarefaction, forces the air back to the upper lift, making the atmospheric gravity at the foot of the shaft 44 lbs. per square foot. Should the fan draft be reversed, the high temperature and pressure would naturally favor natural ventilation, and would of itself create a strong current. It is our duty to object to this plan, however well it may serve its purposes. I found the supply of air in the E workings to be inadequate.

The drowning out of the fire in the Wadesville shaft mines threatened the stability of these mines. I was compelled to suspend mining in these mines, fearing an inundation in case of the giving way of the dividing coal pillar, which apparantly yielded to the water pressure from the Wadesville mines. Fortunately, however, the water did not force through to any dangerous extent, but the chances were such that the instant destruction of the mines was apprehended with seriousness. This danger continued from the 15th of June to the 26th of July, when the mining operations were again resumed, to the great satisfaction of all concerned.

No. 10.—Thomaston Shaft Colliery.—*Thos. H. Schollenberger, Agent for Manhattan Coal Company.*

Description.—This colliery is situated at Thomaston, on the estate of the Manhattan coal company; it consists of a water level drift on the Daniel vein, and a shaft sunk 100 yards deep on the Crosby vein. It contains a double track. The coal in this vein is from 12 to 15 feet thick; an out-let for egress and ingress is completed, and a powerful steam fan used for ventilation. The character of mining done is extending gangway and air-courses, and that in the shaft working is robbing out pillars; there are yet large deposits of coal on the tract, which is of a superior quality, as is all the coal in the Glen Carbon basin.

Gangways.—Only two new gangways are open on this slope; yet the old gangways were numerous, their total length exceeded 22,500 yards, and some of which extended the full distance of three miles.

Ventilation.—The new slope is used for a downcast, the air divided at its bottom, and traverses the east and west gangways; the air from the west districts is brought over the slope in an over-cast, which communicates with the fan out-cast; this mode of ventilation is satisfactory at present.

Remarks.—Ventilation was not sufficient to produce a full supply of fresh air, but improvements are in progress to accomplish this result. Powder smoke was then an evil to be complained of by the workmen; I directed such improvements as seemed necessary for proper ventilation—this done, will have its good effect. 430 horse power steam engines are in use, with 14 boilers, all of which, with their machinery and tackle, are in good order. The colliery will not be properly in shipping order before spring; energetic efforts are making to have it in excellent order to do a large amount of business thereafter.

No. 11.—Eagle Hill Shaft Colliery.—*James C. Oliver & Co., Operators.*

Description.—This colliery is situated north of Port Carbon, on the estate of Messrs. Matison & Beaber; it consists of a shaft and slope opening, sunk on the saddle of the E vein. The slope is sunk on the east gangway, on the level of the shaft opening. In two lifts the coal was found some 11 feet thick on the top bench, and on the bottom bench it was 12 feet thick. In the present new lift the coal is 40 to 60 feet thick; the partition rock is but a few feet thick. With improvements, this colliery will rank among the best in this region. I directed the opening of an ingress road to be made for the safety of miners, etc., and other necessary improvements, but from non-compliance and refusal to conform to the requirements of law, and for the safety of working men, I was obliged to apply for legal proceedings to restrain further operation in the mine until the necessary improvements be completed. From necessity the miners consented to continue their work, after repeated prohibitary notices were posted and served by the sheriff; all of which proceedings were objected to by the firm, they filing bills in averments against our authority and recommendations in the premises.—Many of the miners took sides with the firm, whilst others served me with written complaints of the dangerous condition of ventilation, and the insecurity of ingress and egress, all of which were true. This procedure of the firm was anything but pleasant, taking advantage of the time in obstructing our proceedings until it suited their convenience to make the needed improvements. In this case we met the opposition of many of the hands; but this opposition was mainly caused by their poverty, brought upon them by the long strike in the early part of the year, otherwise the case would have been different. Our duties are such that we cannot please parties who commit and maintain grave evils, and perhaps thereby sacrifice many lives.

Gangways.—Four gangways are open on the E vein in pannels; 7 visits have been made to this mine, and at each visit the ventilation was found inadequate. The dirt bank around the buildings was on fire, threatening the colliery with destruction; my duties, at this mine, were very unpleasant and hazardous.

Ventilation.—The ventilation of this mine is produced by the operation of a 10-horse steam fan, which is, at present, inadequate; and under the method adopted by the mine boss, and persisted in, ventilation cannot be successfully effected, and the workmen are, at any time, subjected to the explosions of gas.

Engines.—This mine is drained by a 60-horse steam pump, with five others; their aggregate power is equal to 201 horse, with 12 boilers; their condi-

tion was not reported to me—some of which are old. The arrangement of the water is not satisfactory.

Remarks.—Not till November last had a map of the mines been furnished, nor has there been any satisfactory report made of the condition of ventilation; nor has there been any effort made to comply with the requirements of law, but by fair promises, which were never intended to be fulfilled. Attempts were made to set the law at defiance, and while the miners agreed to oppose our authority and continue work, our efforts were comparatively powerless.

No. 12.—Eagle Colliery.—*George W. John & Bro., Operators.*

Description.—This colliery is situated at St. Clair, on the estate of Messrs. Wetherill, Keim, Seitzinger and others; the colliery has been in operation some 28 years; the Four Feet and Seven Feet, Mammoth and Skidmore veins are operated in this vein successfully; it consists of a double track slope openings in 3 lifts, and a water level drift opening in a series of small detached basins on the south flank of the Mine Hill Ridge. The Four and Seven Feet veins are generally worked together, for very advantageous purposes; these veins and the Mammoth vein have been extensively worked for a long distance to the east by a number of lateral gangways, driven in 33 feet of coal. The Skidmore vein is open by a slope at a point east of the entrance to the tunnel to the north, on its south dip, and in addition to this, a drift is opened on the mountain, at the east end of the basin, on the E vein. These mines have, from the commencement, been properly conducted; their drainage is perfect, no gas in any quantity exist, which under their present owners, makes it one of the best collieries in the region. The breaker is a large structure of its kind, capable of containing 200 cars of coal. Maps of these mines have been furnished and found to be satisfactory.

Gangways.—There is not less than 29 miles of gangway opening in the main and outside tracks; to describe them is a matter really not needed, but suffice it to say, they are in good condition.

Engines.—Six steam engines of 245 horse power are used, with 15 good steam boilers; their machinery and tackle are in good condition; the water arrangements are such as to be considered safe. No official report of their present condition has been furnished me.

Remarks.—Three visits have been made to this colliery, and always found it in its usual good condition; ventilation is not complained of, the drainage is good and mining operation is considered safe. No accidents to workmen occurred; the healthy condition of the air is satisfactory; in fact, I cannot speak disparagingly of the manner in which the mines is at present managed.

No. 13.—Pine Forest Shaft Colliery.—*George W. Snyder, Operator.*

Description.—This colliery is situated a mile east of St. Clair, on the estate of Wetherill, Seitzinger and others. It has been in operation some 10 years. The colliery consists of a shaft sunk 100 yards deep on the E vein; a tunnel open on its east gangway cuts the Seven Feet vein; both these veins are operated extensively on their eastern run, but westward are less extensive; the upper lifts are generally mined out. Ventilation is here produced

by a 20-horse steam fan; large quantities of explosive gas and choke-damp are evolved in these mines, but under a more perfect system of conducting the air, the ventilation is much improved. The energy and desire this firm evince to discharge their duties to their miners are very creditable. The changing the steam fan to a much better locality effected better results, but the large amount of gasses produced require persevering, industrious vigilance on the part of the officers of the mine, to enable the miners to prosecute their work with a degree of safety, and am pleased to say the reforms proposed are receiving attention.

Engines.—Seven steam engines are in use, with an aggregate of 528 horse power, all of which, with their tackle and machinery, under the care of Mr. Morrison, machinist, are in excellent condition; the water is so arranged as to be considered safe under ordinary care.

Gangways.—Some 1,000 yards of gangways are open on the lower lift. The character of work done is satisfactory, as the mine boss, Mr. Maguire, has evinced great industry in coping with the difficulties originating from crushings and gas.

Ventilation.—A 20-horse steam fan is in use. The out-let air shaft was changed to a point 1,000 yards east of its former situation, almost giving the air a direct course in its circulation eastward. The air is properly split in sections, passing in through tunnels, &c., ventilating the several districts outward. Safety lamps only are used in dangerous workings, and the check-doors are carefully attended.

Remarks.—A careful supervision is necessary to insure success and the safety of workingmen. Directions have been given, and cheerfully adopted, to prosecute the needed improvements for ingress and egress ways for men's safety, and also for the protection of the gangways and pillars from crushings. The old lifts are well drained of their standing water. The superincumbent pressure sustained by the old pillars must gradually overcome these supports, and to guard against accidents arising from such crushings, it is necessary to keep the pillars on the new lift sufficiently strong to enable them to sustain any sudden yielding of the upper works. For this end the mine boss is carefully managing the mining operations, that in return mining a large product of coal may be anticipated, which will overbalance any interruptions met with in his present progress. The temperature outside was at 70° and inside 66°. The barometer steady, at 29° outside and inside at $28\frac{7}{10}$°, showing that about 4 to 5 per cent. of explosive gas prevailed at the point of test. I directed larger out-lets to be opened for a more free circulation of air, and to make additional out-lets as auxiliaries.

No. 14.—Beachwood Colliery—*Powell & Wigton, Operators.*

Description.—This colliery is situated at Mt. Laffee, on the estate of Joseph Patterson & Son, *et al.* The colliery consists of a slope, sunk 780 feet deep on the south dip of the E vein, with a double track throughout its whole length, at an angle of 49°. Three gangways are in operation. The colliery is now thirty-seven years in operation. A very large amount of carburetted hydrogen gas is evolved in the Seven Feet vein and exceedingly dangerous, which resulted seriously on several occasions this year; although a 20-horse steam fan is used for ventilation, the accumulation of gas is so copious that without the strictest vigilence on the part of the fire boses, and they strictly performing and discharging their arduous dutics,

danger to life is at any moment eminent; the constant use of the safety lamp is a speciality, and the slightest disregard of the rules of the mines, on the part of ignorant or obstinate workmen, may at any instant envolve the lives of many. It is proper to state that Mr. Baddow, mine boss, has used great industry in managing this mine for several years.

My duty in connection with this colliery forced me to conquer partly a submission to the requirements of law by legal proceeding in equity. The defendants, through their agent, refused a compliance with the direct requirements of the law under the advisement of council, which case has not been disposed of so far.

Gangways.—There are some 4,500 yards of gangway open in the mine and several slant gangways; the character of mining done is robbing, breast-work and gangway extension, which in its line is a safe operation, were it not for the difficulty experienced in working amongst explosive gases. This is a matter greatly to be regretted for the sake of workingmen.

Engines.—Aggregate power 236 horse, with ten good steam boilers. Their condition is not reported.

Ventilation.—A 20-horse steam fan is used for this purpose, yet from the contracted air courses, and extensive openings, the circulation of fresh air is inadaquate to supply a sufficiency of air for the health and safety of the workingmen.

Remarks.—On several occasions I had officially visited the colliery, and also at the request of several complainants, whose statements were found to be substantially correct, no regard having been paid to the requirements of the act of the General Assembly of the 3d of March, 1870, which prohibited the hoisting or lowering of more than (10) ten men at a time in any wagon, etc., but this firm used two (2) wagons at a time and permitted as many persons to ascend and decend at a time as pleased to do so, thus jeopardizing the lives of the whole, while several accidents occurred, yet these acts, incontrovention to law, were not as yet abated. The posting up of notices and our remonstrances were rejected and proved of no avail. I have given the matter over to my counsel, Mr. Ellis, for adjudication in the courts. No reports have been made to me of the legal condition of the boilers or ventilation, and it must be expected that from such arbitrary proceedings the pecuniary interests of accruing to the firm and the terrible casualities that occurred, are in proportion to the inhumanity of the proprietors. No other firm in my district exhibited such doged resistance to the law. A glance at my lists of deaths and accidents connected with this report will reveal some truths; the verdicts of sworn juries in the case of deaths of two and burning of two men, on the 14th of October, by an explosion of fire-damp, which took place in old works where these persons were employed only the preceding day, none of whom were experienced miners, were set at naught.

I have recommended very necessary improvements to be made to remedy some of these evils, which were truthfully complained of, few of which had been satisfactorily complied with. Under the management of General J. K. Seigfreid we experienced very little difficulty in effecting a compliance with the requirements of law, nor shall we cease to inquire into and press in a legal manner, with due diligence, our official authority until the court decides between the Commonwealth and these parties.

No. 15.—Oak Dale Colliery.—*Lucas & Denning, Operators.*

Description.—This colliery is situated at Glen Carbon, on the estate of Richardson & Webster. The colliery has been in operation some seventeen years, and consists of two double cage-way shafts; these shafts are only some twenty feet apart, but sunk on separate veins. The new shaft is 90 yards deep; the old one is 100 yards deep. Several coal veins are open by these shafts. The Crosby vein is 6 feet thick, the Leller vein is 5 feet thick, the Little Daniel vein is 4 feet thick, the Big Daniel vein is 14 feet thick, and the Drain vein is 6 feet thick; aggregate thickness of coal is 35 feet. The coal seams all have a southern dip. All these veins are opened by a tunnel 200 yards long; the tunnel is located west of the shafts. The track has a run of two miles.

Gangways.—There are 7 gangways in operation, with some 22 breasts, employing over 100 miners and some 35 men at other employments inside.

Ventilation.—A 20-horse steam fan is used for ventilation purposes, with satisfactory results, though some explosive gas is evolved; but under a proper application of the fan no great danger need be apprehended.

Engines.—There are 7 steam engines in use=695 horse power, with 17 good boilers. All of the appointments, machinery and tackle, are in good condition. The water arrangements are so well regulated as to be considered safe under ordinary care.

Remarks.—The substitution of the new steam fan is a much needed improvement, and under its operation the safety and health of the workingmen will be greatly improved. I have experienced no difficulty in the discharge of my duties at this colliery; every facility was afforded me in directing the improvements needed. I find the character of the work done is a safe operation, and ventilation is nearly satisfactory, and a general desire is manifested by all the officers to comply with the requirements of the law. I directed the mine boss to secure the leakage in the wastes, and get a better supply of fresh air into the working districts; to timber such places as gave evidences of danger, and secure the safety of his miners. The officers are practical miners, and consequently understand that every improvement made adds to their interest and extricates them from unseen and untold dangers and apprehensions, that might, by negligence or inattention, ultimately end in disaster.

No. 16.—Glen Carbon Slope Colliery.—*Lucas, Denning & Co., Operators.*

Description.—This colliery is situated at Glen Carbon, on the estate of Richardson & Webster, and has been in operation some 35 years. It consists of two double track slopes, sunk on the south dip of the Big Crosby vein, at an angle of 56°. The old slope is 100 yards below the water-level, and now used for drainage, ingress and egress safety way, and pumps. The new slope is 200 yards deep. There are three coal seams worked on this level, with east and west gangways on each. The Crosby vein is 14 feet, the Daniel vein is 7 feet, and the South vein is 6 feet=27 feet thick of coal. No intervening lands to prevent safety roads. The late improvements are useful and substantial, consisting of an extensive breaker, engine house, boiler house, and a steam fan, which constitute this colliery one of the best in my district; while under the management of the present firm, who also operate the Oak Dale colliery, very little apprehension need be experienced about the proper and safe working of the mines.

Gangways.—The gangways have air-courses open parallel with their course for purposes of ventilation; the mining is conducted properly, and tunnels are open into the other veins for their operation.

Ventilation.—A 20-horse steam fan is used for this purpose; the air courses are so well constructed, and of such capacity, as to render ventilation effective and satisfactory.

Engines.—5 steam engines are used for drainage, hoisting, preparing coal and ventilation, of an aggregate power of 180 horse, with all their machinery, tackle and appointments in good order.

Remarks.—The legal condition of the boilers is not yet reported. Should an accident take place at the slope, the air-courses are adequate and available for egress; there are no combustible material connected with it, which renders the premises more secure. The employment of a competent fire boss in each working pannel, is very commendable, and adds greatly to the safety of workingmen. The character of work done is extension of gangways, opening headings and breast work, which is considered a safe operation, and by such management, the interests of both the operators and miners are promoted. I have given the needed instructions for such improvements as seemed necessary, and the officers and men evinced a willingness to comply with my directions.

No. 17.—Monitor Colliery, (or Saylor.)—*Joseph Dennings, Operator.*

Description.—This colliery is situated west of Wadesville, on the estate of Messrs. Wetherel, Seitzinger and others. This colliery consists of a double track slope, sunk 330 feet deep on the south dip of the G or Primrose vein, at an angle of 23°; 2 gangways, with other branches, are open in the mine; the vein is 6 to 8 feet thick, and the quality good. It does appear that the mine is not advantageously worked, for mining away too much coal contiguous to the slope is not warrantable. This slope has been in operation some 8 years, but the upper lifts have been producing coal for over 35 years, during that time the colliery has passed through the hands of a number of operators, each of them extracted coal to suit their own advantages and interests regardless of consequences.

Ventilation.—A 6-horse steam fan produces ventilation, but under former circumstances had little effect; at present, however, this subject receives attention, and the results are more satisfactory.

Engines.—Three steam engines=76 horse power, is used for hoisting, ventilation, preparing coal and drainage, which appear to be only in a moderate condition.

Remarks.—I disapprove, and think it objectionable to mine coal in proximity to the slope pillars, or near the permanent air-courses and sidings, or skipping pillars in localities where the permanency of the gangways are threatened. There are no safety out-lets constructed. Maps and reports of the ventilation have been furnished. The seams dip at an angle of 7 to 15°; the wagons enter the breasts by incline tracks, and the roof is a fractured rock strata. The circulation of air is not quite proper, the out-let is too contracted. I directed the enlargement of the out-let and headings, and such needed improvements as seemed justifiable, such as to secure the drum by proper brakes, report the condition of steam boilers and ventilation, and do such other things as would conduce to the safety of the workmen and interest of the colliery.

No. 18.—GREENWOOD COLLIERY, No. 1.—*Eugene Borda, Esq., Operator.*

Description.—This colliery is situated east of Tamaqua, on the estate of Tamaqua coal and navigation company. It consists of a slope and drift opening. The slope has a double track sunk 280 yards deep on the south dip of the E vein, has three lifts, and well timbered throughout. The character of work done is opening gangways, headings and breast workings, which is considered a safe operation. The chain pillars are sufficient to support the gangway. The drift is idle at present, the coal being faulty. The parting rock which separates the E and D veins is 15 yards thick, and the openings are quite extensive.

Gangways.—Two principal gangways worked on the west district; the coal on the E vein is 30 feet thick, and that on the D vein, 8 feet; the character of work doing is robbing back pillars and extending gangways.

Ventilation.—A 15-horse steam fan is used for this purpose. The slope is used for a down-cast, and the pump road is used for an up-cast; the air is divided into separate splits, conducted into the working districts, and returns by the headings through the breast workings, to the return out-cast to the fan.

Engines.—Six steam engines are used in the operation of the colliery= 679 horse; a 500-horse Bull pump and an 80-horse pole pump drains the mine; 17 steam boilers, all of which are legally reported to be in good condition; with the tackle, machinery and equipment all in proper order.

Remarks.—I find some quantities of carbonic acid gas generated; the character of mining is considered safe. The E vein is found here to be 30 feet thick. The manway and gangway were found in bad condition, needing repairs; a tunnel is in course of construction; the mine is well ventilated. I directed a change in the location of the steam fan, and to secure the hoisting drums; this has been done to satisfaction. This firm has at all times evinced a desire to comply with the necessary instructions, and have obligingly furnished reports of the condition of boilers and ventilation as required by act of Assembly.

No. 19.—GREENWOOD COLLIERY, No. 2.—*Eugene Borda, Esq., Operator*

Description.—This colliery is situated in Greenwood, designated as No. 2, on the estate of the L. C. & N. company. It consists of a slope sunk on the south dip of the E vein, at an angle of 45°, sunk 200 yards deep. Two gangways are open and working west, one on the Cross-cut and the other on the E vein—are only robbing out the E vein pillars. I found the air good in the mine, with checks in the gangways; the air is conducted in proper splits into the working places. This colliery is ventilated by natural means as air-holes open out to the surface.

Remarks.—I have directed the enlargement of the air-courses, to secure the hoisting drums with proper breaks, and to report monthly the condition of air and boilers.

No. 20.—BUTLER COLLIERY, SILVER CREEK.—*Messrs. Murry, Winlack and Randal, Operators.*

Description.—This colliery is situated at Silver Creek, on the estate of the Valley Furnace company, but formerly operated by John Tucker, Esq.

It consists of a slope sunk three lifts on the south dip of the E vein; it was lately worked by the present firm, but abandoned in 1869, by the closing in of the slope, burying with it a large amount of property.

This year the firm re-opened the upper lift to extract the coal from the chain pillars and old works; this being a dangerous movement, I was compelled to apply for an injunction to restrain the operation. Judging it, from the two underlifts, to be filled with water, and no substantial guarantee for the safety of workmen, I prohibited the miners from continuing their operations, but from necessity, caused by a long strike, these people were forced to submit to circumstances. Two engines=60 horse.

After some short time, it was found necessary for the operators to abandon the mine, which was occasioned by the sinking in of the whole chain pillar gangway, falling in to the lower lifts. The injunction still remains open to the court.

No. 21.—Swift Creek Colliery.—*William Hopkins, Operator.*

Description.—This colliery is situate near Tuscarora, on the estate of G. Bast, and others. It consists of a new slope sunk 110 yards deep on the south dip of the Homes vein, at an angle of 65°; the slope has a double track, a pump road and a manway; considerable explosive gas is generated in the mine as the excavation increases.

Gangways.—Two regular gangways are open in the mine; the character of work done is extending gangways, breast-works and headings, which is considered a safe operation.

Ventilation.—This is produced by the operation of a steam jet, the outcast is open in the slope pillar, and the air out-let on the west side of it is open some 15 yards from the slope.

Engines.—Two steam engines=145 horse power is used to do all the necessary operations of the colliery.

Remarks.—A balance cage is used to force up the wagons on the track, as the engine is put in motion to hoist coal. The character and condition of these engines and machinery are very excellent. Firemen are employed at my suggestion, which, for the operator, is a praiseworthy act. I found the condition of ventilation objectionable, and directed the treble shifting of workmen to open a second out-let for ingress and egress, 250 yards west of the slope, and recommended the substitution of a steam fan for ventilation purposes, to make monthly reports of the condition of the mine and supply of air, and also of the steam boilers; to open a small road to the second out-let at a point where the steam jet is located, to facilitate the egress of the workmen, and to avoid the steam of the jet, which would be annoying to the miners. This once done, the colliery would be in excellent condition. Reports on the condition of boilers and mines have been furnished, which are quite satisfactory. The operation of mining has been suspended for some time, occasioned by abrupt rock faults in the upper part of the stratum, which reduces the seam from its usual thickness; this change does not appear in the gangway on either side.

No. 22.—Lambert Colliery, (or Novelty.)—*Samuel Morgan & Co.*

Description.—This colliery is situated west of New Philadelphia on the estate of the Valley Furnace company. It consists of a double track slope,

sunk 100 yards deep on the south dip of the Primrose vein. The upper lift on this colliery was formerly mined by Col. J. J. Conner. The old lift is 95 yards deep at at angle of 38°. The seam is three feet thick. The appearance of the mines is satisfactory, and very good ventilation throughout. Whole depth of slope 180 yards.

Gangways are open east and west, and active operations are conducted to satisfaction. Some 55 men are employed in the mine.

Ventilation.—A 10-horse steam fan is used to produce ventilation, which is properly conducted with due care for the health and safety of the men, who are well satisfied.

Remarks.—This colliery had been abandoned for many years prior to its occupation by the present firm, who, by the by, are industriously engaged in making extensive improvements in the development of coal in their new lift. Their liberal out-lay in expenditure to improve its condition will eventually be well compensated by the increased production of coal. Being hard working, practical miners themselves adds greatly to the interest of the undertaking. Were it not that they possessed these requisite qualifications, the re-opening of this old colliery would be futile. I recommended and directed some needed improvements and security to machinery, mining operation and ventilation, which will meet my desire, and am pleased to so report.

No. 23.—ALASKA COLLIERY—*Hon. H. L. Cake & Co., Operators.*

Description.—This colliery is situated in the northern outskirts of Tamaqua, on the estate of the Tamaqua coal company. It consists of several water level drift openings in the west on the A and C veins. These gangways are open over 1,000 yards in coal 10 to 14 feet thick.

Ventilation.—This colliery is ventilated by means of air-holes open out to the surface, which are found to be inadequate to accomplish a desirable result, as some black and fire-damp are evolved and the contracted air-courses cannot admit a sufficient free passage for air to circulate properly. I found the condition of the air objectionable.

Engines.—A 40-horse engine runs the breaker, with three boilers in use. A report of their condition has not as yet been furnished. The dirt plane is some 180 yards long. A 40-horse engine is used to operate the plane.

Remarks.—This colliery has been in operation for many years. All the upper levels are comparatively exhausted. The character of mining done is extending gangways, heading and breast work. I found the air in the A district bad, with 22 men in it. The area of the headings is 12 square feet. The section area should be 20 square feet. The mode adopted to ventilate the mine is erroneous, *i. e.*, the air is brought from the surface to the breast workings; thence on the gangway and out on the drift mouth. Any one conversant with ventilating mines knows very well that as the fresh air descends a mine it receives a greater degree of heat, and therefore increasing its temperature inside. The air has a tendency to ascend; try a chimney for instance. The gangway and drift mouth should be used for an intake, and pass the air up by air gates into the breast workings, and thence to the out-let air-holes. The heat the air receives in the mine will give it a buoyancy and circulating force. I directed this plan to be adopted, and to stop the air-way for an available safety road in case of an accident in the gangway, a thing that may possibly occur at any moment.

No. 24.—Wolf Creek Colliery.—*Kear & Ansty, Operators.*

Description.—This colliery is situated near Minersville, on the estate of Brock, Bro. and others, and it has been in operation 37 years; at present, it consists of a double track slope, sunk on its fifth lift 1,520 feet deep, on the south dip of the Rees Davis vein, at an angle of 33°; an improvement, consisting of a 20-horse steam fan has been added for ventilation, which is a success in its line. The character and condition of the mines and openings are good, particularly the new lift, but in the abandonment of the G. H. Potts's Diamond slope, which is but a short distance west of this mine, it has been suffered to fill with water, that company having refused to work their mines longer, dismantled their colliery, removed their pumps and abandoned all. Now, by this action on the part of the Diamond coal company, the water from the Diamond mines overflows the Wolf Creek mines of Kear & Ansty, which compels them to abandon their mine, and sacrifice their interest in this fine colliery. By this act of the parties interested in the Diamond mines, both these collieries now stand as wrecked monuments of former greatness. Some millions of tons of the best anthracite coal have been mined from these collieries, and millions of tons are yet remaining and lost beyond recovery, a sufficient warning to all who may be interested in coal lands and coal mining.

Engines.—Five steam engines were used=170 horse, with 13 boilers; reports of the condition of ventilation, mines, steam boilers and steam engines have been kindly furnished, and are on file.

Remarks.—The coal in this seam is 6 feet thick, and when inspected, I found it the best ventilated colliery in my district, and although explosive gas is produced, I found no traces of it at the time; 51 men were employed there in safety. I directed the protection of the hoisting drum and the securing of machinery, and to do all the necessary things that would add to the safety and health of their employees. I advised the erection of a suitable water tank or reservoir, that would afford a full supply of this needed element. All my instructions would have been complied with, were it not for the above cause.

No. 25.—Commercial Colliery.

Description.—This colliery is situated west of New Philadelphia, in Schuylkill county, on the estate of Messrs. Franklin B. Gowen, G. Bast, and others. Mining operations have been carried on here for some twenty-two years. The colliery consists of two double track slopes and a shaft opening, and are contiguous to each other, on a very favorable location. The old slope consists of two lifts; most of its coal has been mined out, and it is now used for drainage; the shaft operation is not so extensive, and is idle at present. The new lift in the west slope is the only part of the mine worked at present, with gangways open on the Holmes or F vein, and the Seven Feet vein running east and west. These slopes are sunk on the Holmes vein, on its south dip, which is variable, producing a good quality of coal. A tunnel had been projected northward from the west gangway of the F vein, which cut the Seven Feet vein on its passage to the prospected E or Mammoth vein, after large expenditures had been made without the desired result; this undertaking had been discontinued for the present, and operations continued on the other openings, although the E vein was not satisfactorily reached at the locality sought. I am of opinion that

the vein can be found some 600 yards west of the present tunnel, by a cross-cut from the Seven Feet vein, as the appearance of the measures, and regularity of the F and Seven Feet veins, as they are open in the west, indicate the seams to approach their regular and uniform position in that basin. It is known that the coal seams in the Eagle Hill basin get thicker as they open in on their eastern runs in approaching Silver Creek, and it should be strong presumption in favor of these westward seams to assume a like proportion westward.

Gangways.—Four gangways are open in the mine—two on the F, and two on the Seven Feet veins, all of which are in good condition. Both these veins are connected by a tunnel, open on the west of the slope, some sixty yards.

Ventilation.—The west slope is used for an up-cast, and the old slope for a down-cast air-course; a steam pump is used in the up-cast, which creates sufficient heat at present, to raise the temperature to 80°, thus giving some 40° of heat in favor of natural or atmospheric ventilation; the air supplied in these pannels is nearly satisfactory for present use.

Engines.—Five steam engines are in use at this colliery, whose aggregate power is equal to 375 horse, with 20 good steam boilers; these engines, machinery and equipments are in good ordinary condition.

Remarks.—The prospects of any further development of the E vein at its present supposed location should be discontinued; all favorable results having disappeared here, its further development must necessarily depend upon circumstances, which may be developed in the progress made in excavating the western Seven Feet gangway at a more remote point than its present face. This colliery is open at present for lessees, and numerous parties are contemplating the contract. It might be imprudent for me, in this connection, to propose any opinion; the very many interested parties seeking to engage in this valuable lease, are presumed to fully understand their interest and are entitled to their views.

Ventilation is not quite adequate to supply any large force, where extensive mining operations are carried on. I directed the opening of a second out-let for miners' use; also to substitute a steam fan for ventilating purposes; to re-timber the faulty parts of the west slope, as its timbers are badly affected by a dry-rot caused by the heated steam and steam pump fixtures, which is entirely objectionable, and pernicious to the stability of slopes or shafts. The use of Messrs. Allison & Bannan's steam pump in deep mine drainage is very serviceable, but wherever used in deep mines, the timbers soon decay, and even the coal and rock surfaces crumble and involves great expense to keep the slopes permanently secure. To account for this sudden change in the materials forming the slope, it must be inferred that the heated air undergoes a chemical change, arising from the acidulated affinity of the noxious vapor suspended in the air of the mine, which attaches to the surrounding surfaces of all materials, absorbing what moisture they contain as the heated materials throw off all the fluidity in their composite form, the material constantly undergoing an over-heated temperature, consequently parts with its moisture. When this supply is once exhausted and cannot be again restored, decomposition follows, which destroys the fibre of the timber and the solidity of the stratum. Therefore, I think it objectionable to subject the shaft and slope structures to the action of heated air or steam, when impregnated with acidulated vapor and noxious air.

No. 26.—KENTUCKY COLLIERY.—*Messrs. John Schall and Patrick Donohoe, Operators.*

Description.—This colliery is situated west of Tuscarora, on the estate of the Tamaqua coal company, and has been 26 years in operation. It consists of a drift and slope opening. The slope has a double track; is sunk 525 feet deep on the south dip of the E vein, the coal seam of which is 25 feet thick. The drift opens the upper levels on the E and D veins. The D vein of coal is nearly exhausted; all the coal under the level of this drift, for 100 yards deep, is mined and worked by the slope. The seams dip at an angle of 33°. This coal has always been of excellent quality and good workable coal.

Gangways.—All the gangways running in east and west are worked to the boundary line of the tract. The coal produced is taken from old breasts and pillars.

Ventilation is produced by the operation of a 20-horse steam fan, and the supply of fresh air furnished was satisfactory. The eastern and western air are properly conducted, and every necessary improvement is unsparingly executed, and a cheerful compliance with legal requirements evinced.

Remarks.—This colliery has been properly managed, and has afforded me great satisfaction. The engines in use are 4=110 horse power, with 7 steam boilers, all of which are in excellent condition. The character of work done and condition of the mine at present are satisfactory. I directed the security of the drum, which was at once attended to, and requested the monthly reports of ventilation to be furnished me.

No. 27.—BULL RUN COLLIERY, (TUNNEL NO. 10.)—*Lehigh Co., Operators.*

Description.—This colliery is situate east of Tamaqua, on the estate of the Lehigh coal and navigation company. It consists of a tunnel open in the north to the E vein, with gangway opening in east and west, and a new slope lift, of two tracks, sunk 70 yards deep on the E vein, at an angle of 43°, with east and west gangways open and breast mining in operation, which is considered safe.

Gangways.—There are 4 gangways open in the mine, which I find are in good order. The character of mining done in the tunnel level is robbing out the pillars and old works.

Ventilation.—This is at present produced by the action of a steam jet, which shortly will be replaced by a steam fan, now under construction. The air is divided in splits at the bottom of the slope, and conducted in proper channels to be of adequate utility for its purpose, ventilating the working places on its route, and returning by secure passages outward. An over-cast on the slope communicates both splits of air at the fan out-cast. This mode of ventilation we always recommend wherever available, and is, we find, becoming very popular alike with the operators and the miners.

No. 28.—GLENTWORTH COLLIERY.—*Hons. James Ryon & Wren, Operators.*

Description.—This colliery is situated north of Port Carbon, at Eagle Hill, on the estate of Lewis & Baber. It is in operation some 10 years. The colliery consists of two double track slopes. The south slope is sunk

330 feet deep on the south dip of the Holmes vein, at an angle of 30°; this slope is comparatively idle. The north slope is sunk three lifts on the south dip of the Primrose or G vein. A tunnel, open in the east gangway 81 yards, and 53 yards long, cuts the F vein. The quality of coal produced here is excellent. Drainage and ventilation are satisfactory. The coal seam is from 8 to 10 feet thick. These veins are regular, and mining, as conducted at present, is a safe operation.

Gangways.—The new west gangway is open in 400 yards, with 11 breasts working. The new east gangway is open 300 yards, with 3 breasts working. The breasts are 10 yards wide, with 7-yard pillars. This strong pillar work, by experienced men, is very much approved of.

Ventilation.—This subject is influenced by a steam fan operation of a 40-horse power, which produces desirable results. At present the mine is well supplied with air, which is divided into proper splits, traversing the working places on its inward passage, and returning by secure passages, and communicates at the fan out-cast shaft with the other splits, a mode which is highly commendable and safe.

Engines.—Five steam engines are in use, whose aggregate power is equal to 165 horse. Eleven good steam boilers are in use. The water is so arranged as to be considered safe. The condition of these engines, boilers, machinery and equipments I found in good order, with new wire slope ropes and gearing complete.

Remarks.—The rock stratum is safe for mining operation. Teh persons only are permitted to ride on the slope wagons at a time. No persons under twelve years of age are permitted to be in the mine. Safety lamps are used only where explosive gas is evolved, and competent fire bosses are always on duty. Ample supplies of timber are furnished the miners. This colliery has undergone extensive improvement last and this year. Satisfactory maps of the mine workings have been furnished. The officers of the mine have rendered me the necessary accommodation and facility to enable me to make a proper inspection of the mines and all the mining machinery. I recommended the securing of the hoisting drums with horns and a sufficient break.

No. 29.—FORESTVILLE COLLIERY.—*Messrs. Hoch & Vendenheiden, Operators.*

Description.—This colliery is situated at Forestville, on the estate of the Manhattan coal company; it has been some 26 years in operation. It consists of a double track slope, sunk three lifts, 410 yards deep, on the south dip of the Black Heath vein, at an angle of 42°. The new lift is 170 yards deep. The old works are much improved. The character of mining done is robbing out pillars, etc., in the new lift, extension of gangways and breast work. Only two gangways are in operation.

Ventilation.—A large amount of carburetted hydrogen gas is generated in this mine, requiring the supervision of two fire bosses for necessary safety. The slope is used for a down-cast. The air is divided at the bottom of the slope, and these splits conducted in the gangways to its face; thence up the working places, and returns through breasts and headings in air-courses and communicates at the fan out-cast. Five engines=270 horse, with 11 boilers.

Remarks.—Complaints are made by miners of the inadequacy of ventilation, which might involve the safety of the workingmen employed in the mine, and result in loss of life, and might terminate in a disaster of a seri-

ous nature. This matter was occasioned by the discharge of the regular fire boss. I duly investigated the charge and also the complaint, made an examination of the mines and found many of the points complained of well founded. I expostulated with the operators on the necessity existing for the employment of some competent person to manage ventilation and secure the safety of the men. Mr. Hock promised to act as such for the present, as mine boss and fire boss, but refused to employ any person else, *ad interim*. Twelve man are employed in the east gangway robbing pillars. 280 yards from the slope a tunnel from the Black Heath gangway runs in north 30 yards and opens the Billy Best vein. Nine breasts are working on the east gangway of this vein ; 17 men working five breasts, etc., in the west gangway. The mine is imperfectly ventilated by a natural draught, but found the mining operation and excavations in good order. I visited this colliery four times this season in order to secure a proper supply of good air for the men. Vigilence and precaution are necessary to protect the men from the evil influence of bad air and accidents occasioned by the explosion of fire-damp. On a former visit I directed the mine and fire bosses to use great care to strengthen the works and secure the men.

No. 30.—FORESTVILLE SLOPE COLLIERY, No. 2.—*Hock & Vendenheiden, Operators.*

Description.—This colliery consists of a slope sunk 5 lifts or 410 yards deep, on the south dip of the Black Heath vein, at an angle of 45°. The east gangway is in 315 yards, with 10 breasts working on it, employing 38 men. The west slope is 200 yards long, and was abandoned in consequence of an apprehension that it might be overflowed by water from the abandoned Diamond mines at Wolf creek, of G. H. Potts & Co , which also occasioned the abandonment of the Wolf Creek slope of Kear & Ansty.—This course of action may be blamable, as it certainly is very unfortunate.

Ventilation is produced by the influence of a 10 horse steam fan. Explosive gas is here generated to an alarming extent, from which cause two men were killed, and 6 burned badly this year. I have made five visits of inspection to this colliery up to December the 4th, and positively directed the mine boss and fire bosses to remove any danger which might result in injury to the men, and to make such needed improvements and alterations in the methods of ventilation as would furnish a sufficient supply of air, and remove the dangers which explosions would occasion ; to use none, whatever, but reliable safety lamps, and to prescribe stringent mine rules and regulations for the proper government of the workingmen who are employed in the mine. I also warned and admonished the miners and hands to use their utmost caution while using lamps, and prohibited the smoking of tobacco or the carrying of their lamps carelessly. Persons conversant with the disasters occasioned by explosions of gases could not help but be shocked at the careless conduct of some of the working men, to see with what carelessness they handle lights. Two engines=180 horse, with 9 boilers.

No. 31.—NEW KIRK COLLIERY.—*Fry, Shoemaker & Co., Operators.*

Description.—This colliery is situated west of Tamaqua, at New Kirk, on the estate of Tamaqua coal company. It is some 38 years in operation.

It consists of a 4 track slope, sunk 355 feet deep on the south dip of the Holmes vein, at an angle of 74°; on the east side of the slope a pump way is partitioned off for security of man and machinery. The C coal seam is 20 feet thick, and that in the F vein is 12 feet thick; the E seam is 20 feet, the D seam is 8 feet, and the Cross-cut seam is 4 feet thick. The coal of all the upper lifts is worked out.

Engines.—The steam power in use consists of 6 engines; two 60-horse engines for hoisting coal; one 60-horse engine for pumping; two 50-horse engines for pumping in the new slope, and a 30-horse breaker engine; aggregate steam power equal to 310 horse, with 19 steam boilers. All the engines, steam boilers, machinery and tackle, are in good condition.

Ventilation.—Natural means used. The slope on the Holmes vein is used for a down-cast, thence through the tunnel to C vein, here the air is divided into splits, and brought into the Cross-cut vein, thence into the tunnel to the E vein; these splits are each brought in on the gangways to the working places, thence up into the breast workings, and returning back through pillar headings through the different tunnels, by brattice partitions, thence to an air-hole on the drift level, thence to the surface out-let.

Remarks.—Ventilation I found inadequate, the traverse being too long a distance to create a draught; the mine evolves a large quantity of explosive gas, and the workmen are constantly in danger. To remedy this condition of affairs, and for the better security of the men, I directed the use of a steam fan of 20-horse power, and made the necessary changes in the division of the air-splits in proper districts, which would successfully ventilate the mine properly. I have been assured by the operators, that my suggestions should receive attention. The mine working, gangways and drainage are properly conducted; the miners use safety lamps at work.

No. 32.—Glen Dower Colliery.—*Thomas H. Schollenberg, Operator and Agent.*

Description.—This colliery is situated west of Glen Carbon, on the estate of the York and Schuylkill coal company. It consists of two slopes. The new slope has two tracks, and is sunk 300 yards deep on the north dip of the Crosby vein, at an angle of 49°. The other slope is 25 yards east, and is used for drainage and to accommodate the workingmen as an ingress and egress traveling way. A tunnel, 80 yards long, has been opened across this basin to the south dip of the vein, with east and west gangways and breasts working on it. Its north dip is also open in the east and west, with gangway and breast workings.

Gangways.—There are some six regular gangways, with counter gangways and many breasts worked in the mine, whose condition I find in good order, and properly managed and regularly worked in a safe and secure manner.

Ventilation.—The mines this year are ventilated by a 40-horse steam fan, 18 feet in diameter. The slope is used for a down-cast air-way. The air is conducted through the tunnel to the south dip, where it traverses the workings and returns through the same tunnel, by a brattice partition to the north dip; thence to the working places; thence up to the counter gangways, through these working places, and returns to the fan out-cast, all of which is satisfactorily arranged.

Engines.—The colliery is operated by six powerful engines of their class. A Bull or Cornish engine of 500-horse is used for drainage; two 90-horse=

180 horse, for hoisting purposes; a 50-horse fan engine; a 30-horse breaker engine, and a 15-horse dirt plane engine; aggregate steam power 775 horse, with 19 steam boilers, the condition of which, with all their appointments, tackle and machinery, are in excellent order, as per inspection and reports furnished monthly.

Remarks.—To improve the future condition of ventilation, when mining on the south dip of the vein becomes more extensive, I directed the opening of a second fan out-let, and to re-timber the slope, to regulate the air-split in the north dip of west district, and to remove the powder smoke and vitiated oxygen in the west gangway.

Mr. Shollenberg has, at all times, made regular reports of the condition of his mines, engines, boilers and ventilation, according to what is required by law, all of which were satisfactory.

No. 33.—*Adam Jackson & Co., Operators.*

Description.—This colliery is situated on the estate of Wetherill & Seitzinger. It consists of a drift open on the south dip of the F vein. The seam has a dip of 10°. The coal is 6 feet thick. The drift is 280 yards long. There is a counter gangway open and in operation. These mines are ventilated by natural means; the drift is used as an intake; the air passes up into the breasts, and thence into the counter gangway; it circulates through these breasts and returns to the out-cast. The improvements are a 10-horse breaker engine, with 2 steam boilers, which appeared in good condition.

Remarks.—This is a small land-sale colliery, which needs little improvement. It gives employment to some 8 persons, and ships from 6 to 8 cars of marketable coal daily.

No. 34.—*John Taggert, Operator.*

Description.—This colliery is situated near New Castle, on the estate of ——— ———. It consists of a drift open on the south dip of the Skidmore vein, the angle being 80°. The coal is 5 feet thick. This is also a small land-sale drift. The character of mining done here is breast and gangway workings, employing 9 men inside.

Ventilation.—A furnace is used to produce ventilation; the gangway is used for an intake; the air is forced into the working places, returning through the breasts, and thence out by the air-hole. Some explosive gas is generated in this mine, together with black-damp.

Remarks.—I directed the pillars to be left 5 yards thick, and the gangway pillars to be made 6 yards thick. I directed the opening of an ingress and egress traveling road for miners to be made in a pillar left for that purpose, near where the gangway face is at present, of not less than 8 yards thick. This, in case of an accident in the gangway, would relieve the men; and I also directed such other needful improvements to be made as seemed to me necessary and proper.

No. 35.—Crow Hollow Colliery.—*John Evans & Co., Operators.*

Description.—This is also a small drift opening on the south dip of the Diamond or J vein. The seam dips at an angle of 20°. The coal is 4 feet

thick. The drift is 80 yards long. At present labor is suspended, except opening gangway. I found ventilation quite good, owing to the air shaft being located near the face of the gangway; this created a natural draught, which supplied sufficient air for all purposes. A small breaker constitutes the outside improvement, and when the mine is in full operation employment is given to some 25 hands. Railway facilities are quite convenient.

The future of this small colliery is looked to with high anticipations, as the firm are good practical miners, it is hoped their efforts will meet with success.

No. 36.—Heckscherville Slope Colliery.—*John Wadlinger, Operator.*

Description.—This colliery is situated at Heckscherville, in Glen Carbon basin, on the estate of the Manhattan coal company. It has been some 36 years in operation, and consists of a double track slope, sunk 280 yards deep on the south dip of the Crosby seam. The upper levels of the colliery have been burning since September, 1869. A large body of water is confined in the first lift by a strong brick wall and masonry, well laid in cement; the amount of water confined in this lift is carefully calculated at 635 millions of gallons. Should any derangement occasion the giving way of any of these pillars, *i. e.*, the gangway pillars, or the destruction of the metal pipes in the masonry, which are fast yielding to decomposition by the acidulated water, and this body of water once to give way, it would be an impossibility for any person in the lower lift to be saved, the inundation would be so sudden; the gangway is 2,500 yards long, with breast-workings and headings.

Gangways.—There are 14 gangways, 12,000 yards long; the character of mining done here is robbing out old pillars, driving gangway and a tunnel.

Ventilation.—A 40-horse steam fan is used for ventilating the mine, and so far its operation is effective.

Engines.—Six steam engines are in use=240 horse, with 16 good steam boilers.

Remarks.—The old slope is used for a pump-way, and an ingress and egress road for traveling; the inside improvements are such as to warrant the colliery to be one of the best in the county. A large breaker is in course of construction, and a new tunnel to open the coal seams on the lower lift, which, when completed, will largely increase the shipments of the colliery.

No. 37.—Old Hickory Slope Colliery.—*Wm. Draper & Co., Operators.*

Description.—This colliery is situated near St. Clair, on the estate of Seitzinger & Wetherill. It consists of a slope sunk 300 yards deep, on the south dip of the E vein, at an angle of 20°. The character of mining done is opening gangway, breast-work and headings, which so far is a safe operation. One engine=60 horse, is used at the slope.

Gangways.—There are four gangways and some ten breasts working, employing 25 men. Drainage and repair work satisfactory.

Ventilation.—The slope is used for an intake; this air is divided into splits at the bottom, and ventilates east and west gangways; thence up into the working breasts, traverses the headings in returning to an up-cast to

the counter levels; thence east and west in a like manner as the first course, and returns to the slope over-cast, and there communicates with the out-cast air hole, which is used for a second out-let. I find the condition of ventilation good.

Remarks.—I directed the substitution of a steam fan for the present mode of ventilation. There is a very large mass of coal to be extracted, and as the seam generates gas largely, it would be advisable to erect a steam fan as a security for all purposes. This colliery is connected with the Hickory shaft at Wadesville, by which means water was brought into that mine to inundate the fire that threatened the destruction of that splendid colliery. Not until the expenditure of time, labor and money, in the futile endeavors to subdue the fire, was this plan of extinguishing it resorted to, which resulted in the complete restoration of the mine.

No. 38.—Mine Hill Gap Colliery.—*Kear & Brothers, Operators.*

Description.—This colliery is situated on the north slope of Mine hill, at Mine Hill Gap, on the estate of the late James Dundas, Esq. This colliery consists of three slope openings on the north dip of the E vein. The coal slope has a double track; is sunk 300 yards deep; its pillars are 50 feet thick. The slope is used exclusively for coal. Slope No. 2 is of equal depth and dimensions, but is used exclusively for drainage. No. 3 slope is a single track slope, and is used for the accommodation of miners and mine materials. And on the whole, the colliery is one of the best in the county. A steam fan out-cast is located in No. 3 slope. The buildings are generally of stone and well adapted for mining purposes. A very large area of coal is open in the mine.

Gangways.—There are five principle veins worked in this colliery, with gangways principally open in the east and west. Workable coal, 80 feet thick, is mined in these seams. These seams are worked with two lifts, consequently there are ten gangways open. The E seam is 20 feet thick; the Daniel seam 6 feet; the Big Daniel seam 16 feet, and the Crosby seam 6 feet. The aggregate thickness of coal mined in these ten gangways is 114 feet. There are two tunnels to accommodate the coal trains. 10,000 yards of gangways are open.

Ventilation.—A 20-horse steam fan is used for this purpose. The slope is used for a down-cast. The air is divided into splits and forced into the working districts, traversing these districts and returning back through breasts and headings, and in this manner traverses all the veins, until finally it is discharged by the steam fan.

Remarks.—Since an accident in the mine, by the crushing of some pillars, in October last, there are but three gangways in operation. The West E and West Leller gangways are crushed. The West Leller gangway is undergoing re-timbering, and hopes are entertained of its recovery. The West E gangway is closed, and it will be difficult to recover it, as the crush went through from the lower lift to the surface, and greatly injured the up-cast and closed it for a distance of 50 yards. The cause: The last lift was sunk 150 yards, and this lift was now opened into two separate working lifts, to facilitate the mining and producing of coal more rapidly by a counter gangway, etc. The men and material slope is west of the coal slope. A new tunnel had been opened from the foot of this slope 30 yards to the Leller vein, and gangways opened east and west in the bottom and counter lifts as above. All coal produced in these counter gangway openings came

down by counter schutes to the lower lift gangways and there re-loaded. The design was to empty the lower lift breasts, and to separate the slate from the counter level coal, and dump the impurities into these empty breasts. This mode of working was in operation until my first visit, in November, 1870, at which time I objected to this plan, that, should any of these breasts give way, an unavoidable disaster would be the result. My plan was at once adopted. During the long strike of last spring, the coal lift in the lower lift breasts was shiped. When the resumption of mining again took place in June, one of these lower breasts fell through to the counter level, which closed it and started the crush which was quite a serious one. Managers of mines, so very valuable as this is, or even the very inferior collieries, should consult strength and durability in preference of hasty and unsafe usage. There have been millions of tons of the finest coal in the world left in the mines never to be recovered, which are always the fruits of ignorance and hasty usage.

Engines.—Nine steam engines are in use=482 horse. Two 100-horse slope engines; a 6-horse feed pump; a 40-horse material engine for the men in the out-let; a 150-horse Bull pump, and a 6-horse feed pump; a 30-horse breaker engine; a 30 horse dirt plane engine, and a 20-horse fan.

No. 39.—SUMMIT HILL SLOPE, No. —, *Lehigh Coal and Navigation Co., Operators.*

Description.—This colliery is situated near the Schuylkill county boundary line, near the old mines, on the estate of the Lehigh coal and navigation company. It is —— years in active operation. It consists of a double track slope, sunk 507 yards deep, on the south dip of the E vein, at an angle of 18°, with east and west gangways open. The coal seam is 60 feet thick; the breastings are open 9 yards wide, and 12 yards thick in the pillars, which are holed with heading for ventilation at intervals of 15 yards. The character of the work done is extending gangways, breasts and air-courses, which, under ordinary care, is considered a safe operation.

Gangways.—The east and monkey gangways have 300 yards of openings, having 10 breasts worked with 20 men. The west gangways are opened 610 yards, have 25 breasts worked with 25 miners. There are 75 men employed in the mines, and from all appearances, the mine is free from explosive gas and noxious air.

Ventilation is produced by natural draught. The slope is used as a down-cast, the air divided at its terminus in splits, and conducted into the working districts by monkey or auxiliary air channels, thence brought up into the breast working and returning through the pillar headings to surface air-holes as out-cast. I found the ventilation good, with very little powder smoke in the works.

Engines.—Two 50-horse engines are used at the slope; two 10-horse engines run the breaker, with 6 steam boilers, all of which, machinery, engines, steam boilers, tackle and fixings, are found in excellent condition and order. The water is so arranged as to be considered safe.

Remarks.—On the inspection of the mine, I find a desire evinced by the officers and men to comply with the requirements of the law, which has given satisfaction.

No. 40.—Reevesdale Colliery.—*Pardee & Donaldson, Operators.*

Description.—This colliery is situated south of Reevesdale, on the estate of the Tamaqua coal company. It consists of a double track slope, sunk 185 yards deep, on the south dip of the G vein, on an angle of 77°, with gangway openings from east and west. A tunnel 80 yards long opens the E vein, with east and west gangways open in it; the coal of which is 26 feet thick. A tunnel is open to the Cross-cut seam, with east and west gangways open. A second out-let for egress and ingress is open on it. The character of work doing, was extending gangways and breast workings, which are under a proper system, and considered a safe operation.

Gangways.—The west gangway is 400 yards long, with 28 men at work; the E vein, east gangway, is 200 yards long, now idle, except 9 men taking out loose coal; the Cross-cut, west gangway, is 300 yards long, with 15 men in it. A number of breasts are working in these gangways, employing some 65 men, who do not complain for want of proper ventilation and safety.

Ventilation is produced by the operation of a 20-horse steam fan. The slope is used as a down-cast, the air divided into splits, is brought into the working pannels, thence returns through the workings by contrivances to the fan out-cast, discharging the noxious air. By instrumental measurements, I found the supply of air for 60 men, to be 6,900 cubic feet per minute, yet this result, in such large excavations, is not quite satisfactory, excepting the finding of no gases.

Engines.—Two 60-horse engines are used at the slope; a 300-horse engine (steam-pump) is used for drainage; a 30-horse breaker engine; a 30-horse dirt plane engine, and a 20-horse steam fan=500 horse power, with 18 steam boilers; their machinery, fixtures and tackle are in good order.

Remarks.—I found it necessary to direct the attention of the mine boss to the better security of the out-let, by stepping it for safe ingress and egress; to carefully have the breastings cleared of any and all standing gas—fire-damp; to prove if any standing gas was in the breasts that run full of coal by crushing in, *i. e*, open man holes in the pillars, at such points as deemed prudent and necessary, which would discover the dangerous element, and have it removed before the coal should be extracted or the men be endangered.

No. 41.—Coal Dale Colliery.—*Lehigh Coal and Navigation Company, Operators.*

Description.—This colliery is situated four miles east of Tamaqua, on the estate of the Lehigh coal and navigation company. It consists of a tunnel opening 575 yards long, which opens the F and E seams, *i. e.*, Holmes and Mammoth, and a double track slope sunk 100 yards deep on the south dip of the E seam, on an angle of 43°, with gangways open in east and west. The character of work done I consider a safe operation, if, however, conducted under ordinary care.

Gangways.—The east gangway on the E seam is 1,700 yards long, and that open in westward is 1,200 yards long, with 58 men working at breasting and robbing pillars. Two gangways are open on the new lift 500 yards. The seam is 10 feet thick. Some 80 men are employed in the mines.

Ventilation.—The numerous air-holes are used as in-lets, and the slope as an out-cast. This system, at this colliery, produces considerable venti-

lation; in fact, it operates satisfactorily so far. There are three out-lets on each side of the slope for egress and ingress. So far as ventilation is concerned, I have heard of no complaints.

Engines.—A 500-horse Bull pump executes the drainage of the mines; two 60-horse slope engines are in use; two 15-horse engines are used in the trial (new) slope; a 20 horse breaker engine and a 40-horse dirt plane engine; 7 engines in all=710-horse power, with 15 steam boilers. All of the engines, steam boilers, machinery and tackle are kept in good condition.

Remarks.—The mine is ventilated by atmospheric action, with favorable results; no clamor about bad air. The engines are 85 yards under the surface. There are 97 employees in the mine, and 21 mules. I have on all occasions been regularly furnished with reports of the condition of the ventilation of mines, as required by law, by the officers of the colliery. I have recommended such needed improvements as appeared necessary for the safety and health of these employees.

No. 42.—Peach Orchard Colliery.—*B. Rowebotham, Operator.*

Description.—This colliery is situated near Tuscarora, on the estate of Bast, Kentucky Bank, *et al.*; a red ash. It consists of a single track slope, sunk 60 yards deep on the south dip of the F or Holmes seam, on an angle of 65°. The coal is 8 feet thick. Working the east gangway only. A second out-let is open 15 yards east of the slope, in a strong pillar. A 50-horse engine is used at the slope for elevating coal and for drainage, and a 10-horse engine runs the breaker, with 3 steam boilers, whose condition is bad. 48 persons are employed at the colliery.

Remarks.—I directed the opening of a shaft out-let from the gangway face, 450 yards from the slope, out to the surface, of 40 square feet section area; on this to erect a 15-horse steam fan. As carburetted hydrogen gas is evolved to some extent, I instructed the fire boss to carefully examine all the mine each morning, and make note, and report its condition to the superintendent and miners, for their safety, as the law directs; also to report the condition and supply of ventilation monthly, for official record.

No. 43.—Llewellyn Colliery.—*James O. Maley, Operator.*

Description.—The colliery is situated at Peach mountain, on the estate of the North America company. It consists of a drift opening on the north dip of the Peach Mountain seam, on an angle of 25°, with 270 yards of gangway open. The seam is six feet thick. This may be classed among the small land-sale collieries, open on the suburbs of Pottsville. I recommended the repairing of the gangway, to open a safe out-let and air-hole for better ventilation, as the condition of these things required, for the protection and safety of the men, as 16 persons were employed and their safety needed these securities.

No. 44.—Eureka Colliery.—*John R. Deihm, Operator.*

Description.—The colliery is situated north of St. Clair, on the estate of Messrs. Wetherill & Seitzinger. It is a drift opening on the Buck Moun-

tain seam, (B vein;) dip 45° south. 550 yards of gangway are open in 6 feet of coal. Ventilated by air-holes, open out to the surface; the condition of ventilation is inferior. Stone or white gas is largely evolved. A 30-horse breaker, with 2 steam boilers, is used. All the outside improvements had been destroyed by fire in June; 12 persons had been employed at the time. Extended remarks are unnecessary in connection with this report, until resumption of work in the spring.

No. 45.—Anthracite Colliery.—*M. Bartholomew, Operator.*

Description.—The colliery is situated near Tamaqua, on the estate of the Tamaqua coal company. It consists of a drift open 700 yards on the south dip of the A seam; the seam is on an angle of 60°; there are two lifts and two drifts in the colliery, coal seven feet thick; the character of the work doing, at present, is robbing out pillars and loose coal; 80 yards distance between both levels, and the surface is 90 yards—here the coal seam is found 20 feet thick.

Ventilation here is influenced by natural draught or atmospheric ventilation, which principally depends on the state of the weather and seasons of the year; the temperature of the mine rarified by the heat created by lights, men and animals, yet I found ventilation and the state of the mines in good condition. A 15-horse engine runs the breaker, with three boilers; the coal and dirt are elevated by inclined planes; the condition of the boilers is not reported, but are considered unsafe. I recommended the inspection of the boilers by the district inspector of steam boilers, but no record of that matter had been furnished; also to have the machinery and dangerous places securely fenced off.

No. 46.—Tuscarora Colliery.—*John Sullivan, Operator.*

Description.—The colliery is situated north of Tuscarora, on the estate of the Tamaqua coal company. It consists of a drift opening on the north dip of the J or Diamond vein; the coal seam dips on an angle of 60°; the seam is 8 feet thick; this is a new enterprise, the gangway being only open 60 yards; the character of the work doing is extending gangways.

Ventilation produced by atmospheric action; as yet there are no outside improvements; there are eight persons employed at present; location desirable.

No. 47.—New Philadelphia Colliery.—*Hein & Co., Operators.*

Description.—This colliery is situated south of Middleport, on the estate of the Valley Furnace company, (red ash.) It consists of a shaft sunk 100 yards deep on the Gate vein; the coal is 8 feet thick, with east and west gangways open. The character of mining done is considered a safe operation, but carburetted hydrogen gas is largely generated in the mine, and consequently the miners and others are compelled to use the Davy safety lamp to a great extent. The Western district is at present idle, owing to the seam being crushed out by a rock fault.

Ventilation.—A 6-horse steam fan produces ventilation, the shaft being used as a down-cast, the air divided into eastern and western splits passing in the gangways, thence into the working places and returning through pillar headings to the out-cast at the steam fan. This out-cast is used as a second out-let for egress and ingress, but from its contractedness, in case of any serious accident, it would be presumed inadequate for the safety of any large force of men in their exit from severe explosions or other disasters. I recommended the enlarging of these out-lets, and to use a more powerful steam fan, as I consider the present fan and fixtures inadequate to ventilate the colliery with any degree of safety; yet miners, from circumstances well known to themselves, will risk their lives for a maintenance earned in such dreadful places. A 50-horse engine is used at the shaft for hoisting and pumping purposes; a 20 horse engine runs the breaker; a 6-horse engine runs the steam fan; 4 steam boilers are in use, whose condition is not known, they being second-handed and patched. There are some 28 persons employed at the colliery. The difficulty experienced by the operators in working the mine, and the expenses created last year by a boiler explosion, a disaster by which nine men perished, retarded the business of improving needful matters.

No. 48.—Sharp Mountain Colliery.—*Baltaizer & Co., Operators.*

This colliery is situated south of Pottsville, on the estate of Mr. Richardson. It consists of a drift open 64 yards south, which opens the White Ash seam, with east and west gangways. A slope is sunk 49 yards on the east engle of the coal vein. The seam is six feet thick. 500 yards of a west gangway are open. There are some 20 persons employed at this colliery. No other market out-let but supplying the borough. The character of mining done is considered a safe operation.

No. 49.—Sharp Mountain Slope Colliery.—*Joseph Wood, Operator.*

This colliery is situated south of Pottsville, on the northern slope of Sharp mountain, (immediately overlooking the town,) on the estate of Mr. Richards. It consists of a single track slope, sunk 110 yards deep on the west axis of the vein. The seam is six feet thick. There are two veins open of a red ash character. The parting slate is ten feet thick. A 10-horse steam engine is used at the slope for hoisting coal and drainage; a 10-horse steam engine is used at the breaker; some 25 hands are employed at this colliery. The condition of ventilation is not quite adequate, yet there are no complaints.

No. 50.—Tamaqua Colliery.—*John Whitstone, Operator.*

Description.—This colliery consists of a drift open on the south dip of the P vein, on the second basin; situated east of Tamaqua, on the estate of the Tamaqua coal company. The seam dips on an angle of 60°. The west gangway is 560 yards long. The double Q seam is nine feet thick. Ventilation is bad. The gangways appeared to be much neglected. I recom-

mended the opening of an out-let at the face of the P vein gangway, and employing three shifts of miners on its extension until completed, and to erect thereon a 15-horse steam fan; to open a tunnel from the Q vein across the rock measures to the P vein, which would make a safe out-let for the miners in that district.

No. 51.—TAMAQUA DRIFT.—*John Whitstone, Operator.*

This colliery consists of a drift open on the R vein. The coal seam is 16 feet thick, and dips at an angle of 80°. The character of work done is extending gangways, schutes and headings, of whose condition no favorable report can be made. The contracted heading openings are very narrow, so that ventilation or safety is greatly retarded; this gangway is 350 yards long. I directed the opening of an air out-let on the gangway of an area not less than 36 square feet; and also to open a heading of an area of not less than 20 square feet. I was compelled to give these instructions for the needed improvements, from the circumstance of the miserable condition of the mines, which I found filled with smoke and black-damp and bad drainage. Until these improvements are made the condition of the mine will be bad, being filled, as it now is, with impure air and noxious gas to such an extent that miners' health must suffer from such an element. 22 persons are employed in this mine.

No. 52.—NORTH AMERICA SLOPE COLLIERY.—*Charles Williams, Operator.*

This colliery is situated north of Pottsville, on the estate of the North America company. It consists of an old establishment but recently opened as a land sale colliery, giving employment to eight miners. The slope is sunk 110 yards deep on the south dip of the Spohn vein, at an angle of 34°. The coal seam is six feet thick and of good quality. The character of work done is robbing out old pillars and loose coal, which is at all times a dangerous undertaking. The condition of ventilation in such places cannot be otherwise than bad.

No. 53.—BIG TRACY DRIFT.—*John Rus & Co., Operators.*

This small colliery is situated on the North America tract; it consists of a drift, open on the south dip, of the Big Tracy vein; the coal seam of which dip is on an angle of 25°; the vein is found pure and 4 feet thick, of red ash; 200 yards of gangway are open. The character of work doing is extending gangways, schutes and headings, which I consider a safe operation. I found excellent ventilation there, and a safe out-let for an escape for miners. This place gives employment to 6 miners and 8 other persons. It also is a land-sale mine, worked on the crop of the vein.

No. 54.—Peach Mountain Slope.—*William Keener, Operator.*

It consists of a slope, sunk on the north dip of the North America company's Peach Mountain vein, on an angle of 35°. The slope is 72 yards deep, and the coal is 6 feet thick. The work of opening and mining is on the east side, and suspended on the west. The mining and robbing of coal, in this mine, is conducted on a safe plan, and employs 10 miners and some 12 others. Ventilation is produced by means of air-holes, influenced by the action of the atmosphere; and considering all things, the mine is kept in a safe condition. Drainage and ventilation are good.

No. 55.—Little Tracy Slope.—*William Clerk, Operator.*

This colliery is situated north of Pottsville, on the North America tract; it consists of a slope, sunk 30 yards deep, on the south dip of the Little Tracy vein, on an angle of 28°; the coal seam is only 2 feet thick. The appearance and condition of things are bad; some 5 persons are employed, and the present and future prospects of this place are not very encouraging.

No. 56.—East Mine Slope.—*Mammoth Coal Company, Operators.*

Description.—This colliery is situated 2 miles north of Pottsville, on the estate known as the Delaware coal company's, lately purchased by the Fidelity, Trust and Safe Deposit company, of Philadelphia. It consists of a new slope, now sinking 490 feet deep, on the north dip of the Big Tracy vein, on an angle of 80 to 90°. This slope is intended to be sunk to the basin of the Tracy seam, and used for the purpose of draining all the surrounding waters from the workings of the upper old seams, formerly mined by the Delaware coal company. This new company is, at present, engaged in sinking two large shafts to the basin of the E or Mammoth coal seam, the development of which, under the most approved modern plans, is intended. The shafts are located east and west of the railroad, —— yards apart. From the basin of the Big Tracy vein a tunnel will be opened northward, to connect with the shaft workings. Ventilation is produced, in sinking the slope, by an exhaust steam jet placed in a division of the slope; 27 persons are employed in its sinking; a 30-horse engine is used at the slope, and a 20-horse engine for use of drainage. Ventilation, so far, is good. The improvements consist of an engine house, office, smithery and stable, which will eventually be superseded by more substantial buildings, and of better material.

No. 57.—Mammoth Shaft.

Description.—This shaft, just sinking, is situated at the East mines, as described in No. 56, owned and operated by the ——— ———. The shaft is intended to reach the basin of the E seam, at this point, at a depth of —— yards. Its section area is 11½ by 13⅔ feet. 23 miners are employed in the operation of sinking. A 90-horse engine is used to remove the material, and a 30-horse engine to do the drainage.

General Henry Pleasants is engaged as general engineer for the company, under whose superintendence and direction these twin shafts are to be sunk, planed and operated. His reputation for such undertakings has no superior, and it is hoped his plans will prove successful, and that the liberal expenditures of the company in taking this bold step, as pioneers in this great undertaking of developing the basins around Pottsville, may become a source from which their enterprise shall always be largely rewarded. Should the undertaking prove a success, it will be a great blessing, not alone to the company, but to the community, as the want of capacity, public spirit and capital had left the town of Pottsville sitting lonely in a forsaken wilderness, deserted by men of enterprise, and objurgated and chided by the stranger and the eye of enterprise who hailed from far less deserving localities.

No. 58.—West Mammoth Shaft.

Description.—This shaft is located —— yards west of the No. 1 shaft, and at present is in operation of sinking to the E vein basin, and is intended to be used as a second out-let for man, material and coal shaft, or either, and of the same dimensions, etc., as its sister shaft on the east. Its present depth is 67 feet. The operation of the deeper sinking will be done by diamond rotating drills. The depth of the basin to the Mammoth seam is not known in this vicinity, but by speculative measurement the depth is estimated at 1,500 feet. The present improvements consist of a 60-horse shaft engine and a 30-horse pumping engine, with 6 steam boilers. All of the engines, boilers, machinery and tackle are in good condition. 30 hands are employed in and about the premises at present. An extended report of these large works is not necessary.

No. 59.—Little Tracy Drift, No. 2.—*Joseph Pecton, Operator.*

This is a small colliery or land-sale drift open on the south dip of the Little Tracy vein. The angle of the coal seam is 35°. The coal is 3 feet thick, with only one—the east—gangway in operation, the condition of which is good. Ventilation is produced by the action of the atmosphere, and air-holes, which are only subterfuges. The character of work done is considered a safe operation. There are 8 persons employed at this place. The coal is a red ash quality, which gets ready sale in the neighborhood.

No. 60.—Reevesdale Tunnel Colliery.—*James Glenn, Operator.*

This colliery consists of a tunnel, open on the R vein at Reevesdale, on the estate of the Tamaqua coal company. The tunnel is open in 400 yards, and opens the following coal veins, *i. e.*, C, B, D, E, F, O, P, and P, Q, and q and r veins. These seams dip on an angle of 75 to 90°; the coal of which runs in thickness from 5 to 20 feet.

The only seam at present worked, is the R vein, the coal of which is 10 feet thick; all these seams are known to be of the white ash quality, and very good. Air-holes are substituted for producing ventilation, which is

an imperfect attempt. The colliery has changed hands several times lately, which has not improved its condition. This year the mine only worked 10 days. A 20-horse engine runs the breaker. When the colliery is in full operation, 50 to 60 hands are employed.

No. 61.—Revenue Colliery.—*Pomroy & Rickert, Operators.*

This colliery is situated at Mt. Laffee, on the estate of Joseph Patterson, *et al.* It consists of a double track slope, sunk two lifts, on the south dip of the G or Primrose vein, on an angle of 15°. The slope is 200 yards deep, with east and west gangways open on it, with extensive breastings and openings. The character of mining done at the time, was robbing out old pillars. A drift was opened on the Orchard vein, some 5 feet thick, and its production was very good. The breaker had been destroyed by fire in November, 1870, and still the company continued operation, on a small scale, for some time, and finally abandoned the improvements, removed the machinery, and at present stands as a monument of the past.

No. 62.—Levan Slope Colliery.—*John Whitstone, Operator.*

Description.—This colliery is situated north of Tamaqua, on the estate of the Greenwood company. It consists of a slope sunk 112 yards deep on the south dip of the F seam, on an angle of 56°, with east and west gangways open. Two gangways run in westward some 1,300 yards long and within 400 yards of the tract line. The character of mining done is robbing out the old workings. The West E gangway is open in 800 yards long, and is worked up to the tract line, and are robbing out old workings. An air-way is open in a 25 yard pillar east of the tunnel; this is used as an out-let and air-way. The mine generates a large quantum of carburetted hydrogen gas.

Ventilation.—The mines are ventilated by a steam fan and furnace. The condition of ventilation was not satisfactory.

Engines.—A 60-horse engine is used for drainage, using two pole pumps; a 50-horse engine is used for hoisting purposes; a 25-horse engine is used to run the breaker, and an 8-horse steam fan. Four engines=143 horse power, with nine boilers, are in use, all of which, with their machinery, were in good condition.

Remarks.—The colliery was only a few weeks in operation when the improvements were accidently destroyed by fire, which suspended operation to the present time. The pumps are, however, still kept running. Some 65 persons were employed in and about the colliery. The operator is at present engaged in sinking a new lift, that completed will place the colliery amongst one of the best in the district.

No. 63.—Faust Colliery.—*Lewis Faust & Brother, Operators.*

This colliery consists of a small slope sunk 15 yards deep on the north dip of the Lewis vein, on the North America company's estate. The coa is six feet thick. The character of work doing is robbing out the works,

and is very dangerous for the miners. Circumstances rendered it necessary for me to direct the stoppage of this small place on this account. The removal of the chain pillar in this small lift was a dangerous undertaking for the men, yet there were some who would heedlessly continue employment at mining, disregarding the small chances of life and limb in such dangerous places.

No. 64.—Palmer Vein Drift Colliery.—*John Wadlinger, Operator.*

This is a new colliery, lately put in operation; it consists of a drift opening on the Palmer vein, situated west of Minersville, on the Phœnix Park company's estate. This drift is open in 300 yards. The seam is six feet thick, and dips only 10°. The abandonment of this colliery is contemplated at an early day, until further and deeper developments are decided upon. The improvements consist of a 30-horse breaker engine, with three steam boilers, giving employment to some 25 persons.

No. 65.—Conner (Little Tracy) Colliery.—*Charles Conner, Operator.*

This is among the small collieries, situated on the North America tract; it consists of a drift open on the Little Tracy vein; the angle of dip of the coal seam is 15°. 350 yards of gangway have been opened. The seam is three feet thick. Mining is continued with gangway and breast extensions. The condition of the mine and ventilation is good. This place gives employment to some ten persons. The coal is of the red ash quality, and gets ready sale in the place. At present it is unnecessary to extend our remarks further than say, that the safety of the hands receives due attention, much better than could be expected from such a small place. This is attributable to Mr. Conner having the management of his father's large collieries at Girardsville and Ashland.

No. 66.—Big Tracy Colliery.—*George Evans, Operator.*

This colliery is situated at East Mines, on the estate of the North America company. It consists of a slope sunk 45 yards deep on the north dip of the Big Tracy vein, on an angle of 70° to 90°. The coal seam is 5 feet thick, with east and west gangways open. I found the mines in very bad condition, with no second out-let, ventilation and drainage bad, and the timbers inadequate. I directed the necessary timber to be used, and that the mine should be put in safe working order, and to have such necessary improvements made for the safety of the men as was deemed proper. Formerly this colliery had been operated on a large scale, with 2 slopes and 3 drifts, by Mr. Thomas Gorman. The present slope is but a substitute for the extraction of coal lift in the old works. Some 10 persons are employed in this undertaking.

No. 67.—Spruce Forest.—*Messrs. Lucas & Denning, Operators.*

This colliery is situated north of St. Clair, on the estate of Mr. Richardson. It consists of a shaft sunk —— yards deep on the Skidmore vein. The seam dips at an angle of 83° south, with gangways open in east and west; 1,000 yards of gangways are open, with breasting, etc. The coal seam is 6 feet thick. The further extension of gangways was suspended in the spring, in consequence of the pinching out of the seam. The further development of the colliery ceased in April. The engines and machinery for drainage were removed, and the shaft now is filled with water. By tunneling, the other seams on the tract may be reached easily, the basin being a narrow one and the angle of dip being high. No doubt the underlying seams can be developed.

No. 68.—Washington Drift.—*William Kroll, Operator.*

This colliery is situated near Tamaqua, on the estate of the Tamaqua coal company. It consists of a drift opening on the Washington vein, the gangway of which is 700 yards long; the coal seam dip is on an angle of 70°, and five feet thick; the character of work doing is extending gangways and opening breastings and headings; the mine is well ventilated by an air-hole open out to the surface 600 yards from the drift mouth. This air-way is used as an out-let, all of which I found in good condition. The colliery affords employment to some 20 hands; the seam generates no gas, and mining is considered a safe operation in this mine.

No. 69.—Tunnel No. 2, Bull Run.

This colliery consists of a tunnel open in Spring mountain, on the estate of the Lehigh coal and navigation company, 420 yards long on the E vein; the coal seam dips on an angle of 78°; the Red Ash seam is open at the distance of 346 yards in, the west gangway of which is 150 yards in. This coal seam is 8 feet thick. The east gangway on the E vein is 290 yards in. The character of work doing was extending gangways; the E coal seam is 25 feet thick.

Ventilation is produced by natural draught; the condition of the mine is very good, and mining is considered a safe operation; some 18 persons are in the mine at present.

No. 70.—York Farm Slope.—*Job Rich & Son, Operators.*

This colliery is situated west of Pottsville, on the York company's estate. It consists of a slope sunk 350 yards deep on the south dip of the Tunnel vein, on an angle of 15°. The colliery has been 28 years in operation; the coal is 7 feet thick; 2 gangways are open, one on each of the north and south dips. Mining is considered a safe operation here. The character of work doing is extending gangways and opening breastings. A change in the method of ventilation, as I recommended last year, had a good effect; an out-let had been opened in the western district of the mine, at the face

of the gangway, which serves for a safety road and air-course. Drainage is effected by the water passing into the old levels of the York Farm slope; a 20-horse engine is used at the slope and runs the breaker.

No. 71.—Taylorville Colliery.—*Thos. Schullenberger, Operator.*

This colliery is situated on the extreme western end of Glen Carbon valley, near Taylorville, on the estate of the Manhattan coal company. It consists of a slope sunk 280 yards deep on the south dip of the Daniel vein, on an angle of 60°; the coal seam is 8 feet thick; the slope is sunk 2 lifts, the new lift was completed in December. The work of opening gangways east and west is progressing rapidly, such as opening counter schutes on the east gangway, and on the west gangway the work of opening a counter gangway; a second out-let of a section area, 20 by 16, and 6 feet high=108 square feet; this out-let will be used for the pumps. 26 men are at work in these extensions.

Ventilation is produced by the operation of a 40-horse steam fan, 18 feet in diameter, the condition of which is good.

Engines.—Two 90-horse engines are used at the slope; a 40-horse pumping engine; one 10-horse feed pump; a 20-horse runs the old breaker; a 40 horse steam fan; 5 engines=290, with 10 steam boilers, the condition of which engines, steam boilers, machinery and tackle is good. The outside improvements consist of a slope house of ample dimensions, a coal breaker, and a large new breaker constructing. When this colliery is in full operation it will constitute one of the best in the district. The Daniel and B, or Buck Mountain seams, can be made by this slope.

No. 72.—Jugular Drift.—*Thomas Egan & Co,, Operators.*

This drift is situated at Coal Castle, on the estate of the Dundas heirs. It consists of a drift opening on the Jugular vein; the coal seam dips on an angle of 90°; the coal is 60 feet thick, white ash quality. The drift is opened eastward; the gangway is in 80 yards, with 4 breasts working on it. Air-holes influence ventilation, which is very good. The drift is open some 180 feet above water level, and a tunnel is now opening on the water level to cut the coal seam on that level. This is a new place, the prospects of which is very encouraging.

No. 73.—Wadesville Drift.—*Burlucky, Operator.*

This is a drift opening on the Big Diamond vein; the gangway is in 80 yards, and continuing its extension. Other mining breasts, at present, have suspended. This place, when in operation, gives employment to some 16 persons. No machinery is needed so far.

No. 74.—Junction Slope, Westwood.—*T. M'Donall, Operator.*

This is a small slope, sunk on the end of a 3 foot vein, at Westwood gap; it consists of a small land-sale colliery for supplying that vicinity, giving employment to some eight hands; the coal is of a red ash quality. These seams had been formerly worked on a large scale, but the parties abandoned them, and transferred their mining interests to the Mahanoy region, when that region came into the mining market.

No. 75.—Mead's Colliery.—*William Mead, Operator.*

This consists of a small slope sunk 50 yards deep on the Lewis vein, on the North America tract. I found the place in good condition. Ventilation was good, but the profit of ten times is not adequate to warrant any great expenditure. This state of affairs often forces persons to become covetous, the consequence of which is the neglect of substantially repairing the mine until finally the place is abandoned. Some 10 persons are employed at this place.

No. 76.—George Seiberts's Small Colliery.

Open on the North America tract. A drift had been open and gangways extended for some considerable distance on the Lewis vein. The coal seam was 7 feet thick. 7 hands were employed. The mine had been suspended for a time and finally abandoned.

In closing my report on these collieries of my district, I am impelled by a sense of justice to say that many courtesies have been extended to me by the mining public, while many of the operators have also favored me by adopting my recommendations favoring the safety of the miners and persons employed in working the mines, and by civily complying with the requirements of the mining law, although there were others again who tenaciously opposed my instructions to make the necessary improvements for the better safety and health of the miners in their employ. I am pleased to say, however, that this year there were 16 deaths less than last. But four injunctions have been issued restraining delinquent operators from working their mines in contravention of the statute law.

I was present at 27 inquests held on the bodies of persons who were killed or who died of injuries. Have made 246 examinations of collieries, and traveled 4,442 miles. Have 77 collieries in my district; 9 shafts, 59 slopes of 132 lifts and 28 drifts. 84 veins are worked—23 north dips and 61 south dips; 40 are white ash, 29 red ash and 11 gray ash veins. 37 steam fans, 3 furnaces, 33 natural and 3 steam jects are used for ventilation. 240 steam engines are in use=16,012 horse power. 19 persons were killed, 11 died of injuries, and 119 were maimed and injured. 10,000 persons are employed in and about the mines of my district.

Respectfully submitted.

FRANK SCHMELTZER,
Inspector of Mines for Pottsville District.

P. F. M'Andrew,
Clerk Min. Dist. Schuylkill.

ABANDONED COLLIERIES—THEIR LOCATION AND NUMBER.

Roversville	1 slope.	Port Carbon	4 drifts.
Heckscherville	2 slopes.	Pottsville, Yery's Landing	2 slopes.
Thomaston	1 slope.	Pottsville, Sharp mountain	2 "
Mine Hill Gap	1 "	Pottsville, Sharp mountain	6 drifts.
Delaware, No. 1	3 drifts.	Five Points	2 slopes.
Delaware, West	3 "	Five Points	6 drifts.
Coal Castle	4 slopes.	Silver Creek	2 slopes.
New Castle	4 "	Silver Creek	6 drifts.
Spruce Forest	1 shaft.	New Philadelphia	4 slopes.
Spruce Forest	1 drifts.	New Philadelphia	4 drifts.
New Castle	1 drift.	Kaskawilliam	3 slopes.
Forestville	1 slope.	Kaskawilliam	4 drifts.
Primrose	1 "	Tuscarora	2 slopes.
Phœnix Park	2 drifts.	Tuscarora	3 drifts.
Black Valley	4 slopes.	Brockville	3 slopes.
Mine Hill	2 "	Middleport	2 "
Oak Hill	5 "	Middleport	3 drifts.
West Delaware	4 "	Buckville	3 "
West Delaware	4 drifts.	Buckville	2 slopes.
Mount Laffee	2 slopes.	Reevesdale	1 shaft.
Mount Laffee	3 drifts.	Tamaqua	1 "
Wadesville	4 slopes.	Tamaqua	2 slopes.
Wadesville	6 drifts.	Tamaqua	4 drifts.
St. Clair	1 shaft.	Greenwood	1 slope.
St. Clair	6 slopes.	Greenwood	1 tunnel
East Delaware	4 "	Sharp mountain	1 slope.
East Delaware	7 drifts.	Duncan estate	1 "
Mill Creek	5 slopes.	Duncan estate	1 drift.
Mill Creek	5 drifts.	West Wood	1 slope.
Crow Hollow	7 "	West Wood	1 shaft.
West Branch	1 shaft.	West Wood	2 drifts.
West Branch	2 slopes.	Old Salem	1 slope.
Minersville	2 "	Old Salem	2 drifts.
Pottsville	5 "	West Wood Junction	1 "
North America mines	3 "	Minersville borough	1 slope.
North America mines	1 shaft.	Minersville Red Ash	1 "
North America mines	4 drifts.	Minersville Cackle	2 drifts.
Windy Harbor	2 slopes.	Oak Hill, East	2 slopes.
Windy Harbor	6 drifts.	Delaware Greenpark	1 drift.
Eagle Hill	1 slope.	Delaware Greenpark	1 slope.
Eagle Hill	4 drifts.	Bullock estate	2 drifts.
Port Carbon	3 slopes.		

A LIST OF MAPS FURNISHED OF THE COLLIERIES OF THE FIRST DISTRICT.

1. Glendower slope.
2. Glen Carbon slope.
3. Oakdale shafts.
4. Heckscherville slopes.
5. Thomaston shaft & slope.
6. West Pine Knot slope.
7. East Pine Knot slope.
8. Mine Hill Gap slope.
9. Spruce Forest slope.
10. Phœnix, No. 1, slope.
11. Wolf Creek (Kear) slope.
12. Live Oak slope.
13. Beachwood slope.
14. Eagle slope.
15. Monitor slope.
16. Manchester, 2, slope.
17. Hickory shaft and slope.
18. St. Clair shaft.
19. Pine Forest shaft.
20. Forestville slope.
21. Feeder Dam slope.
22. Ravensdale slope.
23. Eagle Hill shaft.
24. Glentworth slope.
25. Lambert slope.
26. Gate shaft.
27. Silver Creek slope.
28. Commercial slope.
29. Nowegian sh't & slope.
30. Butler slope.
31. Swift Creek slope.
32. Alaska slope.
33. Summit Hill slope.
34. Bull Run slope.
35. Coal Dale slope.
36. Kentucky slope.
37. New Kirk slope.
38. High Mines slope.
39. Tamaqua shaft.
40. Greenwood slope.
41. Greenwood, No. 2, slo'e.
42. Reevesdale slope.
43. Buckville slope.
44. Wolf Creek (Kear) slo.

Expenses of Frank Schmeltzer, Inspector of Mines of the First district, (Pottsville,) for the year ending September 22, 1871.

EXPENSE ACCOUNT TO DECEMBER 31, 1870.

DR.

To 1 horse, $120; 1 buggy, $200	$320 00	
1 set of harness, $25; 3 months' horse feed, $58	83 00	
3 months' house rent, $51; three months' office rent, $21 25	72 25	
office coal, $22; post office expenses, $4 86	26 86	
printing and publishing, $18 98; gas, $3	21 98	
moving from Girardsville to Pottsville, etc	75 00	
instruments used by inspectors of mines	14 20	
suit of mining clothes, $26 50; boots, etc., $13	39 50	
1 tape-line, $3; rule, $2; lamps, $4	9 00	
		$661 79

EXPENSES TO SEPTEMBER 22, 1871.

To 9 months' horse feed, $174; 9 months' house rent, $90	$264 00	
9 months' office rent $31 86; 9 months' postage and telegrams, $10 60	42 46	
printing, $5 83; 1 anemometer, $40	45 83	
second set of harness, $35; carriage repairs, $29 80,	64 80	
justice and witness fees, Commonwealth *vs.* St. Clair colliery	6 50	
6 affidavits, ($1 50,) and stage fare to Summit mines,	5 50	
expenses for getting maps made	1 08	
difference in the value of an exchange of a horse	105 00	
horse shoeing, $12; stamps, stationery and printing, $5 10	17 10	
incidental expenses for the current year	80 00	
stable rent, one year	36 00	
compass and tin box	3 25	
		671 52
Amount of expenses incurred		1,333 31

This is to certify, that the above amounts are correct to the best of my belief.

FRANK SCHMELTZER,
Inspector of Pottsville district.

STATISTICS RELATING TO COLLIERIES IN THE POTTSVILLE DISTRICT FOR THE YEAR 1871.

No.	Names of collieries.	Location of collieries.	Names of land owners.	Names of operators.	Names of mining agents.	Number of visits of inspection.	Number of miles traveled.	No. of slopes or shafts worked.
1	Live Oak	West Mt. Laffee	Joseph Patterson, et al	William Prout	William Prout	6	50	1
2	West Pine Knot	Coal Castle	Dundas	Pine Knot Coal Co	Maj. Baldwin	2	26	8
3	East Pine Knot	do	do	do	do	6	66	1
4	Manchester, No. 1	Wadesville	Wetherill & Heitzinger	C. Franz	C. Franz	4	28	1
5	Manchester, No. 2	do	do	do	do	2	14	1
6	Thomaston slope	Thomaston	Manhattan Coal Company,	T. Shollenberg	T. Shollenberg	2	30	1
7	Ravensdale	Ravendale	Raber & Lewis	Whittlesey & Co	A. Tumbull	5	46	1
8	Feeder Dam	Port Carbon, West	Mammoth Vein C. & I. Co.,	Feeder Dam Coal Co		4	28	1
9	St. Clair shaft	St. Clair	H. C. Carey and others	Kendrick & Dovey	R. Humphreys	6	54	1
10	Thomaston shaft	Thomaston	Manhattan Coal Company,	Thomas Shollenberg	B. Baddow.	3	48	1
11	Eagle Hill shaft.	Eagle Hill	Baber, Inness, et al.	J. C. Oliver	D. Oliver	8	92	1 sl. 1 sh
12	Eagle	St. Clair	Wetherill & Seitzinger	G. W Johns & Bro	William March	4	35	2
13	Pine Forest shaft	St. Clair, East	do	G. W. Snyder	T. Maguire	5	46	1
14	Beachwood	Mt. Laffee	J. Patterson, et al	Kendrick	J. Bowen	8	72	1
15	Oakdale shafts	Glen Carbon.	Dundas & Richardson	Lucas & Co	William Morris	3	54	1 sl. 1 sh
16	Glen Carbon.	do	do	do	James Robins.	6	102	1
17	Monitor	Wadesville	Wetherill & Seitzinger	J. Dennings.	J. Dennings	4	36	1
18	Greenwood, No. 1.	Tamaqua, East	Greenwood	E. Borda	John Stine.	2	78	1
19	Greenwood, No. 2.	do	do	do	S. Kemp	3	114	1
20	Butler.	Silver Creek	Valley Furnace Company.	Murray & Winlack	William Murray,	4	64	1
21	Swift Creek.	Tuscarora	Bast & Kentucky Bank	William Hopkins.	W. Hopkins	4	88	1
22	Lambert	Combola	Valley Furnace Company.	Morgan & Co	S. Morgan.	3	36	1
23	Alaska	Tamaqua, North	Tamaqua Coal Company	H. L. Cake		2	74	
24	Wolf Creek	Minersville	Wharton and others.	Kear & Ansty.	Ansty.	3	34	1
25	Commercial.	New Philadelphia	Bast & Commercial Bank.	A. Focht	A. Focht.	6	84	1
26	Kentucky	Tuscarora	Tamaqua Coal Company	Sholl & Donohoe	P. Donohoe	3	83	1
27	Bull Run, No. 10	Tamaqua, East	do	E. Borda	E. T. Jones	5	220	1
28	Glenworth	Eagle Hill.	Baber & Inness, et al.	J. & W. P. Ryon	M. Burk	2	22	1
29	Forestville	Forestville	Manhattan Coal Company,	D. Hoch & Co.	D. Hoch	6	82	2

30...	Forestville	Forestville	Manhattan Coal Company,	D. Hoch & Co	D. Hoch	2	30	1
31...	New Kirk.	New Kirk.	Tamaqua Coal Company	Fry & Co	S. Stine	8	256	1
32...	Glendower	Glen Carbon	Manhattan Coal Company,	T. Shollenberg	R. Purcell	8	83	1
33...	A. Jackson	St. Clair	Wetherill & Seitzinger	A. Jackson	A. Jackson.	2	18	
34...	Taggert.	New Castle	Potts & Bannan	John Taggert	J. Digdung	2	20	
35...	Crow Hollow	Crow Hollow	Ravendale Company	J. Evans	J. Evans	1	11	
36...	Heckscherville	Heckschersville.	Manhattan Coal Company,	J. Wadlinger	S. Schultz	3	54	1
37...	Old Hickory slope.	St. Clair	H. C. Carey and others	Hickory Shaft Company,	Althouse	4	36	1
38...	Mine Hill Gap	Mine Hill Gap, North	Dundas	Kear Brothers	Thomas Kear	2	28	1
39...	Lehigh, No. 2	Summit Hill	Lehigh C. and Nav. Co	L. C. and Nav. Co.	D. Zehner	1	46	1
40...	Reevesdale	Reevesdale	Tamaqua Coal Company	James Glenn	J. Glenn.	2	60	
41...	Coaldale.	Coaldale.	Lehigh C. and Nav. Co.	L. C. and Nav. Co.	D. Zehner.	1	46	1
42...	Peach Orchard	Tuscarora.	Bast & Kentucky Bank	B. Rowbotham	B. Rowbotham.	3	83	1
43...	Llewellyn drift	Yorkville.	York Company	Llewellyn.	R. Llewellyn	1	3	1
44...	Eureka	St. Clair, West	Wetherill & Seitzinger	J. R. Delhm.	J. R. Delhm.	2	18	
45...	Anthracite	Tamaqua	Tamaqua Coal Company	M. Bartholomew	M. Bartholomew.	3	114	
46...	Tuscarora.	Tuscarora	do	J. Sullivan	J. Sullivan.	2	66	
47...	New Philadelp'a shaft,	Middleport	Valley Furnace Company.	Hein & Co.	Moses Hein	5	80	1
48...	Sharp Mountain.	Pottsville, West.	Richardson & Wood.	Baltaizer	F. Boertzel	1	3	
49...	Sharp Mountain slope.	Pottsville, South	do	Joseph Wood	J. Tiley	1	3	1
50...	Tamaqua drift	Tamaqua	Tamaqua Coal Company	John Whitstine	W. Bachman	2	76	
51...	Black Heath	Glen Carbon	Manhattan Coal Company,	Thomas Shollenberg	R. Purcell	2	48	1
52...	White Oak	Mine Hill Gap.	Dundas.	Abd		1	12	
53...	Phœnix, No. 1	Phœnix Park.	Phœnix Park Coal Co.	Morgan Williams	M. Williams	6	84	1
54...	Palmer.	Primrose	do	John Wadlinger	F. Wadlinger.	2	28	
55...	Dillman	Phœnix Park	do	Dillman & Co.	S. Seltzer	1	12	
56...	Black Heath	Minersville.	Wharton and others.	Sonner and others.	Sonner	1	11	
57...	Wolf Creek Diamond.	Minersville, North	do.	W. C. Diamond Co	Abd	2	22	1
58...	Revenue	Mt. Laffee.	Joseph Patterson, et al	Pomroy & Eckert.	Abd	2	14	1
59...	Hickory shaft.	Wadesville.	Wetherill & Seitzinger	Hickory Shaft Coal Co.	Althouse	8	52	1
60...	Spruce Forest.	New Castle, East	Richardson.	Lucas & Denning	J. Denning.	2	13	1
61...	Mammoth.	do.	Potts & Bannan	G. S. Repplier.	Abd	2	11	3
62...	Mill Creek	Port Carbon.	Mammoth Vein Coal Co.	Beddall & Robinson.	A. Robinson	2	12	1
63...	Ledger vein.	Silver Creek	Valley Furnace Company.	Harris & Williams	T. Williams	6	118	1
64...	Buckville.	Buckville.	Tamaqua Coal Company	Moss & Abblett.	Abblett	6	180	1
65...	Wabash.	Reevesdale	do.	Borda & Donaldson	B. Wragg	3	96	1
66...	Tamaqua shaft	Tamaqua.	do.	Sharp Mountain Coal Co.	J. Whitstine.	2	78	1
67...	High mines.	do.	Greenwood	G. Ormrod	G. Ormrod.	1	38	1
68...	Little Tracy.	East mines	North America Company.	Joseph Picton.	J. Picton	1	4	
69...	North America.	do	do.	William Clark	William Clark.	2	8	
70...	Lehigh, No. 8.	Summit Hill	Lehigh C. and Nav. Co	L. C. and Nav. Co.	D. Zehner.	2	88	1
71...	Mammoth shafts	East mines	Fidelity T. and S. D. Co.	F. T. & S. D. Co. of Phila.	Gen. Pleasants.	6	86	3
72...	Jugular	Coal Castle	Dundas	Thomas Egan	T. Egan	1	12	

COLLIERY STATISTICS IN POTTSVILLE DISTRICT—CONTINUED.

No.	Names of collieries.	Location of collieries.	Names of land owners.	Names of operators.	Names of mining agents.	Number of visits of inspection	Number of miles traveled	No. of slopes or shafts worked
73...	Wadesville drift	Wadesville	Wetherill & Seltzinger	Berlucky	Berlucky	2	12	.....
74...	Junction, W. Wood	West Wood	Richardson & Wood	J. M'Donnell	J. M'Donnell	1	4	1
75...	Mead's	North America	North America Company	William Mead	William Mead	1	4	1
76...	Seibert's	do.	do.	George Seiberts	G. Seiberts	1	4	.....
77...	Norwegian	Mt. Laffee	Wetherill & Seltzinger	Schweers & Brown	J. Brown	8	48	4
						246	3,991	*

*59 slopes, 9 shafts.

No.	Number of lifts sunk	Number of drifts and tunnels	Degrees dip of the strata	Direction of dip	Names of the coal seams worked.	Nature of ashes	Thickness of coal seams	How ventilation is produced	Condition of the ventilation	Number of steam engines	Horse power of engines	Number persons killed	Number persons died of injuries	Number maimed and injured	Total number of casualties	No. persons employed inside	No. persons employed outside	Total force employed	Shipme'ts in tons of 2,240 lbs.
1	3	.....	26	S	E, Seven Ft. and D	White	25	Fan	Good	4	185	1	1	8	10	80	52	132	8,755
2	3	.....	56	S	Daniel and Leller	do	28	do	do	5	280	.....	.....	1	1	80	70	150	51, 121
3	3	.....	56	S	do	do	28	do	do	7	810	.....	.....	1	1	70	65	135	
4	3	.....	23	S	Peach Mountain	do	5	Furn'e	Bad	3	115	.....	.....	.....	.....	75	57	132	21, 980
5	1	.....	40	S	H and G	Red, gray	8	do	do	.....	.....	.....	.....	.....	.....	.....	.....	.....	
6	1	1	40	N	Daniel Crosby	White	20	Fan	Good	5	220	1	.....	4	5	30	20	50	.....
7	3	....	36	S	G	Gray	10	do	do	7	920	.....	1	5	6	75	70	145	.....
8	3	.....	25	S	J	Red	5	do	do	3	43	.....	1	3	4	46	40	86	9,083
9	1	.....	35	S	E and Seven Feet	White	35	do	do	5	705	.....	.....	6	6	225	90	315	92, 803
10	1	1	.....	N	Crosby, D. Leller	do	28	do	Bad	5	930	.....	.....	2	2	87	96	183	.....
11	2 1	.....	.....	N.S	E	do	24	do	do	6	201	1	.....	2	3	102	90	192	41, 187
12	2	.....	.....	N.S	E, Seven Feet and D	do	45	Natural	Good	6	245	.....	.....	5	5	80	80	160	52, 808
13	1	.....	.....	S	do	do	45	Fan	do	7	528	.....	1	10	11	105	90	195	.....
14	3	....	.....	N.S	E and Seven Feet	do	35	do	do	4	236	3	.....	10	13	156	90	246	46, 369
15	1 1	.....	....	N	Crosby and Church	do	22	do	Fair	7	695	.....	.....	4	4	108	70	178	50, 287
16	3	.....	.....	S	do	do	22	do	Good	5	180	2	1	4	7	74	50	124	46, 000
17	3	.....	.....	S	J	Gray	8	do	Fair	3	76	.....	.....	3	3	48	43	91	.....
18	3	.....	.....	S	E and Crosscut	White	31	do	do	6	676	1	.....	.....	1	65	46	111	30, 000
19	3	.....	.....	S	F	do	10	Natural	Good	2	100	.....	.....	.....	.....	40	34	74	36, 341
20	3	.....	.....	S	E and D	do	32	do	Bad	2	60	1	.....	1	2	20	20	40	9, 489
21	1	.....	.....	S	G	Gray	8	Jet	do	2	145	.....	1	1	2	20	20	40	4, 385
22	2	....	.....	S	Palmer	Red	3	Fan	Good	3	90	.....	.....	.....	.....	50	40	90	.....
23	.....	2	.....	S	A and C	White	20	Natural	Bad	2	80	1	.....	1	2	50	50	100	24, 026
24	5	.....	.....	S	G	Gray	8	Fan	Good	4	170	1	1	.....	.....	50	41	91	34, 535
25	3	.....	.....	N.S	F and G	White, gr.	14	Natural	Bad	5	375	.....	.....	.....	.....	60	60	120	30, 253
26	2	.....	.....	N.S	E	White	25	Fan	Good	4	110	.....	.....	.....	.....	20	40	60	17, 333
27	1	1	.....	S	E	do	60	do	do	3	180	2	.....	6	8	88	90	178	.....
28	2	.....	.....	S	G	Gray	8	do	do	5	165	.....	.....	.....	.....	48	40	88	.....
29	5	.....	.....	S	E and Best	White	14	do	do	5	270	2	.....	2	4	78	54	132	.....

COLLIERY STATISTICS IN POTTSVILLE DISTRICT—CONTINUED.

No.	Number of lifts sunk	Number of drifts and tunnels	Degrees dip of the strata	Direction of dip	Names of the coal seams worked.	Nature of ashes.	Thickness of coal seams	How ventilation is produced	Condition of the ventilation	Number of steam engines	Horse power of engines	Number persons killed	Number persons died of injuries	Number maimed and injured	Total number of casualties	No. persons employed inside	No. persons employed outside	Total force employed	Shipme'ts in tons of 2,240 lbs.
30	1			S	Billy Best	White	6	Natural	Fair	2	180					20	6	26	
31	1			N	E, C and Crosscut	do	42	do	Bad	6	310					43	60	103	14,468
32	3			N	Crosby and South	do	22	Fan	Good	7	775			2	2	70	65	135	75,346
33		1		S	F	do	5	Natural	Bad							10	8	18	
34		1		S	D	do	4	do	do							6	7	13	
35		1		S	J	Red, gray	4	do	do							5	3	8	
36	3			S	Crosby and South	White	22	Fan	Good	6	240					40	60	100	
37	3			S	E	do	25	do	do	1	60		1		1	34	20	54	
38	3			N	Crosby and South	do	22	do	do	9	482					89	80	169	47,011
39	5			S	E	do	60	Natural	do	3	110	1			1	90	70	160	
40		1		N	R	do	8	do	do	1	20					91	97	188	
41	1	1			E and F	do	68	do	do	7	710					23	15	38	
42	1			S	H	Red	6	Furn'e	Bad	2	60					8	6	14	6,199
43	1			S	Gate	do	6	Natural	do							6	6	12	
44		1	45	S	Buck Mountain	White	6	do	do	1	20					12	10	22	
45		2		S	C and E	do	20	do	do	1	40			7	7	12	10	22	2,278
46		1		N	F	Red	6	do	do							6	4	10	
47				N	Gate	do	6	Fan	do	3	66	2		2	4	21	14	35	6,130
48		1		N	Bartlost	do	9	Natural	Good					1	1	6	8	14	
49	1			N	do	do	9	do	do	2	20			1	1	8	6	14	
50		1		N	E splits	White	31	do	Bad					1	1	6	12	18	
51	3			S	Daniel splits	do	8	Fan	Good	5	160					26	20	46	
52																			
53	3			S	G	Gray	8	Fan	Fair	4	127			2	2	58	54	112	13,705
54		1		S	Palmer	Red	6	Natural	Bad	1	25					6	4	10	
55		1		S	G	Gray	6	do	do							8	7	15	
56		1		S	Black Heath	White	12	do	do										
57	5			S	Reese Davis & Daniel	do	15	Fan	Idle										
58	3			S	F	Gray	8	do	do				1	1	2				
59	1			S	E and Seven Feet	White	35	do	Good	7	480					50	40	90	
60	1			S	D	do	6	Natural	Bad	3	130								

61...	5	.....	.....	N.S	E and Seven Feet.....	...do.....	35	Fan.....	Idle..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
62...	2	1	.....	S...	Palmer	Red	5	Natural	Bad..	1	20	.....	.....	.....	.....	.....	.....	.....	.....
63...	1	.....	.....	S..	E and D.....	White.....	32	Fan.....	Fair..	5	210	.....	.....	.....	.....	62	68	130	.....
64...	2	.....	.....	S...	E and Crosscut.....	...do.....	32	..do	..do...	6	952	.....	2	8	10	36	39	75	16,340
65...	2	.....	.....	N ..	.....do.....	...do.....	32	..do	Good	5	470	.....	.....	.....	.....	73	75	148	45,856
66...	1	.....	.....	N ..	Pp, Qq and R	...do.....	50	..do	Idle..	5	220	.....	.....	.....	.....	54	56	110	20,416
67...	2	.....	.....	S...	E and F.....	...do.....	32	..do	Bad..	4	140	.....	.....	.....	.....	4	2	6	5,638
68...	.....	1	.....	N ..	K.....	Red.....	3	Natural	Good	.....	.....	.....	.....	.....	.....	7	6	13	.....
69...	.....	1	.....	S...	L.....	...do.....	3	..do	Bad..	.....	.....	.....	.....	.....	.....	4	2	6	.....
70...	1	3	.....	S...	E.....[H, I and J.	White.....	60	..do	Good	6	670	.....	.....	.....	.....	91	97	188	.....
71...	each 1	.....	.....	N.S	E, Seven Feet, F, G,	White, red,	78	Stm. jet	..do...	6	260	.....	.....	.....	.....	90	20	110	.....
72...	.....	1	.....	S...	Daniel.....	White.....	40	Natural	..do...	.....	.....	.....	.....	.....	.....	5	7	12	.....
73...	.....	1	.....	S...	L.....	Red..	3	..do	Fair..	.....	.....	.....	.....	.....	.....	3	3	6	.....
74...	1	.....	.....	S...	Red Ash	...do.....	3	..do	Bad..	.....	.....	.....	.....	.....	.....	4	5	9	.....
75...	1	.....	.....	S...	Lewis vein.....	...do.....	5	..do	..do...	.....	.....	.....	.....	.....	.....	3	3	6	.....
76...	.....	1	.....	S...	.....do.....	.. do.....	5	..do	..do...	.....	.....	.....	.....	.....	.....	3	3	6	.....
77...	5	.....	.....	N.S	T.....	White.....	20	Fan.....	Fair..	6	215	.....	.....	.....	.....	75	70	145	22,409
	132	28	.....	*		†	.....	‡		240	16,012	19	11	109	139	3,338	2,806	6,144	.....
10 small collieries, not included in this list, give employment to.....																40	40	80	

* 23 north dips, 61 south dips. † 40 white ash, 19 red ash, 11 gray ash. ‡ 87 steam fans, 33 natural, 3 furnaces, 3 jets.

REPORT

OF THE

COLLIERIES OF THE SECOND, OR ASHLAND, DISTRICT, FOR THE YEAR 1871.

His Excellency, JOHN W. GEARY,

Governor of the Commonwealth of Pennsylvania:

SIR:—In compliance with the requirements of an act of the General Assembly of the Commonwealth of Pennsylvania, approved the third day of March, Anno Domini, 1870, entitled "An Act providing for the health and safety of persons employed in coal mines,"

I have the honor to herewith submit my annual report of the condition, etc., of the collieries of the Second, or Ashland, district, for the year ending December 31, 1871. In connection with which are tabulated statistics of mortality and casualties, which occurred during the year: the number of persons killed or died of their injuries; the number of persons maimed and injured, and the number of widows and orphans. Attached to this report is a list of colliery maps furnished me, showing the extent of the workings of the mines, and the territory allotted to each. The largeness of the coal seams in the collieries of my district make mining a more dangerous operation than it is in thinner seams, and therefore requires better skilled miners to work them than it does in smaller seams. This is not always the case in this country. The inducements held out to inexperienced persons to become miners, and earn miners' wages, a work to which they are altogether unacquainted with, precipitates this unwarrantable excuse, and the result of such an imprudent course, adopted by the applicant for minership, and even the employer, is deserving of the severest censure. Many who are entirely strangers to the art of mining—except when they learn only the rudiments of drilling in the coal seam and charging a blast, without any further experience—assume the responsibility of discharging that very onerous and responsible duty, that of a practical and skilled miner in the face of such terrible dangers, and that mortalities are so common, that funeral processions may be seen weekly at those mining hamlets, answer this case truthfully. It must be assumed that the party is some hapless miner, who came to his death by an accident in the mine. The circumstances of some; the ambition of others; the sort of community; the advantages afforded by the locality; the influence of association on the part of the employed, and the operators' necessity to increase their shippments, together with the pecuniary distress occasioned by strikes, are the inducements that generally attract the inexperienced novice to assume the occupation of the miner. When once accustomed to his occupation his fears vanish and give place to fearless imprudence, which sooner or later results fatally.

Although ignorant of the nature of gases; unacquainted with the art of mining in thick high pitching seams; a novice to the surrounding dangers, or even the use of the safety lamp, here he is found an object of pity, digging his own grave. When the practical miner cautiously advances in his working place, carefully exploring every minutia of interest, carefully examines every crevice where a speck of gas could accumulate, making sure of this, he then tests the solidity of the top rock or coal, the sides and face of his working place, sees that a safe retreat is available, pauses and calculates accurately every point of interest before he assumes operation, first being assured that all things are well. When a passenger train stops at the station, the click of the hammer of the practical car-wheel examiner is heard along the train, indicating the dangerous wheel or axle, just so does the click of the practical miners pick reveal the dangerous spot, from which he suddenly flies, or endeavors to secure. But explosive gas, above all other dangers, is the most dreaded, as an explosion fills all space with fire, destroys the strongest barrier, burns with violent intensity, suffocates even those at a long distance, and often setting fire to the locality. This is a condition common to the coal mines of Schuylkill county, in which many inexperienced persons are employed, and consequently disasters must ensue from the causes herein set forth.

It will be seen that the number of deaths in my district this year is 56, to 62 in 1870—6 less; that the injuries this year are 168, to 93 in 1870—75 more; that the widows this year are 24, to 38 in 1870—14 less; and that the orphans this year are 97, to 121 in 1870—24 less. In nearly all the cases which resulted in death or serious injuries the verdicts rendered exonerated the mine officers from blame, while ill-advised undertakings and impetuosity are found to be the chief causes of almost all the casualties that occur in the district mines.

I am pleased to say that the necessary improvements for the safety and health of persons employed in these mines are rapidly advancing; that the miners themselves view the causes of the casualties with greater interest than was the case heretofore, and are submitting to the regulations and rules of the mining law, which is for their especial benefit. The use of speaking tubes is not yet appreciated by the operators generally. The condition of mine machinery is much better, and better precautionary measures are adopted than was the case formerly.

In regard to our duties under the thirteenth section of the act of 3d of March, 1870, in reference to steam boilers, we do not feel responsible for reporting their condition in connection with this report, as that branch of our duty under the act providing for the health and safety of persons employed in coal mines, has been transferred to an inspector of steam boilers for the district of Schuylkill by an act of the General Assembly, whose reports on the condition of steam boilers are seldom furnished us.

The advantage of using steam fans is receiving attention, and they are superseding all other modes of ventilation heretofore in use. Their use, when properly applied, is no small guarantee of safety. Ventilation of deep mines is a matter engaging the attention of mine bosses and mine managers much more than that subject did since the commencement of mining in this district, and hopes are entertained of its beneficial result.

The marked decrease in casualties during the last three months of the year is a gratifying feature, showing that precautionary measures have great influence over disasters, and that the necessity of fostering this protection for the safety and health of those employed in coal mines is eminent, and the gratitude of the mining public particularly is due to all who have contributed in the least degree to enact this most needed law for the ame-

lioration of the condition and for the safety of persons employed in coal mines.

In conclusion, I am impressed with a hope that a greater degree of precaution will be exercised the coming year than has been heretofore, and that casualties will decrease in like ratio; that prudent councils will prevail among our miners; that mine managers will so conduct the operation of mining and ventilation, in conformity with law, as will deserve public approbation, for in doing this they not only secure the safety of the lives of valuable men, but greatly benefit their own interest in conducting their collieries on a safe and practical plan. In discharging our duty to the public our action should be prompt and just, well knowing its necessity, and asking the assistance of all officers of collieries to afford us the necessary assistance to enable us to discharge our duties justly to all. Many satisfactory changes have taken place during the year, and many more are in progress, while others again are anticipated and decided upon to be carried into effect, and but little doubt remains but a complete compliance with the requirements of the law and the inspector's instructions will soon be completely established.

JOHN ETLINGHAM,
Inspector of Mines.

ASHLAND, OR SECOND, DISTRICT.

Names of persons killed, and those who died of their injuries, during the year ending December 31, 1871.

Date.	Names of the killed.	Names of the collieries.	Wife.....	Children,	Remarks.
Jan. 21...	John Cullen	Lost Creek	1	.....	Killed by falling into an open breast.
30...	George Herman	Shenandoah	.....	.....	Killed by temporary drum fixings.
March 9...	Tom Banester	Tunnel	1	2	Killed by a fall of coal in an air hole.
9...	Patrick Burns	....do	1	2	Killed by a fall of coal in an air hole.
16...	Mark Daniels	Union, E. Bast	1	.....	Killed by explosion of a steam boiler.
April 9...	A miner	West Lehigh	.....	.....	Killed by fall in a slope in his sleep.
13...	Michael Conner	St. Nicholas	.....	.....	Run over while loading cars—died.
25...	Daniel Josephs	Glendon	1	4	Died—a drill forced through his body.
26...	David Perong	Kohinoor	1	7	Killed by premature discharge of a blast.
27...	Ben. Lewis	Colorado	.....	.....	Killed by a fall of coal.
May 8...	Griffith Jones	Hill & Harris	.....	.....	Died from effects of injuries.
14...	George Smith	Lost Creek	1	4	Died from effects of injuries.
16...	John Fogarty	Lance	1	8	Killed by a fall of coal.
June 2...	Ben. Lovell	Locust Run	.....	.....	Died from effects of an explosion of gas.
2...	Walter Wyatt	....do	.....	.....	Died from effects of an explosion of gas.
2...	Alfred Lovell	....do	.....	.....	Died from effects of an explosion of gas.
6...	John Taggart	Lost Creek	.....	.....	Killed by a fall of coal.
6...	John Oliver	Hill & Harris	.....	2	Killed by a fall of coal.
22...	Thomas Webb	St. Nicholas.	1	4	Killed by a fall in a breast.
26...	Andrew O'Donnell	Lence's	1	3	Injured by a fall of slate—died.
30...	Thomas Horan	St. Nicholas.	.....	.....	Killed by a fall of coal.
July 3...	M. Scheltzer	Cambrian.	.....	.....	Killed in the cog wheels.
19...	Robert Eltingham	Atkins	1	5	Killed by a fall of rocks.
21...	John Gallagher	Girard	.....	.....	Killed by a stroke of a piece of coal.
29...	Martin Rilley	Knickerbocker	.....	.....	Killed by a fall of coal.
29...	Thomas M'Andrew	Preston, No. 3.	1	4	Killed by a fall of coal.
Aug. 5...	Michael Walsh	Ellen Gowen	1	7	Killed by a fall of coal.
5...	Patrick Thigue	Cuyler	.....	.....	Killed by a fall of coal.
11...	Lawrence Corcoran	Keystone	1	4	Killed—fell into the slope.
19...	Lewis Liechmanstine	Girard	.....	.....	Killed—fell into the rollers.
19...	William Jenkins	Keystone	1	5	Died from effects of an explosion of gas.
26...	John Dixon	Colorado	1	4	Killed by a fall of coal.
26...	Michael Gannel	Girard	1	4	Killed by a fall of coal.

ASHLAND, OR SECOND, DISTRICT.—*Names of persons killed, &c.*—CONTINUED.

Date.	Names of the killed.	Names of the collieries.	Wife.....	Children.	Remarks.
Sept. 5...	A boy.	Ellen Gowen	.....	.....	Killed accidentally.
11...	A miner	Hazle Dell	.....	.....	Killed accidentally.
13...	Jacob Smith	Kohinoor	1	4	Died from effects of an explosion of powder.
13...	Thomas M'Avoy	Ellen Gowen	.....	.....	Killed by a fall of coal.
13...	John Natrass	Girard	.....	.....	Drowned in the slope.
23...	John Foster	Keystone	.....	.....	Killed—fell into the upcast shaft.
23...	Martin Tuoy	Lost Creek	1	6	Crushed by wagons—died.
29...	John O'Brien	Plank Ridge	1	8	Killed by a fall of coal.
Oct. 2...	Thomas Cravenby	Big Mine Run	.....	.....	Killed—run over by wagons.
7...	Philip Brensell	....do	.....	.....	Killed accidentally.
10...	Thomas Landy	Trenton	1	2	Killed in the breaker rollers.
13...	Hugh Rowan	Girard	.....	.....	Killed.
16...	John Caughlin	Lehigh, No. 3	.....	.....	Killed—fell into the screens and wheels.
16...	William Davis	Continental	.....	.....	Killed—kicked by a mule.
31...	Daniel Freeman	Maize & Co	.....	.....	Killed by a coal schute falling on him.
Nov. 20...	James Stork		.....	.....	Killed by a fall of rocks.
21...	Thomas Wyatt	Thomas	1	1	Killed by a discharge of a blast.
24...	Hugh Gribbin	Girard Mammoth	.....	.....	Killed by a discharge of a blast.
28...	A miner	Shenandoah	.....	.....	Killed by a fall of coal.
Dec. 2...	Bartly Dean	Lost Creek	.....	.....	Killed—run over by wagon.
4...	John Fellows	Gilberton	1	1	Killed by a fall.

54 persons lost their lives, 12 of whom died of injuries, 1 was drowned, and 43 were instantly killed, leaving 24 widows and 96 orphans.

Names of persons maimed and injured in the mines of the Second district for the year ending December 31, A. D. 1871.

Date.	Names of persons injured.	Names of collieries.	Remarks.
January 5...	Emanuel Hodgkis	Lost Creek	Leg fractured by a fall of coal.
6...	Martin M'Andrew	Keystone	Ankle fractured by a fall of coal.
8...	The engineer	Stanton	Injured by explosion of cylinder.
8...	P. Daugherty	Tunnel	Lost both eyes by a blast.
24...	James Martin	Locust Dale	Leg broken.
28...	H. Neighthamer	Keystone	Wrist and thumb injured.
Feb. 7...	Thomas Colohan	Locust Run	Arm broken by a fall of coal.
9...	John Coeblin	William Penn	Leg broken by a fall of coal.
March 18...	Thomas Shelly	..... do	Hand cut off by a saw.
18...	Benjamin Davis	Indian Run	Severely injured by a plank.
22...	Henry Jones	Stanton	Severely injured.
22...	John Carlin	Ellen Gower	Leg broken by a fall of coal.
26...	Henry Brocius	Thomas	Eye injured by a saw.
April 8...	Michael Dwyre	E. Mahanoy	Burned by an explosion of a blast.
8...	James Dwyre	..... do	Burned by an explosion of a blast.
20...	George Smith	Lost Creek	Severely injured by a fall of coal—died.
21..	Thomas Gilfillan	Plank Ridge	Severely injured by wagons.
21...	William Carpenter	Mahanoy City	Severely injured by a fall of slate.
25...	Henry Cook	Kohinoor	Severely injured by a fall of slate.
26...	David Perong	..... do	Mortally injured by an explosion of a blast.
29..	William Grant	Hazle Dell	Severely injured by an explosion of a blast.
May 10...	Matthew Cope	Silliman's	Arm cut off by an explosion of a blast.
10...	Griffith Jones	..... do	Abdomen cut open by an explosion of a blast.
10...	Isaac Jones	Lance's	Hand severely burned by powder.
15...	Joseph Hoff	..... do	Severely injured by fall of rocks.
15...	Abraham Abrams	Beatty's	Severely injured by noxious air.
17...	Simon Geckood	Colorado	Fingers cut off.
19...	John Conomy	Girard	Fingers cut off.
19...	Charley Ross	Preston, No. 3	Hand injured by fall of coal.
24...	Charley Becker	Kohinoor	Arm broken in the breaker.
29...	Andrew Rhoades	Shenandoah	Severely injured by a fall of coal.
29..	A miner	Fowler's	Severely injured by a wagon.
29...	A miner	Locust Run	Severely injured by an explosion of gas.
29..	A miner	..... do	Severely injured by an explosion of gas.
June 5..	Michael Lally	Girard	Legs broken by a fall of coal.
5..	Thomas Lavelle	Lost Creek	Severely crushed by wagons.
5...	Benjamin Williams	Hartford	Leg broken by a fall of coal.

TABLE OF INJURIES—CONTINUED.

Date.	Names of persons injured.	Names of collieries.	Remarks.
June 8...	Philip Germand	Hartford	Leg and back broken by a fall of coal.
12...	Andrew O'Donnell	Lance's	Mortally injured by a fall of slate.
16...	James Conroy	William Penn	Severely injured by a fall of coal.
16...	Charley Seltzer	Kohinoor	Collar bone broken by wagons.
16...	Thomas Powell	Shenandoah, West	Leg broken by wagons.
16...	James Dwyre	Tunnel Ridge	Head severely injured by a fall of coal.
22...	Ludwig Herr	Shenandoah City	Thumb cut off by a fall of coal.
26...	Michael Pooler	Kohinoor	Back cut by wagons.
26...	Patrick Roach	Hartford	Injured by a fall of coal.
26...	Thomas Brown	do	Injured by a fall of coal.
28...	Henry Reeder	William Penn	Injured by a fall of coal.
30...	Lewis Weller	Shenandoah City	Injured by a blast.
July 3...	John Kurtz	do	Leg broken by timber.
3...	Edward Kerns	Indian Run	Leg broken by fall of coal.
5...	Michael Dugan	Lehigh, No. 3	Arm broken by fall of a cage.
5...	George Smith, Jr	do	Arm and face severely injured in the screens.
9...	Jacob Bissell, Jr	Locust Run	Severely injured by timber.
9...	James Kelly	Hartford	Severely injured by a fall of coal.
13...	Patrick Conry	Girard	Leg broken by a fall of coal.
13...	Patrick Carden	Raven Run	Severely injured by a fall of coal.
13...	Isaac Scilton	Knickerbocker	Leg broken by coal falling off wagon.
17...	John H. Williams	Indian Ridge	Severely injured by a blow of a sledge.
17...	William Moyers	Shenandoah City	Leg sprained by timber.
17...	John Lowery	Raven Run	Leg broken by a fall of coal.
18...	Arndt Hovercost	Lance's	Severely injured by a fall of coal.
18...	Domnick Joyce	Shenandoah	Shoulder injured by a fall of coal.
19...	Daniel Lawler	Barry's	Leg broken by a fall of coal.
20...	John D. Evans	Shenandoah, West	Arm broken by a fall of coal.
20...	Michael O'Hara	Centralia	Body severely injured by a fall of coal.
20...	Joseph Perry	do	Slightly injured by a fall of coal.
20...	William Jones	do	Slightly injured by a fall of coal.
20...	Samuel Richards	Hazle Dell	Leg broken by a fall of coal.
21...	Ralph Lee	Elmwood	Arm broken by a fall of coal.
22...	Richard Murphy	Suffolk	Arm broken by a fall of coal.
24...	William Dodds	Tunnel Ridge	Arm and leg broken by a fall of coal.
24...	Hart, (a boy,)	Preston, No. 1	Severely hurt—fell off a trestle.
24...	J. O. Donnell, Jr	Girard	Arm and hand crushed in wheels.

	28...	A miner and five others	Lawrence's	Injured—slope chain broke.
Aug.	1...	Anthony Keppler	...do	Severely crushed by wagons.
	2...	James Oliver	Hill & Harris	Hand severely crushed by a fall of coal.
	2...	John Harris	Suffolk	Head shockingly cut by the fall of a cage.
	2...	Thomas Larkin	St. Nicholas	Collar bone broken by falling off of a building.
	3...	Charles Heisser	Preston, No. 3	Crushed by props and wagon.
	3...	A miner	St. Nicholas	Severely burned by an explosion of gas.
	3...	John Mangold	Lawrence	Leg severely crushed by wagons.
	3...	Brannan, (a boy)	Gorman's	Scull fractured—fell off of the breaker.
	4...	John Hoban	Lawrence	Hand badly crushed.
	4...	James Ormesby	Stanton	Severely injured by fall of a schute—died.
	4...	A miner	St. Nicholas	Severely injured by an explosion of gas.
	7...	Thomas Hoolahan	Locust Run	Arm broken.
	7...	Thomas Kennedy	Colorado	Severely injured while mining.
	9...	Miles Henry	Union	Crushed by wagons.
	13...	Edward Harrison	Big Mine Run	Face severely injured by a blast.
	13...	Peter Wildner	Tunnel	Mortally injured by the fall of a fly wheel.
	16...	Matthew Shaw	Lehigh, No. 3	Severely crushed by wagons.
	16...	Calvin, (a boy)	Knickerbooker	Arm broken—fell off the breaker.
	16...	M. Thomas	Grant	Severely burned by powder.
	16...	Samuel Mason	Lentz's	Severely cut by a fall of coal.
	16...	Robert Weightman	Beatty's	Toes cut off—run over by wagons.
	17 ..	Patrick Lowery	Keystone	Leg broken—fell in a schute.
	19...	Samuel Deen	...do	Severely burned by an explosion of gas.
	19...	Benjamin Weeks	...do	Severely burned by an explosion of gas.
	19...	William R. Jenkins	...do	Severely burned by an explosion of gas—died.
	19...	James Sargeant	...do	Severely burned by an explosion of gas.
	22...	William Curry	Preston, No. 4	Severely injured—fell into an air-hole in the mines.
	24...	William Jones	William Penn	Leg broken and face and hand injured by a fall of coal.
	26...	Thomas D. Davis	Indian Ridge	Hip broken by wagons.
	27...	James Brannan	Shanandoah	Head badly injured by a fall of coal.
	27...	Michael Dormer	William Penn	Arm broken by fall of a screen.
	27...	Joseph Miller	Gilberton	Leg broken by fall of a rail.
	27...	Patrick Nulty	Honey Brook	Head severely injured by a fall of coal.
	31...	Brown, (a boy)	Hazledale	Head broken by fall of a T rail.
	31...	Thomas, (a boy)	...do	Leg broken by fall of a T rail.
	31...	Peter Perry	Lentz's	Head severely injured by a fall of coal.
	31...	Dennis Murphy	Atkins's	Internally crused by a fall of rocks.
	31...	Jacob Smith	Kohinoor	Severely injured by powder—died.
	31...	His assistant	...do	Severely injured by powder.
Sept.	2...	William Starkey	Shaft 1	Severely injured by a fall of rocks.
	3...	Peter Grow	Gilberton	Severely injured by a fall of coal.
	5...	J. Heartzean	Stanton	Ankle crushed by wagons.

TABLE OF INJURIES—CONTINUED.

Date.	Names of persons injured.	Names of collieries.	Remarks.
Sept. 5...	A miner	Shenandoah City	Ankle crushed by wagons.
5...	Alfred Miller	Big Mine Run	Fingers cut off by wagons.
7...	A boy	Kohinoor	Severely burned by powder.
7...	J. Young, (boy)	Cuyler	Leg cut off.
9...	Martin Tuoy	Lost Creek	Mortally injured by wagons—died.
10...	Charles Hostman	Stanton	Severely crushed by wagons.
11...	Thomas M'Avoy	Ellen Gower	Mortally injured by a fall of coal—died.
13...	Mr. Wilson	E. Mahanoy	Severely injured by a fall of rocks.
18...	Mr. O'Donnell	Preston, No. 3	Leg broken.
18...	John Purcell	Colorado	Nose broken by a fall of coal.
18...	George Saint	Lost Creek	Arm crushed by connecting rod.
19...	Patrick Monaghan	do	Severely injured—fell in a schute.
19...	Walter Kenny	Girard	Back and shoulder injured by a fall of coal
20...	J. Radcliffe	Suffolk	Eyes lost by a piece of coal.
20...	Matthew Natrass	Honey Brook	Arm cut off in oiling pulleys.
20...	Richard Moran	do	Severely injured by a fall of coal.
30...	Samuel Samuels	Ashland drift	Head burned by an explosion of gas
30...	John Smith	Knickerbocker	Eye lost—contact with a lighted lamp.
October 7...	A miner	Tunnel Ridge	Severely injured by discharge of a blast.
7...	His assistant	do	Severely injured by discharge of a blast.
10...	John Leffler	Tunnel	Dangerously hurt by caving of a dirt bank.
10...	William Leible	do	Back and thighs dangerously hurt by caving of a dirt bank.
10...	J. K. Klineginna	Lost Creek	Leg broken by discharge of a blast.
10...	William Walters	William Penn	Head severely cut by fall of a schute.
12...	James Taylor	Wiggan's	Back and thighs severely cut by a fall of coal.
12...	John Brannan	Broad Mountain	Thighs fractured by a fall of coal.
12...	James Laughney	Lost Creek	Head fractured by fall in a breaker.
13...	John O'Donnel	Girard	Leg broken—crushed by wagons.
13...	Dominick Monaghan	do	Severely injured—crushed by wagons.
19...	John Thomas	Big Mine Run	Severely burned by an explosion of gas.
19...	James O'Brien	Bedford's	Foot crushed by a dumper.
26...	Thomas Gilhilan	Plank Ridge	Severely cut by a piece of coal.
26...	Richard Wharton	Turkey Run	Severely cut by a piece of coal.
27...	C. J. Palmer	Thomas's	Severely injured by fall in a schute at work.
Nov. 1...	Thomas John	Tunnel	Severely injured—fell in an air-hole.
1...	John Roberts	Mt. Ætna	Head and body severely injured by a fall of coal.
1...	James Conner	Atkins's	Severely injured by a fall of coal.

	2...	Lewis Evans	St. Nicholas	Head cut severely by a fall of coal.
	3...	A miner	Hartford	Severely injured by a blast.
	3...	An assistant	do	Severely injured by a blast.
	4...	A miner	Boston Run	Severely burned by an explosion of gas.
	7...	John Evans	do	Shoulder injured by a fall of coal.
	17 ..	Joseph Gardner	Beatty's	Severely injured—crushed by the cage.
	23...	Peter Bortell	Thomas's	Severely injured by a fall of coal.
	23...	William Natrass	do	Slightly injured by a fall of coal.
	27...	George John	Stanton	Severely injured by a fall of coal.
	27...	Edward Lucid	Kohinoor	Arm severely injured by a fall of coal.
	27...	William Wells	do	Head severely injured by a fall of coal.
Dec.	2...	William M'Keon	Plank Ridge	Seriously injured by a fall of coal.
	2...	Thomas Conner	do	Seriously injured by a fall of coal.
	16...	Owen Gallagher	Raven Run	Seriously injured by a fall of coal.

168 persons were maimed and injured, (9 of whom died,) chiefly occasioned by falls of coal in the large coal seams of the Mahanoy basins, the E vein ranging in thickness from 20 to 60 feet, and at high angles.

SECOND DISTRICT—ASHLAND.

Hereto annexed will be found detailed reports of all collieries in the district of Ashland, with descriptions and conditions when examined, the means used for their ventilation and safe management as is herein set forth.

No. 1.—CONTINENTAL COLLIERY.—*Robert Gorrell & Co., Operators.*

Description.—The colliery is situated two miles north of Ashland, on the estate of ——— ———. It consists of a double track slope opening, sunk 175 yards deep on the north dip of the E vein, at an angle of 50°; the coal of which is 25 feet thick; the old slope is used for a drainage; 10 steam boilers are used in one set of nests to supply steam for drainage, hoisting coal and a steam fan. Two engines are used for drainage, one a 70-horse in the bottom lift, and a 50-horse in the upper lift; two 50-horse engines are used at the hoisting slope. The character of work done is extending gangways, breast working and opening air-courses, which is considered satisfactory. The seam is generally regular and the coal strong; the rock top is tolerably safe; the mine generates some explosive gas.

Gangways.—Only two gangways are yet open; the east is open in 1,500 feet, with 18 breasts worked; the west is open in 1,800 feet, with 24 breasts worked, each of which is from 10 to 12 yards wide and 75 to 80 yards long, the pillars generally 8 yards thick.

Ventilation.—A 15-horse steam fan is used to ventilate the mine. The slope is used for a down-cast; the air is separated at the bottom of the slope into two splits, the one goes in west, the other in east in the gangways to their faces, thence passes up into the working districts, ventilating these breast workings and returning by the pillar headings to and communicates with the out-cast air shaft at the fan.

Engines.—There are five well conditioned steam engines in use, equal to 260 horse, with 19 steam boilers, whose condition is not reported. All other machinery and attachments are in good order.

Remarks.—Miners work by contract per yard; the coal is solid and good; a 20 yard chain pillar is left to support the old lift gangway; there are two schutes open in each breast, with headings in the pillars for ventilation; an air-course is open along each gangway, having a section area of 30 square feet; the fan out-let has a section area of 60 square feet; a second out-let is now open for travel on the west side. The condition of ventilation is at present good; some difficulty had been met with in getting a second egress safety traveling road made for the men; drainage, etc., is good at present; there is no speaking tube or wash-house called for; the operators promise to comply with all the requirements of law.

No. 2.—PRESTON COLLIERY, No. 3.— ——— ———, *Operators.*

Description.—This colliery is situated at Girardsville, on the estate of the late Stephen Girard, and owned by Dr. Preston, as the Preston coal and improvement company. It consists of a double track slope sunk two lifts on the north dip, 150 yards deep on the E vein, at an angle of 55°.

The upper lift was only sunk to the water level; its gangways run in east and west; the new lift is a continuation of it, and its gangways are open in east and west, but a change in the formation of the strata forms a south dip also; the breasts are worked 10 yards wide and run up some 80 yards high, the pillars are sufficiently strong, with headings open at suitable intervals for the admittance of air, etc. The present system of mining done is considered safe; the rock strata appears to be regular and strong; the coal also is of good strong quality, generally mined by blasting.

Gangways.—There are 4 regular gangways open on the colliery; the upper lift is nearly exhausted, and the new gangways will have a run of some 1,600 yards.

Ventilation.—This is produced by an out-let air-hole to the slope water level, which comes from the mountain air-hole, and, by a system of overcasts in the gangway, is brought into their working places, and forced to traverse each district, thence through a course down to the out-let. The bottom lift is supplied with air from the slope, divided and forced in east and west, traversing these separate districts, returns through the workings, and communicates with the water level on its out-ward passage; a 25 horse steam fan has been in use at this colliery for some time, which renders general satisfaction.

Engines.—Two steam engines are in use; the slope engine is a 60-horse; the breaker engine is a 25-horse. There is now a small locomotive engine used to haul the coal from No. 3 mine to No. 4 breaker; their aggregate power is 90 horse. A report of the condition of these boilers has been made; the engines and machinery appear to be in a good condition.

Remarks.—Drainage was produced by water cages. The mode used last year to ventilate the mine has been successfully changed; safety lamps are used for safety of the miners, as large quantities of explosive gas are evolved, and a necessity exists to use all efforts for the protection of those who are there employed. Other improvements are making for greater security, and for better ventilation, which will, when completed, render satisfaction. An accident occurred, which resulted in loss of life.

No. 3.—Tunnel Colliery, Ashland.

Description.—This colliery is situated in Ashland, on the estate of John P. Brock & Bro. It consists of three slopes, sunk on the north dip of the E vein, at an angle of 65°; the seam is 21 feet thick. The old slope is 268 yards deep, with a double track. This slope is to be used for a miner and material stop, after the others are completed and in operation. A new double track slope is now sinking, to the same level, on the 6 foot vein, to be afterwards used for a coal slope, which is, from its contiguity to the present breaker, to do away with hauling, etc. A pumping slope is sunk a short distance east of this, by which it is intended to drain the tunnel and Pioneer collieries. When these improvements are completed, they will constitute this colliery one of the largest in the region. The character of work doing is sinking and mining gangway coal, which will continue until some time in March next.

Gangways.—There are some 1,400 yards of gangways open on the old lift level. A tunnel will open the E vein from the new slope, which will make mining operations much safer.

Ventilation.—At present a 12-horse steam fan ventilates the tunnel mine; a 20-horse steam fan ventilates the old Pioneer mines, which are connected

with the tunnel colliery, and an opening for another 20-horse steam fan is in course of construction. When these improvements are completed, the colliery may be ventilated by 3 steam fans.

Engines.—Seven steam engines are in use=580 horse power, viz: One 90-horse hoisting engine; one 300-horse pump engine; two 60-horse engines in the new slope; one 30-horse breaker engine; one 30-horse dirt plane engine, and one 10-horse fan. The Pioneer colliery has a Bull pump of 500-horse power, and a 20-horse steam fan in operation, but the colliery is, at present, dismantled and abandoned.

Remarks.—This colliery has of late passed into other hands, who are completing these improvements at a heavy cost; some of the present engines are to be superseded by more powerful ones, and entirely improved machinery.

Ventilation is the only difficulty to be overcome, but it is hoped the character of mining done and management of the works, will insure this matter as safe. Ample steam power can be brought into requisition at all times; at present, what work is done inside, is done by the use of safety lamps; the seam is large and generates explosive gases freely; but under improved management, this difficulty may be easily overcome.

No. 4.—COLORADO COLLIERY.—*Hon. H. L. Cake & Huntzinger, Operators, or the Philadelphia coal company, reputed Operators.*

Description.—The colliery is situated in the Shenandoah valley, west of William Penn colliery, on the estate of Stephen Girard, deceased. It consists of a tunnel, opening 120 yards long to the south; the coal seams dip north; the E vein is worked on a large scale. Extensive ramifications of gangway openings, operated under the superintendence of Col. David Percy Brown, producing the largest shipments of any single colliery in the region. Col. Brown, by the way, is one of the most experienced and practical mine managers in the county; coupled with this, is his excellent knowledge of the various systems of mining, mine engines, pumps and mining generally, and competent to discuss practical questions on the subject. The colliery has been some 12 years in operation, during which time the coal produced was from surface mining; numerous breasts and branch gangways are in operation. The west workings change round to east on the Bear ridge; the coal is mined out from the flat which forms between the south and north dips on this small basin, with some breasts open out to the surface.

Gangways.—The large number of gangways open on this colliery, (of which a description is not necessary here,) many of which are idle, but those used are kept in good order, the drainage always good.

Ventilation.—This subject receives the necessary attention, but is produced by atmospheric action only; the presence of explosive gas is not common as yet; numerous fallen openings form a sort of natural out-let.

Engines.—There are but two steam engines in use; a 30-horse breaker engine, and a 60-horse slope engine.

Remarks.—The company are sinking a slope at the inner end of the tunnel, which is down to the water level on the north dip of the vein, and for this purpose uses a 60-horse engine; the condition of these boilers is not reported. It is intended to sink the slope to a considerable depth, and should tunnels then be open into other adjacent veins, the colliery would

become one of the best in the region. A large force of hands are employed; seldom the colliery suffers from strikes or detentions. A more full report of this colliery will be made in my next. The E seam is worked 25 feet thick.

No. 5.—Bee Hive Colliery, (or Lehigh,) No. 3.—*Gen. H. L. Cake and J. Huntzinger, Operators.*

Description.—This colliery is situated west of Shenandoah, on the Girard estate. It consists of two drifts and a slope opening; the slope has a double track and sunk on the south dip of the E vein, some 110 yards deep, at an angle of 46°, with a gangway open in east and west; the coal is 45 feet thick and quality good; the seam is separated by a parting slate which admits of working on both seams, and may be cross-cut at intervals for economical ventilation.

Engines.—A 90-horse engine is used for hoisting and drainage; the gearing and drum fixtures are secure, with 4 good boilers; a 12-horse steam fan is used for ventilation, and a 20-horse breaker engine, all of which appear to be in effective condition.

Ventilation.—This is effected by a 12-horse steam fan; one portion of the slope is used for an intake; the air is distributed at the bottom into splits, which traverses in east and west and returns to the slope, the west side of which is securely partitioned off for an out-cast; at present, the openings are not so extensive as to require the substitution of a proper out-let.

Remarks.—At present much cannot be said of the required improvements, as the excavations increase it will be found necessary to increase ventilation and the system of air-courses. The coal wagons are raised up on a cage which spans a five feet track; the new breaker is completed. The location is admirable and another year's work will speak loud for this colliery. This also is under the superintendence of Col. David Percy Brown.

No. 6.—Grant Colliery.—*Eshelman & Co. Operated latterly by Dr. Yocum.*

Description.—This colliery is situated east of Mahanoy City, near the western entrance of the tunnel, on the estate of the Delano company. It consists of two drifts open in north on the Buck Mountain vein, the coal seam of which is 14 feet thick.

Ventilation is produced by a furnace, but is found not to be adequate, and some complain of noxious air and poor ventilation.

Engines.—A 25-horse engine is in use at the breaker, which is sufficient.

Remarks.—A new tunnel, east of the breaker, has opened the Skidmore vein, in good condition, and is still continued toward the Buck Mountain vein. Very little more can be said of this colliery at present.

No. 7.—Oak Hollow Colliery.—*Gorman & Wenterstine, Operators.*

Description.—This colliery is situated east of Mahanoy City, south, on the Delano land company's tract. It consists of a double track slope sunk 170 yards deep on the north dip of the E or Mammoth vein. This slope

has been but lately put in operation, and promises to yield well. The character of work doing is opening gangways and breastwork, which is considered a safe operation.

Gangways.—Two gangways are all that are as yet open in the slope; the east gangway is open in 250 yards, with 9 breasts working on it; the west gangway is open in 200 yards, and 7 breasts working on it. Their appearance and condition are good. The coal seam is 16 feet thick.

Ventilation is effected under the operation of a steam fan. The west working is ventilated by brattice plans on schutes, which causes the air to circulate into the working places. The slope is used for a down-cast; the air is split at the bottom of the slope, and is brought in east by what is called a monkey gangway; thence up into the working places, and returns to the west side through these workings, where it is used for ventilating the west workings, and then returns to the out-cast at the steam fan.

Engines.—Two steam engines are used at the colliery—a 60-horse hoisting engine and a 20-horse breaker engine, both of which I found in good condition.

Remarks.—I directed the necessary improvements to be made respecting the safety of the men and ventilation. The air was found insufficient. Our instructions respecting the needed improvements are to be fully complied with.

No. 8.—ELLEN GOWEN COLLIERY.—*J. C. Scott & Sons, Operators.*

Description.—This colliery is situated at Maple Dale, on the estate of the Philadelphia and Mahanoy coal company. It consists of 5 different drift openings at present. A new slope is in progress of sinking on the south dip of the H or Orchard vein; two 30-horse engines work the slope. A tunnel opens the E or Mammoth vein, with east and west gangways open. The coal is 13 feet thick, and in fine appearance. New breasts are just opening in it.

Gangways.—Five drifts are operated here, most of which are nearly exhausted. Two new gangways are open on this E vein—one 116 yards, the other 124 yards in. The breasts are open 10 yards wide, with 8-yard pillars. The work is well executed.

Ventilation.—A furnace ventilates this new vein; the North vein is a split off the Mammoth, or its top bench. Ventilation is but in ordinary condition as yet. A furnace and air-holes ventilate the North vein also. By measurement, ventilation was found inadequate; the outside temperature ranged to 55° and inside 68°—difference, 13° against natural ventilation. I have instructed its improvement and the removal of the noxious air.

Remarks.—Francis Daniels, Esq., has lately taken charge of this colliery, and under his superintendence it is fast coming into popularity in production and improvements. Three deaths resulted from accidents, not reflecting on the officers, but purely casual. The Black Heath, Primrose and other veins are worked here by tunnels, and ventilated at present by furnaces and air-shafts.

No. 9.—SUFFOLK COLLIERY.—*Sufforlk Coal Company, Operators.*

Description.—This colliery is situated east of St. Nicholas, on the estate of the Philadelphia and Mahanoy coal company. It consists of a slope

(double track) sunk 110 yards deep, on the south dip of the Primrose vein, the coal of which is 10 feet thick; the tracks are continued as far as the north dip, with gangways open in east and west on both dips. There are, at present, 12 breasts working, each opened 8 to 10 yards wide, with 6 yard pillars, and open headings every 15 yards for safe ventilation. The south and north dips have again formed into one; a new pump slope has been opened out from within, for the purpose of an air-way, and an ingress and egress road, and also used for a steam fan out-cast air-shaft; 11 breasts are working on the east north dip.

Gangways.—There are several gangways opened in the mine, and generally in good condition, but is not necessary of description.

Ventilation.—A 10-horse steam fan is used for ventilating part of the mine; the slope is used as a down-cast, the air is divided into splits, and forced in east and west to face of gangways, thence up into the working districts, returning back through the pillar headings; one split crosses the slope by an over-cast or over-throw, and communicates with the western air in the steam fan out-cast air shaft.

Engines.—Three engines are in use=170 horse power, *i. e.* two 60-horse runs the slope; a 30-horse the breaker, and a 20-horse the steam fan. All their appointments, machinery and tackle are in good order, but the condition of their steam boilers is not reported. I found that every attention had been given to my instructions, under the superintendence of Mr. John Phillips.

Remarks.—I have visited this colliery occasionally, and can say for it, its operation has been satisfactory, no accidents of a dangerous character having taken place. Ventilation is receiving every attention, and a desire to comply with the requirements of the law is manifest. The situation of the breaker buildings and location of the slope and tunnels, are not quite near enough, which creates an expense not warrantable, yet the case cannot be well altered. I found the outside temperature at 55°, whilst inside at 62°—difference 7°. Quantity of air supplied per minute is, at an average, 3,235 cubic feet.

No. 10.—Honey Brook Colliery, (Nos. 1, 2, 3 and 4 Slopes.)—*John B M'Creary & others, Operators.*

Slope, No. 1.

Description.—These collieries are situated at New Pottsville, in Union township, on the estate of the Honey Brook coal company. This colliery consists of 4 slopes, 3 of which are located in Schuylkill county. A large tract of coal land is owned by this company, the coal of which passes over eastern routes, and is seldom credited to the production of Schuylkill.—Slope No. 1 is 163 yards deep on the south dip of the E vein; a 50-horse engine, with 3 large steam boilers, is located in the slope 66 yards from its top, and its operation is successful. The dip of the strata varies from 18° at its opening, to 30° at its bottom, contains a double track and traveling road; the coal is 30 feet thick. The character of work doing, is principally robbing out old pillars.

No. 11.—Slope, No. 2.

This is a double track slope; is sunk 100 yards deep on the north dip of the E vein; part of the slope is timbered for traveling road. Over 3,000 yards of gangways are open in this slope. The breasts are from 70 to 80 yards long and some 10 yards wide, with cross headings in the pillars, at suitable intervals, for the freedom of ventilation. A cross heading is kept open along the top of the old breasts, which creates a considerable circulation of air, which ventilates freely.

Engines.—There are three steam engines in use=to 250 horse, all of which are in good condition.

No. 12.—Slope, No. 3.

This slope is 233 yards deep; contains a double track, 64 yards from the top. The wagons are taken into the working of No. 1 slope, 800 yards distance. A counter gangway, open into No. 1 level, is 77 yards long, and a counter gangway, open to the foot of No. 3, is 92 yards long, on a dip of 29½°, with gangways radiating from it. In-lets, open on both sides of the slope to the surface breasts, are worked here on the north and south dips of the seam. Two 50-horse engines are used, with four boilers; a 250-horse Bull pump, with 12 steam boilers, drains with a 20-inch and an 18-inch column, and two 16-inch and a 12-inch column.

No. 13.—Slope, No. 4.

This slope is sunk 278 yards deep on the basin of the north and south dips; contains two tracks. The seam dips at an angle of 32°. The E vein is open here, and they are excavating to open the north dip. The coal seam is 30 feet thick. The character of work done is opening breasts, gangways and prospecting. A 25-horse engine is used for drainage; a 60-horse engine is used at the slope, with eight steam boilers, all of which engines, steam boilers, machinery and appointments are in good condition and under proper management.

Ventilation.—This subject consists of various modes, viz: By furnaces, where such a system is applicable; by air-holes and air-shafts, where such occasionally are open out to the surface. In all these works I found a tolerable supply of good air, conducted under a systematic plan.

Remarks.—There are four slopes open on this colliery, in a vast body of good coal, with long ranges to the boundary line, located as it is, naturally, on an extensive flat; the seams have generally a uniform regularity and regular thickness; the top rock is strong, and very little water percolations appear; some 700 hands are employed in the mine. There are some 15 engines in use, with 42 steam boilers, and all their vast equipments, which is in itself an item of great value. The Western and Erie railroad is the only out-let to market. I would prefer the mines to be ventilated by steam fans, as furnaces cannot do the same execution; the mine air comes back loaded with noxious impurities, which sloughs it on its outward passage; the regularity of the air current, formed by the motion of the steam fan, keep up a uniform draught, and consequently disturbs the noxious slough-

ing of the air. I find these mines worked and managed properly, and a general desire on the part of all classes to act in conformity with good order.

No. 14.—Silver Brook Colliery.—*Hosea & Longstreet, Operators.*

Description.—This colliery is situated at Silver Brook, on the estate of Messrs. Dilworth & Mitchell. It consists of a slope and shaft colliery; the slope is worked out, the shaft is in full operation. The shaft is sunk 147 feet deep on the Mountain vein, has a double cage-way. The vein is dipping slightly upward westward, with breast-work and skipping working. An ingress and egress way is open on the west side. A tunnel opens the water vein, which, after expensive openings, is found faulty, though considerable coal has been extracted, which gets a market by the Western and Erie railway.

Gangways.—Four gangways are open in the mine. The water vein gangways are nearly exhausted of coal. The big vein gangways are over 2,700 yards long. There are some 20 breasts open, with a large number of pillars yet to be worked out.

Ventilation.—This is effected by natural means. The slope is used for a down-cast and the shaft for an up-cast; the air is brought into the working districts, traversing these places, and returns to the shaft out-cast; the heat of the steam pumps causes a buoyancy in the temperature of the shaft air, which occasions a perceptible current, and indeed a moderate draught.

Engines.—A 60-horse engine is used at the shaft; a 20-horse saw-mill engine is in use; a 25-horse breaker engine, and a 160-horse steam pump=265 horse power, all of which receive their steam from 11 steam boilers, located at the shaft. A 60-horse engine and 4 boilers lie idle at the slope since its abandonment. The condition of the active engines, boilers, machinery and tackle is good.

Remarks—The surface appears to be a large flat, and affords but little natural drainage, consequently water fissures appear in the top rocks, causing drainage in itself to be no small part of the ordinary expenses. There have been no deaths or serious injuries reported. A manifest desire to comply with the requirements of the law is shown by the industry of the officers of the mine, and the regular good conduct of the workmen is in itself commendable.

No. 15.—Mahanoy City Colliery—*Romel, Hill & Harris, Operators.*

Description.—This colliery is situated in the suburbs of Mahanoy City, north, on the estate of the Philadelphia and Mahanoy coal company. It consists of a double track slope sunk 166 yards deep on the south dip of the E vein, at an angle of 40°, with gangways open in east and west, with 12-yard wide breastings working, and pillars 7 yards thick. A tunnel opens the Primrose vein on its north and south dips, with north and south workings on it. Four drift levels are idle, the gangways of which are each a mile long.

Gangways.—The gangways are worked properly, with well timbered sidings; the breasts and pillars are opened and worked intelligently. The character of mining done is considered safe.

Ventilation.—This is produced by the influence of a steam fan; the slope is used for a down-cast air-shaft, the air being divided into separate splits and brought into the several working districts, ventilating these places, and returns by the pillar headings, through the breasts, to the fan out-cast. The workings on the E vein are ventilated from the old level, which comes on the new gangway, thence by an air-course open along the top slate, thence by brattice to the working places, and returned as described above.

Engines.—An 80-horse engine is used for hoisting purposes; a 50-horse engine runs the breaker, and a 15-horse steam fan ventilates the mine. The condition of these engines, steam boilers and machinery is generally good.

Remarks.—In consequence of the destruction of the breaker, by fire, last year, a new one of large capacity has been built off from the old location, and mining and shipping rapidly resumed. Examinations made of the mode of ventilation, ingress and egress way for safety of miners, and the general condition of the mines and drainage, proved them satisfactory.

No. 16.—COPLEY COLLIERY.—*Lentz & Bowman, Operators.*

Description.—This colliery is situated east of Mahanoy City, on the estate of the Delano land company; is 12 years in operation. It consists of a rock tunnel run in north, which opens two veins; the first is a 5 feet vein; the second is a 6 feet vein; both have gangways open in east and west, with considerable breast workings open. A tunnel is to be continued still northward to reach the Seven Feet and Buck Mountain veins.

Ventilation.—The tunnel is used to supply air for both the workings of the veins east and west, conducted along the gangways with schute batteries and canvased draw-holes, which force it into the working places, returning through the works to the out-cast. The supply was found to be inadequate for proper ventilation, and, therefore, noxious air and vapor pervaded the greater part of the mine. The tunnel air is supplied by pipes. The complement found for supply was but 1,620 feet per minute. This is entirely unsatisfactory.

Remarks.—A 40-horse engine, with two steam boilers, is the only power needed, all of which I find in fair condition. There are five workable viens on the tract, all of which can be reached by a tunnel, which can supply a large amount of coal for a number of years before a necessity of slope openings is resorted to.

No. 17.—EAST MAHANOY COLLIERY.—*Pomroy & Rickert, Operators.*

Description.—This colliery is situated north of Mahanoy City, on the estate of Kear, Patterson & D. L. Co. It consists of a slope sunk 255 yards deep on the north dip of the E seam, in three lifts. Four gangways are opened with breast workings, and a second out-let for miners is completed. A 15-horse steam fan ventilates the mine. Old steam boilers are used to do the drainage at present. Ventilation was found barely adequate. A 60-horse engine is used at the slope, and a 15-horse engine runs the steam fan, and a 30-horse engine runs the breaker, with eight steam boilers, which supply all the steam, are located at the breaker some 100 yards from the slope. Our remarks, in connection with this place, will not at present need to be extended further than that matters are at present satisfactory, until further developments be made.

No. 18.—GIRARDVILLE COLLIERY.—*Messrs. Agard & Moody, Operators.*

Description.—This colliery is situated east of Girardsville, on the Girard estate. It consists of six water level drifts on the Skidmore and E veins, and a new slope is approaching completion. Two breakers are on the colliery. Either or both are found to be inadequate to manufacture the supply produced. A new and extensive breaker is also in course of construction, which, when completed, will accomplish the whole work and supersede both the old ones. The character of mining done is opening extensive breastings and extending air-courses and gangways. The breasts have ample width and the pillars sufficient thickness. The excavations and mining are going on extensively, and a large daily shipment is made. This fine colliery was lately sold by Col. J. J. Conner to the present firm. Mr. Conner has the credit of being the first pioneer operator who first entered the Mahanoy basin and sent off coal to market.

Ventilation is governed by atmospheric action generally. The drifts are naturally intakes. The breasts, some of which fall in at the surface, create out-lets, and increase the chances for good ventilation. As these drifts are open, one above the other, in the dip of the seam, they act as lifts in a slope or shaft; hence the air of the lower drifts rises into the upper drift levels, and assists in increasing the ventilating currents, which again increases the draught in the lower drift gangway, and so on as the case requires. A steam fan ventilates the west workings, together with the action of the atmosphere. Thirty breasts are open on No. 1 west gangway, each 10 yards wide, and pillars 6 yards thick. Thirteen breasts are open on the West Skidmore gangway. The air is generally taken in the west drifts; thence into the workings and returns through the pillar headings to the fan. The E vein drift opens at the breaker level; is worked in a mile; is used as an air inlet with several out-lets on the Wild Cat Run drift. The new slope is completed from this level to the surface, and the sinking of the other section is in progress of construction. Four persons accidentally lost their lives at this colliery this year.

No. 19.—WEST LEHIGH COLLIERY.—*J. O. Robinson, Operator.*

Description.—This colliery is situated in West Shenandoah, on the estate of the M'Neal coal and iron company. It consists of a drift opening on the E vein, with east and west gangway openings. The east gangway continues veering north until finally it becomes a north gangway. A slope is sunk 200 yards deep on the south dip of the E vein, at an angle of 25°, with two gangways open in west, and a second out-let, egress and ingress traveling way, and the workings ventilated by a furnace. A slope, with a double track, is sunk 200 yards deep on the south dip of the Primrose vein, at an angle of 17°, with 4 gangways open on it, with an air out-let on either side. The character of mining done here is robbing out the pillars, &c. A slope of double track is sunk on the south dip of the Skidmore vein 100 yards deep, in coal 12 feet thick, and the mines thereof are ventilated by a furnace. The drainage is performed by boiler cages.

Remarks.—The ventilation of these several works are similar in their modes and plans, the air being taken at the lowest points and brought into monkey air-courses and gangways to the working places; thence up into the breasts and returns through pillar headings to the available out-casts.

Ventilation was found inadequate, and the mines in an unhealthy condition. The quantum of air produced was 2,665 cubic feet. Two 15-horse engines are used at the Primrose slope; two 50-horse engines are used at the E slope; one 40-horse engine is used at the Skidmore slope; one 15-horse engine is used at the breaker; one 20 horse, and one 25-horse engines are used at the dirt plane=230 horse power, with 12 good steam boilers, all of which engines, their machinery and tackle, are in good order. The firm contemplates building a large breaker this spring, which will enable them to do a large business.

No. 20.—HOFFMAN COLLIERY.—*Lineaweaver & Co., Operators, old firm; James F. Hardy & Co., present Operators.*

Description.—This colliery is situated 2 miles west of Delano City, in east Mahanoy valley, on the estate of the Delano land company. It consists of a slope, sunk 85 yards deep, on the south dip of the Buck Mountain vain, at an angle of 45°, with east and west gangways open, and an egress and ingress road for men; there are 1,200 yards of gangways, with some 18 breasts open.

Ventilation.—The slope is used for an in-let, the air is split at the gangway levels, and runs in east and west, with plankings on schutes and canvas on the draw-holes; the air passes into the workings, and returns to outlets, which are open in every 12th breast. A furnace on the east gangway ventilates that section. I found the supply of air to be inadequate for proper ventilation.

Remarks.—The present company is composed of a company of co-operative miners. This colliery has been in operation some 12 years, and during that time has passed into the hands of several different parties. The shipments by this colliery reach market by the Western and Erie railway. A 90-horse engine is used at the slope to do the hoisting and drainage, with 4 good boilers attached; a 25-horse engine runs the braker, with 4 boilers, all in good order. The condition of the colliery generally is improving, and the character of the work done is considered safe.

No. 21.—GLENDON COLLIERY.—*J. B. Boylen, Operator.*

Description.—This colliery is situated north of Mahanoy City, on the estate of the Delano land company. It consists of a double track slope, sunk 160 yards deep, on the south dip of the Seven Feet vein, at an angle of 25°, with east and west gangways open on it. A tunnel opens the Skidmore vein a little south of the slope, and a second out-let is open for ingress and egress on the west side. There are 13 breasts working on the east 7 feet gangway; the drainage is effected by cages.

Ventilation.—This is produced by a furnace; the slope is used as a downcast, which traverses east and west, and returns through the works to the out-cast; the steam jets used assist ventilation, of which I have satisfactory notes.

Engines.—Two 50-horse engines are used at the slope, with 4 boilers; a 25-horse engine used at the breaker; a 40-horse engine used at the plane, with 3 boilers=165 horse power; all of which engines, steam boilers, machinery and tackle are in good order.

Remarks.—The operator is sinking a new slope and a shaft, which, when completed, will constitute this colliery one of the largest and best in this district. The mines have been operated some 12 years, and bids fair to last for a number of years longer, as the tract is a large one, and the coal deposit extensive and inexhaustive.

No. 22.—Barry Slope.—*M'Neal Coal and Iron Company, Operators.*

Description.—This slope is situated two miles north of Mahanoy City, on the M'Neal estate. It consists of a double track slope sunk 87 yards deep, on the south dip of the Primrose vein; a fifty yards tunnel opens the M'Neal level on the E vein; the second out-let is located on this level, for a safe ingress and egress for men, if necessary; a furnace is used to supply ventilation; irregular man-ways are open in each breast. The market outlet for coal from this colliery is over the Quakake railway.

Gangways.—Two gangways are open in the colliery, the coal of which is nearly extracted; the coal seam dips at an angle of 45°, which is the most feasible for mining purposes, and very convenient.

Furnace ventilation is used in the mine, with several out-lets traversing the tunnel and ventilates the workings on its outward course. I found an insufficiency of air in the mines, not adequate to supply a necessary quantum for health, or remove the noxious air. I have, however, directed the necessary improvements to be commenced, and a report of its completion furnished me.

Engines.—A 60-horse engine is used in the slope, and a 40-horse engine in the breaker, with 7 good steam boilers, all of their equipments are in ordinary condition; our instructions received due attention.

Remarks.—I directed the enlargement of the air out-lets, to increase the velocity of the air current to furnish a full supply; to change the position of the tunnel doors so as to open against the pressure of the air current, that the air on its passage is not retarded or confused, and to increase the furnace draught; this done, ventilation would be very much improved and the condition of things would appear much better.

No. 23.—M'Neal Slope.—*M'Neal Coal and Iron Company, Operators.*

Description.—This colliery is situated two miles east of St. Nicholas, on the M'Neal estate. It consists of two drifts, one on the Skidmore and one on the Four Feet vein. A slope is sunk on the Primrose vein; the gangway is open in east some 650 yards; here both north and south dips come together, and rises with a western dip; north and south gangways are open some 25 yards; above this level the coal is removed by counter schutes and the character of the mining done is a safe operation.

Engines.—A 15-horse engine is used at the slope, which operates a pole pump and a steam fan and holsts coal; a 40-horse engine is used at the breaker, with 5 good boilers, all of which are in good condition.

Ventilation.—This is produced by the operation of a steam fan and air-holes, which are found inadequate to supply a sufficient quantum of air for miners' use, or to form proper ventilation for workings, but to offset this

deficiency, it is argued the mines do not generate any gases, which fact is not in any way entitled to my attention.

Remarks.—Several breasts are working on the colliery; the extension of gangways still goes on. I directed an ingress and egress slope to be made for men's safety, and also to increase the section area of air-courses; the slope is used as an air intake, ventilates both dips, goes through the basin to the south dip gangway, ventilates these works, and returns to the furnace out-cast; both steam and furnace ventilation is used.

No. 24.—M'Neal No. 2, Colliery.—*M'Neal Coal and Iron Company, Operators.*

Description.—This colliery is situated on the same premises with colliery No. 1, and all coal mined and delivered by this colliery, is manufactured, shipped and handled at a joint breaker. A new shaft was contemplated to be open, but finally abandoned, and a new slope open on a south dip. This estate is a valuable one, and is expected to produce largely; the location is desirable for large improvements; already a small town is erected at the colliery, where a large number of persons get employment nearly the whole year. The population of the neighborhood have ready access to markets at Mahanoy City, Shenandoah City, etc. This firm is rapidly increasing in popularity with their employees, and very few, if any complaints are expressed.

No. 25.—Knickerbocker Colliery.

Description.—This colliery is situated three miles east of St. Nicholas, on the estate of the Philadelphia & Mahanoy Coal company. It consists of five drifts and a slope opening on Waste House run. These drift workings are nearly exhausted. A double track slope is sunk 163 yards deep on the south dip of the E vein, at an angle of 40°. The E or Mammoth vein coal is 25 feet thick, and the thickness of the five coal seams in this colliery is 65 feet. Mining at this colliery this season was not carried on extensively, although the developments are extensive. A second out-let is open in westward.

Gangways.—There are four gangways open in the slope. These breasts, open in these gangways, have each two schutes and are 10 yards wide, with pillars six yards thick, and are headed for ventilation at suitable places apart. The character of mining done here is considered a safe operation.

Ventilation.—The slope is used for a down-cast air-way. The air is divided into splits and brought into the working places by proper contrivances, returning through the workings to the steam fan out-cast. The condition and supply of air was satisfactory.

Engines.—A 40-horse engine is used at the slopes, and a 15-horse engine is used at the steam fan, and a 25-horse engine runs the breaker, all of which, with their boilers and tackle, are in good condition.

Remarks.—This colliery has been 13 years in active operation in drift workings, which now are comparatively worked out. I directed the improvement of the channels of ventilation. I found the quantum of air inadequate for a sufficient supply for the force employed, therefore, a necessity existed demanding the needed improvements.

No. 26.—TRENTON COLLIERY.—*Wooley & Barton, Operators.*

Description.—This colliery is situated west of Delano City, on the estate of the Delano land company. It consists of a double track slope sunk 95 yards deep, on the south dip of the Buck Mountain seam, at an angle of 25°, with gangways open east and west. The wagons are run into the breast workings by slant gangways, which breasts are open 10 yards wide. The pillars are 6 yards thick; the coal is 9 feet thick. The character of work done is considered safe.

Gangways.—Two gangways are in active operation, and were found to be in good ordinary condition.

Ventilation.—The slope is used for a down-cast air-way; the air is split at the bottom of the slope, and is brought in east and west; thence up into the working districts, returning by the headings, and communicates at the fan out-cast, which appears satisfactory.

Engines.—A 50-horse engine is used at the slope, with 3 steam boilers; a 50-horse engine runs the breaker, with 5 steam boilers; a 30-horse steam pump is used in the slope for drainage purposes, and a 30-horse pump to furnish a supply of water.

Remarks.—This colliery is put in operation of recent date. I directed some improvements to be made in the channels of ventilation, and in sundry items of interest in and about the mines and machinery, as appeared proper and necessary for the safety of miners and employees.

No. 27.—DRAPER COLLIERY, Nos. 1 and 2.—*Wm. Draper & Co., (or Hickory Coal Company,) Operators.*

Description.—This colliery is situated at Boston run, south of Gilberton, on the estate of Gilbert & Bros. The colliery has been 12 years in operation. It consists of a double track slope sunk 60 yards deep on the north dip of the E vein, to the same level of the old slope. This new slope will be exclusively used for coal hoisting, while the old one will be used for miners, material and drainage. A new breaker has been built lately; an engine of 25-horse power runs it, with 3 good steam boilers.

Ventilation is produced by a steam fan. The air is practically distributed in the working places, and renders satisfaction.

Remarks.—A 40-horse engine is used at the slope for coal purposes, a 20-horse engine runs the saw-mill, and a 60-horse engine is used for drainage, etc. The shipping capacity is equal to 100 cars per day.

No. 28.—MILLER & MAIZE COLLIERY, STANTON COLLIERY.—*Messrs. Miller & Maize, Operators.*

Description.—This colliery is situated a short distance east of Mahanoy Planes, on the estate of Gilbert & Bros. It consists of a new slope, of a double track, in course of sinking on the E vein, at an angle of 45°. The coal seam is 25 feet thick, and of an excellent quality. The premises are finely located. A 90-horse engine is used in sinking, with 4 good steam boilers, and a 25-horse engine is used to run the breaker, with 2 boilers, all of which engines and machinery are in good condition. At present it is

not necessary to further detail this improvement. A person accidentally lost his life at the breaker in October, by the breaking of the coal schute while it was overloaded; the proping had not all been placed in position at the time. This case has been given over to council; no decision has been rendered.

No. 29.—HANNON & FARRELL, COLLIERY.—*Hannon & Farrell, Operators.*

Description.—This is a small colliery situated west of Ashland, on the former estate of Brock & Bro. It consists of a drift opening on a red ash vein, the coal of which is found to be nine feet thick. The drift has been opened on the anticlimal axis of the basin. Gangways are open on both dips. The seams dip at an angle of 15°. The drift is used for an in-let, and an old counter gangway for an out-let. This method is called natural ventilation. A 10-horse engine is used at the slope, which answers all purposes. The character of work done is considered safe.

No. 30.—CAMBRIAN COLLIERY.—*John Lewis & Co., Operators.*

The Cambrian colliery, owned by Lewis & Atkins, is situated just below Germantown, in Columbia county, and midway between Ashland and Locust Dale, on lands of the late John P. Brock & Bro.; was inspected by me last year, when I ordered some alterations to be made, which, on examination to-day, I found has been fully complied with and satisfactory. They have ceased driving gangways in this level, and the only work now remaining to be done in said lift is to take out pillars. Instructions have been given for the proper and safe working of the same.

Since my last visit I find that the following improvements have been made: A new slope has been sunk 123 yards from the old level and 162 yards from the surface, (for a 40-inch double track,) on the Mammoth E vein, with a gangway sunk 30 yards on a 20-degree pitch. Gangways have been driven east 175 yards with a large turnout, and on the west 35 yards with a turnout. Seven breasts are opened. The breasts will be 10 yards wide and the pillars from 8 to 9 yards. The vein is 30 feet thick, and the coal is of a very superior quality from top of slope to bottom. They have fully complied with the requirements of the law, by making a large out-let for ventilation and opening good air-courses of 30 square feet. The work is all done substantially and satisfactory.

The colliery, with the present facilities, is able to ship about 75 cars daily, and improvements are in course of working for the remodeling of the breaker with new screens, &c., and other additions, to enable them to ship at least from 100 to 120 cars a day. They are also excavating for the erection of a 12-feet fan and a 30-horse engine and a new 14-inch column steam pump, and other alterations, and the whole is so arranged that the working can be done at a very small expense outside.

The improvements now consist of a 40-horse hoisting engine at the new slope, a 40-horse hoisting engine at the old slope, a 30-horse hoisting engine at the breaker, a 25-horse breaker engine and 20-horse fan engine, and 6 good boilers, as per certificate. I am in possession of a map of the colliery. They are also tunnelling to the overlaying vein, which, from present appearance, I am of the opinion and believe will make a number one colliery.

No. 31—Locust Run Colliery.—*George S. Ripplier & Co., Operators.*

Description.—This colliery is situated north of Ashland, on the estate of the Locust Mountain coal and iron company. It has been in active operation some 18 years, under the management of this celebrated firm. It consists of slope openings, sunk in three lifts on the south dip of the E vein 285 yards deep, of two tracks, &c. The coal seam is 25 feet thick. It constituted one of the most productive collieries in the region. Gangways are open east and west. The western seam takes a dip of 20°. A self-operating plane conveys the coal to the slope gangways. The seam forms a flat. The ingress and egress roads are open on the west side. The coal evolves considerable gas, from which occurred a serious accident in June last, which resulted in the death of three miners and the injury of several others.

Gangways.—There are numerous gangways open and producing coal, with breast workings and headings. The character of mining done is considered a safe operation, with very few interruptions experienced.

Ventilation.—This subject is produced by the operation of a steam fan; the slope is used for a down-cast; the air is divided at its base, and taken into the eastern and western working districts, ventilating the working as it returns to the steam fan out-cast, on its outward passage. The quantum of air supplied for 80 men, was found by measurement to be 6,324 cubic feet per minute; this gave a satisfactory result, although a much larger fan I deem necessary for safe practical purposes.

Engines.—A 150-horse power steam engine is used at the slope; a 20-horse runs the steam fan; a 30-horse runs the breaker; a 25-horse operates the dirt plane, with 16 steam boilers=225 horse power. All their equipments and tackle are found in good order.

Remarks.—I have recommended the substitution of a more capacious steam fan for the better mining of coal, and for the safer protection of the men. I have investigated the accident occasioned by the explosion of gas in June last, and found it purely accidental. I pointed out needed improvements for a better safety of men, and the removal of these dangerous and noxious gases, to increase the vigilance of the fire bosses, and to do all necessary things conducive to the health and safety of men.

No. 32.—Elmwood Colliery.—*Lee & Wren, Operators.*

Description.—This is a new colliery, situated in Mahanoy City, west, on the estate of the Philadelphia and Mahanoy coal company. It consists of a new double track slope, now sinking on the south dip of the Primrose vein. The firm is extracting the coal from the old drift pillars. A 50-horse engine is used at the slope, with 4 good steam boilers. A new and substantial breaker has been erected and is in operation, run by a 25-horse engine, all of which are found in good condition. Little else need be said of this improvement in connection with this report.

No. 33.—Cuyler Colliery.—*Heaton Brothers, Operators.*

Description.—This colliery has been 13 years in operation. Is situated at Raven Run, on the estate of Girard heirs. The colliery consists of drift openings on the West Skidmore vein, the coal of which is 14 feet thick.

The seam is generally flat, with a slight degree of elevation. The breastings are open 10 yards wide. The pillars are 6 yards thick. The product of the mine is transported over the Lehigh Valley railroad. Some 1,600 yards of a western run is on the tract. The character of the work done is a safe operation.

Ventilation.—A 10-horse steam fan is used for ventilation, but from the manner in which this system was put in practice, it was found deficient to produce an adequate supply of fresh air for the men in the deep gangway. I further examined the tunnel to this gangway on the E vein. Here I directed a system of ventilation which would be fully effective. The colliery is an extensive one, and has always produced largely from its commencement. No serious accident occurred.

No. 34.—GIRARD MAMMOTH COLLIERY—*Girard Mammoth Coal Company, Operators.*

Description.—This colliery has been 13 years in active operation, and is situated at Raven Run, on the estate of Girard heirs. It consists of a north tunnel excavated through rock some 300 yards, cutting the Skidmore vein, and continuing to the Buck Mountain vein, which was found impracticable for working. East and west gangways are open on the Skidmore vein, with counter gangways for the extraction of the 4 feet vein coal. A new slope is now in progress of completion, and a second out-let is open west of the Mammoth vein.

Ventilation is produced by air-holes, which produce natural ventilation, and is found to do tolerably well. Another drift has been opened south of the breaker and east of the Raven, which has produced largely, but is idle at present. An extended report of this colliery is unnecessary at present; suffice it to say, that the mine has been worked safe, and very little complaint made of its management, except the accident which resulted in the death of Benjamin Lewis, from a fall of coal in his working breast, on the 28th of June; the jury exhonerated the officers of the mine from all blame.

No. 35.—COAL RIDGE COLLIERY.—*Messrs. Longstreet & Berton, Operators.*

Description.—This colliery is situated north-east of Mount Carmel, in Columbia county, on the estate of Coal Ridge coal and iron company. It consists of a double track slope, sunk 200 yards deep, on the south dip of the —— vein, at an angle of 40°, with gangways open in east and west; a drift opened the surface works, which are at present exhausted; a swamp, east of the colliery, obstructs the opening of out-cast air-holes until the excavations approach the hill or high ridge; drainage is produced by water tanks.

Ventilation.—The slope is used as a down-cast. The air, at its terminus, traverses the gangways to their face, thence pass up into the breast workings, returning through headings on its outward course to the out-let. I found an insufficient supply of air in the works, and therefore directed the necessary improvements to be forthwith commenced for the relief of the workingmen. Two 90-horse engines are used in the slope, and a 40-horse engine used at the breaker; a 16 inch pump used for drainage. These engines, with all their appointments, and the 12 steam boilers, are found in good condition.

No. 36.—Shenandoah City Colliery—*J. Oliver Rhoades, Operator.*

[No report.]

No. 37.—Lost Creek Colliery, (late Shenandoah, 2.)—*Philadelphia Coal Company, Operators.*

Description.—This colliery is situated at Lost Creek, two miles west of Shenandoah City, on the Girard estate. It consists of a double track slope opening 130 yards deep, on the south dip of the E vein, on an angle of 65°. The coal seam is 40 feet thick. The north dip is opened by a tunnel. The colliery has been four years in active operation. Col. David Percy Brown is general manager, under whose superintendence the colliery has greatly improved in efficiency and productiveness. With his great experience in and practical knowledge of mines and mining generally, the company's collieries are likely to supply large productions of coal. A careful examination of gangways, breast workings, air, water drainage, pumps, engines, etc., I am pleased to say, shows the colliery has been well ordered. The wagons are lifted on platform cages, which renders their handling safe and less irksome.

Gangways.—There are several gangways and breasts open and ventilated on correct principles. Some panel mining has been introduced by Mr. Brown, which proves to be a success, as nearly all the coal can be extracted with safety, and reduces the cost of production.

Ventilation.—A steam fan produces ventilation; by measurement I found a supply of 7,700 cubic feet per minute. The mine is ventilated on proper principles, with check doors, etc., which remove the noxious air and vapor of the mine, much of which is formed by the locomotive engine in use in the mine, which supersedes mule power, and is found to be by far superior and less expensive. Large accessions have been made to general mining lately, which greatly improve the old system, and the introduction of locomotive power in and outside of mines is one of these improvements.

Engines.—There are 6 engines on the colliery; their aggregate power is 275 horse. There are 12 effective steam boilers in use. All of the engines, steam boilers, machinery, equipments and tackle I found in excellent condition and in charge of competent men.

Remarks.—There are 5 workable coal seams on the tract, whose aggregate thickness exceeds 85 feet; these seams may at any time be opened by tunnels when the present openings become exhausted; they have a run east and west of a mile each way. I made a careful inspection of things generally, and instructed the officers in the manner of making some improvements which would, when completed, result in a benefit to all parties. It appears that from accidents, over which none had control, five persons lost their lives, three of whom died of their injuries.

No. 38.—William Penn Colliery.—*Messrs. S. E. Griscom & M'Manus, Operators.*

Description.—The colliery is situated two miles west of Shenandoah City, on the Girard estate. Its improvements consist of several drifts and a double shaft opening. Drift mining at present consists of robbing out the

old levels. The shaft has a double cage track, and is sunk 85 yards deep on the south dip of the E vein. A second out-let is open 30 yards west of it for ingress and egress; 30 yards east of it a counter schute takes away all the coal mined in the counter gangways. The breasts are opened 12 yards wide, with support pillars 10 yards thick. The character of mining done is gangway extensions, breast working and opening air channels, etc., which is considered a safe operation. These pillars are pierced by manways, to admit of a free circulation of air and for ventilation. The breasts are worked up 80 yards long in coal 40 feet thick, on an angle of 45°; each breast has two schutes, for greater convenience in handling coal, etc. A counter is also open on the out-let, with gangways open on it.

Gangways.—There are numerous gangway openings in the mine; their construction and workmanship is excellent, and drainage good. Mine regulations are enforced, and due respect attended to.

Ventilation.—This matter receives attention; the shaft is used for a downcast air-way; at its terminus the air is divided into splits, brought into the several working districts, ventilates these places, and returns by the pillar headings to the out-cast. A 20-horse steam fan is used to ventilate the shaft workings, but the drift levels are ventilated by numerous air-holes run out to the surface, as natural ventilators.

Engines.—Two 60-horse engines are used at the shaft. Two breakers are used when necessary, one of which is run by a 20-horse and the other by a 40-horse engine; a 30-horse engine runs a saw-mill on the premises; two 70-horse engines are used for drainage; the 7 steam engines used are equal to 300 horse power; they are supplied by 17 steam boilers. Engines, boilers and fixings are all kept in excellent order.

Remarks.—The colliery has been in full operation 10 years. The location is desirable; the tract well timbered. Its market out-let is by the P. and R. R. R. Very little explosive gas can be found. Mining coal is conducted on correct principles and on a safe plan. No serious accident occurred this year. A desire to comply with the requirements of law is openly evinced.

No. 39.—THOMAS COLLIERY.—*Thomas, Cake & Co., Operators.*

Description.—This colliery is situated at Shenandoah, west of city, on the estate of Girard. The improvements consist of a double track slope sunk 125 yards deep on the south dip of the E vein, on an angle of 45°; a pump and traveling way is open in the slope. Mr. J. Wasley has successfully managed the colliery from its out-set; the coal seams on the tract are 48 feet thick; the E vein forms into two benches; the intervening slate seam being only 18 inches thick; a second out-let is open 50 yards west of the slope.

Gangways.—There are several gangways open, with breastings 10 yards wide and 110 yards long; the pillars are 6 yards thick, and are pierced with headings for the free access of ventilation; coal has been mined on correct principles, and ventilation, drainage, etc., good.

Ventilation.—A 10-horse steam fan produces ventilation by a system of air-courses and check doors, which drive the air into the workings, returns through these headings on its outward course to the fan out-cast; by measurement, the supply of air was found to be 4,226 cubic feet per minute, for a force of 28 men, and 4,126 cubic feet per minute on the west side, for an equal number.

Engines.—Two 60-horse engines are used at the slope; a 30-horse breaker engine, a 10-horse steam fan=160 horse power, with 7 boilers, whose condition is not reported; all of which engines and fixtures are well conditioned.

Remarks.—October 21, John Wyatt, a married man, (with wife and child,) was killed by being crushed between wagons and timbers; this case appears to have been an accident, over which no person had control.

Ventilation was moderate; the mines are worked on proper principles, and some attention given to conform with legal acquirements.

No. 40.—UNION COLLIERY.—*Ryan & Anderson, Operators.*

Description.—This colliery is situated in Cunningham township, Columbia county, two and one-half miles north of Ashland borough, near the northern boundary line of Schuylkill county, on the estate of Girard's heirs. The colliery consists of two coal seams—first, the Mammoth seam, 18 feet in thickness, and the Skidmore seam, (but often named the Buck Mountain,) 12 feet thick; the drift is open on the Mammoth seam, on a line with the water level, and open in one and three-quarter miles; both coal seams dip north on angles varying from 38, 52 and 58 degrees. A tunnel opens into the Skidmore vein from the Mammoth gangway, some 600 yards from its mouth, the mining of which is open in east and west; the tunnel is 120 yards long from seam to seam.

Gangways.—Three main gangways are worked in the mine; the original on the E seam is 1¾ miles long, running east; the east gangway on the Skidmore seam is 600 yards long, and the West seam the same length; the upper lift on the Skidmore seam is worked from the lower level of the E seam; 10 breasts are working, each 11 yards wide, with 8 yard pillars; a locomotive is used in hauling in the mines inside, and delivers the loaded cars at the breaker, which is a large saving in stock and provender.

Ventilation.—This is effected by natural means and air-holes opened from the breasts to the surface, and operated by atmospheric and temperature action, nearly like all upper level workings, and mining here is considered a safe operation.

Engines.—The present steam engine necessary is the drift locomotive, of 20-horse power. The breaker engine is a 40-horse power, with three steam boilers, each 33 inches by 33 feet long. This engine prepares the coal in the breaker, hoists the wagons on the plane and runs a saw-mill. Two 60-horse power hoisting slope engines, with the necessary fixtures, have been for some time on the place. The slope is sunk to the water level on the Mammoth seam, but its use at present has been dispensed with. The supply of coal for a number of years yet to come will be very large, which will not necessitate the use of slope workings.

Remarks.—The colliery has a 2-mile run and a deep basin to penetrate. The yield of coal must be enormous, as the seams betray no irregular changes so far as have been developed. The quality of coal is excellent and free from most any impurities. The location is contiguous to the head of the Big Mine Run planes, affording great facility for car accommodation. 150 men and boys are employed in and about the colliery, with 18 head of working stock and a double coal breaker and fixtures, sufficient to prepare 120 cars of coal a day. A donkey supply pump furnishes water to the boilers, &c. 14 blocks of tenant houses, with a large stable, carpenter and smith-shop, an office and private residence, are on the place. Over 2 miles of 35

to 40 lb. rail are laid inside and some 820 yards outside=4,340 yards. Mr. James Keely manages the mining department, whose practical skill has brought new energy to the colliery. Old miners are of opinion that it is one of our best collieries. Only one accident occurred here during the year, which resulted in the crushing of Mr. M'Cleary's arm.

No. 41.—Turkey Run Colliery.—*Southall, Johnson & Dovey, and D. B. Hass & Co., Operators.*

Description.—This colliery is situated west of Shenandoah City, on the estate of Gilbert & Sheafer; it consists of a tunnel opening and a drift, with 4 gangways, on one of which a down-cast air-shaft has been opened on the mountain. The tunnel vein is worked on north and south dips, on either side of a saddle formed by the axis of the strata. A counter gangway is opened on the mountain, from which the coal is delivered by a schute to the lower works, which is a saving in expense and labor.

Ventilation.—This colliery is ventilated by a steam fan, forced to traverse the mines in a manner quite satisfactory. I found, by measurement, that 5,345 cubic feet of air had been supplied per minute for each 50 miners employed. The character of mining done I consider safe.

No. 42.—Indian Ridge Shaft Colliery.—*Kindrick, Davy & Dovey, Operators.*

Description.—This colliery is situated east of Shenandoah City, on the estate of Bowers and others; it consists of a double cage track, sunk —— yards deep, on the —— dip of the E vein; gangways are opened in but a short distance. A second out-let will soon be completed, which will open into Lee, Grant & Co's tract.

No. 43.—Furnace Colliery.—*Atkins & Bro., Operators.*

Description.—This colliery is situated near Gilberton, on the estate of Gilbert & Sheafer; it consists of 2 drift openings, one of which opens the E vein, and the other opens the Skidmore vein; the seams dip 45° south; the mines lately are worked by counter gangways. A tunnel opens the E vein southward, with gangways open in east and west; the breasts are open 10 yards wide, with supports 6 yards thick; the seams of the Skidmore and E veins are fully developed on this tract. The mines are ventilated, and the drifts are used as intake air-courses, brought into the Mammoth vein tunnel, there it is divided into splits traversing east and west by doors, then it is forced into the breast workings and returns through heading to the out-cast furnace shaft. By measurement, I found a supply of air equal to 12,000 cubic feet of air per minute for 30 men. I directed some improvements to be made in the mining of some breasts. An accident occurred in the mine on the 19th of July, which resulted in my brother's death, who leaves a widow and 5 children. The jury, in this case, rendered a verdict of accidental death, over which no person had control.

No. 44.—Primrose Colliery.—*Caldwell, Connant & Co., Operators.*

Description.—This colliery is situated north of Mahanoy City, on the estate of the Delano land company. It consists of a slope and drift openings on the Primrose vein. The slope is open on the high grounds and sunk to the drift level some 73 yards deep, and is still sunk 51 yards deeper to the basin of the seam. 60 yards of a south tunnel opens the Primrose and E veins, the coal of which is 16 feet thick, with gangways open in east and west with breasts workings, each of which are 10 yards wide, and the pillars are six yards thick. Another tunnel opens the Holmes vein from the Mammoth vein. An out-let on the Holmes vein will accommodate the whole mine.

Ventilation.—A 12-horse steam fan ventilates the mine. The slope is used for an intake. The air is divided at its terminus into splits and traverses inward into the working places; thence through the headings on its return to the fan out-cast. By measurement I found the supply of air was 4,213 cubic feet for 26 men.

Remarks.—The Primrose east and west gangways connect at a point 400 yards east in forming a small basin, with breasts opening out, radiating from this oval gangway, which are ventilated by a furnace arrangement. The supply of air found here was 3,014 cubic feet per minute for 30 workingmen. This quantum I consider was inadequate for the health of the miners. I had instructed the officer in charge to make some needed improvements in ventilation and other necessary matters for the safety and health of persons employed in the mine.

No. 45.—Keystone Colliery.—*William Kendrick and John Dovey, Operators.*

Description.—This colliery is situated west of Ashland, near Locust Dale, on the estate of Brock & Bro. It consists of drift and slope openings. The drifts are nearly all worked out. A double track coal slope and a single track pump slope are sunk 145 yards deep on the north dip of the E vein, at an angle of 68°, with gangways open in east and west. The pump slope is used for a second out-let. An up-cast is formed of this slope, with a 40-horse steam fan located in it, and is used for ventilating the mine. The coal seam is 28 feet thick, and generates gas profusely. The character of work done is excavating gangways and breast workings, which is conducted on systematic principles.

Gangways.—There are several gangway openings on the drift lifts. Mostly all their coal has been extracted, but for the purpose of assisting drainage and ventilation are kept open and in good ordinary repair.

Ventilation.—This operation is produced by the action of a 40-horse steam fan. The slope is used for a down-cast. The air is divided into splits and passes into the face of the workings into the several districts, returning by the headings in the pillars to the fan out-cast. A considerable amount of carburetted hydrogen gas is evolved in the mine, which necessitates the use of the Davy lamp by the miners. Although every precaution is used by the officers and men to guard against accidents, two persons lost their lives by other accidents than explosions, and one person by an explosion of gas.

Engines in use.—Two 80-horse engines are used at the slope; a 500-horse Bull engine is used for drainage; a 50-horse runs the breaker; a 60-horse

hoist in the dirt plane, and a 40-horse steam fan; in all 6 engines=810 horse power, with 22 steam boilers in use, all of which I found in good condition.

Remarks.—Since the new lift has been successfully put in operation, and the channels for good ventilation are securely managed, very little danger need be apprehended, should the colliery be operated in conformity with the requirements of law. This is one of Mr. Kindrick's specialities in mining, to first substitute strong supports, effect good ventilation, employ vigilent, competent men in his service, who have a just regard for the miners' interest as well as his own; being a good practical miner himself, he is intelligently conversant with all the minutia of the mine. No doubt under his management, the colliery will last and be made remunerative for a number of years.

No. 46.—Locust Dale Colliery.—*George H. Potts & Co., Operators.*

Description.—The colliery is situated at Locust Dale, Columbia county, on the estate of the Locust Dale coal company. It has been 18 years in active operation. It consists of drift and slope openings; the slope consists of a double track sunk 310 yards deep in two lifts on the south dip of the E vein, at an angle of 45°, with gangways open east and west; an upcast is open from the lower lift, which is connected to the steam fan outcast; a pump slope has been lately opened east of this slope, which is used for an ingress and egress traveling road for the safety of miners. The air traverses in air-courses made over the gangways; both the new lift gangways are extended in 70 yards each; another out-let will soon be available 60 yards west of the slope, for an additional security for men.

Gangways.—All the old gangway works are nearly exhausted. The breasts are generally open 12 yards wide. The coal is 26 feet thick. The chain pillars are 25 yards thick, left to support the old gangways from falling in; this is a commendable act.

Ventilation.—This is produced by the operation of a 12-horse steam fan. The air is divided into splits at the foot of the slope, made to pass into the working districts by a monkey air-course made over the gangways; on its return it passes through the breasts and pillar headings, and communicates at the fan out-cast. I found, by measurement, 5,224 cubic feet of air had been supplied per minute to 30 men, yet this supply is still inadequate.

Remarks.—I made a careful examination of the mines, workings and drainage, also of the engines, steam boilers, machinery and tackle, and am able to say that things appeared satisfactory. Several good coal seams can be opened by tunnel when necessary. Davy lamps are necessarily used by some miners. Eventually a larger steam fan will be needed, or another west of the slope to ventilate this district.

In connection with this subject, it may not be out of place to say that at the Locust Dale colliery Mr. Potts first put the Beadle steam fan into practical use; nor had it been practically used in England at that time, which was, I think, in 1855. Mr. Louden Beadle then superintended the mining department at this colliery, and happily conceived the idea of ventilating our deep and pitching coal seams; this produced good results, and at present supersedes all other modes known to the mining public. For this excellent idea, and the practical aid it has rendered to humanity, a patent has been granted at the patent office, Washington, to Mr. Beadle, which wipes out any claims put forward by other inventors.

P. F. M'ANDREW.

No. 47.—E. S. SILLIMAN COLLIERY.—*Romel, Hill & Harris, Operators.*

Description.—This colliery is situated on the north suburbs of Mahanoy City, on the estate of the Philadelphia and Mahanoy coal company. It consists of five drifts, and slope openings, all of which drifts are open west in two or three lifts, which excavations are open in for a long distance. Most of the coal reached by these openings has been extracted, and of what still remains a large portion is available. The upper lifts are ventilated by furnace and atmospheric action. A double track slope is sunk 100 yards deep on the south dip of the Seven Feet vein, on an angle of 25°, with gangways open in east and west. This is a new enterprise, and lately put in operation. The machinery is so arranged as that the coal, when hoisted out of the mine, is at once delivered into the breaker—an exceedingly advantageous arrangement.

Gangways.—Only two gangways are yet open, some 370 yards, and breast-works commenced. An out-cast, for ventilation, is open on the west gangway to the surface.

Ventilation.—This is produced by the operation of a steam fan, 10-horse power; the air is divided into splits at the foot of the slope, made to pass in on the gangway level, thence into the working places, returning through headings to the out-cast.

Engines.—A 100-horse engine is used at the slope for hoisting coal and for drainage, and a 30-horse engine at the breaker, with 10 steam boilers, all of which are in good condition.

Remarks.—By measurement, I found the quantum of air supplied for 43 miners was 4,226 cubic feet per minute. A tunnel open south cuts the Skidmore vein, and one open north cuts the E vein. The Skidmore seam is 8 feet thick, and the E vein is 16 feet thick. There are five seams of coal on this tract, all of which can be made available by tunnels on every lift, until the basin be reached. This colliery has its out-let to market by the P. and R. R. R., and constitutes one of the twenty-six collieries surrounding Mahanoy City.

No. 48.—JACOB LAWRENCE COLLIERY.—*Lawrence & Co., Operators.*

Description.—The colliery is situated at the Mahanoy and Broad Mountain New planes, on the estate of Gilbert and others. It consists of a slope opening. A double track slope is sunk 100 yards deep on the north dip of the E vein, at an angle of 55°. The coal seam is 46 feet thick. The operation of mining is carried on here on a large scale; the mine proved regular from its commencement. The character of mining done is directed on correct principles. A tunnel opens the Seven Feet vein. A second out-let is in course of construction for a road for men and animals. The condition of the mine is good.

Gangways.—There are 6 gangways open in all, with a number of breasts working; counter gangways are used, to enable the breast workings to be shortened, and to decrease the great labor of mining.

Ventilation.—The slope is used for a down-cast, the air is divided at the bottom into splits brought in by the lower gangway level to their faces, thrown up thence into the working places, and through these districts returns to the steam fan out-cast. I found, by measurement, that 9,224 cubic feet of air supplied, per minute, 75 workingmen.

Engines.—Three steam engines are in use=105 horse power, with 7 good steam boilers, the condition of which I found to be good.

Remarks.—The slope has a stepped traveling road all through; none but the quota of 10 men are allowed to ascend or descend at a time. A desire is manifest, by the officers and men, to comply with the requirements of the statute law. I directed some needed improvements in connection with ventilation and safety of workingmen, and such other matters as were deemed necessary and proper. No accident of a serious character occurred during the year. Very little trouble is experienced from the effects of gas, for the business of the colliery is conducted on proper principles.

No. 49.—GIRARD COLLIERY.—*Beatty & Garrettson, Operators.*

Description.—This colliery is situated east of Girardsville, on the Girard estate; it has been in operation some 16 years, and consists of 2 openings; a drift, opened on the water level, works all the upper coal seam. A double cage-way shaft is sunk 174 feet deep on the E vein to this water level, with additional gangways open east and west. The seams dip 60° north of the south seam; the south coal seam dips at an angle of 45° east of the tunnel, and the coal is nearly exhausted. One hundred yards west of the shaft a tunnel opens the north dip of the E vein, with gangways open in east and west. A new slope 124 feet deep has just been sunk on the 6 feet seam, which will, when in active operation, yield largely.

Gangways.—The gangways in the old workings are extended to the boundary line of the tract. The character of mining doing here, is robbing out pillars, etc.

Ventilation.—A 20-horse steam fan produces ventilation; the shaft and slope are used for down-casts; the air is separated into splits at the bottom of each, and conducted through these tunnels into the gangways, thence by stop-door contrivances into the working districts, which it ventilates on its outward return to the fan out-cast. Some satisfactory improvement has been made in regard to ventilation this year.

Engines.—Four steam engines are in use; a 20-horse engine runs the steam fan; a 60-horse engine hoists at the shaft and runs the breaker, and two 60-horse pumps at the slope=200 horse power, with 12 steam boilers. All of which engines, steam boilers, machinery and tackle, are kept in a satisfactory condition by competent persons who have them in charge.

Remarks.—September 18, John Masters, an employee, came to his death by accidental drowning in the slope, while in the act of reaching for some material. The jury rendered an exonerating verdict. Several coal seams may be opened by tunnels on the present lift level, before the necessity of sinking deeper. I have observed due respect and submission evinced by the officers of the mine to conform with the legal requirements.

No. 50.—KOHINOOR COLLIERY.—*Richard Keckscher & Co., Operators.*

Description.—This famous colliery is situated west of Shenandoah City suburbs, on the estate of Gilbert & Shaeffer. It consists of a double cage track shaft, constructed on the most approved modern English plan in all its dimensions, and its proprietors claim for it to exceed, in excellence and style of finish, anything in its line in this country, not excepting the English or

Belgic shafts. The shaft is sunk 420 feet deep to the basin of the Mammoth or E vein, whose angle of dip does not exceed 12°. In sinking the shaft a 10 feet vein was cut through, and gangway turned on it, and mining has since been successfully continued; its coal seam is 10 feet thick, and found regular throughout; both seams are worked together in the shaft. A second out-let is open 160 yards south, on an easy grade for ingress and egress, following the regular grade of this second out-let brought its opening out on intervening lands claimed by the Thomas coal company, who obstructed its use under their title to the premises; this action on part of the Thomas coal company brought on a litigation.

Engines.—The steam power in use consists of 5 engines=211 horse, with 8 steam boilers, 4 of which are of common pattern, and 4 of the Gerner pattern; the water is so arranged as to be considered safe under ordinary care.

Ventilation.—This is produced by the operation of a 20-horse steam fan; the shaft is used as a down-cast; the air is here divided into splits and brought into the different working districts, ventilating these places on its return to the fan out-cast; as yet the place is not fully developed for established ventilating channels, as the excavations increase and the extensions of gangways advance, a more correct system will then be established for permanent ventilation.

Remarks.—By an accidental explosion of a blast, David Perong received mortal injuries, from which he died April 26, after a few hours suffering—left a widow and seven children. September 13, Jacob Smith died from injuries received on the 7th, by the premature explosion of powder, leaving a widow and four small children. Juries in each case rendered verdicts of accidental death. The regulations of the colliery are excellent, and in descending and ascending the shaft the utmost attention is given to conform with the requirements of the statute law. Working of the mines is conducted on correct principles; the coal seam of the E vein is 46 feet thick; the dip of the synclinals are adoptable for easy drainage. The coal is broken by machinery at the surface, then elevated some 60 feet to schutes, which distribute it into sizing screens and separators, by which plan a large expense is saved in handling the coal and its impurities. The location of the necessary buildings is on level ground; having no other advantage for erecting improvements, it, of course, necessitated expensive buildings suitable to support such enormous weight and jarring of machinery.

No. 51.—Plank Ridge Colliery.—*William Grant & Lee, Operators.*

Description.—This colliery is situated in Shenandoah City, on the estate of Bowers and others; it consists of a shaft and slope openings. The shaft is 100 yards deep, having 2 cage tracks, with gangways open in east and west. The shaft has been in operation some 12 years. The character of work-doing is robbing out the pillars, etc. A double track new lift slope is sunk some 120 yards deep on the south dip of the E vein, with gangways open in east 675 yards and on the west 300 yards. The coal in these openings is reserved until needed, except some breasts on the west side. The supply of coal on this tract is very large and the quality good. Fire-damp gas is produced in the mine to some extent.

Gangways.—There are numerous gangways open in the mine, which are kept in good order. The drainage is good, and all the working places are properly secured.

Ventilation.—This is produced by the operation of a steam jet thrown up a section of the shaft, which is partitioned off for that purpose, which is not at all satisfactory to supply sufficient ventilation for a large body of miners.

Engines.—Four steam engines are in use, as follows: A 60-horse engine is used at the shaft; a 30-horse engine at the dirt plane; a 40-horse engine at the breaker, and a 40-horse engine at the slope=170 horse power, with 10 steam boilers, all of which are in good order.

Remarks.—This colliery has been in successful operation 11 years. The new lift will continue to produce largely for a number of years to come without a necessity to resort to sinking deeper. I have instructed the improvement of ventilation for the safety of the men. On September 29, John O'Brien lost his life by a fall of coal—accidental.

No. 52.—GILBERTON COLLIERY.—*Gilberton Coal Company, Operators.*

Description.—This colliery is situated at Gilberton, on the estate of Gilbert and others. It has been in operation 13 years. It consists of two slopes. The old slope has a double track sunk 100 yards deep on the south dip of the E vein. All the gangways and breast workings are completed, and mining coal is resorted to by robbing out pillars. The new slope is 210 yards deep with single tracks at top and bottom. The angle of dip is 47°, with gangways open in east and west. The slopes are 50 feet distant. The old slope is used for a steam pump and drainage. Two 90-horse engines are used for this purpose, with very satisfactory results.

Gangways.—There are some 2,200 yards of gangways open on the old slope level. In the new slope there have been 1,200 yards of gangways opened; these are all kept in good condition.

Ventilation.—A 12-horse steam fan produces ventilation. The new slope is used as a down-cast. The air is divided in splits and brought in by the gangways, and by other contrivances is forced into the workings, ventilating these places on its outward return trip, communicating at the fan outcast. By measurement I found 413 cubic feet of air for the supply of 50 miners; this quantum I think insufficient in long gangways.

Engines.—Two 90-horse engines are used for drainage; a 200-horse steam pump is used in the slope; a 16-horse engine runs the steam fan; a 60-horse engine is used at the new slope; a 40-horse engine is used at the old slope, and a 30-horse engine runs the breaker. 12 steam boilers are in use. All these engines, steam boilers, machinery and tackle were found in good order and well conditioned.

Remarks.—A desire to comply with the requirements of law is manifested by officers and men. I directed some improvements to be made in ventilation, for the better health of miners. The manner in which the mine is managed reflects credit on its officers.

No. 53.—CENTRALIA COLLIERY.—*J. M. Frack, Operator.*

Description.—This colliery is situated east of Centralia, in Columbia county, on the estate of the Locust Mountain coal and iron company. It has been some 14 years in operation. It consists of a double track slope sunk 320 yards deep in two lifts, on the south dip of the E vein, on an angle of 62°. The coal seam is 25 feet thick. A pump and traveling way is

open in the slope. East and west gangways are open. The character of mining done is extending gangways, opening and mining breastings, etc., which is considered safe. The drainage is good, and the permanent appearance of the workings is favorable.

Gangways.—The west gangway is open in 750 yards, with 41 breasts open and full of coal; the east gangway is 521 yards in, with 15 breasts open; all these breasts have double schutes; the breasts are open 10 yards wide, and run up 80 yards. The pillars are 6 yards thick, and headed at regular intervals.

Ventilation.—A 15-horse steam fan produces ventilation, the slope being used as a down-cast; the air is divided at the bottom and conducted in splits into the working districts, ventilating these places on its return to the out-cast. The condition of ventilation is good.

Engines.—Five steam engines=270 horse power, with 12 steam boilers, are in use, all of which, with the machinery and tackle, are in good condition.

Remarks.—I directed some improvement in the mode of ventilation of this colliery. It is one of the best in my district for safety. Two hundred hands are employed in and outside of the mine.

No. 54.—Excelsior Colliery.—*James Cleaver, Operator.*

Description.—This small colliery is situated at Ashland, in its northern suburbs, on the estate of Brock & Bro. It consists of a new slope sunk 80 yards deep on the south dip of the Six Feet vein, on an angle of 40°. Two gangways are open on this colliery=1,450 yards. The breastings are open 10 yards wide, with 5-yard pillars. A 20-horse engine is used at the slope, with 2 steam boilers, and a 10-horse breaker engine.

Ventilation.—The old drift is used for an intake on the east, and opens air-holes out at intervals of 200 yards; in these a furnace is as often changed as a new out-let is open, and closing the latter opening to form the draught. Headings are often open in the pillars at intervals of 15 yards in length. Ventilation was not measured.

No. 55.—St. Nicholas.—*F. & E. D. Denison, Operators.*

This colliery is situated at St. Nicholas, on the estate of the Philadelphia and Mahanoy coal company. The colliery has been 15 years in operation. It consists of a double track slope sunk 122 yards deep on the south dip of the E vein, on an angle of 50°. The developments of five veins may be made available by a tunnel—the E, Seven Feet, Four Feet, D and B seams. The character of work doing is the extension of gangways and breastings. I found the drainage good.

Ventilation.—A 16-horse engine produces ventilation. The slope is used as a down-cast. The air is split at the bottom; taken in on the gangways; passes up into the working districts and ventilates these places on its outward passage. I found its condition to be good.

Engines.—There are six steam engines in use at the colliery; two 60-horse engines are used at the slope; a 60-horse engine runs the breaker and saw mill; a 16-horse engine runs the steam fan, and a 60-horse drains the lower lift. There are 12 steam boilers in use, the condition of which is good.

Remarks.—This colliery has been, from its commencement, one of the largest producing collieries in the district. There are five workable coal seams on the tract. First in the basin is the Primrose vein; 300 feet north of this lies the Mammoth vein; 30 feet north of this lies the Four Feet vein; 50 feet further north lies the Seven Feet vein; 180 feet north of this lies the Skidmore vein, and 300 feet further north lies the Buck Mountain vein. These measures have been taken from the cross section of the south dip. All these veins can be developed by tunnels; and ventilation may be made available in either or all the seams as they come up to the surface in easy mining on a 50° dip.

No. 56.—Bear Run Colliery.—*Wiggan & Treibles, Operators.*

Description.—The colliery has been in operation 12 years. It is situated west of St. Nicholas, on the estate of the Philadelphia and Mahanoy coal company. It consists of a double track slope sunk 200 yards deep on the south dip of the E vein, on an angle of 42°. A pump and traveling road is available in the slope. The gangways are open in east and west. There have been 6 drifts open on the colliery, the coal of which is nearly exhausted.

Gangways.—The slope west gangway is open in 1,400 yards; 75 breasts were worked on it, generally 12 yards wide, and 6-yard pillars. The east gangway is open in 600 yards, with 30 breasts open on it, of like dimensions. A tunnel opens the Holmes vein south of the slope, with gangways open on it 62 yards west of the slope; another tunnel opens the E vein, and continues this tunnel 45 yards; still further it opens the Seven Feet vein, and still further on the tunnel is continued and opens the D or Skidmore vein 65 yards off=165 yards of a tunnel through solid rock.

Ventilation.—A 20-horse steam fan produces ventilation; 600 yards west of the tunnel a down-cast is open from the surface; the air is brought in by monkey air-courses, along the gangways, to the working places; all the working districts are thus ventilated by air, and on its return outward it passes through the working places until it finally passes out at the fan.

Engines.—There are 4 steam engines in use=166 horse power.

Remarks.—This has always been an excellent colliery, and properly managed. These expensive tunnels, in the out-set, are great objections to developments, but in proper time become remunerative. The location is desirable for a colliery, and the present firm have gained for themselves an excellent name among the employees and public. I have no casualties to report, nor any complaints made by the workingmen of the place.

No. 57.—Bear Ridge Colliery.—*Day, Huddell & Co., Operators.*

Description.—This colliery is situated north of the Mahanoy planes, on the Girard estate; it consists of a double track slope, sunk in two lifts or 240 yards deep, on the south dip of the E vein, on an angle of 56°; the coal seam is 40 feet thick. A pump slope 100 yards deep, and opened east of the elevating slope, is used for draining the level to which this pump slope is sunk, the coal of which is nearly exhausted. Gangways have been opened on the deep slope east and west, and an out-let has been opened on the west gangway, which has its communication with the fan out-cast shaft. A second out-let is in course of construction, which will connect both these

lifts, and make a safe ingress and egress for miners. The condition in which I found this colliery is very satisfactory.

Gangways.—The new gangways are large and well timbered, opened in 90 yards each, with 3 breasts aside, double schuted, each 8 yards, with 6-yard pillars.

Ventilation.—The slope is used as a down-cast; the air is split at its terminus, and forced in east and west by the monkey air-courses along the gangway to the face of the working places; a 15-horse steam fan is used for producing ventilation, and as the operation of the steam fan influences the air current, it passes through the inside workings and returns to the fan out-cast.

Engines.—There are 6 steam engines used at the colliery; a 50-horse slope engine; two 80-horse engines used at the new slope; a 200-horse pumping engine in the old slope; a 50-horse breaker engine; a 15-horse fan engine, and a 50-horse pole pumping engine=525 horse power, with 16 boilers, all in excellent order and condition.

No. 58.—New Boston Colliery.—*New Boston Coal Company, Operators.*

Description.—This colliery is situated 2 miles south of Mahanoy City limits, on the estate of the New Boston coal company, and has been 8 years in operation. It consists of two double track slopes, sunk 110 yards deep, on the south dip of the D vein, at an angle of 33°, with gangways opened in east and west; as the D or Skidmore seam underlies the E or Mommoth vein some 60 yards, and the basin rising to the out-crop on an easy grade, as the seam approaches eastward, it is supposed that the E seam does not reach this slope with its out-crop at this point, as it had not been discovered on these sinkings, and this theory is satisfactory in the absence of better proof. A pumping slope is sunk the same depth as the coal slope, and an additional one for an out-let, on which is located a 20-horse steam fan.

Gangways.—There are two main and two counter gangways opened on this colliery; the west gangway has no counter parallel to it; the counters are on the east side of the colliery; as the western gangway approaches west, its grade is raised for drainage purposes; the surface recedes rapidly, which causes the breasts to become shorter as they become opened in west. The eastern district is more fortunate, as the case is dissimilar; all the breasts have double schutes.

Ventilation.—A steam fan produces ventilation, and is located west of the slope; the slope being used as a down-cast, the principal split of air is used on the eastern district, which ventilates the lower gangways and breast workings, when it passes up into the counter gangways and their workings, returning to the out-cast by over-casts in the slopes, and out by the fan.

Engines.—A 40-horse double acting steam pump is used in the slope, two 90-horse engines are used for hoisting coal, a 40-horse breaker engine in use to prepare coal, with 13 steam boilers, all of which, with their machinery, fixings and tackle are in good order.

Remarks.—This mine had been idle for some time; the colliery may be classed among the best in that region; the supply of air furnished had not been measured at the time, as I intended to make a fuller report on my next inspection.

No. 59.—Preston Colliery, No. 2.—*Buckley & Moody, Operators.*

Description.—The colliery is situated near Girardsville, on the estate of the Preston coal and iron company. It consists of a new lift, a double track slope sunk 115 yards under the water level, making a slope of 150 yards deep on the south dip of the E. vein, on an angle of 48°, with gangways open in east and west. The old slope is situated some distance east of it, and sunk to the water level at that point; the old slope served the double purpose of an inclined plane and a coal slope, which, during its time produced largely. The improvements are well located.

Gangways.—East and west gangways are open on the new slope, with air-courses open along these gangways for the purpose of ventilating the workings at any convenient point; the breast is opened 10 yards wide, with 8-yard pillars.

Ventilation.—A 30-horse steam fan will be used in future; at present ventilation is produced by other means; carburetted hydrogen gas is evolved to some extent; to provide against this most destructive element, a large steam fan will be used; the new lift to be used for a down-cast, the air conducted into the working districts in proper splits, and returning by the pillar headings to the fan out-let; this plan will prove satisfactory.

Engines.—Two 60-horse engines are used in the old slope; a 25-horse is used to run the breaker; a 40-horse is used at the new slope, and a 10-horse is used for fan=195 horse, with 15 steam boilers, all of which are found in good order.

Remarks.—A second out-let for egress and ingress is open 26 yards east of the slope, and a pump road with 18 yards of a pillar between this out-let and the pump road; an up-cast for ventilation is open on the west lower lift gangway, on which the steam will be erected. The colliery has been thoroughly put in order at heavy cost, but from the fact of its former productiveness, it is hoped its future will be a success.

No. 60.—Preston Colliery, No. 1.—*Buckley & Moody, Operators.*

Description.—This colliery is situated at Girardsville, on the estate of the Preston coal and iron company. It consists of two drifts on the Diamond Red Ash seam; one opens on the Skidmore vein, with east and west gangways, with 1,500 yards of openings on them of breast workings.

Ventilated by a 10-horse steam fan; a 50-horse engine is used at the breaker. The Skidmore seam is nearly worked out, with 1,600 yards of breastings on it. Coal good at its face, and worked to the tract line.

Remarks.—It is gratifying to learn that, except one accident at Preston, No. 3, the four Preston collieries had no serious injury this year, where last year there were nine cases of deaths by accidents. This result is chiefly due to regulations in conformity with law. All these collieries have of late passed into the hands of Mr. Kendrick by lease for a term of years, given by the P. &. R. R. R. Agency.

No. 61.—Union Colliery.—*Emanuel Bast & Co., Operators.*

Description.—This colliery has been 18 years in operation. It is situated at Big Mine Run Gap, east side, on the estate of the Bast and Commercial

Bank. It consists of four drift openings and a slope, double track, sunk 274 yards deep on the south dip of the E vein, on an angle of 46°, with an additional trestled slope or incline plane of 50 yards to the slope=324 yards in length. The coal seam is 40 feet thick. Drainage is effected by a 60-horse steam pump. A second out-let is open east of the slope. 1,275 yards of east and west gangways are open on the lower lift, with breastings 10 yards wide and 6-yard pillars. The air is well conducted in its operation in all parts of the mine.

Gangways.—There are two gangways open on the lower lift 1,275 yards long, with breasts and pillars. The pillars are untouched. Five upper level gangways are on the Skidmore drifts, in two lifts, on its south dip, on an angle of 27°. The coal seam is 15 feet thick. The breasts are 8 yards wide with 6-yard pillars. The works are ventilated by natural draught.

Ventilation in general.—A 20-horse steam fan produces ventilation in the slope workings. The slope is used as a down-cast. The air divides into splits and passes inward to the face of the working districts by means of monkey air-courses; thence up into the breast workings, and returns through the headings outward to the fan out-cast, rendering satisfactory results.

Engines in use.—Seven steam engines=515 horse power, with 20 steam boilers and fixings, which were found in good order. The water is so arranged in these boilers as to be considered safe under ordinary care

Remarks.—By measurement I found the supply of air for 60 men to be 3,370 cubic feet per minute. The seam generates a large amount of carburetted hydrogen gas. Davy lamps are used by the miners in many parts of the mine. Such instructions were given to make the necessary improvements in ventilation and exit and ingress means of escape in case of accidents as seemed proper. Evidence of a willingness to comply with the requirements of law is fully evinced by the officers and men in the colliery.

No 62.—Big Mine Run Colliery.—*Taylor, Lindsay & Co., Operators.*

Description.—This colliery has been 18 years in active operation. It is situated at Big Mine Run Gap, west side, on the estate of the Locust Mountain coal and iron company. It consists of a slope and drift levels. A double track slope is sunk 112 yards deep on the south dip of the E vein, under the water level of the drift gangways, with gangways open in east and west, with breastings 10 yards wide and 6-yard pillars, with headings open at suitable intervals in their whole length for free ventilation. The E seam dips at an angle of 42°. The coal is 40 feet thick.

Gangways.—The slope east gangway is in 90 yards and finished; the west gangway is in 1,800 yards. The character of work doing is robbing out pillars. No. 1 drift gangway, on the Skidmore vein, is 600 yards; No. 2 drift gangway is 750 yards; No. 3 drift gangway is 600 yards=1,950 yards of gangways, with 30 working breasts, each 10 yards wide, and 6-yard pillars.

Ventilation.—In the slope workings the slope is used as a down-cast. The air is split at the bottom and brought in on the gangways to the working districts; on its return outward it ventilates the workings, passes through the pillar headings and connects at the out-cast, where a powerful

steam fan is located on the Little Mine run, arranged and operating satisfactorily. The drift workings are all ventilated differently by atmospheric action or natural draught. The drifts are used as in-let air channels, having check-doors placed in positions which throw the air up into the working places, where and when necessary. If its temperature is higher than that of the outer atmosphere, ventilation is in consequence accelerated; if not, it becomes retarded. The coal seam in this colliery produces an amount of carburetted hydrogen gas, but the manner in which ventilation is controlled little danger need be apprehended.

Engines.—Six steam engines operate the colliery=240 horse, with 19 steam boilers, all of which engines, steam boilers, machinery, appointments and tackle are in good condition.

Remarks.—This colliery has been operated by Gideon Bast, Esq., from its incipiency until lately, when age required rest and silence from the arduous and active duties occasioned by the wearing life of a coal operator, who is never free from anxiety and toil of body and mind; and thus it was with Mr. Bast for the space of 42 years, through all the vicisitudes of the fickle coal trade. With unprecedented credit he successfully conducted his business, without inflicting losses on others or sustaining any himself.

I beg leave to digress from my purpose to pay him this compliment on my own and the part of thousands of others who shared his modest friendship; but, in saying this much for my friend, other deserving men in the coal trade must not be forgotten, many of whom are equally industrious but less fortunate. The phantoms of the fickle mine often lured them into labyrinths inextricable, some of whom perished whilst others bloomed; and thus it is with ambitious votaries, some of whom are smiled upon whilst others again are frowned.

P. F. M'ANDREW.

No. 63.—MAHANOY COLLIERY.—*Bedford, Cox & Co., Operators.*

Description.—This colliery is located north of Mahanoy City, on the estate of the Delano land company. It consists of a rock tunnel open in north, and opens the Black Diamond seam 15 yards from its opening; the seam dips at an angle of 35°. This tunnel is continued to the north 72 yards, and opens the Skidmore vein. These veins are open with east and west gangways, and breastings each 10 yards wide, and 6-yard pillars. The Diamond seam is 8 feet thick; the Skidmore vein is 9 feet thick. An out-let is open from the Skidmore gangway to the surface. The tunnel is still continued in north 23 yards, and opens the Seven Feet seam, with gangways open east and west, which are each 85 yards long. Still further north, 23 yards, the tunnel opens the celebrated Buck Mountain seam, with 1,100 yards of east gangway open on it; the west gangway is 900 yards long; the seam is 16 feet thick; these breasts run up 80 yards, are 8 yards wide, with 5-yard pillars; these pillars are headed in 15-yard distances, for ventilation. The tunnel is used as an in-let air-course for all these works; the air is split into sections by doors and contrivances that, by their united action, the air is diverted into the workings, and by the atmospheric action of the outside temperature this air of the mine is attracted outward, giving it a simple current in the workings as to cause ventilation. Another gangway is open on the south side, in the Skidmore seam, but proved faulty

The steam power used at this colliery is a simple 40-horse engine to run the breaker and a 6-horse to pump water, with 4 boilers. The wagons are elevated on an incline plane to the top of the breaker, where the coal is unloaded and handled, and put through suitable machinery, requiring no other additional steam power than that already described.

No. 64.—HAZLE DELL COLLIERY.—*Robert Gorrell, Operator.*

Description.—The colliery is situated east of Centralia, in Columbia county, on the estate of the Locust Mountain coal and iron company. The colliery has been 16 years in active operation. It consists of a slope sunk 324 yards deep on the north dip of the E vein, on an angle of 35°. There are 4 tracks in the slope. The coal is 35 feet thick. The character of mining done is extending gangways and breastings, which operation is conducted on safe principles. The slope is sunk on its third lift.

Gangways.—There are very extensive gangway openings in this celebrated mine, which it is not necessary to detail here, further than say the breasts are open 8 yards wide, and run up 80 yards, with 6-yard pillars, headed for ventilation. Some of the upper gangways are robbed out and suffered to fall in.

Ventilation of the mines is produced by the operation of the atmosphere, which is almost indescribable, from the numerous workings and air-channels from the third, second and first lifts of the slope, with the many out-lets and escapes at the surface, and the many escapes which are broken through the old lift. Suffice it to say, the mines are worked tolerably safe, and though ventilation is not to my liking, still it is comparatively good.

Engines.—Two 60-horse engines are used to work the slope; a 20-horse runs the breaker; a 150-horse steam pump is used for drainage, with eight steam boilers, which supply all the necessary steam, all of which are in good condition.

Remarks.—After due examination of these mines, the system of working the same and drainage is properly executed, but an objection may be had to the plan of ventilation. I should prefer the use of a 20-horse steam fan, with its accompanying expense, for effective services in such a mine for removal of noxious and vitiated air, and for the health and safety of the workingmen, than any system, plan or contrivance used as above. I therefore directed such needed improvements to be made, and recommended such other necessary alterations as would be in conformity with law. An accident occurred on the 11th of September last, of a peculiar character, in the falling dead of an employee at the slope head, while in the performance of his duties while shifting the slope chain.

No. 65.—TUNNEL RIDGE COLLIERY.—*George W. Cole, Operator.*

Description.—This colliery is situated in the western suburbs of Mahanoy City, on the estate of the Philadelphia and Mahanoy coal company. It consists of a drift and slope openings; the drift opened the D seam, the Seven Feet and E seams, whose large deposits are nearly exhausted on the out-crop, and are now used as channels for surface drainage. The slope is a single track at top and bottom, and is sunk 160 yards deep on the north

dip of the D seam, at an angle 42°, with east and west gangways open, (4 in number,) is 1,745 yards long, with 108 breasts open, each 10 yards wide and 7-yard pillars, each holed every 15 yards of their length for ventilation. A second out-let is open on No. 1 west gangway for an escape road, which has its in-let in the water level tunnel, and an up-cast air-shaft is located in No. 1 breast; coal 40 feet thick.

Ventilation.—This is produced by the operation of a 10-horse steam fan. The slope is used as an in-let air-course; the air passes in eastward, and by means of air-gates on that gangway, is forced up into the working places, and on its return ventilates these districts on its outward course to the fan; in the west gangways air is forced up from the gangway into the working places, and in its forward march ventilates these working places; is then thrown down on the gangway, thence into a parallel or monkey gangway, on its outward course, passes into the pump way, where the exhaust steam accelerates its discharge.

Engines.—Three engines of 160-horse power are used at the slope, with 6 boilers; a 60-horse pump and a 10 horse steam fan, with 9 boilers; a 50-horse breaker engine with 3 boilers=280 horse, with 20 boilers, all in good condition.

Remarks.—The steam fan I consider inadequate for the purpose of effective ventilation. I recommended the adoption of a 30-horse steam fan for these extensive excavations. The character of mining done is on correct principles, and under ordinary mining the plans adopted for ventilation is effective, but for extensive and deep workings it will prove inadequate and expensive. I have, after due examination of the mine and its surroundings, recommended such improvements as appeared necessary. No accident of any importance occurred during the year, a fact which is very gratifying.

No. 66.—Eagle Colliery.—*Philip Brenzle & Co., Operators.*

Description.—This colliery is situated in Cunningham township, Columbia county, 2 miles north of Ashland borough, close to the northern boundary line of Schuylkill county, on the estate of the Girard heirs. This colliery consists of a drift open in east to the Buck Mountain seam, which is here found 18 feet thick; the drift is some 90 feet above water level, which will admit of another drift level lift for working, before a necessity for slope workings is required. The eastern run of the tract is nearly a mile in length; the western run is bounded by the creek; the coal seam varies from 10 to 30° dip. The breaker is located near the head of the Big Mine Run planes, which affords great facility for car accommodation. This mine has been in operation some 8 years.

Gangways.—The following number of gangways are worked:—The main east gangway is open in 400 yards; its west gangway 200 yards; the first east counter gangway is open in 300 yards; its west counter gangway 200 yards; the second counter gangway is open in 150 yards, and its west counter gangway 100 yards; and the west plane gangway is open in 200 yards—total gangways opened 1,500 yards. Twenty-six breasts are working, each 10 yards with 6-yard pillars. Mining here is considered a safe operation. This colliery has been worked some 8 years, and the breasts are worked some 70 yards long.

Ventilation is effected by natural means, *i. e.* air-holes are open from the head of the breasts out to the surface, as is generally the case with all upper level workings. The changes of the atmosphere and temperature of

the mine cause currents of air to ascend, and often descend, which renders ventilation easy.

Engines.—A 25-horse power engine, with 2 steam boilers, is the only power necessary to prepare from 60 to 80 cars of coal a day. The engine, machinery, steam boilers and fixtures are in good condition. At present the firm ships some 40 cars of coal per day.

Remarks.—Six head of mules are used at this colliery; 5 blocks of tenant houses, occupied by 10 families; 65 persons are employed at the colliery; 38 mine wagons are used, worth $80 a piece. There are 1,000 yards of outside track laid of 25 pound rail, with 1,550 yards of inside track= 2,550 yards. No accidents occurred during the year. There was no gas, of any sort, discovered in the mine so far. The prospects of a large supply of coal, for a number of years, favor the future of this colliery.

No. 67.—Coal Run Colliery.—*Longstreet, Barton & Co., Operators.*

Description.—This colliery is situated in Columbia county, north-east of Mount Carmel, on the estate of the Coal Ridge coal and iron company. Has been 14 years in operation. It consists of a double track slope sunk 200 yards deep on the north dip of the E vein, with gangways open east and west, with breastings open, each 10 yards wide, double schuted and run up 80 yards, with pillars 6 yards thick and headed at proper intervals of each 15 yards, for safe ventilation. The character of work doing is extending gangways and breast workings.

Gangways.—The west opening is 500 yards in, and the east opening is 400 yards in, with double schuted breastings open in them, the condition of which, and the drainage, is satisfactory.

Ventilation.—The slope is used as a downcast, for ventilating the western district; the air, passing in along the gangway by a monkey air-course, passes up into the breast workings and passes out at an out-let at the drift opening. The eastern district is ventilated from an in-let on the upper lift works, going in the gangway, and ventilating the working places on its outward return, to an out-let where the steam is exhausted.

Engines.—Two 90-horse engines are used at the slope, with 9 steam boilers; two 90-horse engines are used for drainage; a 40-horse engine, with 3 boilers, all of which are in good condition.

Remarks.—After an examination I have found the colliery in good condition. At present a more extended report than the above is not necessary. No deaths or serious accidents occurred during the year, which is a gratifying fact.

No. 68.—Hartford Colliery.—*Late William Patterson's.*

Description.—This colliery is situated at Mahanoy City, on the estate of Kear & Patterson. It consists of two drift openings on the out-crop of the E vein. These drift gangways are open in a long distance, with counter gangways running over and parallel with them, where the seam admits of such long breast workings, the coal of which is unloaded into counter schutes and brought out these drift gangways. The D vein is now open by a tunnel.

Ventilation.—This is effected by air-holes run out to the surface at convenient points. The drifts are opened some 100 feet higher on the mountain than the water level of the base of the hill, and consequently atmospheric action does the work of fans and furnaces remarkably well in winter weather, but is absolutely inadequate in the warm season of the year.

A 20-horse breaker is the only steam power necessary at present, though getting the coal to the breaker is expensive in the substitution of animal power for steam. Steam, when available, in mining is a matter of economy deserving of notice, and should engage the attention of every one connected with mining of coal.

Remarks.—This colliery has been 11 years in operation. Contracted aircourses are derogatory to the true principles of the ventilation of mines; this is seen by the expense in making small crevices, which are, at any moment, subject to be closed with *debris*, thus obstructing the air, and scarcely anything is produced to liquidate the expense, while, if larger openings were resorted to, the coal extracted would in a measure assist in defraying the expense, besides affording capacious openings that would effectually improve and establish good ventilation.

A LIST OF MAPS FURNISHED OF THE COLLIERIES OF THE SECOND DISTRICT.

1. Focht & Althouse slope.
2. St. Nicholas slope.
3. Suffolk slope.
4. Tunnel Ridge slope.
5. Glendon slope.
6. Oak Hollow slope.
7. Copley slope.
8. Beaver Run slope.
9. Primrose slope.
10. Silliman slope.
11. Wiggan slope.
12. Turkey Run slope.
13. Gilberton slope.
14. Cuyler slope.
15. Shenandoah, W., slope.
16. Grant slope.
17. M'Neal slope, 3 maps.
18. Wm. Penn shaft.
19. Plank Ridge shaft.
20. Ellen Gowen slope.
21. Girard shaft and slope.
22. Coal Ridge slope.
23. Silver Brook sh't & slo.
24. Honey Brook, 4, 4 slo's.
25. Reno slope.
26. Hoffman slope.
27. Colorado slope. [slopes.
28. Preston, Nos. 1, 2, 3 & 4,
28. Lost Creek slope.
30. Knickerbocker slope.
31. Thomas slope.
32. Girard Mammoth slo.
33. Focht & Whittaker, slo.
34. Union slope.
35. Big Mine Run slope.
36. Keely Run slope.

Expenses of John Eltringham, Inspector of Mines of the Second district of Schuylkill, for seventeen months, ending September 22, 1871.

DR.

EXPENSE ACCOUNT FROM JANUARY 1 TO MAY 31, 1870.

To 1 horse, $200; 1 carriage, $200	$400 00	
1 set of harness, $50; 5 months' stabling, $20 83	70 83	
5 months' office rent, $35 42; 5 months' water and and gas rent, $27 50	62 92	
5 months' feed for two horses	187 50	
horse shoeing, $15; postage and letter stamps, $3 75,	18 75	
sundry incidental expenses incurred	50 00	
		$790 00

Amount brought forward.....		$790 00

FROM SEPTEMBER 22 TO DECEMBER 31, 1870.

To 1 anemometer, $50; 1 barometer, $12 50.....	$62 50	
2 Davy lamps, $10; 1 thermometer, 85 cts.....	10 85	
1 tape-line, $3; 1 head lamp, 50 cts.....	3 50	
printing, advertising and stationery, to date.....	35 00	
3 months' horse feed, $58; 3 months' rent, $51....	109 00	
incidental expenses incurred.....	80 00	
fuel, $20; office fixtures, $56.....	76 00	
stamps and postage, $4 50; office books, etc., $8..	12 50	
		389 35

FROM JANUARY 1 TO SEPTEMBER 22, 1871.

To 9 months' horse feed, @ $20 per month.....	$180 00	
9 months' house rent, @ $200 per annum.....	150 00	
9 months' office rent, $37 50; 9 months' post office rent, $5 40.....	42 90	
printing and stationery, $5 10; 1 set of harness $30,	35 10	
carriage repairs and fixings, $50; expressage $1..	51 00	
horse shoeing, etc., $17; stamps and envelopes, $10,	27 00	
		486 00
Amount of expenses incurred.....		1,665 35

This is to certify, that the above amounts are correct to the best of my belief.

JOHN ELTRINGHAM,
Inspector of Mines.

P. F. M'ANDREW,
Clerk Schuylkill Min. Dist.

STATISTICS RELATING TO COLLIERIES IN THE SHAMOKIN DISTRICT FOR THE YEAR 1871.

No.	Names of collieries.	Location of collieries.	Names of land owners.	Names of operators.	Names of mining agents.	Number of visits of inspection.	Number of miles traveled	No. of slopes or shafts worked
1	Trevorton	Trevorton	P. and R. R. R. and others,	Packer & Rathbun	John Rathbun	3	48	1
2	Cameron	Shamokin	Mineral R. R. and M. Co.	Summit M. and R. R. Co.	Gillard Dock	2	4	
3	Shamokin	do	Hayse & Co	Martin, Aucker & Bower		2	4	
4	Bear Valley	West of Shamokin	Carbon Run Iron Co	Goodwill & Heim	Robert Goodwell	2	12	
5	George Fales	do	do	do	do	2	10	1
6	Burnside	South of Shamokin	Big Mountain Imp. Co	Isaac May & Co	Henry Morgan	3	17	1
7	Marshall	Shamokin	William Marshall	Reese Brothers	Reese Bros	2	2	
8	Frank Gowen	do	Belle's heirs	Boughner, Shipp & Co	Thomas Reese	2	2	
9	Clinton	do	Northumberland Land As.	Bechtel, Kulp & Co		1	1	
10	Henry Clay	South of Shamokin	do	Robinson & Guiterman	Nichol M'Arthur,	2	6	1
11	Big Mountain	do	Big Mountain Imp. Co	J. Langdon	Alex. Fulton	2	7	
12	Buck Ridge	do	Renshaw & Johnson	May & Patterson	Thos. May	2	8	
13	Daniel Webster	Shamokin	Northumberland Land As.	J. B. Henry		5	5	1
14	Luke Fidler, (2)	East of Shamokin	Mineral R. R. and M. Co.	Mineral R. R. and C. Co.	Gillard Dock	3	8	1
15	Lambert	do	do	William Browne	Wm. Browne	3	8	1
16	Lancaster	do	do	Smith & Haup	John Bamford	2	10	
17	Hickory Swamp	do	do	Mineral R. R. and C. Co.	Gillard Dock	2	11	1
18	Hickory Ridge	do	do	J. Langdon	Alex. Fulton	1	6	
19	Brady	do	Fulton estate	Guiterman & Co	G. Robinson	2	10	
20	Greenback	do	Northumberland Land As.	do	do	2	10	1
21	Excelsior	Excelsior	Fulton estate	Excelsior Coal Co	Isaac Kramer	2	18	
22	Enterprise	Enterprise	do	Enterprise Coal Co	A. B. Day	3	30	1
23	Margie Franklin	South of Enterprise	do	do	do	2	18	
24	Mt. Franklin	West of Mt. Carmel	do	A. R. Fisk	John Dewees	1	10	
25	Caledonia	do	Henry Saylor	Swenk & Co	Wm. Michel	4	54	
26	Morton	do	Mineral R. R. and M. Co.	Morton, Davis & Co	Thomas Morton	1	16	
27	Coal Mountain	do	Susq. and Coal Mt. C. Co	Frank Rhodes & Co	Frank Rhodes	2	33	1
28	Stewartsville	East of Mt. Carmel	Coal Ridge C. and I. Co.	William Montellius	A. W. Montellius	1	20	1
29	Reliance	South of Mt. Carmel	Locust Mt. C. and I. Co	Locust Mt. C. and I. Co.	A. B. Day	2	36	1
30	Locust Creek	Locust Gap	Locust Mt. Summit Co	Carter & Gorman	Joseph Carter	2	36	1
31	Locust Gap	do	Locust Gap Iron Company,	Graber & Kimble	Graber & Kimble,	2	36	

32...	A. S. Wolf	....do....	....do..	....do....	....do..	2	36	1
33...	Monitor	....do....	....do..	G. W. Johns	Frank Omler	2	36	1
34...	Meriam	East of Locust Gap....	Locust Dale Coal Co	Samuel Harris	Frank Eckrod	1	20	1
35...	Helfenstine, (3).	Helfenstine..	Helfenstine Brothers..	D. Llewellyn	D. Llewellyn	1	20	1
36...	Ben. Franklin	....do....	....do..	R. Douty & Co	R. Douty	1	18	.....
37...	Coal Ridge	Roaring Creek	Coal Ridge Improve't Co...	Burton & Bro.		.....	.....	.....
38...	Green Ridge	Green Ridge	Northern Central Railroad,	S. Johns & Sons.	S. Johns.	.....	.....	.....
39...	Locust Spring..	Locust Gap..	Locust Summit Company,	J. Bartholomew, Jr.	J Bartholomew, Jr	.....	.....	.....
	39 collieries in Northumberland county.					74	631	18
40...	Diamond	Forestville	Manhattan Coal Company,	Whitaker & Co..	Stephen Jones..	2	144	1
41...	Phœnix, No. 2	Phœnix Park.	Phœnix Park Coal Co.	E. A. Packer	John Goyne.	3	216	1
42...	Phœnix, No. 3	....do..	....do..	J. C. Northall	J. C. Northall.	2	144	1
43...	Otto, No. 1	Branchdale..	Manhattan Coal Company,	Cain, Hacker & Cook.	T. Shollenberger.	2	158	1
44...	Otto, No. 2	....do....	....do..	....do..	....do..	3	227	1
45...	Otto, No, 3	....do....	....do..	....do..	....do..	1	79	1
46...	Pyne Red Ash	Swatara..	....do..	C. M. Shoemaker & Co...	Claud White.	2	204	1
47...	Pyne White Ash	....do....	....do..	....do..	....do..	2	204	1
48...	Straw	....do....	Helfenstine & Co....	Murray & Winlack	Wm. Murray	2	104	1
49...	Red Mountain	Tremont, South..	Swatara Coal Company	Allen Fisher	Allen Fisher.	1	134	.....
50...	Middle Creek	Middle Creek	Tremont Coal Company....	Tremont Coal Company..	John Tiften	1	106	1
51...	Colkett	Donaldson	....do....	Owen, Long & Co..	John Long..	3	414	1
52...	Eckert	....do....	Swatara Coal Co. & others,	Nutting, Lewis & Co	W. J. Lewis	1	142	1
53...	Lower Rauch Creek	Lorberry	....do....	Miller, Graff & Co	Edward Moore	2	280	2
54...	Lincoln	....do....	Fishing Creek Company...	Levi Miller & Co	J. Workman.	1	160	.....
55...	Franklin	Upper Rauch Creek....	George B. DeKeim	Henry Heil	H. Heil	4	556	2
56...	Lykens Summit	Red Mountain summit	Broad Mountain Coal Co...	Lykens Summit Coal Co	H. Schmoley.	3	432	1
57...	Kalmia	South Mountain valley	Fishing Creek Company...	Phillips & Sheafer.	Thos. Phillips.	1	162	.....
58...	Tower City	Williams valley	Munson & Williams	Savage & Althouse	Robert Savage	1	130	1
59...	Brookside	....do....	.... do....	Savage & Kauffman.	James Savage	2	268	1
60...	West End	Donaldson	Tremont Coal Company....	Owen, Long & Co	John Long.	1	142	1
61...	Dundas, No. 6	Tremont, East	James Dundas's heirs..	Idle		.....	.....	.....
62...	Rauch Creek, West	Tremont, West..	Swatara Coal Company....	Idle		.....	.....	.....
63...	Tremont Land Sale.	Tremont drift	Tremont Coal Company....	Land Sale Company		.....	.....	.....
	24 collieries in Schuylkill county.					40	5,106	20
64...	Williamstown	Williamstown	Summit Branch R. R. Co.,	Summit Branch R. R. Co	Joseph Anthony..	2	374	1
65...	Big Lick	West of Williamstown	....do....	....do.	....do..	2	382	1
66...	Franklin	Wiconisco.	....do....	....do....	....do..	3	399	1
67...	Short Mountain	....do....	....do....	....do....	....do..	3	394	1
	4 collieries in Dauphin county.					10	1,549	4

COLLIERY STATISTICS IN SHAMOKIN DISTRICT—CONTINUED.

No.	Number of lifts sunk	Number of drifts and tunnels	Dip of coal strata,	Names of the coal seams worked.	Nature of ashes.	Thickness of coal seams	How ventilation is produced	Condition of the ventilation	Number of steam engines	Horse power of engines	Number maimed and injured	Number persons died of injuries,	Number persons killed	No. persons employed inside	No. persons employed outside.	Total force employed	Shipme's in tons of 2,240 lbs	Gross tonnage
1	1	2	N.S	Big Mt. & Mammoth	White	14	Nat. fan	Fair	3	120	1	.....	1	75	.....	75	30,170	30,615
2	.....	5	S.	Big Mt., Sev. Ft. & E	...do	var.	Natural	..do	2	80	.....	.....	4	134	.....	134	11,942	123,019
3	.....	1	S.	Orchard	...do	5	...do	..do	1	15	1	.....	.....	20	.....	20	5,209	12.455
4	.....	1	N.S	E vein	.....	16	Furn'e	Good	1	40	1	1	1	67	.....	67	25,500	55,092
5	1	1	N.	Primrose	.....	6	Jet, fur.	..do	2	80	.....	.....	.....	33	.....	33	12,919	16,402
6	1	1	N.S	E vein splits	.....	6	Fan	..do	3	120	4	1	.....	68	.....	68	59,682	54,574
7	.....	1	N.	Orchard	.....	5	Natural	..do	1	15	.....	.....	.....	8	.....	8	986	1,226
8	.....	5	N.S	Orchard & Primrose	.....	5	...do	Fair	1	40	.....	.....	.....	30	.....	30	8,698	19,895
9	.....	1	N.	Orchard	.....	4	...do	..do	1	10	.....	.....	.....	10	.....	10	1,367	4,348
10	1	2	N.	E vein splits	.....	7	Fan	Good	3	110	2	.....	.....	.....	.....	.....	27,578	54,856
11	.....	4	N.	..... do	.....	6	Natural	Fair	1	40	2	.....	.....	82	.....	82	39	60,984
12	.....	6	N.	..... do	.....	7	...do	Good	1	40	1	.....	1	.....	.....	.....	41,195	92,782
13	2	.....	S.	Primrose	.....	6	Fan	..do	3	110	4	.....	.....	36	.....	36	13,683	15,959
14	1	.....	S.	Holmes and E splits,	.....	7	...do	Fair	3	110	2	.....	.....	75	.....	75	3,732	52,313
15	2	.....	S.	Primrose	.....	6	...do	Good	3	110	1	1	.....	31	.....	31	8,427	12,697
16	.....	2	S.	E splits	.....	6	Natural	Fair	1	20	3	.....	.....	14	.....	14	5,826	7,533
17	1	2	N.S	..... do	.....	6	Nat. fan	..do	3	120	2	.....	.....	147	.....	147	24,577	54,487
18	.....	1	N.	Skidmore	.....	5	Natural	..do	2	60	1	.....	.....	58	.....	58	.....	9,038
19	.....	4	N.	Big Mt. and E splits,	.....	5	...do	..do	1	40	2	1	1	51	.....	51	8,840	20,633
20	1	1	N.	..... do	.....	7	Fan	Good	4	120	1	.....	.....	46	.....	46	31,134	32,539
21	.....	7	N.S	..... do	.....	7	Furn'e	..do	2	50	2	.....	1	79	.....	79	43,498	86,819
22	1	.....	N.	..... do	.....	8	...do	Fair	3	160	2	.....	1	54	.....	54	36,176	42,949
23	.....	1	N.	Lykens Valley	.....	9	...do	..do	1	40	.....	.....	.....	28	.....	28	6,881	8,914
24	.....	1	S.	..... do	.....	5	Natural	..do	1	40	.....	.....	.....	20	.....	20	4,166	4,170
25	.....	2	N.S	E	.....	6	Furn'e	..do	1	15	.....	.....	.....	25	.....	25	.....	13,005
26	.....	1	N.S	E	.....	9	Natural	Good	1	.....	.....	.....	.....	23	.....	23	.....	1,233
27	2	.....	S.	E	.....	15	Fan	..do	4	125	2	.....	.....	52	.....	52	658	21,045
28	1	.....	N.	E and Skidmore	.....	16	Furn'e	..do	1	50	3	.....	.....	99	.....	99	57,175	104,261
29	1	1	N.	E	.....	10	Fan	..do	4	130	1	.....	1	108	.....	108	60,306	60,306
30	2	.....	S.	E	.....	14	...do	Fair	3	90	.....	.....	1	39	.....	39	18,004	18,004
31	.....	1	S.	E	.....	20	Furn'e	Good	.....	.....	4	.....	1	35	.....	35	.....	46,903

32...	1	.....	S...	E	.....	20	...do	..do...	2	100	3	.....	1	39	.....	.....	.....	.....
33...	1	.....	S...	E.	.....	20	Fan	..do...	5	130	1	.....	1	53	.....	.....	38,881	38,881
34...	1	.....	S...	E.	.....	20	...do	..do...	5	315	.....	.....	.....	65	.....	.....	.....	.....
35...	1	.....	N..	Lykens Valley	.....	8	Natural	Fair..	3	61	.....	.....	.....	32	.....	.....	.....	5,091
36...	.....	1	N..	.....do.	.....	8	Fan	..do...	2	45	.....	.....	.....	65	.....	.....	27,626	27,626
37...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	32,436
38...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
39...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	22	52	21 S 23 N			.....	13 fans. 9 furn. 13 nat'l.	18 gd. 18 fair	78	3,140	46	4	16	1,801	1,350	3,551	.....	.....
39 collieries in Northumberland county.																		
40...	2	....	S...	J, Diamond..	.....	7	Fan	Fair..	4	115	4	.....	.....	70	.....	.....	18,426	.....
41...	3	.....	S...	G, Primrose	.....	9	...do	Good	4	180	2	.....	.....	42	.....	.....	21,460	.....
42...	1	.....	S...	J, Diamond	.....	7	...do	..do...	3	115	2	.....	1	57	.....	.....	14,989	.....
43...	2	.....	S...	E, Mammoth..	.....	7	...do	Fair..	5	210	2	.....	1	111	.....	.....	.....	.....
44...	2	.....	S...	G, Primrose	.....	9	...do	..do...	4	230	7	.....	5	75	.....	.....	.....	.....
45...	5	.....	S...	..... do.	.....	9	..do	Good	4	180	.....	.....	.....	50	.....	.....	.....	.....
46...	1	....	S...	Primrose & E splits	.....	9,3	Fan,nat	..do...	3	120	2	.....	.....	55	.....	.....	.....	.....
47...	1	.....	S...	E.	.....	9,3	Natural	..do...	3	120	2	.....	.....	60	.....	.....	.....	.....
48...	1	....	N..	Peach Mountain	.....	5	...do	..do...	1	40	2	.....	.....	8	.....	.....	.....	.....
49...	.....	1	S...	.....	.....	8	...do	..do...	.....	.....	1	1	1	7	.....	.....	.....	.....
50...	2	1	S...	E and D.	.....	9	Nat.,jet	..do...	4	80	.....	.....	.....	52	.....	.....	.....	.....
5 ...	2	.....	S...	E and Black Heath.	.....	20,9	Fan.....	..do...	7	450	16	.....	.....	93	.....	.....	42,190	.....
52...	1	....	S...	E splits	.....	6	...do	..do...	3	160	3	.....	.....	.....	.....	.....	31,816	.....
53...	2	.....	S...	.....do.	.....	11	...do	..do...	8	470	6	1	1	177	.....	.....	92,383	.....
54...	.....	1	S...	.....	.....	5	Furn'e..	..do...	1	40	1	.....	1	40	.....	.....	39,662	.....
55...	3	.....	N..	E.	.....	11	Fan	..do...	6	300	5	1	.....	94	.....	.....	42,743	.....
56...	1	.....	N..	E splits	.....	4,6	Furn'e..	Fair..	2	95	2	.....	2	22	.....	.....	5,206	.....
57...	.....	1	N..	Lykens Valley	.....	8	Natural	..do...	1	40	.....	.....	1	32	.....	.....	16,095	.....
58...	1	.....	N..	.....do.	.....	10	...do	..do...	4	140	1	.....	.....	41	.....	.....	.....	.....
59...	1	...	N..	..... do.	.....	9	Fan.....	..do...	5	180	.....	.....	.....	110	.....	.....	44,349	.....
60...	New.	.....	S...	.....do.	.....	10	Natural	Idle..	1	40	.....	.....	.....	.....	.....	.....	.....	.....
61...	.....	.....	.....	D.	.....	11	.....	..do...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
62...	.....	.....	.....	E splits	.....	11	.....	..do...	.....	.....	.....	.....	.....	.....	.....	.....	42,743	.....
63...	.....	.....	.....	Primrose	.....	6	.....	..do...	.....	.....	1	.....	.....	6	.....	.....	15,817	.....
	30	4	15 S 6 N.			.....	12 fans. 8 nat'l. 2 furn. 1 jet.	13 gd. 5 fair.	73	3,305	59	3	13	1,292	959	2,261	.....	.....
24 collieries in Schuylkill county.																		

COLLIERY STATISTICS IN SHAMOKIN DISTRICT—CONTINUED.

No.	Number of lifts sunk	Number of drifts and tunnels	Dip of coal strata,	Names of the coal seams worked.	Nature of ashes.	Thickness of coal seams	How ventilation is produced	Condition of the ventilation	Number of steam engines	Horse power of engines	Number maimed and injured	Number persons died of injuries.	Number persons killed	No. persons employed inside	No. persons employed outside	Total force employed	Shipme'n in tons of 2,240 lbs.	Gross tonnage
64	2	.....	N.	Lykens Valley	.....	10	Fan	Good	6	250	5	1	1	385	.....	.....	.....	.....
65	4	1	N.	do	.....	10	Fan, fur	do	6	310	6	1	3	198	.....	.....	.....	.....
66	1	.....	N.	do	.....	10	Natural	do	5	420	1	1	.....	56	.....	.....	.....	.....
67	1	1	N.	do	.....	10	do	do	3	420	.....	.....	.....	81	.....	.....	.....	.....
	8	1	4 N.			.....	2 natu'l	4 gd.	20	1,430	12	3	4	720	700	1,420	.....	.....
				4 collieries in Dauphin county.			1 furn'e											
							2 fans.											

RECAPITULATION.

Counties.	Number of visits of inspection	Number of miles traveled	No. of slopes or shafts worked	Number of lifts sunk	Number of drifts and tunnels	Dip of coal strata, S. dip. seams	Dip of coal strata, N. dip. seams	Fan ventilation	Furnace ventilation	Natural ventilation	Good ventilation,	Fair ventilation	Indifferent ventilation	Number of steam engines	Horse power of engines	Number maimed and injured	Number persons died of injuries,	Number persons killed	No. persons employed inside	No. persons employed outside	Total force employed
Northumberland	74	631	18	22	52	21	23	13	9	13	18	18	.....	78	3,140	46	4	18	1,801	1,350	3,551
Schuylkill	40	5,106	20	30	4	15	6	12	2	8	13	5	.....	73	3,305	59	3	13	1,292	969	2,261
Dauphin	10	1,549	4	8	1	.....	4	2	1	2	4	.....	.....	20	1,430	12	3	4	720	700	1,420
Total	124	7,286	42	60	57	36	33	27	12	23	35	23	8	171	7,875	117	10	33	3,813	3,019	7,232

REPORT

OF THE

INSPECTION OF COLLIERIES IN AND FOR THE MIDDLE DISTRICT OF LUZERNE AND CARBON COUNTIES, FOR THE YEAR ENDING DECEMBER 31, 1871.

COMMUNICATION.

OFFICE OF INSPECTOR OF MINES,
Wilkesbarre, Pa., Feb., 1872.

To His Excellency, JOHN W. GEARY,
Governor of the Commonwealth of Pennsylvania:

SIR:—In compliance with the requirements of law, I have the honor to submit herewith my annual report of accidents producing death or serious personal injury to persons employed in and around coal mines in the Middle district of Luzerne and Carbon counties, for the year ending December 31, 1871.

Also, accompanied with a table of comparison, showing the state of the mines in this district, as regards the safety of persons employed therein at the present time and since August, 1870, when I assumed the duties of the office of inspector.

Very respectfully,
Your obedient servant,
T. M. WILLIAMS,
Inspector of Mines.

GENERAL REPORT.

During the past year great changes have been wrought in the mines of my district in respect to the requirements of the act of 3d of March, 1870, known as the ventilation bill.

Prior to the passage of this act no law governed the working of coal mines in this region, save the will of the operator and his superintendents. Naturally some were restive under the restraints imposed by the act referred to, but the majority by far have not only coincided with the legislature in decided opinion as to the wisdom and justice of the act, but have co-operated with the inspector to the extent of their ability in enforcing the provisions thereof. The result may be seen in the presence at every mine of the appliances to secure the safety of workmen in the dangerous transit up and down shafts; in the machinery set in motion to supply pure air at the

face of the workings; in the increased vigilance and improved knowledge as to the modes of procuring and distributing pure air throughout the mines, and generally in the more vigilant exercise of every precaution looking to the preservation of employees from danger and death. Much work has been accomplished during the past year that will be permament; much knowledge diffused that will abide for the future, and as all parties have gradually become familiarized with the meaning and workings of the act, all are more inclined to applaud its wisdom and aid in its enforcement.

A vast labor has involved on the inspector during the first year, which will be lightened and partially removed in the future, so as to afford more time for inside inspection. In addition to his periodical visitation of the interior of the mines, he has been obliged to spend much time in securing the construction and application of safety catches, brakes, speaking tubes, bridle chains, and covers for carriages; in preparing and distributing the necessary blanks, in preparing and serving notices of various kinds, in investigating accidents, in classifying, copying and arranging the reports made to him by operators of the quality of air, condition of steam boilers, reports of accidents, of trials and tests of safety-catches and bridle chains, &c.; in prosecuting violators of the law, both men and operators, and in setting in motion and getting into practical working order a system of rules which has modified, in many essential particulars, a great branch of industry, in which millions of capital and thousands of men are employed. A great portion of the labors above enumerated are permanently done, and therefore more time can be given hereafter to the actual inspection of the interior of the mines.

Although great improvements have been made in all the mines of the district, yet there is room for great improvements still. The fearful death roll which I am forced to transmit bears testimony that cannot be gainsayed of the manifold dangers that beset this branch of industry, and of the fact that notwithstanding the protection afforded by the ventilation bill, many perils are yet to be encountered by workmen employed in mining and shipping coal.

It has been said that every fifty thousand tons of coal sent to market are baptized with the life blood of one man; nor can we hope for a material decrease of accidents resulting in serious bodily harm and death. As the mines are driven deeper dangers increase, machinery is multiplied, fire-damp, that frightful monster that lurks unseen in every cranny and crevice of deep workings, ready to spring upon careless or unwary workmen and envelop them with a fiery winding sheet, will be more frequently encountered, and nothing but the most rigorous enforcement of the provisions of the law, relating to the preliminary inspection of the mines each day by competent persons as fire bosses, and the exercise of far more care and prudence on the part of the men themselves, can be relied upon to keep down the death rate even to its present fearful dimensions.

An examination of the facts relating to the several accidents mentioned in tabular statement annexed, will clearly exhibit that many of them have been the result of carelessness of the victims themselves or of fellow workmen, and under circumstances where neither the inspector nor the owners of mines can be justly held accountable; constant exposure to danger renders men reckless of consequences, and nothing but an awakening upon their part to the necessities of caution can prevent the class of accidents which occur in places where they alone can be the guardians of their safety. More caution among the men and the employment of better superintendents and mine bosses are essential elements in the problem of securing the health and safety of persons employed in coal mines. It is not unfrequently the

case that persons, holding responsible positions under our large companies and small operators, are selected, less from the practical knowledge possessed by them, or the duties pertaining to the place, than from the fact of relationship to high officers, or other equally unworthy and improper motives. No other condition, save that of fitness for the place should govern the selection of men upon whose skill, coolness and judgment the lives and safety of others depend. More than one fearful accident during the past year, entailing great loss of life and property, have borne witness to the truth of this proposition.

Some expression of opinion has been made upon the subject of increasing the number of inspectors. In my judgment no increase is necessary at present. With a proper appreciation of individual responsibility upon the part of owners and superintendents all the legitimate benefits that can result from the inspection of mines may be attained under the present system. It was not the purpose of the law, as I view it, to create a mine superintendent in the office of inspector, but rather to cloth with official authority one whose watchfulness and care should constantly prompt others to obey the requirements of the law, and in case of flagrant neglect to require its enforcement. It is a mistake, not seldom made, to suppose that the dictum of an inspector can take the place of positive enactment. The responsibility of wrong construction should be upon the violator, even though backed by the erroneous opinion of an inspector.

PROSECUTIONS.

I have caused legal proceedings to be taken to punish infringements of the law, viz: Against five persons for riding upon loaded cars up a slope called the Gaylord slope, near Plymouth.

Also, against three persons for the same offence at the Mineral Spring slope, near Wilkesbarre.

No penalty was insisted upon by me save a payment of costs, these being the first cases prosecuted and the defendants pleading ignorance of the law. The effect upon the whole district has been salutary. Action was taken against the agent of the Consumers' coal company for not reporting accidents, also against Broderick, Conyngham & Co., for a similar offence, which resulted in obtaining judgments for $25 in each case—the minimum penalty. These also being the first cases of this class.

I caused bills in equity to be filed in the common pleas of Luzerne county against Samuel Bonnell and others, the Consumers' coal company and the Wilkesbarre and Seneca Lake coal company, charging them with a violation of the ventilation law in working their several collieries without having provided the second opening required, and praying for injunctions to restrain them.

In the two former cases injunctions were promptly granted by the court. The latter case being of a somewhat different kind, and late in the year when brought up, was discussed; but no opinion given before the court in this case; it was a slope extended downwards, called a new lift.

Also, against the Northern coal and iron company, charged them with a violation of the ventilation law in not providing a sufficient quantity of pure air in their colliery. The court granting an injunction in this case also promptly.

Also, against Broderick, Conyngham & Co., charging them with a violation of the law in not providing a sufficient quantity of pure air in the mine known as the Washington mine. This case was not disposed of for some time, had several hearings; in the meantime the condition of the mine was somewhat improved.

QUANTITY OF COAL, NUMBER OF MEN, &C.

Aided by such statistics as could be readily gathered, I have estimated the amount of coal mined in my district in the year 1871, and the number of men and boys employed in and about the mines.

My information was gained by circulating blank requests among the operators, which, in a large majority of cases, were filled and returned without hesitation, though the law does not require such exhibits. Without such knowledge an inspector would find great difficulty in ascertaining the proportionate increase or decrease of causualties.

The returns thus furnished for 1871 shows a production of 2,700,000 tons of coal. At operations, from which no report has been received, I judge about 300,000 tons have been produced, making in all 3,000,000 tons. In 1870, about 8,000 men and boys were employed. In 1871 about 10,000, distributed as follows: Inside—men, 5,601; boys, 779. Outside—men, 1,730; boys, 1,760—total, 9,870. Out of this total amount 2,270 are miners, theothers are laborers in the various branches.

CASUALTIES.

The casualties, as will be seen by table No. 1, are classed as follows: Fatal accidents, 53; caused by fire-damp, 1; by fall of rock, 2; by fall of coal, 11; by falling down shafts, 2; burnt by gunpowder, 1 ;miscellaneous, 4; above ground 6; falling under mine-cars, 6; at West Pittston shaft, 20. Total, 53. Twenty-four widows and 80 orphans were left by men killed.

Of accidents *not fatal* 90 occurred, viz: By fire-damp, 31; by fall of rock, 11; by fall of coal, 15; falling down shafts, 1; burnt by gunpowder, 8; miscellaneous, 12; above ground, 3; falling under mine cars, 9. Total, of both kinds, 143.

Every 56,605 tons of coal shipped from this region during the year has cost one life; every 33,333 tons has cost a severe accident, involving serious bodily harm to some person.

SURFACE OPENINGS, VENTILATION, ENGINES, &C.

The number of coal breakers is 52; drifts and tunnels, 38; slopes, 43; shafts, 31. Total, 112. Included in the above are 14 new openings, viz: Nine new shafts sinking, 3 new slopes, 1 shaft re-opening and sinking deeper, and 1 tunnel; also, 10 local collieries.

They are ventilated by 34 fans, 17 furnaces, besides many small grates not counted, 10 steam jets and exhauts; 27 by natural ventilation. Some of the latter have small grates, and at times steam exhausts to assist them.

Table No. 2 exhibits, to a great extent, the condition of the major part of the mines in this district in the fall of 1870, when I assumed the duties of inspector, and a comparison of the same at the close of the present year. This table exhibits all operations of any note. From this table it may be seen what breaks, speaking tubes, safety catches, covers and bridle chains on carriages have been put up. The ventilation of mines throughout my district is much improved, as is shown by table. New fans—18 have been constructed, including 2 not shown in the table, and averaging from 12 up to 21 feet in diameter. The two fans, omitted in table above referred to, are the West Pittston fan, 21 feet in diameter, built on the *Gubal* principle, and an iron-cased revolving disk fan, 15 feet in diameter, put up at Nanticoke. Furnaces—one double and 4 single ones have been put in operation.

The following items may be of interest: 510 mules are worked inside the mines, and 200 outside; engines used for pumping, 45, of 2,365 horse

power, besides a great number of small steam pumps; 25 fan engines, 699 horse power; total number of engines, 138, estimated at 9,284 horse power. Also, 9 locomotives, used in and about the different collieries.

From the table it may be seen also, that there has been great activity in securing second openings. At the following places such have been made, during my term of office, up to this time. At Notyngham shaft, Broderick & Co., drove through coal about 2,400 feet, to connect with the Washington mines. Fellows & Dodson sunk a second shaft to the depth of 180 feet, and tunneled about 60 feet to complete the connection. At Lance colliery, a second shaft was sunk 160 feet, tunneled about 200 feet, and drove through coal 250 feet. N. C. & I. company connected the No. 1 and No. 2 collieries, to secure second openings, by driving 650 feet through coal in the Lance and Cooper veins, each making 1,300 feet in all. In No. 2 shaft, they sunk from the Cooper, 180 to the Waller vein, and drove a tunnel from the Waller into their lower vein.

Waterman & Beaver, at the Kingston (or Morgan's) shaft, have driven through coal to the out-crop of vein, a distance of 4,300 feet. Consumers' coal company, at East Boston, have sunk a second shaft 170 feet; Hutcheson & M'Farland have connected with the East Boston mines, by driving a short distance through coal.

At the Henry shaft, then owned by H. N. Burroughes, a second shaft was sunk 270 feet. Pine Ridge, leased by the D. and H. C. company, has been connected with the Mill Creek mines, by driving about 200 feet through rock and 1,500 through coal.

Diamond shaft, owned by the Wilkesbarre coal and iron company, has been connected with the old mines, by driving through coal about 400 feet; and at several of our slopes, second openings have been made; some by driving a short, and others long distances. There are but two of the single shafts of 1870 in this district, at present, with the second opening. The No. 2 shaft, owned by W. B. C. & I. company, which has not been worked since it was stopped by the inspector, because it lacked a second opening, in August, 1870; also the West Pittson shaft. The Luzerne coal and iron company are, however, sinking a second shaft there, to connect with the old shaft; present depth of new shaft, 50 feet. Air shafts—one at Burroughes' Shaft plank road, depth 60 feet; and another at the Gaylord slope, Plymouth, have been sunk. Also the D. L. & W. railroad company are sinking one at the Jersey mines, 10 by 14 feet, present depth of which is 150 feet. These are a few of the most important improvements that have been done in this district; many others of less importance might be pointed out.

FATAL EXPLOSION OF FIRE-DAMP.

Accident No. 32.—A miner named Michael M'Donald, working in a breast in the mine commonly known as the Maffet's new slope, but owned by the Wilkesbarre and Seneca Lake coal company. M'Donald was a miner, and had been informed by the fire-boss that there was some gas in his breast; he then took his naked light and placed it on a prop near, and a little above the cross-cut, and taking his safety lamp, he began to brush the gas into the current of air, which carried it towards the cross-cut and came upon the lamp, causing an explosion, which burned M'Donald so severely that he died from the effects in a few days.

This was the only death occasioned by fire-damp, and with proper care and knowledge this would not have happened. There is air enough passing through the mine, if properly distributed and kept to the face of the workings, to dispel the gas therefrom. There have been a great many persons

burned, more or less, in this mine, from time to time, which does not speak well for the management. It requires a rigid enforcement of good rules of discipline in mines, where there is so much fire-damp, to prevent the frequent occurrence of such accidents.

LOSS OF LIFE BY FALLS OF ROCKS.

Accident No. 3.—Two men (miner and his laborer) were working together, in a breast in Warrior Run mines, and while the laborer, Jas. Boyle, was in the breast assisting his miner, a piece of top slate fell upon him, killing him almost instantly.

Accident No. 30.—Morris Conway, a miner, was working in a breast with his son, at the Nanticoke mines, a large piece of slate fell upon him, killing him instantly and injuring the son slightly. The son stated that they were going to prop it up as soon as they could get out the loose coal from under it. Conway was an old and experienced miner.

FATAL ACCIDENTS BY FALLS OF COAL.

Accident No. 1.—James Allen, a miner, was killed instantly by a fall of the coal, in a gangway in the Union (or Chauncey) mines, near Grand Tunnel. He had a small temporary prop under a piece of coal, and wishing to get it out he struck the prop with a hammer, against the remonstrance of a by-stander. The blow removed the prop and the coal fell upon him. Allen was said to have been a good practical miner.

Accident No. 4.—Solomon Houser, a laborer, working in the Fellows & Dodson shaft, was injured by the falling of a piece of coal upon him. At the time it was not considered even a dangerous accident, but being injured internally he soon afterwards died unexpectedly.

Accident No. 17.—Patrick Moore, a miner, was instantly killed by a fall of top coal in a gangway in the Port Bawkley slope, on Plank Road. Deceased was about changing shifts, he and two others were under the same piece of coal, and were speaking of its being loose, &c. One of the three tapped it with a scarper, (an instrument used in mining to clean out dirt from drill-holes,) when it fell, killing Moore and injuring two others seriously but not fatally.

Accident No. 18.—Thomas Walsh, a miner, was instantly killed by a fall of a piece of coal from face of the breast. The seam pitched slightly. It appears, by what his partner said, that they had been suspicious of this piece of coal, but thought it would stand until they could have a more favorable time to take it down.

Accident No. 21.—Thomas Tretheway, a miner, was injured by a piece of coal falling upon him when working in a gangway in slope No. 1, Baltimore mines, from the effects of which he died in about 7 hours. Tretheway had just returned into his work, had fired a blast and was in the act of sounding this piece, over his head, when it gave way and caught him. He was an experienced and active man.

Accident No. 22.—John Harwood, a laborer, was instantly killed by a fall of bone coal from roof in a breast in the Laurel Run slope. He was in the act of shoveling coal into the schute at the time. His miner, being 8 or 10 feet from him, escaped uninjured

Accident No. 23.—Patrick Sharp, a miner, working at the Baltimore, No. 1, slope was almost instantly kill—a piece of coal falling upon him. He had just fired a blast and going back to fire another, but was overtaken by the fall which caused his death. His laborer escaped unhurt.

Accident No. 25.—Evan Morgan, a miner, working at Newport mines, was injured July 6, 1871, by a fall of coal, from which he died September 28, 1871.

Accident No. 26.—Michael Ennis, a miner, working in the Hollenback, No. 2, slope, was instantly killed by the fall of a piece of coal. He and his partner had returned unusually soon after firing a blast and were in the act of looking around to see the effect of it, when a huge piece of coal fell and caught them both. His partner, however, was not much injured.

This, among other accidents, shows that more time and care should be taken in entering a place of working, immediately after blasting, and before the shattered and losened pieces have had sufficient time to settle, and the dense smoke to clear away, so that it can be seen where the danger lies, if any exists.

Accident No. 33.—John Spargo, a miner, working at No. 3 slope, Wilkesbarre coal and iron company, was injured in December, 1870, by the fall of a piece of coal from the roof of the gangway, which resulted in his death May, 1871.

Accident No. 34.—James Lawler, a miner, working in the Swetland shaft, near Plymouth, was injured by a fall of coal in a breast, from which he died August, 1871.

FATAL ACCIDENTS BY FALLING DOWN SHAFTS.

Accident No. 12.—Edward Ham, a rock miner, lost his life while working at the shaft for a second opening for the Consumers' coal company mine, at East Boston, near Kingston. He and his partner were in the act of getting into the sinking bucket to descend the shaft, when, by some means, it became disconnected from the rope and both men were precipitated to the bottom—a distance of 40 or 50 feet. Mr. Ham was instantly killed; his partner survived.

Accident No. 20.—George Ashman, a blacksmith, working at the Lance shaft, near Plymouth, now owned and worked by the Wilkesbarre coal and iron company. He had been down the shaft fixing something about the pump, and when coming up it seems he had a long crooked piece of gas pipe extending upwards and over the cross piece of the carriage. Somewhere near the surface the pipe caught against the side and precipitated him to the bottom of the shaft into the sump. A carpenter was on the carriage at the same time and escaped uninjured.

FATAL ACCIDENTS FROM EXPLOSION OF GUNPOWDER.

Accident No. 15.—Samuel Johns, a miner, working at Baltimore, No. 1, slope, ignited a keg of powder by carelessly using the lamp. The explosion resulted in his death in two days thereafter. Another instance where carelessness has ruled, instead of the greater care which is essential to the safe using of gunpowder in mines.

MISCELLANEOUS FATAL ACCIDENTS UNDER GROUND.

Accident No. 7.—Hugh Hughes, a miner, working in the Mineral Spring slope, in a gangway, after having prepared a blast and sent back his partner out of danger, was instantly killed by the premature explosion of the blast. How it fired is not known.

Accident No. 8.—Joseph Freil, a laborer, working at the Powkley slope, in a kind of gangway or narrow working, was instantly killed by a blast, which broke through a pillar on him The persons firing the blast had

given warning, but it seems he either didn't apprehend danger there or did not hear the warning given him. His partner, or miner, was out from there some distance, preparing a cartridge. at the time. A slight misunderstanding appeared to exist between the party driving the place where the shot was fired and the mine boss, about the course in which the place was ordered to be driven. This accident would have been avoided had the parties interested, and the mine boss, taken the proper care when driving places so close together.

Accident No. 9.—Isaac Davis, a fireman, working at the Hartford mines, near Ashley, was instantly killed by an explosion of a steam boiler. He was on the night shift, firing for four steam boilers, used in connection with the hoisting and pumping engine used there under ground.

The following information was gleaned from an investigation held by the inspector, Sunday, June 18, 1871:

It appears that the engineer had examined the water in the boilers about ten minutes previous to the accident, and that the gauge then showed from 50 to 60 pounds pressure per square inch, no steam blowing off. He put some water in one next; there was plenty in the one that blew up. The safety-valve and steam gauges were in good order. The boilers had been used about six months, and S. J. Tompkins, the man looking after the boilers for the company, had examined them in January, 1871. All their boilers are also examined closely when being cleaned.

W. D. Snyder, engineer, stated that the steam blew off at a pressure of 55 pounds, and that sometimes it would raise rapidly to 80 or 85 pounds; that it had done so the day previous to the accident. This would occur whenever the large steam pump would be stopped.

Frank Craig, a boiler-maker, from the shops of C. R. R. of N. J., at Ashley, gave it as his opinion that the boiler iron was of an inferior quality, a fact hard to detect, unless by persons thoroughly accustomed to testing of iron; and further, that the iron was thin, being barely a quarter of an inch in thickness. Also, that the boiler may have been weakened or injured by being too tightly corked at the riveting, as it had given out there. Saw no signs of a deficiency of water. The boiler may have been weakened by expansion and contraction, and given away even under a lower pressure than it had ordinarily withstood.

John Campbell, foreman at the shops of N. J. C. R. R. Co., at Ashley, concurred in the views given by Mr. Craig, that the iron was of an inferior quality, and too light for boilers of such dimensions; that the boiler may have become weakened by contraction and expansion.

The two latter gentlemen were solicited by me to go to the mines and examine into the cause of the explosion of the boiler. They having a reputation as experts in that branch of business, I therefore depended much on their judgment and assistance, which they cheerfully gave.

Mr. Geo. Parrish, general superintendent of all the mines of the Wilkesbarre coal and iron company, stated that these boilers were examined, and reported, about the beginning of the year, that they were bought from Richard Jones, of South Wilkesbarre, for C. H., No. 1 iron, and were considered as good as new. Dimensions of boiler, 22 feet long, 30 inches in diameter; length of sheet, 24 inches.

The boiler was thrown out of its place across the gangway, thereby killing the fireman, Davis. It was torn assunder near the middle, close to one of the seams. The back end also was blown into shreds.

Accident No. 14.—Patrick Nicols, a miner, working at Port Bowkley slope, on Plank Road, was killed by a blast. He was going back into his breast to re-touch it, it having hung fire, when in close proximity the blast exploded and caused his death.

FATAL ACCIDENTS ABOVE GROUND.

Accident No. 2.—John Becker, Jr., a carpenter, working at the Empire mines on the trustling near the breaker, fell therefrom, a distance of 62 feet, and was instantly killed.

Accident No. 11.—Michael Conyngham, a laborer, working at the Franklin mine's old slope, was almost instantly killed by being scalded. This young man had finished his day's work in the mines, and, as usual, went to wash himself and change his clothes before going home; this he and a few others did in the boiler room, in the rear part of the building. On this day the boilers were to be blown out for the purpose of inspection. The engineer, getting ready, gave a few minutes notice to the men washing at the rear of boilers of his intention to let off the steam, (which was not led clear of the building before it struck against the wall, causing it to scatter in every direction through the building and boiler room.) He then let off the steam, when two of the men came out over the boilers, and seeing the third man did not follow they gave the alarm, and ran to the back window, from which he escaped almost naked and frightfully scalded, which caused his death in a short time.

There was a new wash house almost ready close at hand, needing only about half a day's work to finish it when this sad accident happened.

Accident No. 16.—Frank Brenner, a carpenter, working at Sugar Notch, was almost instantly killed by the falling of the spider of a new fan upon him while in the act of erection.

Accident No. 19.—Hugh Dougherty, a laborer, working at the breaker at Mill Creek mines, D. & H. C. Co. An injury to his foot, requiring its amputation, and finally resulted in his death.

Accident No. 24.—Corey Downs, a boy aged 11 years, working at the Gaylord slope, Headstrom & Co., was instantly killed by being caught in the machinery of a hoisting apparatus. His father was engineer at this place and had charge of the machinery, having much oiling to do he needed some assistance. His son showing much care and pride in the business he thought him fit to assist him, which he did for some time very successfully. On the day of the accident the boy had just got through oiling the breaker and hoisting machinery, and had told his father he was going to give the oil can to the young man who run the engine at the dirt plane. In a few moments he was discovered by the engineer entangled in the running machinery of the hoisting engine. The poor boy was taken therefrom by his almost heart-broken father.

This is another proof that it is not only unwise and unsafe to put boys of such tender years to oil or have anything to do with machinery, but that it is a cruel wrong. It should be made a crime. It is folly to expect that boys, with all their brightness and aptness to learn, can comprehend the complications, intricacies and dangers of machinery. Many of our large breakers have places where oiling must be done several times daily, and places where an adult can scarcely penetrate, yet boys are sent to do the oiling while the machinery is running, which is very wrong. There should be a time set for oiling, and the machinery should be stopped for that purpose, say twice each day, besides being oiled the morning before starting, and at noon before starting after dinner. All oiling places should be made as convenient as possible for the oiler, and have tubes leading into the journals wherever it can be done. Last year a boy was lost at Newport in the same manner as young Downs.

Accident No. 27.—Robert Rodgers, a boy 10 years of age, who worked in the breaker at the Notyngham shaft, Plymouth, leased by Broderick

Conyngham & Co., fell into the pony rollers. His death ensued in four hours after the accident. This youth, it appears, had just changed places with one of the other boys, as they often do, and had placed himself above the pony rollers, between them and the large screen, for the purpose of picking slate, standing on the coal in the schute. He took hold of a small board put there to prevent the coal from rushing into the rollers too fast, and raising it, was precipitated, with the coal, between them. His right leg was dreadfully crushed. Some time elapsed before he could be extricated, and after lingering a short time he expired.

The lessees aver that this machinery is as safe as it could be made, and that no boy had a right to raise that board, a man having charge of it. I am of a different opinion, and think that that place may, at any future time, be the cause of other accidents unless changed. It may suit, as it is, for the single purpose of facilitating the putting of coal into the rollers, but for the sake of safety, and thereby saving the limbs or, perchance, the life of some one else in future, it should be changed. Each pair of these pony rollers should be put low enough down, that the schute leading into them may have iron bars over the rollers, where the coal could pass between them and fall into the rollers below; yet these bars placed high enough, so that if a person's legs hung down through or between them they would not be caught by the rollers. The rollers are dangerous at the best; hence much care should be taken in their location. One person lost his life last year through some unfortunate misunderstanding, in the large rollers above these, in the same breaker. Such accidents may be controllable by proper care and discipline.

FATAL ACCIDENTS FROM MINE CARS.

Accident No. 6.—Adam Smith, a boy 17 years of age, working in the No. 2 shaft, Baltimore mines, for Delaware & Hudson canal company. He was driving a team, and when he was near his stopping place, by some means, he was caught between a door frame and his trip of loaded cars and was almost instantly killed. It is supposed that his clothing caught on the hook of the door as he was passing on the cars. The team not stopping immediately he was pulled off and crushed by the cars.

Accident No. 10.—John Omealy, a laborer, working at the mines (commonly known as Maffet's new slope) leased by the Wilkesbarre and Seneca Lake coal company, was killed while riding up the slope on a loaded car. The car in ascending the slope got off the track and the unfortunate man was caught between it and one of the centre props causing his immediate death. Last year it became my unpleasant duty to inquire into and report a somewhat similar case at the Washington mines. This is strictly prohibited by law, still persons will continue this dangerous practice unnecessarily and against the law; its provisions should be well known by this time by each person working in and around the mines. The bosses and superintendents should see that these parts of the law are obeyed by men under their control, as far as possible.

Accident No. 13.—Frank Holliday, a boy 17 years of age, working at the No. 3 Baltimore slope, for the Delaware & Hudson canal company, was killed. He was driving a team inside, as he usually did, but by some means unknown he fell under the trip of loaded cars and was thereby frightfully mangled and died instantly, sharing the fate of many of our poor driver-boys in the coal mines.

Accident No. 28.—John Finney, a laborer, working in the Fuller shaft, near Plymouth, leased by the Northern coal and iron company. He was

employed about the foot of the plane inside, near the foot of the shaft. Some of the connections of wire rope on the plane broke and let down the trip of cars. He was caught and crushed so badly that he died the next day from the effects.

Accident No. 29.—Michael Grout, a driver boy, aged 15 years, working in the Avondale shaft, D. L. and W. railroad company. He was driving as usual, when near the top of the plane where he was to stop his trip, he fell under the cars, a part of the train ran over him, and almost severed one of his limbs from his body. He was taken home, and died in about four or five hours from the injuries.

Accident No. 31. — Patrick M'Donough, a driver boy, aged 17 years, working in the mines of the Mocanaqua coal company, Shickshinny, after coupling up his trip, he called to his team to start them, and just as they started, he fell between the loaded cars, and was instantly killed.

Accident No. 4.—May 27, I received the sad news of the West Pittston calamity, where twenty persons lost their lives. The breaker was discovered to be on fire between one and two o'clock P. M., as will be seen by the testimony of various witnesses before the inquest.

I arrived there about 5 P. M., and at that time the whole structure of the old breader had been entirely consumed, nothing was left except the smouldering ruins. The mouth of the shaft, where a few of the timbers were still burning, was the centre of attraction. It was thronged by thousands moving to and fro in anxiety and suspense.

Not until about 12 o'clock that night, were we able to rescue the first person from the shaft, but continued to get them one after another; sometimes found singly, and others were found in groupes, until about 2 P. M. the next day, when the last person was hoisted; to the astonishment of all he was alive, but died subsequently. Twenty persons perished from inhaling the gases and impure air caused by the burning of the breaker. No second opening for escape had been provided as required by law.

I will here give the testimony as recorded by the coroner's jury and their verdict; also the testimony taken before the inspector of mines and a committee of respectable citizens of Pittston, who were solicited to witness and assist the inspector in this examination. They were one merchant, two mine superintendents and two practical miners.

THE INQUEST.

A jury being summoned, a coroner's inquest was held at the town hall of Pittston. Dr. O'Malley acting as coroner. The following testimony was elicited:

Coroner's inquest.—Jurors—James Walsh, M. Bolin, S. T. Barret, Morgan Jones, James Fitzpatrick, J. W. Freeman.

James M'Dermott, sworn—I was engineer in charge of the machinery on Saturday at West Pittston shaft; the first I knew of the fire was when Superintendent Kendrick came into the engine house; when the large doors were opened I saw the fire and gave the alarm at the bottom of the shaft; also gave the alarm through the speaking pipe; was in the fan house at 1:05 o'clock, with the superintendent, and all was in good order; don't know the exact time the fire broke out; the engine could be easily disconnected; the superintendent and myself measured the air and found 24,000 cubic feet of air passing through the air; the cracker box was 50 or 60 feet higher than the floor of the engine house; there was no communication of alarm between me and the cracker box; Rolland Gorman oiled the machinery; fire might occur by a hot journal; don't know what the condition

of the air was in the mine; no place to get out but the one; Inspector Williams was in the mine last Thursday; he made no complaint to me; the slope was begun about some eight months ago.

David Harris, sworn.—I am a miner, have worked there sixteen months; stopped work about the 16th of January; was out about three months; was not in the mine at the time of the accident; ventilation is very poor; the slope is 1,152 feet from the bottom of the shaft; the weighmaster at the bottom of the shaft gives signals from the engineer to the men in the mines, (Thomas Phillips is weighmaster,) who came up in the first carriage after getting the signal of danger without passing the signal to the men inside; Richard Clark, footman, came up with Phillips; suppose fifty men in the mine; seven came up with him; there are fourteen chambers, two men in each, and two with four men each; also four drivers and footman, two runners, two boys tending doors, one trackman, one man at the fan, and some others whom I didn't know; four mules and two horses. In his opinion there was opportunity to sink another shaft 150 feet beyond the mouth of the shaft. Work for the improvement of ventilation has been going on. The inspector was in my gangway last Tuesday; I told him the air was very bad; after blasting the smoke remained nearly all day; have not done anything at the new slope for the past three weeks on account of the gas: not more than three in a shift can work the slope.

Thomas Phillips, sworn.—First time I ever worked in the mines was at West Pittston; was weighing coal there on Saturday; I first heard the alarm at the foot; two footmen helped me to push the car of coal on the carriage and hearing the signal pushed it off again; John Jones is the only man who came up with me; I ran to the speaking pipe but could get no answer; told the footman to give four raps, but received no answer; put on my coat and locked my slate and books up in the scales; I went to the foot of the shaft and got on the carriage and went up; I did not go back in the mine that day while the men were at work; did not know what the alarm of danger was; was never informed it was my duty to give the alarm to the men; have worked there about twenty-one days; John Jones was inside boss; he was not there when the rapper struck; think I went up on the third carriage; was weighmaster the first time on the day of the accident; was footman before; I took the place of the man who was either discharged or changed to some other place.

Robert Cox, sworn.—Am a miner; commenced about the 8th of May; have mined coal about eight years; I think the ventilation was very bad; I was driving an air-course, and after I had it done I came out with six men, on account of the bad air; we told the boss about the men having to stop on account of the new air-course; it is the business of the weighmaster to give the alarm.

Edward R. Jones, sworn.—Am a miner; have been such twenty-five years; worked at the West Pittston shaft about ten days; was at the foot when the signal was given, waiting to go up; I saw the fire above while at the bottom of the shaft; I went back about one hundred and fifty yards and called my three friends to come, there was danger; I ran back and got on when the carriage came down; my friends came up on the second carriage after me; the air was good where I worked, but believe the air generally was bad; have been a miner twenty-five years.

Cross-examined by Inspector Williams.—We worked three shifts; four of us in my chamber; don't know of any others who worked three shifts.

Superintendent Kendrick.—The Lehigh Valley company own the mine; C. A. Blake works them; have been superintendent since first of January; my duty is to superintend the general management of the books above and

below; I think the ventilation was sufficient for the number of men we had to work. There were twenty-eight to thirty men in the morning shift last Saturday; I employed Phillips; I gave Frank Keller orders to surrender his position to Phillips, and inform Phillips of his duty; the duties of the weighmaster is not necessarily to attend alarms or signals, but it is the duty of the footman; four raps at the bottom is to listen to the speaking tube. Inspector Williams has been all through the mine with me several times, and gave no directions to have whistles at top and bottom of the shaft; Williams and I measured the air last Thursday, in the passages, and found 11,000 cubic feet per minute. [At this stage of the proceedings Inspector Williams, after having had extended to him the usual courtesies, got on his defence and indulged in the most insinuating remarks, reflecting upon the competency of the coroner and jury, when he was politely requested to leave.]

The inquest adjourned at 1½ o'clock P. M., to meet at the Town hall.

Mr. Kendrick, resumed.—The difference of depth from surface to bottom of shaft and bottom of slope is, the latter is about five yards lower; they were working to find the basin so as to know where to sink the shaft; think the mine inspector has been there about three times since last January; have had charge of mine about ten years; don't think the ventilation as good as he would like it, but the best they could get.

Inspector Williams, sworn.—I am mine inspector; I visit the different mines at my convenience; I was at the West Pittston shaft last Thursday. [Here Williams exhibited a panoramic view of the mine, giving the result of his last visit to the mine, the substance of which was that there were 1,680 cubic feet of air to the square inch per minute.] He stated that he also recommended the shortening of the speaking tube so as to be nearer the footman. He then examined the fan, which was driven very fast, and the upcast air-way very small. He did not know that there was more men than there was air for; thinks that for twenty men there was sufficient. They have been trying to make improvements in the ventilation; never knew that the breaker was on fire at one time soon after the Avondale disaster. They were working, in his opinion, under the twenty men clause, in the mine ventilation bill, on the 12th of September; they were 1,500 feet before the present proprietors had possession; at the last inspection, January 14, 1871, found the quantity of air very much improved. Mr. Williams had expressed to Supt. Kendrick his approval of the improvements. He denied having told Mr. Kendrick that he counted more than fifteen men in the shanty; this occurred on the occasion of his visit in May; said he told Mr. Kendrick that he might work in violation of law ninety-nine years, or he might not ninety-nine hours.

J. R. Gorman.—I was fireman at the breaker on Saturday; I attend the breaker engine, oil the fan, etc. I stopped the fan as soon as the alarm of fire was sounded, by order of Superintendent Kendrick; I stopped the fan; don't know how the fire originated; think the engine that run the fan occasionally run faster on account of the governor getting out of order.

Richard Clark.—I was footman at the shaft from Thursday till Saturday, at the time of the fire; his and the weighmaster's duty is to give alarms; when he heard, I staid at the foot till the next car came down the shaft; there were seven or eight men at the scales; Phillips did not go up the shaft till after I did; no one went back to give the alarm, that I know of; the fourth carriage was the last I saw come up; don't know of there being any inside-boss but Mr. Kendrick.

Michael O'Boyle.—I was a laborer in the shaft; I was in the old works when the fire broke out; as soon as I heard the alarm I went to the foot, when I saw the fire coming down the shaft; there were five men with me; I went back to bring some others, but could not find them; I went back to the foot and found the car had gone up; I went up on the last car that took anybody up; I think the air, where I worked, was good.

John M. Jones.—I am a miner; have worked there two years; think the air was good enough in the mines; I am inside-boss when Mr. Kendrick is not there; about two years ago they began an air-hole about 200 feet from the shaft, but abandoned it last summer, with the project of sinking a new shaft, and commenced the slope.

Simon Thomas.—I was a miner at the shaft; have been there for three years; think there was not sufficient ventilation in the mine; the superintendent intended to mine up from the west heading towards the north, to sink an air-shaft there; think that with the requisite force they might have got it completed by this time. They worked a few weeks on the slope during suspension; I believe that the fire originated by friction of the joints of the fan; was near the fire when it occurred; could not work inside on account of gas; there are usually about forty men inside on the morning shift; there were more men went out at the time the shift changed than afterward, which was at the time of the fire; the shift changes about three o'clock; fire occurred some time between two and three o'clock.

VERDICT OF THE INQUEST.

The inquest held by the coroner, Dr. O'Malley, have concluded their labors, and rendered the following verdict:

COMMONWEALTH OF PENNSYLVANIA, } ss:
Luzerne County, }

An inquest indented and taken at Pittston, in the county of Luzerne, the 30th day of May, A. D. 1871, before me, P. J. O'Malley, coroner of the county aforesaid, upon the view of the bodies of George Cull, Martin Crahan, David Connor, Timothy Walsh, Martin Cooney, Patrick Carden, Thomas Ruane, Patrick Farley, Thomas Prosser, William James, Charles M'Ginnis, Aaron Smallcombe, Benjamin Jones, David Edwards, Peter Davis, Evan R. Davis, then and there lying dead, upon the oaths of James Walsh, Michael Bolin, S. T. Barrett, Morgan Jones, James Fitzpatrick and J. W. Freeman, good and lawful men of the county aforesaid, who being sworn and affirmed to inquire on the part of the Commonwealth, when, where, how and after what manner the said George Cull, Martin Crahan, David Connor, Timothy Walsh, Martin Cooney, Patrick Carden, Thomas Ruane, Patrick Farley, Thomas Prosser, William James, Charles M'Ginnis, Aaron Smallcombe, Benjamin Jones, David Edwards, Peter Davis, Evan R. Davis came to their death, do say, upon their oath and affirmation, that the said George Cull, Martin Crahan, David Connor, Timothy Walsh, Martin Cooney, Patrick Carden, Thomas Ruane, Patrick Farley, Thomas Prosser, William James, Charles M'Ginnis, Aaron Smallcombe, Benjamin Jones, David Edwards, Peter Davis, Evan R. Davis, on the 27th of May, A. D. 1871, at West Pittston, in the county aforesaid, came to their deaths from the effects of impure air, caused by improper ventilation in the West Pittston mine, and from the effects of carbonic acid gas produced by the burning of the breaker in said mine, and that the fire was communicated to the breaker from friction of one of the journals of the fan; that Blake & Co. commenced operating the West Pittston mines on or about January 1,

1871; and further, that there is but one air passage for fresh air to descend to the mine, and but one passage for the escape of impure air, both of which passages are through a shaft 280 feet in depth, having their out-lets directly under the breaker, and that no work was in progress at the time of the fire, or any contemplated second shaft, tunnel or slope above or below ground for the supply of fresh air to the miners; and further, that repeated attempts to improve the quantity and quality of the air were made by said Blake & Co., and that each and every one of the successive attempts were inadequate for the purpose of proper ventilation, as required by law in an act, entitled "An Act providing for the health and safety of persons employed in coal mines," sections 3 and 7, approved 3d of March, 1870. Furthermore, that there was negligence upon the part of the employees of the company in not keeping the journal of the fan properly oiled; furthermore, that Blake & Co. did have in their employ, working in the mine at one shift and at one time, more than twenty men, and that upon Saturday, May 27, 1871, the said Blake & Co. had in their employ, and engaged in mining and producing coal, upon one shift, and at one time, not less than forty-three men, in violation of the aforesaid act of Assembly.

And furthermore, that Thomas M. Williams, mine inspector for and in the district in which said shaft of Blake & Co. is situated, has visited the said mines since the 1st of January, 1871, at least twice, the last time being May 24, 1871; that he has passed through the mine and inspected the operations and works of said Blake & Co.; that the said T. M. Williams suggested improvements in the ventilation of the mine; and furthermore, the said T. M. Williams was aware of the violation of the aforesaid act of Assembly by Blake & Co., and the said T. M. Williams has not protested against the violation of said act; and furthermore, the said T. M. Williams has failed to perform his office duty in not excercising due diligence to ascertain the number of men engaged at one time in said mine, and that the said T. M. Williams neglected to perform his official duty as required by law in not instituting legal proceedings to restrain the said Blake & Co. from violating the aforesaid act of Assembly.

In witness whereof, as well the aforesaid coroner as the jurors aforesaid, have to this investigation put their hands and seals, on the day and year, and at the place and time first above mentioned.

PETER J. O'MALLEY, *Coroner*
JAMES WALSH, *Foreman.*
M. BOLIN,
JAMES FITZPATRICK,
J. W. FREEMAN,
MORGAN JONES,
T. S. BARRETT.

INSPECTOR OF MINES' EXAMINATION.

The following is the testimony taken at the examination last week by the inspector of mines, Thomas M. Williams, relating to the West Pittson shaft disaster, on May 27, 1871.

Committee appointed by government inspector, Mr. T. M. Williams, to witness any matters brought before the inspector during this examination, Messrs. Thomas Smiles, Israel Watkin, Alfred Heffron, John Reed and Oscar F. Gaines.

Mr. James M'Dermott, engineer, deposed.—I am engineer at West Pittston mines; was on duty on Saturday last; could not say the exact time of fire; Mr. Kendrick called my attention first, by calling fire; I then ran to the top of the shaft and signalled to the footman, with the rapper; danger signal is steady rapping; I did not speak; understood the use of speaking tube; I then went to my engine; the signal I gave was pulling and shaking of the wire or rope of rapper; I ran eight or ten single trips; could not say how many men came up; saw the fire through the large doors, in line with the fan as near as I could tell; thought the fire originated near the fan; heard the inspector tell Mr. Kendrick that it would be better to move the tube more convenient to the engineer, and have a whistle to call at ention instead of rapping; same engine works fan and breaker; think the fan would run at the rate of ninety revolutions per minute; on an an average it would go ninety revolutions; could throw the breaker out of gear when convenient; fan was always in gear; had a governor to regulate speed; did not think it was in good order; the fan was at one time doubled in speed to measure the air; breaker not running; heard Mr. Kendrick state the fan discharged 24,000 cubic feet; this occurred at five minutes to one o'clock on Saturday; this speed lasted about ten minutes; did not know of anything dangerous or out of order in running at a high speed; I have been there since November 1, 1865; never known any actual fire since Avondale disaster, but have seen smoke from pulley.

Mr. J. R. Gorman, fireman, deposed.—I was on the day shift on Saturday; my business was to attend the fires at the breaker engine, oil the fans and run the breaker engine; speed of engines, from forty-five to fifty revolutions, speed of fan twice as fast; did not run the hoisting engine at any time: on this day I ran her from 90 to 100, while testing the air, by order of Mr. M'Dermott; Mr. Kendrick measured the air; no other was present; this occurred at dinner hour, between 12 and 1 o'clock; did not know when the fire broke out; Mr. Kendrick came in, crying fire! I ran and stopped the fan and breaker; did not know how many carriages were hoisted; could not apply the hose, in consequence of steam, &c., pumps were working at the time of the fire.

Mr. M'Dermott re-called.—Mr. Kendrick gave the instructions as to increasing the speed of the fans, and I ordered Mr. Gorman; had only the hose attached to the pump; the column pipe, three inches, would throw water only a short distance when the speed of the engine was from three to five per minute; once had a Woodward donkey that could throw water to the top of the shaft; it was taken down the mine last winter, previous to this company taking possession of the mine.

Mr. David Reese, deposed.—I am breaker boss; my duty is to attend to cleaning of the coal, oil the screen and breaker, and keep the men's time; have been there one month; was on duty the day of the accident; did not see the fire when it broke out; first I saw was on the rope, on the top, while the engineer was hoisting the carriages; went on the top; told the boys to clear; did smell some rags or something before I saw the fire come up on the rope into the pulley and set the top on fire; did not know how many carriages were hoisted; could not see down the shaft, as there was too much smoke; first fire I saw was on the west side rope, coming up.

Mr. Sanderson Sherley, deposed.—I am docking boss; was at my post near the top of shaft, on the day of the accident, about ten feet above the fan; I first smelled a fire of burning pine; mentioned the fact to Mr. Reese, and ran down stairs and saw Mr. Kendrick, and gave the alarm; could see the fire between the fan and pump-way; think the fire broke out about the fan; could not say positively the time; five cars were hoisted after one

o'clock; timed the hoisting of a few cars, average two minutes to a car; they were only hoisting on one side at this time; a delay of ten or fifteen minutes between the hoisting of the two or three last carriages after dinner; think there was no other delay; no coal was hoisted after I saw the fire; could not say how many men came up; have been there three years; have known danger from friction, in the screen room at the roller, two weeks previously to going to be docking boss; I smelled a fire under the roller; it was easily put out; made a practice of oiling every hour; don't remember the exact circumstances of any previous fire since the Avondale disaster.

Mr. Youngs Davies, deposed.—I was feeding the breaker when the accident occurred; saw smoke come from the head; did not see the fire before the alarm was given; did not see the fire break out; have been there nearly a year; one of the rollers was dangerous, sometimes getting heated; have known the other roller to become heated, but not in a blaze; could not say positively where the fire broke out; saw the fire on the journals at one time.

Mr. Thomas Woodhouse, deposed.—Was feeding the breaker at the time of accident on Saturday; saw the fire in the box attached to the fans; they were throwing water on it from below; think the fire originated in west journal of the fans; it was between one and two o'clock P. M.; have been five or six years at this place, off and on; did not smell any fire until the alarm was given; one of the journals of the roller was subject to become heated; the officials knew about the rollers becoming heated; have had charge of this part of the machinery; one of these journals was heated two weeks previous to Saturday last; sometimes sulphur was used, as difficulty was felt in getting oil; it was not always on hand, and had to be sent for.

Mr. Joseph Crossley, deposed.—I was taking out the culm from the schutes to culm dump; saw smoke; afterward saw fire; asked for water but got no assistance; John Doherty was the only man carrying water at the time; thought he saw the fire first on the south side of the fans, about two o'clock P. M.

Mr. Joseph Crowell, deposed.—I have seen the journal heated; on the last day of September, 1869; was smoking, but not in a blaze; I left there in December, 1869.

Mr. Edward Elward, deposed.—I was down in the mines, as track-layer, at the time of accident; footman said something was the matter; looked up the shaft; saw sparks of fire; very soon the shaft was all in a blaze; they went up the shaft afterwards; after I got up I saw a fire which appeared to be fifty feet above the fans; heard a woman say she had smelled a fire fifteen or twenty minutes before; did not know how many men were working down in the mines; saw the inspector last week when he was down.

Mr. Frank Keller, deposed.—Was weighmaster at the foot; kept the company's men's time; was there only an hour and a-half; Mr. Kendrick told me to fix a fan in the air-way; at night wanted more coal out; more air was needed; I went to the foundry for one; then went to Pittston to get one; on the day before the fire (Friday) there were 18 or 19 company hands in the mine; on Wednesday there were about 24; could not say how many men were down altogether; there were 30 numbers out, each miner and laborer had a number; four of these places were not working at all these days; did not usually see how many men came down; the speaking tube was put down where I was working; could tell every word that might be said at the top; in case of danger we could report to the men in the mine; was on the top fixing up the dunkey engine, ready to go down; when the fire broke out in the pumpway where the fan stood, Mr. Kendrick told me to show Mr. Phillips how to weigh coal; Mr. Kendrick did not tell me

to show my successor in all the duties of that office, only how to weigh coal; at noon on Saturday I heard the noise proceeding from the fan, in consequence of the increased speed; thought something was wrong; Mr. Kendrick measured the air 24,000, usual quantity 13,000; two weeks ago I smelled a smell as if something was burning at the top; I asked through the tube, and the engineer said some of the journals of the roller had been on fire or heated.

Mr. J. Touhill, deposed.—I do not work at West Pittston shaft; I helped to put up the fan wrought iron shaft, cast iron spadders and wooden case; usual speed from 90 to 100, or two to one with the engine; thought it ought to run 300 revolutions per minute with safety; at that speed it would be required to oil from two to four times a day; there was no oil cup on the journals; have examined the journals several times; advised Mr. Kendrick to put an 8 or 9 feet wheel on instead of the 4 feet one, which would increase its speed to between 200 and 300; have made improvements under Mr. Kendrick's instructions.

Mr. W. Kendrick, superintendent at West Pittston mines, deposed.—On Saturday last I saw a fire, and immediately ran and hollered fire; saw the fire first come out of the up-cast from the fan; then ran to the engine house and stopped the fan; the blaze then came down; saw two or three cages of men come up; thought there would be five persons on one and three on each of the others; this was between 2 and 2.30 P. M.; think it must have caught from the journals of the breaker, as the fire would naturally be drawn by the suction of the fan toward the upcast shaft, or from the sparks of the miners' lamps; Reese, the breaker boss, had orders to the oiling of these places; we run the fan up to 80 to 95 revolutions; the ordinary speed was about 65 to 80 revolutions, 24,000 cubic feet per minute; on Wednesday it was 11,900 cubic feet; learned about two or three weeks ago that the journals of the breaker were dangerous; was so informed by Mr. Sherly; discharged a man for not taking better care of these oiling matters; could not say precisely where the fire originated, as I went immediately to see after the men getting out of the mine; the engine was stopped by my orders; the greatest probability is that the fire originated on the top; the size of the shaft is 2 feet 6 inches by 2 feet 8 inches; think the journals would heat in fifteen or twenty minutes if not attended to; much depended on the quantity of coal that was passing through the breaker; thought there would be from 45 to 48 men in the mine at the time of the fire; including all, there would be 13 or 14 breasts and gangways working; as a rule two work in a place, sometimes one; a number were working on the airways east, the slope not working; there are four breasts on the west side, on the counter gangway west. "The inspector asked Mr. Kendrick if he (the inspector) had not asked him if there was any person working upon that road; Mr. Kendrick said he thought not; he did not understand his question if he did say so." "Did the inspector tell you, Mr. Kendrick, that the air was too small in quantity for mines? Answer, yes; and he thought that 40,000 or 50,000 cubic feet would not be too much." On Wednesday we had as many men in the mine as on the Saturday, but not so many places at work; did not think any fresh men were employed from Wednesday to Saturday; may have opened new places on Thursday or Friday; we opened four new places on the slope after the visit of the inspector, up to the time of the fire; thought the inspector should have told me if I had too many men in the mines; Mr. Brown had told me to study the law and do all I could to keep the men out of danger; the inspector never told him to break the law, but had told him to keep within the law; Mr. Brown had provided him with a copy of the law; did not think he had

violated the law; did not think it his duty to go five or six miles to seek the law; could recollect the visit of the inspector and the nature of the conversation between them; the inspector cautioned Mr. Kendrick about being caught, probably in ninety hours, probably not in ninety years, while violating the law in any respect; had not any system as to how many men had to be down at one time, it was discretionary with the men.

William Davies, deposed.—I was a miner in the West Pittston shaft at the time of the fire, on the night shift; had been gone down about 20 minutes before the alarm was given; John Williams, a new hand, was with him on the same shift; I was opening a breast in the slope; they had started two new chambers on Thursday, and three on Friday; we went down the shaft about 2 o'clock P. M.; after the alarm we ran back to the foot of the shaft, when large quantities of burning timber were falling down the shaft; we then began to prepare for keeping back the smoke that was filling the place; the east heading and air-way had two men in each place; upon the hill were 4 places working, with 11 men; west side, 4 places, with two men in each place, and a heading with 1 man; west heading and air-way had 4 men in them; could not say how many men were in the slope; was in the slope with Mr. Kendrick, and saw one man; have been working in these mines since July, 1869; begun first day after resumption; could not say how many places were begun on that day; knew there were too many men in the mine; had understood that there had been no new chambers opened for one year; knew the law was violated.

Mr. Kendrick, re-called.—Said he did not know about the ages of the boys, as they had been in the mines before; thought the two boys were considerably above 12 years; did not know Martin Crahan's age to be 11 years and 5 months; did not believe it; admitted that he ought to know the ages, but had judged by appearances.

Mr. Bernard Mulroy, deposed.—I have known Martin Crahan 3 years; his age at death, on Saturday, was 11 years and 5 months, as given to Father Feenan, who buried him; this boy had been in and out of the mines for about 2 years.

Mr. Chason Davies, deposed.—Was not working there at time of accident; have been there previously as fire boss; was there from July, 1869, to January 31, 1871; the breaker was on fire and alarm given 3 times; miners came to the top once, and to the bottom twice; these alarms were to be conveyed to the men by Mr. T. Jones, and then to each other; the speaking tube was not completed until after I left; could remember seeing the inspector in September, 1870, and another time afterwards; on the latter occasion they were hoisting water from the gangway; on the first visit the inspector was all through the mines, excepting eight old chambers that were abandoned; the understanding was that no chambers or breasts were to be started on the gangways, air-ways and slope; Mr. Kendrick was in charge at last visit; Mr. Brown, after January 1, 1871, took all charge to himself; has known about 150 men working at one time previous to the mine being stopped; before the first visit of the inspector the whole hill was stopped on account of gas; "What position did Davies hold under Kendrick?" Fire boss; had a conversation to the effect that Davies told Kendrick to be careful not to put a number to violate the mining law of 1870, when opening breasts on the west side; Kendrick said he "would take care of that himself;" "Did you have any conversation about the number?" Yes, the number was often mentioned as being 20 persons; this embraces all boys, as well, and was well understood; Mr. Kendrick stated to Mr. Davies and John Cortright that in reply to what the inspector said, that "it was all right—he and Mr Williams knew each other before, and

Mr. Williams knew where he came from, and had been together before;" did think that no boy under 12 years was working during my term; don't deny that Mr. Cake had employed more than 20 persons.

Mr. Thomas Phillips, deposed.—I was, on Saturday night last, on duty as weighmaster at the foot of the shaft; I started on the 9th of May to bale water; began as weighmaster on Saturday morning; was at the foot on Friday to receive instructions as weighmaster; heard Mr. Kendrick tell Keller to give me instructions; only received it as I asked for it; did not ask any questions respecting the speaking tube; got to understand it by paying attention to the footman and Mr. Keller; did not know of any danger signals from any one; he had not the alarm of fire given through the tube; went to the tube, but got no answer.

Mr. Thomas H. Williams, deposed.—Have not been at West Pittston mines since last April; was there near 2 years, previous to that time, but did not work steady; heard the inspector say, on his second visit, to Mr. Kendrick, to mind and not put more than the lawful number of men at any one time; a few days after this I was rather late in going to work, and on going to the top of the shaft, was told by the watchman, Mr. Jesse Geddis, that I could not go down, as there were 20 men down already; Mr. Kendrick must have employed the watchman; one morning, soon after this, my butty or partner was late, but got down, there being then more than 20 men in the mine; they were working three shifts on the slope at that time; there was no rule respecting the changing of the shifts of the men; was within three feet of Mr. Kendrick and the inspector when I heard their conversation; was understood they were working under the mine law; worked there about a month afterwards; think they had more than twenty men before I left, after the day I was sent home; the order only obeyed for one day; sometimes they had to be at the mines at 7 o'clock A. M.; did not know the reason why he was turned back; had talked the matter over in the mine; thought there must have been 20 or more men down, independent of the boys; did not think any of the boys to be under age; Crahan was not in the mine at the time.

Mr. Simon Thomas, deposed.—I was at the West Pittston mine on the day of the accident; was cutting a place for the new fan near the other fan; saw the smoke break out; saw the smoke coming out of the engine house roof; could not say exactly where the fire broke out; was positive it was above; I am a miner and work in the slope, sinking the slope; have been there three years; heard of the inspector being there in September, 1870; saw him in January, 1871, out-side; I can corroborate the statement of Mr. Williams; about seven men came up the shaft previous to the alarm being given; the talk had often been between himself and Mr. Kendrick; had heard Mr. Kendrick say he did not see why they could not have so much coal out as well as other places—Pleasant Valley, for instance; did not know it was the watchman's duty to prevent men from going down the mine; don't know why the men were turned back; slope and air-way were stopped, in consequence of seven cents; in January a difference occurred about prices, of seven cents per ton; in our agreement Mr. Kendrick said the drop would not affect the narrow working, as they were being worked by the yard, and there would be no chambers worked within a year or so; we had the ventilation bill talked over; had no intention of making the inspector acquainted with this matter, but hoped he would, in course of time, make his appearance.

TO THE PUBLIC.

We, the undersigned, hereby certify that the above is a correct copy of the evidence taken before the mine inspector, T. M. Williams, at Pittston, May 31, 1871, respecting the West Pittston calamity, on May 27, 1871. Without comment for or against anyone, we leave the public to judge, hoping they will do so calmly, discreetly and without prejudice.

Signed, as committee,

THOMAS SMILES,
ISRAEL WATKINS,
ALFRED HEFFRON,
JOHN REED.

JOSHUA GOLIGHTLEY, *Secretary pro tem.*

DECISION IN REGARD TO COUNTY PAYING COSTS OF INQUEST, &C.

Return of inquests on the bodies of twelve persons killed, mostly in and about the coal mines, in Luzerne county, previous to the following opinion being rendered by the court as to the liability of the county to pay fees and costs in such inquests.

* * * * * * * * *

The foregoing several returns of inquests have been presented to us for examination. The more immediate purpose of this is, as we have been informed by council, to obtain from the court an opinion as to the liability of the county for the costs, as charged in the said several returns.

Under the 15th section of the act of May 27, 1841, (*Purdon Cog.*, *P.L.* 127,) justices of the peace were authorized, under certain contingencies, to hold inquests of this character; and to that section was appended a proviso, in the following words:

"That no fees or costs shall be allowed or paid said justice or inquests until the proceedings are submitted to the court of quarter sessions of the proper county, and said court shall adjudge that there was reasonable cause for holding said inquest, and approve the same."

We should have had no serious difficulty now, in disposing of the cases named in the foregoing schedule, had the law remained unchanged; and probably such disposition would have been alike satisfactory as well to the county as to the parties claiming fees and costs. But the act of March 30, 1866, (*Purdon* 1444, *P. L.* 391,) applicable singly to the county of Luzerne, works a complete change in the liability of the county for compensation to coroners as well as to justices of the peace and jurors, growing out of the holding of these inquests. By the terms of this act it does not become the duty, either of the coroner or any justice of the peace in this county, to hold an inquest on the body of any deceased person "unless the said deceased person shall have died of unlawful violence, or other unlawful acts, at the hands of some other person or persons, or there be such strong suspicion of such violence or other unlawful acts as to make an inquest necessary, &c." And further, while it does not prohibit, in any manner, the holding of inquests by the officers before named, yet, in terms altogether unequivocal, it declares that "if the said coroner or justice shall hold an inquest in any other case, he and the jurors shall not be entitled to any compensation therefor."

None of the returns now before us embrace a case within the provisions of the act of 1866; but, on the contrary, each exhibits a death resulting

from accident, and occurring almost exclusively in and about the coal mines of this county.

It follows, therefore, that an "approval" by the court, as contemplated by the act of 1841, before referred to, and payment of fees and costs by the county, in the several cases embraced herein, must be denied.

We may add that the act of 1870, entitled "An Act providing for the health and safety of persons employed in coal mines, &c.," makes no change in the matter of compensation for fees and costs of inquests, *as such*, so far as the liability of the county is concerned.

That act, however, contemplates an investigation, on the part of the inspector of mines for the proposed district, in cases where there has been an "explosion or accident," and provides for payments, by the county, of the expenses growing out of such investigation.

GARRICK M. HARDING,
President Judge.

[Copied per T. M. Williams, inspector of coal mines, &c., May 13, 1871, from copy in the prothonotary's office, on file since April 17, 1871. Published in Scranton *Republican* about 1st of April or May.]

Since I received my commission last July, I have assisted to hold inquests, or at least to call for them; and have in each case conducted the examining of witnesses in over twenty cases, under the coroner himself and several justices of the peace, it being the custom in this country, England and Wales; they at all times wishing me to do so. Those parties finally applied to the court for pay, when his Honor, Judge Harding, decided that, under the law of 1866, they could not be paid unless the person had been killed by violence at the hands of some other person or persons, &c., and that the law of 1870 (mining law) contemplated an investigation by the inspector of mines, &c.

Now I did not wish to interfere with the coroner's jury in this important case, (although not one of the cases that required him to act according to his Honor, Judge Harding's decision,) so I made my appearance, as usual, but was reluctantly allowed to question or cross-examine one witness; and when the mine boss (Kendrick) was on the stand I was refused to ask him a single question, even after all the others were through with him; and it was here that an expert was wanting. This was the man that had direction of the place; but no, he should not be interrogated by me. So I told the coroner that I thought it strange proceedings, and asked him who was going to question the witness. He said he was. I then plainly told him he was not a fit person to do so, and doubted very much if he had a man on the jury fit to do so in this case. Whereupon I was requested to leave the room, and this no doubt helped to give tone to their *verdict*.

I was called again in the afternoon to testify. I did so in a clear and candid manner, and showed them a map of the mine. I described the mine and my last visit through a portion of the same; my reason for not having traversed it all, and the deceiving manner in which Mr. Kendrick led me to believe there was only the lawful number of men in the mine. This was mostly left out, except such pieces as they could use separate, and construe to suit their own taste.

After I saw the whole thing was nothing but a farce, I told the coroner what I was going to do the Wednesday following—hold the investigation—but he did not make his appearance.

I visited the mine in September, 1870; again in January, 1871. The first time not one man worked there; dispute between the company, and had bad ventilation in the mines.

In January there were one or two persons hoisting water from a slope, and Kendrick, (then a new boss,) with four or five men, making an air-bridge. This was during suspension, and they were expecting to start the next day on their east and west gangways, and their air-ways, also the slope and its air-way. This was all that Mr. Brown and Mr. Kendrick wanted to do, as they said they could not do anything with the old work—only drive into the solid and open new work. I told the boss Kendrick and Brown to get fixed all the things called for and required by law as soon as possible, as plenty of time had been given, &c., and charged Mr. Kendrick (as I have witness to prove and have proved) to allow no more men down in the mine, at one time, than the law required; and in talking of their small fan, I stated that they might be able to get along with it until they got through with the contemplated shaft, for the number of men allowed by law.

My last visit was on May 24th; they had just started afresh some time through the month, and I was under the impression that the understanding previously between us, not to work chambers, was kept in good faith. I entered the mine, traveled the slope and air-way into the east side gangway and air-way, and then back to foot of shaft; looked into the shifting shanty; saw some ten or a dozen persons in there at dinner; on going away from there towards the west gangway, I asked Mr. Kendrick how it was there were so many men in the shanty, and if any of them belonged to the slope that we had seen before. He said, "yes, that those men from the slope were there at dinner;" "I just thought that," said I. "If not, you would have more than your compliment of men down here." So we walked on into the west side gangway and its air-way. Returned to a place where they were making a new stable, and on returning saw the road leading up the hill; asked if any one worked up there; Kendrick said, "No, not now; they have been, but are not now." (After the fire it was proved that four chambers and a gangway [counter] were at work at the time of my visit, and that five new chambers were started the two days next after I was there, and some new hands were employed to do so.) From there we went to the return air-way at the foot of shaft; measured the air at the same place that Kendrick made out a report a few days previous and sent to me; the three splits together, according to his report above referred to, were 9,600 cubic feet; my measurement, (with him there to see it done,) was 1,680 cubic feet per minute at foot of up-cast shaft, and when I measured the 1,680 cubic feet, the fan exhausted at the top 11,900 cubic feet.

The day of the calamity Mr. Kendrick was experimenting to get more air out of the fan; at five minutes to one o'clock, increased her speed; got 24,000 cubic feet per minute.

I have thought it proper to report the testimony relating to this accident in full, and feel it to be my privilege and duty to exonerate myself from the charges of negligence and incompetency that have been freely made by the public press and by private persons.

It seems to be established by the testimony taken, that the fire was occasioned by the friction produced by the fan, which, under the direction of Mr. Kendrick, was being driven at a very extraordinary rate of speed, without the use of any adequate precautions to prevent accidents. According to a measurement made by me, when inspecting the mines a short time before the fire, I found 11,900 cubic feet per minute of air passing out of the fan exhaust.

On the day of the fire, it was ascertained by measurement made by Mr. Kendrick at fan exhaust, that 24,000 cubic feet per minute was being then exhausted. From the testimony of the engineers and others, the fan was ordinarily run at the rate of about 95 revolutions per minute; if 95 revolu-

tions would afford 11,900 cubic feet of air per minute, then to produce 24,000 cubic feet per minute, the speed must have been increased about three times, or to about 285 or 300 revolutions per minute.

In "Hopton's Conversation on Mines," it is laid down that to double the quantity of air in a mine, the ventilating power must be increased four times, to overcome the friction of the air which increases in the same ratio as the force with which it is impelled. The same proposition is asserted in "Atkinson's Practical Treatise on Gases and General Principle of Ventilation," in "Hyslop's Colliery Management," and in "Useful Metals and their Alloys."

Why then did this superintendent inaugurate an experiment which resulted so disastrously, without, at the same time, using the common caution to guard against danger?

He professes to be an experienced miner and overseer; his conduct indicates either gross carelessness or inexcusable ignorance.

He stated that the journals of some part of the machinery would heat in ten or fifteen minutes. How important then that such men understand their duty, and stand ready at all times to give warning of danger, and particularly when the danger was multiplied manifold by the unusual and extraordinary experiment of increasing the speed of the fan from 95 to probably 285 or 300 revolutions per minute.

Of course the inspector could not be held responsible for the speed of the machinery, as his capabilities do not permit him to be personally present at over a hundred collieries, to be found in his district, at the same time; but the complaint was that more men were at work in the mine than the law allowed. When the fearful slate of dead and dying reached thirty-four, the superintendent sought to shift the responsibility of his palpable violation of the plain letter of the law, as well as of his criminal negligence, upon other shoulders. He "thought the inspector should have told him if he had too many men in the mine," leaving the inference clear that the inspector knew and acquiesed in his violation of the law. At the time of this accident, by the general interpretation placed upon the act, twenty persons were to be allowed in a mine with a single opening, and that number were permitted in all cases. After the calamity, his Honor, Judge Harding, held, in the case of the Commonwealth, *ex relatione*, T. M. Williams vs. Samuel Bonnell, that no more persons could be permitted at one time in any such mine than were sufficient to drive the second opening, not exceeding twenty persons.

According to the light had at the time, I believed Mr. Kendrick to be working no more men than the law allowed, namely twenty persons, and I am now forced to the conclusion that, at the time of my last visit, he wilfully deceived me in relation to the number at work.

Having previously explored the whole mine, although not at work, I did not at that time deem it necessary to go into parts in which I was assured, by Mr. Kendrick, no men were at work, and, therefore, left with the impression that he was complying with the law. That he knew its requirements is evident from the fact that he used deception as to the number of persons at work; besides the evidence given by several of the witnesses of having conversed with him about the law, a number of persons, &c., also of having heard me call his attention to the matter during my visits there. His employer had furnished him with a copy, and instructed him to study it and do all he could to keep the men out of danger. Twenty persons and no more could be worked at one time according to its plain provisions. He knew it, and, therefore, found it necessary to deceive the inspector as to the number actually at work.

Unless suspicious of some wrong, could it have been expected of an inspector to disbelieve all mine officers? I think not. In no respect had I neglected my duty; in no respect had I failed to require compliance with the letter and spirit of the law, and am, therefore, blameless in this matter.

ACCIDENTS NOT FATAL.

There have been 90 accidents not resulting in death in and around the mines during the year, many of which were very serious.

Thirty-one persons were burnt by the explosions of carburetted hydrogen gas, (better known as fire-damp.) Two out of this number were crippled, probably for life. The first was Joseph Constable, an Englishman—accident No. 1 in table 1, in the non-fatal list. He was a stranger, lately arrived in this country from England. He engaged to work a steam pumping engine at the Fellows & Dodson shaft, placed in the return air-way at the foot of the shaft. The mine was not producing coal at this time. Nothing was being done except hoisting and pumping water. The head man in charge of the machinery, named B. Jones, descended the shaft in company with Mr. Constable. The latter descended from the carriage into the gangway bottom, which was covered with water from 15 to 20 inches in depth. He then told Jones that he did not know the road in to where the pump was. Jones gave him directions how to proceed. Constable then wended his way inwards, at the same time Jones ascended shaft. Not long afterwards an explosion was heard, and, on searching, the man Constable was found, badly burnt. Being a stranger, and without a guide, he had gone too far into the mine, and ignited a quantity of gas. How he ever lived to come from there is a mystery, but he suffered much from his injury, and will never be as good as before this accident.

This was sheer carelessness on the part of somebody, as a man who had not been in the mine but once previously, and then under different circumstances, should not have been sent to wander through the unknown parts of a mine in that manner, especially when all parties in charge knew there was a quantity of gas accumulated in the mine, from doors being out of their places.

Accident No. 33.—Mathew Cannon, a miner, working in the Empire shaft, No. 4 slope. He was working a breast, and was seriously burned by explosion of fire-damp. He says that the gas ignited from a spark struck off by his pick. This statement seems rather doubtful; but be that as it may, this unfortunate man has been in a very precarious condition, and it is uncertain whether he will ever be able to do another hard day's labor. The other accidents were not so serious. They nevertheless demonstrate the carelessness of many of the victims themselves, and their unfitness to work in places containing fire-damp.

FALLS OF ROCK.

There were eleven persons injured, more or less, by falls of rock. The greater proportion of such accidents are unavoidable. There may have been cases where better care, on the part of the men themselves, would have avoided danger. Several very serious accidents of this class have occurred.

FALLS OF COAL.

There were fifteen persons hurt by falls of coal in different ways, several of whom were seriously injured. A large majority of such accidents arise from the lack of skill and experience of persons employed as miners. Not

unfrequently laborers of very limited experience in mining are employed as miners, through favoritism or other motive, and as a result many serious casualties occur. To possess the skill of an experienced miner it is essential to serve a long and careful apprenticeship. A laborer who can drill a hole and fire it is no more a miner than a person who can start an engine is an engineer. The skillful miner understands the nature and quality of the material in which he works. His experience enables him better to judge of the roof, the sufficiency of pillars, and to detect approaching danger by infallible signs, which are unseen by the ignorant. If no motive, save fitness for the place, governed in the employment of men accidents of this class, and of all classes, would be far more rare.

FALLING DOWN SHAFTS.

Only one person has been injured by falling down a shaft; at the same time and place another person lost his life, and the survivor escaped narrowly.

BURNING WITH GUNPOWDER.

Eight persons were injured, more or less, from burning with gunpowder, in various ways. Several accidents were caused by sparks falling from lamps into powder while it was being handled, either in cartridges or kegs. A common and pernicious practice, of even experienced miners, is to keep their lamps on their heads while filling and making cartridges, thereby endangering their own lives and the lives of others.

MISCELLANEOUS ACCIDENTS.

Under this head may be classed 12 persons that were injured, more or less, in different ways, not included under other titles: One by premature explosion of blast in rock; one by having had leg broken by a prop falling upon him, and still another in the same manner as the latter, only at another place; one was caught between coal and prop in a schute, while starting his battery; one was struck by a piece of coal from a blast, and still another from the same cause, at another mine; one had his leg broken by a mule falling upon him; one had his hand badly mashed in the mines; one was kicked by a mule, which he was driving, on his head; one had his arm very severely cut; one had his leg broken by a piece of timber falling upon him; one, a boy, had his arm broken by a piece of coal flying off from the pillar side, where there was a crush in the mine.

ACCIDENTS ABOVE GROUND.

There were three accidents above ground belonging to this class. One, a boy, fell upon a large screen when it was revolving in the braker, and was injured seriously. One boy had his arm caught and broken between car and schute, under a braker. Another boy fell down inside the braker. The two latter were not very seriously injured.

ACCIDENTS BY BEING CRUSHED &C., BY MINE CARS.

Under this head may be classed nine more injuries. Three of the persons injured were laborers, three were driver boys, two were engaged in tending doors, who were caught between their doors and the cars, and injured more or less. The ninth was a miner; run over, leg and arm broken, when assisting driver to get car into his working place.

It appears that under this head, in the list of fatal and not fatal, a large share of the accidents in and about the mines occur, and further, that it is the young boys who are generally found the victims. This shows again, that if more care was taken in employing competent persons the number of accidents would be less. The cheapness of boys' labor is undoubtedly the inducement which leads to their employment, but in reality it is, in many instances, more expensive to the operator, in the end, than the labor of men would have been. Taking it for granted that a large proportion of the accidents are occasioned by the carelessness and ignorance of inexperienced workmen, (and who so careless and inexperienced as boys?) and recollecting that every accident occasions a suspension of the whole works, during the day of its occurrence, and, in case of death, until after the funeral of the deceased, frequently a period of two or three days, and remembering also the subscriptions and contributions constantly solicited and cheerfully made for widows, orphans and disabled persons, it will be seen that accidents entail great loss and expense on men and operators; and whoever contributes most to the happening of accidents contributes most to loss of time and money. In my judgment, the loss to operators from accidents occurring through the employment of incapable men and young boys would much more than compensate them for any difference in wages between such persons and those entirely competent.

GENERAL CONDITION OF THE MINES, &C.

I had intended to give a brief description of each mine in the district, showing their condition in 1870, when I made my first visit, and their condition, respectively, at the close of the year 1871, so that if any improvements have been made they might appear; but owing to the length of this report, I have concluded to make the comparison in a tabulated form, which, I have no doubt, will in the main answer the same purpose.

John Doyle	[illegible]	[illegible]
Tim. Walsh	[illegible]	[illegible]
Benjamin Jones	[illegible]	[illegible]
Patrick Earley	[illegible]	[illegible]
Adam Smith	Delaware and Hudson canal company	Little east of Wilkesbarre.
Hugh Hughes	Mineral Spring coal company	Mineral Spring.
[illegible]	[illegible]	Plains-ville
[illegible]	[illegible]	Ashley

22...	11	Old slope	Near Wilkesbarre	Franklin coal company	Michael Conyngham...
31...	12	East Boston	Near Kingston	Consumers' coal company	Ed. Ham
August 8...	13	Baltimore, No. 3, slope	1 mile east of Wilkesbarre	D. and H. C. company	Frank Hollilday
11...	14	Port Bowkley slope	Plainesville	Wyoming coal and transportation co	Patrick Nichols
11...	15	Baltimore, No. 1, slope	Near Wilkesbarre	D. and H. C. company	Samuel Johns
21...	16	Sugar Notch mines	Sugar Notch	Wilkesbarre coal and iron company	Frank Brenner
25...	17	Port Bowkley slop?	Plainesville	Wyoming coal and transportation co	Patrick Moore
26...	18	Slope No. 2	Newport	Lehigh coal and navigation company	Thomas Walsh
.....	19	Mill Creek breaker	Mill Creek	D. and H. C. company	Hugh Dougherty
Sept. 4...	20	Lance colliery	Plymouth	Wilkesbarre coal and iron company	George Ashman
9...	21	Baltimore, No. 1	Near Wilkesbarre	D. and H. C. company	Thomas Tretheway
18 ..	22	Laurel Run slope	Laurel Run	do	John Harwood
19...	23	Baltimore, No. 1, slope	Mear Wilkesbarre	do	Patrick Sharp
23...	24	Gaylord slope	Plymouth'	Headstrom & Co	Corey Downs
28...	25	Newport mines	Newport	L. C. and N. company	Evan Morgan
Nov. 4...	26	Hollenbach, No. 2	Near Wilkesbarre	Wilkesbarre coal and iron company	Michael Ennis
10...	27	Nottingham shaft	Plymouth	Broderick, Conyngham & Co	Robert Rodgers
20...	28	Fuller's shaft	do	Northern coal and iron company	John Finney
Dec. 4...	29	Avondale shaft	Below Plymouth	D., L. and Western coal company	Michael Grout
9...	30	Nanticoke tunnel	Nanticoke	Susquehanna coal company	Morris Conway
11...	31	Mocanaqua	Shickshinny	Mocanaqua coal company	Patrick M'Donough
.....	32	Maffet's new slope	Plainesville	Wilkesbarre and Seneca Lake coal co	Michael M'Donnel
May	33	Empire, No. 3	Empire	Wilkesbarre cool and iron company	John Spargo
Aug.	34	Swetland shaft	Near Plymouth	N. C. and iron company	James Lawler
1871.		*Non-fatal list:*			*Persons injured:*
Feb. 23...	1	Dodson shaft	Plymouth	Fellows, Dodson & Co	Joseph Constable
Mar.	2	Lance shaft	do	William W. Lance & Sons	James Harvey
20...	3	do	do	do	Morgan M. Morgan
April 14...	4	do	do	do	Thomas Young
25...	5	Dodson shaft	do	Fellows, Dodson & Co	Sidney Gillard
.....	6	Washington mines	Near Plymouth	Broderick, Conyngham & Co	—— Jones
25...	7	Sugar Notch mines	Sugar Notch	Wilkesbarre coal and iron company	Thomas Conway
28...	8	do	do	do	James Geach
May 2...	9	Maffet's new slope	Plainesville	Wilkesbarre and Seneca Lake coal co	Thomas Litlehales Kennet Fergeson
3...	10	Lance shaft	Plymouth	Lance & Sons	James Lever Joseph Carr William Scott
15...	11	Empire shaft	Near Wilkesbarre	Wilkesbarre coal and iron company	Morgan Jones
16...	12	Enterprise mines	Plainesville	J. H. Swoyer	John Brown John Atkins
19...	13	Port Bowkley	do	Wyoming coal and transportation co	Patrick Starrs

TABLE No. 1.—CONTINUED.

Date.	No. of accident.	Name of colliery.	Location.	Name of owner or agent.	Persons killed.
19...	14	Maffet's new slope	Plainesville	Wilkesbarre and Seneca Lake coal co.	John Hauser
19...	15	Warrior Run mines	Warrior Run	A. J. Davis, lessee	John Williams
19...	16	Empire shaft	Near Wilkesbarre	Wilkesbarre coal and iron company	Thomas Hughes
June 17...	17	Hartford mines	Near Ashley	do	David Jones Meschack Reese David Jenkins
20...	18	Newport mines	Newport	Lehigh coal and navigation company	William Lewis
22...	19	Sugar Notch mines	Sugar Notch	Wilkesbarre coal and iron company	William Cronin
July 5...	20	Swetland shaft	Plymouth	Northern coal and iron company	John Muckler
5...	21	Avondale shaft	Below Plymouth	Del., Lackawanna and Western R. R. Co.	Thomas Rosecamp
7...	22	Empire shaft	Near Wilkesbarre	Wilkesbarre coal and iron company	John Grady
7...	23	Hartford mines	Near Ashley	do	Frank Kelley
7...	24	Chauncey mines	Near Grand tunnel	Albrighton, Roberts & Co.	Levi Caraner
10...	25	do	do	do	John Laycock
11...	26	Baltimore, No. 2	East of Wilkesbarre	Delaware and Hudson coal company	Thomas Devers
13...	27	Warrior Run mines	Warrior Run	A. J. Davis, lessee	Anders'n Hendershot
.....	28	Enterprise mines	Plainesville	J. H. Swoyer	William Dixson John Smith
15...	29	Empire shaft	Near Wilkesbarre	Wilkesbarre coal and iron company	Thomas Ford
22...	30	do	do	do	Richard Jones Reese Davis
27...	31	Germania slope	do	do	John Burke
31...	32	Sugar Notch	Sugar Notch	do	Richard Little
August 1...	33	Empire shaft	Near Wilkesbarre	do	Matthew Cannon John Grady
1...	34	Maffet's new slope	Plainesville	Wilkesbarre and Seneca Lake coal co	Patrick Mohan
14...	35	Hartford mines	Near Ashley	Wilkesbarre coal and iron company	Hugh Connahan
25...	36	Port Bowkley slope	Plainesville	Wyoming coal and transportation co.	John Monday William Buckley
25...	37	Girard Tunnel mines	Grand Tunnel place	Susquehanna coal company	Jacob Eley
26...	38	Baltimore, No. 1, slope	Near Wilkesbarre	D. and H. canal co.	
26...	39	Sugar Notch mines	Sugar Notch	Wilkesbarre coal and iron company	Lewis James

	26...	40	Maffet's new slope	Plainesville	Wilkesbarre and Seneca Lake coal co	William Skeldon
Sept.	6...	41	Enterprise shaft	do	J. H. Swoyer	Joseph Trevithick
						Frank Burk
	6...	42	Empire shaft	Near Wilkesbarre	Wilkesbarre coal and iron company	David J. Morgan
	6...	43	do	do	do	Richard Coleman
	6...	44	Pine Ridge shaft	do	D. and H. C. company	George Adams
	9...	45	Maffet's new slope	Plainesville	Wilkesbarre and Seneca Lake coal co	Peter Soukx
						Hermand Smith
October	3...	46	Avondale shaft	Below Plymouth	D., L. and W. R. R. company	John E. Jones
	.....	47	Henry shaft	Plainesville	H. N. Burroughs	S. W. Glegorn
						John Comer
	18...	48	Elliot mines	do	Elliot & Co., lessees	Richard Courtright
	23...	49	Pine Ridge shaft	Near Wilkesbarre	D. and H. canal company	William Manson
	23...	50	Boston shaft	Back of Kingston	D., L. and W. R. R. company	Peter Roote
	24...	51	Avondale shaft	Below Plymouth	do	William Martin
	27...	52	Maffet's new slope	Plainesville	Wilkesbarre and Seneca Lake coal co	Charles Dodson
Nov.	15...	53	Newport mines	Newport	L. C. and N. company	James James
	20...	54	do	do	do	Ed. Martin
	22...	55	Fuller's shaft	Plymouth	N. C. and iron company	Lewis Thomas
Dec.	1...	56	Baltimore, No. 1	Near Wilkesbarre	D. and H. canal company	Thomas Rush
	1...	57	Newport mines	Newport	L. C. and N. company	Peter Buble
	2...	58	Mill Creek slope	Mill Creek	D. and H. canal company	Michael Nenahan
	4...	59	Avondale shaft	Below Plymouth	D., L. and W. R. R. company	Lemuel Philips
	4...	60	Empire shaft	Near Wilkesbarre	Wilkesbarre coal and iron company	James B. Davis
	8...	61	Empire, No. 3, slope	do	do	John M'Gormick
	9...	62	Empire shaft breaker	do	do	Peter Murphy
	.....	63	Blackman mines	do	Franklin coal company	John Clark
	11...	64	Baltimore, No. 3	East of Wilkesbarre	D. and H. C. company	Patrick Boner
	12...	65	Enterprise shaft	Plainesville	J. H. Swoyer	James Biggins
	13...	66	Hollenbach, No. 2	Near Empire	Wilkesbarre coal and iron company	Michael Gillan
	14...	67	Newport mines	Newport	L. C. and N. company	Thomas Parker
						Ebnr. Hunter
	15...	68	Maffet's new slope	Plainesville	Wilkesbarre and Seneca Lake coal co	Christ. Keiper
	22...	69	Nanticoke mines	Nanticoke	Susquehanna coal company	Thomas Fulton
July	31...	70	East Boston	Near Kingston	Consumers' coal company	Thomas Forsyth
.....	.....	71	Enterprise mines	Plainesville	J. H. Swoyer	Thomas M'Laughlin
.....	.....	72	do	do	do	Martin Walsh
.....	.....	73	Port Bowkley	do	Wyoming coal and transportation co	John M'Goldrick
.....	.....	74	do	do	do	Patrick Maloney
.....	.....	75	Fuller's shaft	Plymouth	N. C. and I. company	John Ryan
.....	.....	76	Gaylord slope	do	Headstrom & Co	William Thomas

TABLE No. 1.—CONTINUED.

No. of accident.	Occupation.	Age	Widow.	No. of children.	Cause of death.	Fire-damp explosions.	Falls of rock	Falls of coal	Falls into shafts	By explosions of gunpowder	Miscellaneous	Above ground	Falling under & crus'd by cars.	Total deaths
1	Miner		1	3	Fall of top coal in gangway			1						1
2	Carpenter	20			Fell from trustling 62 feet							1		1
3	Laborer	20			Fall of rock from roof in breast		1							1
5	do	35	1		Fall of coal			1						1
4	Miner	28	1	4	Suffocated by burning of breaker									20
	do	25	1	2										
	do	56	1	6										
	Laborer	19												
	Miner	23												
	do	42	1	5										
	do													
	Driver	14												
	Miner	30	1	1										
	do		1	6										
	do	27	1	2										
	Laborer	26	1	2										
	Miner	39	1	3										
	Laborer	19												
	do	23												
	do													
	Miner	32	1	2										
	do	30	1	3										
	do	28	1	Pgt										
	do	27												
6	Driver	17			Fell under his own trip of cars								1	1
7	Miner	30			Premature explosion of blast in coal						1			1
8	Laborer	45			Blast breaking through pillar of coal						1			1
9	Fireman	20			Explosion of steam boiler under ground						1			1
10	Laborer	32	1	5	Crushed between car and prop								1	1
11	do	19			Scalded in boiler room while shifting							1		1
12	Miner				Fell down a new shaft while sinking				1					1

13...	Driver	17			Fell under his own trip of cars						1			1	1
14...	Miner	27	1		Going back to re-touch, when shot fired						1				1
15...	do		1	7	Spark from lamp ignited keg of powder—lived 2 days,					1					1
16...	Carpenter	18			Crushed by putting up fan spider							1			1
17...	Miner	30			Fall of top coal in gangway			1							1
18...	do	28			Fall of top coal in breast			1							1
19...	Laborer		1	0	Foot crushed by cars at breaker—lived a short time							1			1
20...	Blacksmith	28	1	2	Fell down shaft while coming with gas pipe				1						1
21...	Miner	30	1	3	Fall of coal in gangway—lived 7 hours			1							1
22...	Laborer	21			Fall of bone roof in breast			1							1
23...	Miner	55	1	3	Fall of coal in breast, going after blast			1							1
24...	Oiling boy	11			Fell into hoisting machinery of dirt plane							1			1
25...	Miner	32			Fall of coal—lived from July 6 after injury			1							1
26...	do				Fall of coal in gangway			1							1
27...	Slate picker	10			Fell into poney rollers in breaker							1			1
28...	Footman	20			Car run over him at foot of plane								1		1
29...	Driver	15			Fell under his own trip of cars—lived 4 hours								1		1
30...	Miner		1	4	Fall of slate from roof in breast		1								1
31...	Driver boy	17			Fell and was crushed between cars and side								1		1
32...	Miner		1	8	Burned by explosion of gas—lived 13 days	1									1
33...	do				Died from injuries received in Dec., 1870—fall of coal			1							1
34...	do	37	1	6	Injured for some time before he died by a fall of coal			1							1
			24	80	*Cause of injury:*	1	2	11	2	1	4	6	6	53	
1...	Engineer				Burned by explosion of fire-damp	1									1
2...	Laborer				Fall of rock from roof		1								1
3...	Miner		1		do		1								1
4...	do		1		Premature explosion of blast in rock						1				1
5...	do				Burned by fire-damp explosion	1									1
6...	do				Fall of top rock in breast		1								1
7...	do				Burned by fire-damp explosion	1									1
8...	do				Fall of top rock		1								1
9	do		1		Burned by fire-damp explosion	2									2
	do														
	do														
10	do				Burned by explosion of powder					3					3
	do														
	do														
11	do				Burned by fire-damp explosion	1									1
12	Laborer	30	1	3											
	Miner	28	1	2	do	2									2
13...	Laborer	35			Squeezed by car in mine								1		1
14...	do				Leg broken by prop falling upon him						1				1

TABLE No. 1.—CONTINUED.

No. of accident.	Occupation.	Age	Widow	No. of children.	Cause of injury.	Fire-damp explosions.	Falls of rock	Falls of coal	Falls into shafts	By explosions of gunpowder	Miscellaneous	Above ground	Falling under & crus'd by cars	Total injured
15	Miner				By prop falling upon him						1			1
16	do				Fall of coal in breast			1						1
17	do				Burned by explosion of fire-damp	3								3
	do													
	do													
18	do				do	1								1
19	do				Fall of coal			1						1
20	Footman	15			Fell under car on slope								1	1
21	Miner				Fall of coal			1						1
22	do				Bruised by being caught in schute among the coal						1			1
23	Laborer				Fall of rock from roof		1							1
24	Miner				Fall of coal			1						1
25	do				do			1						1
26	Carpenter				Burned by fire-damp explosion	1								1
27	Slate picker	11			Fell on large breaker screen—leg broken, back inju'd,							1		1
28	Miner	26	1	2	Burned by fire-damp explosion	2								2
	Laborer	24												
29	Miner				Fall of coal in breast			1						1
30	do				Burned by fire-damp explosion	2								2
	do													
31	Driver				Jammed between cars								1	1
32	Miner				Struck by piece of coal from blast						1			1
33	do				Burned by explosion of fire-damp	2								2
	Laborer													
34	Miner				do	1								1
35	Laborer				Jammed by mine cars								1	1
36	Miner				Fall of top coal in gangway			2						2
	do													
37	Laborer				Fall of rock		1							1
38					do		1							1
39	Miner				Fall of coal			1						1

40...	Miner				Burned by explosion of fire-damp	1									1
41	do	23			Burned severely by explosion of cartridge of powder,					2					2
	Laborer	32	1	3											
42...	do				Leg broken by fall of coal			1							1
43...	Breaker boy	14			Caught by car under breaker—arm broken							1			1
44...	Miner		1		Burned by explosion of fire-damp	1									1
45	do				Burned by explosion of fire-damp in their breast	2									2
	do														
46...	Laborer.				Fall of top coal			1							1
47	Miner				By blast going off while taking out tamping rock					2					2
	do														
48...	Mining boss				Burned slightly with fire-damp	1									1
49...	Miner				Burned by fire-damp explosion	1									1
50...	Laborer.				Fall of top coal—injured inwardly			1							1
51...	Driver	17			Leg broken—mule fell upon him						1				1
52...	Laborer.				Burned by explosion of fire-damp	1									1
53...	Miner	21			Car run over him, breaking one arm and one leg									1	1
54...	Door boy	14			Crushed between his door and car									1	1
55...	Miner.				Hand badly crushed						1				1
56...	Driver				Kicked on head by his mule						1				1
57...	do	19			Squeezed between cars and pillar									1	1
58...	Laborer.				Slightly burned by explosion of fire-damp	1									1
59...	do				Injured severely on arm						1				1
60...	Miner				Burned by fire-damp in air-way	1									1
61...	do				Fall of top coal			1							1
62...	Breaker boy				Falling in breaker							1			1
63...	Miner				Burned by powder ignited by lamp					1					1
64...	do				Burned slightly by fire-damp	1									1
65...	do	23	1	2	Fall of slate—leg broken		1								1
66...	Laborer.				Crushed between car and prop									1	1
67	Miner	30	1		Fall of top rock at foot of slope		1								1
	do	22			Fall of top rock at foot of slope—leg broken		1								1
68...	Laborer				Burned by explosion of fire-damp	1									1
69...	Miner				Fall of top slate—leg broken		1								1
70...	do				Fell down shaft				1						1
71...	Door tender	13			Caught by car while at his door									1	1
72...	Miner	26	1	3	Injured in back by fall of coal			1							1
73...	Laborer.	25			Fall of coal			1							1
74...	Miner	38			Blast went off when returning to chamber—arm broken						1				1
75...	Laborer	40	1		Leg broken by piece of timber at head-house						1				1
76...	Driver	15			Arm broken by piece of coal						1				1
						31	11	15	1	8	12	3	9		90

TABLE No. 2.

Table of comparison, exhibiting the condition of the various mines in 1870 *and in* 1871.

Location of mine.	Local name of.	Name of operator.	Name of general mine superintend't.	Name of the mine boss.	Kind of opening—depth or length.		Two or more openings.	
					1870.	1871.	1870.	1871.
Shickshinny	Paxton mines	Paxton Coal Company,	James Hutcheson	Robert ———	3 drifts	4 drifts	.....	Openi'g
Do	Mocanaqua mines	Mocanaqua Coal Co	A. J. Cohen	Z. Kreiger	Drifts	Drifts	Yes	Yes
Newport	Newport, No. 1	Lehigh C. and N. Co	1870, Z. Thomas.. 1871, J. Waddell..	Thos. Edwards	"	"	"	"
Do	Newport, No. 2	do	1870, Z. Thomas.. 1871, J. Waddell..	George Sager	Slo. 300 ft.	Slo. 300 ft.	.....	.....
Nanticoke	Tunnel, No. 1	Susquehanna Coal Co.	George T. Morgan	H. Beddow	Tunnel	Tunnel	Yes	Yes
Do	No. 1 slope	do	do	Tim. Downing	Slo. 1,100,	Slo. 1,100,	"	"
Warrior Run	do	A. J. Davis, lessee	'70, David Caird.... '71, J. E. Roderick	1870, Ch. Conrod, 1871, John Parry,	Slope 300,	Slope 300	"	"
Sugar Notch	Sugar Notch shaft	Wilkesbarre C. & I. Co.	Thos. Casedy	Robert Looney	Shaft 319,	Shaft 319	"	"
Do	Red Ash	do	do	do	Drift	Drift	"	"
Near Ashley	Nos. 1 and 2	New Jersey Coal Co	1871, Frank Barnes	Thomas Hughes	.....	.....	Idle	.....
Ashley	Hartford mines	Wilkesbarre C. & I. Co.	G. H. Patrish	'70, J. C. Wells ... '71; T. Harkness..	Slo. 300 " 646	Slope 646,	Yes	Yes
Near Ashley	Landmesser's slope	do	do	do	" 700	" 1,000,	"	"
Empire	Empire shaft, Balt. v	do	do	Lewis Jones	Shaft 296	Shaft 296	"	"
Near Empire	Hollanck, No. 3	do	do	Wm. Dickie	Slope 600	Slope 800,	"	"
Do	Hollanck, No. 2	do	do	M. B. Williams	" 400	" 460	"	"
Near Wilkesbarre	Diamond mines	do	do	L. Stutze	" 1,100	Shaft 371	No	Yes
Do	Baltimore, No. 1	D. and H. C. Co	A. Nicols ... Wm. M'Gregor	Jas. Tretheway	" 1,000	Slo. 1,000,	Yes	"
Do	Baltimore, No. 3	do	do	Wm. W. Reese	" 900	Slo. 1,000,	"	"
Do	Baltimore, No. 2	do	do	Ed. Hahn	Shaft 100	Shaft 100,	"	"
Mineral Spring	Scranton mines	Mineral Spring C. Co.	John R. Davis	E. Hughes	Slope 900 " 1,100	Slope 900 " 1,100,	Work'g 2 veins.	Work'g 2 veins.
Laurel Run	Laurel Run slope	D. and H. C. Co	A. Nicols ... Wm. M'Gregor	David M'Donald	" 1,000	" 1,000,	No	Yes
Near Laurel Run	Pine Ridge shaft	do	do	John T. Moore	Shaft 400	Shaft 400	"	Yes
Mill Creek	Mill Creek slope	do	do	'70, Jonk. Jones '71, J. Laidler.	Slo. 1,600	Slo. 1, 00,	Yes	Yes

Mill Creek	Mill Creek drift	D. and H. C. Co	Wm. M'Gregor	1870, Jenk. Jones, 1871, Jno. Laidler	Drift "	Drift	Yes	Yes
Near Mill Creek	Hillman's new mines	H. B. Hillman & Son	H. B. Hillman	Geo. Foerick	Slo. 50 ft. Drift	Slo. 300 Drift	"	"
Plainesville	Enterprise mines	J. H. Swoyer	Wm. M Culloch	John Dingwall	Slope 900, Shaft 135,	Slo. 900 Sha. 135	"	"
Do	Henry shaft	H. N. Burroughs Luzerne C. & I. Co	1870, Jas. Thomas.. 1871, Fred. Mercur	John Nicols	" 385..	Shaft 385..	No	Yes
Do	Port Bowkley slope	J. Wentze, lessee Wyoming C. & T. Co.	'70, P. Wintersteen '71, W. M'Culloch..	John Meahan John Carnell	Slope 300..	Slope 300..	Yes	"
Do	Maffet's new slope	W. and S. L. Coal Co..	Wm. R. Maffet	F. Landmesser	Slope	Slope	law suit No	pendl'g No
Near Kingston	East Boston	C. Hutcheson, lessee.. Consumers' Coal Co...	'70, W. M'Culloch.. '71, Wm. G. Payne	'70, W. M'Culloch '71, Wm. Evans	Shaft 160..	Shaft 160..	"	Yes
Do	Morgan's shaft	Waterman & Beaver	Daniel Edwards	'70, David Isaac '71, M. Rosser	" 347..	" 347..	"	"
Do	Boston shaft	D., L. and W. R. R. Co.	Benjamin Hughes,	James George	" 160..	" 160..	"	"
Near Plymouth	Jersey mines	do	do	T. J. Phillips	Slope 600..	Slope 600..	Yes	"
Do	Avondale shaft	do	do	M. Houser	Shaft 239..	Shaft 239..	"	"
Do	Swetland shaft	J. C. Fuller Northern C. & I. Co	'70, H W Devenport '71, E. R. Peckins..	M. Shonk	" 104..	" 104..	"	"
Do	Fuller's new shaft	J. C. Fuller Northern C. & I. Co..	'70, H W Devenport '71, E. R. Peckins..	Caleb Shank	" 235..	" 235..	"	"
Do	No. 2 shaft	Northern C. and I. Co..	Sperer & Peckins..	Andrew Weir	" 500..	" 500..	No	"
Do	No. 1 shaft	do	do	do	" 295..	" 295..	"	"
Do	Fellows & Dodson's	Fellows, Dodson & Co Wilkesba'e C. & I. Co	1870, N. Vanhorn.. 1871, G. H. Parrish,	Daniel Reese	" 300..	" 300..	"	"
Do	Gaylord slope	Headstrom & Co	R. Hilliard	George Pickton	Slope 450..	Slope 450..	Yes	"
Do	Nottingham shaft	Broderick & Co	Charles Smith T. Broderick	1871, J. Johns	Shaft 373..	Shaft 373..	No	"
Do	Washington mines	do	C. Smith T. Broderick	1871, P. Conahan	Tunnel, Slope		Yes	"
Near W. Nanticoke	Harvey mines	Harvey Brothers Susquehanna Coal Co	1870, W. Harvey 1871, G. F. Morgan,	John Thomas	Tunnel		"	"
Do	Grand tunnel	New England Coal Co S. C. Company	1870, S. H. Brown.. 1871, G. F. Morgan,	Jas. Hutcheson	Tunnel		"	"
Near Wilkesbarre	Old slope Brown's slope	Franklin Coal Co	R. R. Morgans do	Wm. Thomas do	Slope 700.. " 1,050..	Slope 700.. " 1,050..	"	"

TABLE No. 2—CONTINUED.

Local name of mine.	Second opening since made—depth or length.		Was there any brake on drum.		Any gates on landing.		Was there any speak'g tube.		Any bridle chains.		Any cover on carriage.		Any safety catches.	
	1870.	1871.	1870.	1871.	1870.	1871.	1870.	1871.	1870.	1871.	1870.	1871.	1870.	1871.
Paxton mines		Mines on top mountain...												
Mocanaqua mines														
Newport, No. 1														
Newport, No. 2			No need	No need			No	No	No	No				
Tunnel, No. 1			do	do			No							
No. 1 slope			do	do			No	No	No	No				
Do			do	do			No	No	No	No				
Sugar Notch shaft			Yes, but no good.	Slightly improved	No	Yes	No	Yes	No	Yes		New ones.	Yes.	New ones.
Red Ash														
Nos. 1 and 2														
Hartford mines							No	No	No	No				
Landmesser's slope			No	Yes			No	No	No	No				
Empire shaft, Balt. v.			No	Yes	No	Yes	No	Yes	No	Yes	Some kind.	New, of iron, Y.	Yes	Yes
Hollanck, No. 3			No	Yes			No	No						
Hollanck, No. 2			No	Yes			No	No	No	No				
Diamond mines		Coal driven through 500 ft	New	Yes	New, No	Yes	New, No	Yes	New, No	Yes	New, No	Yes	New, No	Yes
Baltimore, No. 1							No	No	No	No				
Baltimore, No. 3			No				No	No						
Baltimore, No. 2			No men hoisted.											
Scranton mines			Yes	Yes			No	No						
Laurel Run slope	Through coal		Yes	Yes			No	No						
Pine Ridge shaft	Through rock and coal	R. 210 feet C. 1,500 feet	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	Yes	Yes
Mill Creek slope							No	No						
Mill Creek drift														
Hillman's new mines							No	No						
Enterprise mines			No men hoisted.		No	Yes	No	No						

Henry shaft	Rock shaft	275	No	Yes some kind.	No	Yes	No	No	No	Yes	No	Yes	Yes	Yes
Port Bowkley slope							No	No						
Maffet's new slope			Yes	Yes			No	No						
East Boston	Rock shaft	170	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	Yes	Yes
Morgan's shaft	Drove through coal	4,075 feet.	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	Yes	Yes
Boston shaft			No	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Jersey mines			No	Yes			No	Yes						
Avondale shaft			No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Swetland shaft			No men to be hoisted.		No	Yes	No	No						
Fuller's new shaft			No	Yes	Yes	Yes	No	Yes	No	Yes	No	Yes	Yes	Yes
No. 2 shaft	Shaft and tun'l through rock,	200 feet. 60 "	No	Yes	No	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes
No. 1 shaft	Through coal	1,300 "	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	Yes	Yes
Fellows & Dodson's	Tunnel coal, Rock shaft	150 " 240 "	Yes	Yes	No	Yes	No	Yes	Yes	Yes	No	Yes	No	Yes
Gaylord slope							No	No						
Nottingham shaft	Drove through coal	2,400 "	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	Yes	Y., new ones.
Washington mines							No	No						
Harvey mines														
Grand tunnel														
Old slope							No	No						
Brown's slope														
			5	21	3	16	1	14	3	14	2	13	11	14

TABLE No. 2.—CONTINUED.

Local name of mine.	Amount of air at face of the mine.		Amount of air at the out-let of mine.		No. of men and boys employed.		No. of mules or horses in mine.		Kind of gases given out by mine.	
	1870.	1871.	1870.	1871.	1870.	1871.	1870.	1871.	1870.	1871.
Paxton mines	Couldn't measure..		Couldn't measure..		40	60		10	None.	None.
Mocanaqua mines	do	2,500	do	14,000	101	130	12	12	do	do.
Newport, No. 1	do	12,000	do	32,000	88	67	8	8	do	do.
Newport, No. 2	do	3,800	do	10,200	30	104	2	8	do	do.
Tunnel, No. 1	do	4,000	Did not measure	11,000	93	84	10	12	do	do.
No. 1 slope	1,000	7,000	12,000	40,000	93	84	5	12	do	do.
Do.		15,500		22,500	45	72	4	5	do	do.
Sugar Notch shaft	1,320	5,000		25,000	77	251	11	13	C. H.	C. H.
Red Ash	Couldn't measure..	11,000	Couldn't measure..	13,000	31	61	5	3	None.	None.
Nos. 1 and 2										
Hartford mines		25,000		44,000					Little	Little
	4,275	22,000	24,000	39,650	187	278	27	33	C. H.	C. H.
Landmesser's slope	Couldn't measure..	19,000	Couldn't measure..	21,600	33	31	2	2	do	do.
Empire shaft, Ba.v.	13,000	18,000	10,000	25,600	34		2	3	do	do.
	2,500	17,000	30,000	66,300	131	336	19	17	do	do.
Hollanck, No. 3	Couldn't measure..	43,000		44,328	60	105		5		
Hollanck, No. 2	do	18,000	Couldn't measure..	32,457		237		12		
Diamond mines	New.	20,600	New.	30,900		128				C. H.
Baltimore, No. 1	Couldn't measure..	5,000	Couldn't measure..	12,000	193	126	20	16		
Baltimore, No. 3	do	28,200	do	68,040	166	127	15	12		C. H.
Baltimore, No. 2	do	7,200	do	15,000		128		21	C. H.	do.
Scranton mines	In top vein, 1,120	16,000	Did not measure	28,000	111	125	13	20	None.	None.
Laurel Run slope	Couldn't measure..	23,000	12,000	42,000	58	116	5	12	do	do.
Pine Ridge shaft	One split, 2,100	28,190	49,500	68,000	20	102	4	12	C. H.	C. H.
Mill Creek slope		72,000		113,000	178	154	16	21	do	do.
Mill Creek drift	Did not measure	13,000	18,000	26,000	53	41	7	7	None	None.
Hillman's new mines	Couldn't measure..	23,000	Couldn't measure..	24,000	30	60		3	C. H.	C. H.
Enterprise mines	do	17,000	do	20,800	188	154	10	14	do	do.
Henry shaft	1,080	16,300	Did not measure	28,000	79	70	5	7	do	do.
Port Bowkley slope	Couldn't measure..	29,149	Couldn't measure..	31,800	106	168	21	15	do	do.
Maffet's new slope	do	7,200	do	18,060	16	54		2	do	do.
East Boston	do	Shaft just through.	do	Shaft just through.	65	72	14	9	None.	None.

Morgan's shaft	Couldn't measure..	[illegible]	5,000	28,815	60	67	5	4	None ..	None.
Boston shaft	8,100	[illegible]00	L[illegible]ot measure ...	35,000	166	164	30	29	...do	...do.
Jersey mines	Couldn't measure..	8,960	6,480	10,546	79	76	8	8	...do	...do.
Avondale shaft	Did not measure...	36,165	41,250	48,016	154	169	12	16	...do	...do.
Swetland shaft	Couldn't measure..	20,000	Could[illegible] measure..	24,200	107	118	13	12	...do	...do.
Fullers new shaft	...do	16,762	7,500	36,600	103	93	12	14	...do	...do.
No. 2 shaft	Second opening	.....	.....	.....	.....	.....	.....	.....	...do	...do.
No. 1 shaft	35,000	37,550	.....	59,700	Idle..	153	.....	13	...do	...do.
Fellows & Dodson's	After get 2d open'g	.....	.....	.....	27	33	.....	4	C. H...	C. H.
Gaylord slope	2,420	New air shaft.....	Did not measure ...	No measurement..	114	.....	20	.....	None ..	None.
Nottingham shaft	Couldn't measure..	15,000	8,250	22,500	39	160	3	20	...do	...do.
Washington mines, {	...do	Slightly improved,	Couldn't measure..	7,200 }	138	217	20	17	...do	...do.
	...do	...do.....	...do	7,000 }						
Harvey mines	...do	Fan newly started,	.....	Airways not ready,	53	.....	5	.....	...do	...do.
Grand funnel	...do	...do.....	.....	.....	82	128	18	21	...do	...do.
Old slope	...do	13,000	Did not measure ...	24,000	41	67	.....	6	...do	...do.
Brown slope	3,500	18,580	...do	31,070	54	112	20	10	...do	...do.
					3,530	4,994	438	498		

LIST OF THE OPERATORS IN THIS DISTRICT, FOR 1871.

Local name of mines.	Location of mines.	Names of operators.	No. of
Mocanaqua mines	Shickshinny	Mocanaqua Coal Company	
Paxton mines	do	Paxton Coal Company	
Newport mines	Newport	Lehigh Coal and Nav. Company,	
Nanticoke mines	East Nanticoke	Susquehanna Coal Company	
Harvey mines	West Nanticoke	do	1
Grand tunnel	do	do	1
Warrior Run mines	Warrior Run	A. J. Davis & Co	1
Nos. 1 and 2 mines	Near Ashley	New Jersey Coal Company	2
Sugar Notch	Sugar Notch	Wilkesbarre C. and I. Company,	
Hartford mines	Near Ashley	do	1
Germania mines	do	do	
No. 5	Near Empire	do	1
No. 4	do	do	
No. 3, Hollanbach	do	do	
No. 2, Hollanbach	Near Wilkesbarre,	do	
Diamond mines	do	do	
Lance shaft	Near Plymouth	do	
Fellows & Dodson shaft	do	do	
Franklin mines	Near Wilkesbarre,	Franklin Coal Company	
No. 1, Baltimore mines	do	Delaware & Hudson Canal Co.	
No. 2, Baltimore mines	do	do	
No. 3, Baltimore mines	do	do	
Laurel Run mines	Laurel Run	do	
Pine Ridge shaft	Near Laurel Run	do	
Mill Creek mines	Mill Creek	do	
Mineral Spring mines	Mineral Spring	Mineral Spring Coal	
Hillman mines	Back Road	H. B. Hillman &	
Enterprise mines	Plainesville	J. H. Swoyer	
Hollanbach mines	do	Elliott & Co.	
Mitchel shaft	do	Luzerne Coal and [illegible] Co.	
Henry shaft	do	do	
Port Bowkley mines	do	Wyoming Coal and Tra.	
Maffet's mines	do	Wilkesbarre & Seneca	
West Pittston shaft	West Pittston	Brown B. Lake & Co.	
Maltby shaft	Maltby	Wilner & Co	
Hutcheson & Co's. mines	Near Kingston	Chas. Hutcheson & Co.	
East Boston shaft	do	Consumers' Coal Company	
Morgan's shaft	do	Waterman & Bear	
Boston shaft	do	Delaware, L. & W. R. R. Co.	
Jersey mines	Near Plymouth	do	
Avondale shaft	Below Plymouth	do	
No. 1 shaft	Near Plymouth	Northern Coal & Iron Company,	
No. 2 shaft	do	do	
No. 4, Swetland shaft	do	do	
No. 5, Fuller's shaft	do	do	
Gaylord slope	do	Headstrom & Co.	
Nottingham shaft	do	Broderick, Conyngham & Co.	
Washington mines	do	do	
Union (or Chauncey) mine	Below Plymouth	Roberts, Albrighton & Co.	

T. M. WILLIAMS, *Inspector of Mine*