PART G

ANNUAL REPORT

OF THE

MINISTER OF MINES

OF THE PROVINCE OF

BRITISH COLUMBIA

FOR THE

YEAR ENDED 31ST DECEMBER

1936

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1937.

BRITISH COLUMBIA DEPARTMENT OF MINES.

VICTORIA, B.C.

Hon. GEORGE S. PEARSON, *Minister.*

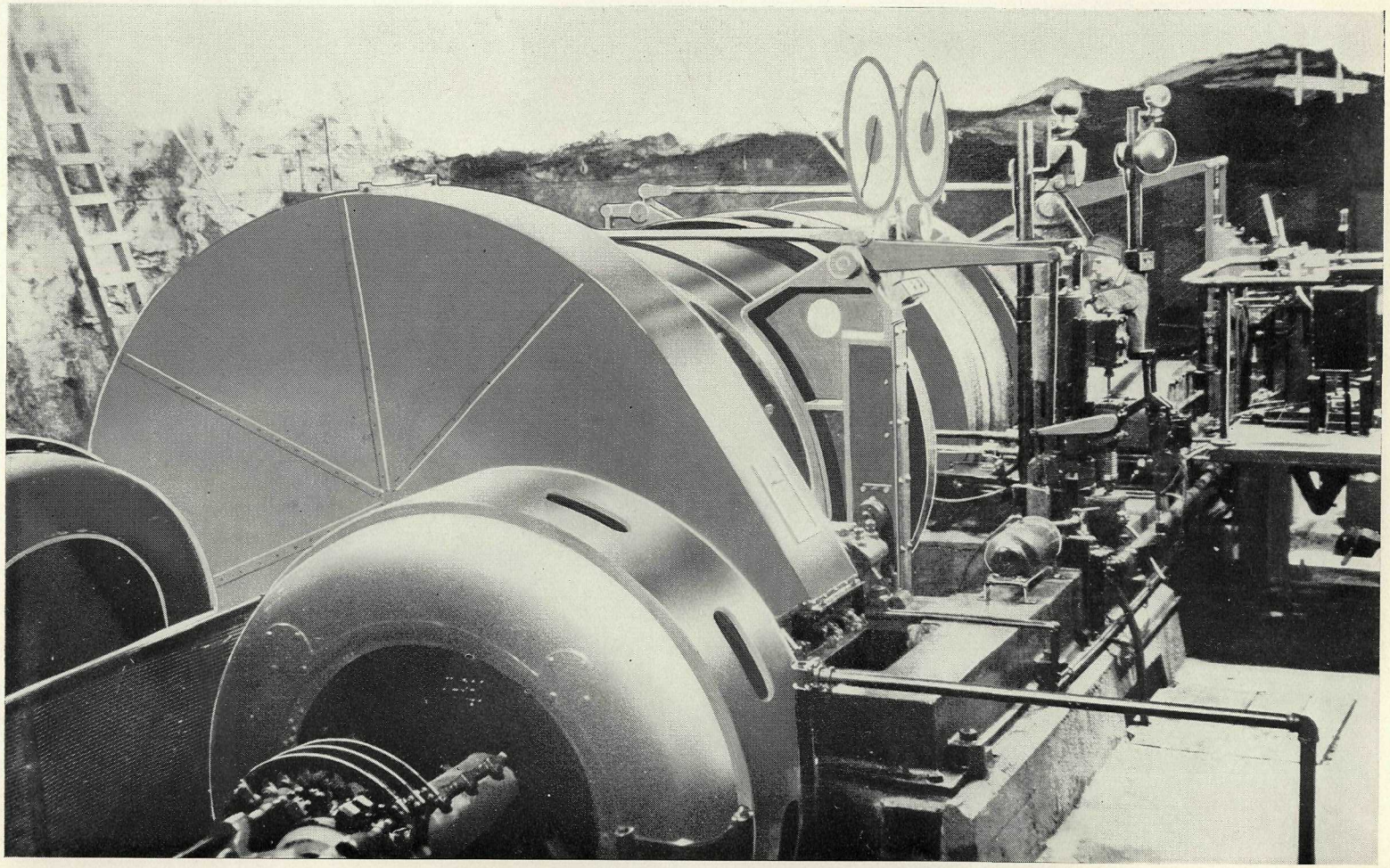
JOHN F. WALKER, *Deputy Minister and Provincial Mineralogist.*

JAMES DICKSON, *Chief Inspector of Mines.*

D. E. WHITTAKER, *Provincial Assayer and Analyst.*

P. B. FREELAND, *Chief Mining Engineer.*

R. J. STEENSON, *Chief Gold Commissioner.*



End View of 500-horse-power Driving Motor, Hoist at Top of 3,901 Shaft, Sullivan Mine, Kimberley.

PART G.

INSPECTION OF MINES.

BY

JAMES DICKSON.

The Province is divided into six Inspection Districts, as follows:—

Inspection District.	Mining Divisions in District.
Coast	Quatsino, Clayoquot, Alberni, Victoria, Vancouver, New Westminster, Yale, and Nanaimo Mining Divisions.
Northern Interior	Lillooet, Ashcroft, Clinton, Quesnel, Cariboo, and Peace River Mining Divisions, and those portions of the Liard and Omineca Mining Divisions east of the 123rd degree of longitude.
Interior	Similkameen, Osoyoos, Nicola, Vernon, and Kamloops Mining Divisions.
East Kootenay and Boundary	Greenwood, Grand Forks, Trail Creek, Nelson, Slocan City, Slocan, Arrow Lake, Ainsworth, Lardeau, Revelstoke, Fort Steele, Windermere, and Golden Mining Divisions.
Northern	Queen Charlotte Islands, Bella Coola, Stikine, Nass River, Portland Canal, Skeena, and Atlin Mining Divisions, and those portions of Liard and Omineca Mining Divisions west of the 124th degree of longitude.

The Inspectors inspect the coal mines, metalliferous mines, and quarries in their respective districts.

BOARD OF EXAMINERS FOR COAL-MINE OFFICIALS.

James Dickson	Chairman, Victoria.
James Strang	Secretary, Victoria.
H. E. Miard	Member, Fernie.

Messrs. Strang and Miard and the Inspector of Mines of the district in which an examination is being held form the Board for granting certificates of competency to coal-miners.

An Inspector of Mines is empowered to grant provisional certificates to miners for a period not exceeding sixty days between regular examinations.

INSTRUCTORS, MINE-RESCUE STATIONS.

Richard Nichol	Nanaimo Station.
James L. Brown	Cumberland Station.
Alfred Gould	Princeton Station.
John T. Puckey	Fernie Station.

PRODUCTION.

The total tonnage produced by the coal mines of the Province for the year ended December, 1936, was 1,346,471 tons, being an increase of 158,503 tons or 13.34 per cent. over the production of 1935.

The Coast District, which includes Vancouver Island, Nicola-Princeton District, and the Northern District, produced 875,865 tons, an increase of 95,007 tons or 12.16 per cent. over 1935.

Vancouver Island collieries produced 713,037 tons, an increase of 82,824 tons or 13.14 per cent. over 1935.

The Northern District produced 5,266 tons.

The Nicola-Princeton District produced 157,562 tons, an increase of 10,343 tons or 7.02 per cent. over 1935.

The East Kootenay District produced 470,606 tons, an increase of 63,496 tons or 15.59 per cent. over 1935.

The following table shows the output and *per capita* production daily and for the year of the various mines:—

Colliery and Mine.	Gross Tons of Coal mined during Year.	Days worked.	Total No. of Employees.	Tons of Coal mined per Employee daily.	Tons of Coal mined per Employee for Year.	No. of Employees Underground.	Tons of Coal mined per Underground Employee daily.	Tons of Coal mined per Underground Employee for Year.
Western Fuel Colliery, Nanaimo	302,524	272	722	1.54	419	438	2.53	690
Reserve mine	154,512	278	218	2.44	709	177	3.21	873
Comox Colliery	237,733	247	583	1.65	408	473	2.03	502
Northfield mine	2,565	50	69	0.74	37	57	0.90	45
Lantzville Colliery	8,233	265	26	1.19	317	21	1.48	392
Fiddick mine	679	99	16	0.42	42	10	0.69	68
Ida Clara mine (Richardson)	2,372	304	9	0.86	263	5	1.56	474
Jingle Pot mine	49	64	4	0.19	12	4	0.19	12
Biggs' mine	276	51	6	0.90	46	4	1.35	69
Chambers' mine	1,697	243	8	0.87	212	5	1.39	339
Beban's mine	2,397	140	10	1.71	240	8	2.13	299
Middlesboro Colliery	25,461	170	110	1.35	231	77	1.94	330
Coalmont Colliery	93,698	239	206	1.90	454	132	2.96	709
Tulameen Colliery	10,643	82	93	1.40	114	69	1.87	154
Pleasant Valley Colliery	6,430	310	32	0.65	201	16	1.30	402
Blue Flame Colliery	19,262	255	50	1.51	385	30	2.51	642
Black Diamond Colliery	1,080	63	16	1.08	68	8	2.14	135
Tulameen Valley Coal Co. (Lind)	671	.....	18	.....	37	12	.....	56
Hat Creek Colliery	317	67	2	2.35	158	2	2.35	158
Bulkley Valley Colliery	5,266	236	10	2.22	526	8	2.78	658
Coal Creek Colliery	91,645	165	152	3.65	603	116	4.78	790
Michel Colliery	378,961	240	454	3.47	834	343	4.60	1,104

Collieries of Vancouver Island Inspection District.

The output of Vancouver Island collieries was 713,037 tons. Of this amount, 79,694 tons or 11.1 per cent. was lost in preparation for the market, 79,505 tons or 11.1 per cent. was consumed by producing companies as fuel, 543,817 tons was sold in the competitive market, 10,021 tons was added to stock, thus 76.2 per cent. of the output was sold. Of this amount sold in the competitive markets, 506,947 tons or 93.2 per cent. was sold in Canada and 36,870 tons or 6.8 per cent. was sold in the United States.

Collieries of the Nicola-Princeton District.

Of the gross output of 157,562 tons produced by the collieries of the Nicola-Princeton District, 22,765 tons of 14.4 per cent. was consumed by the producing companies as fuel, 2,717 tons was lost in preparation for the market, 126 tons was added to stock, and 131,954 tons or 83.7 per cent. was sold in the competitive markets in Canada.

Collieries of the East Kootenay Inspection District.

The output of the collieries of the East Kootenay District was 470,606 tons. Of this amount, 46,748 tons or 9.9 per cent. was lost in preparation for the market, 8,565 tons or 1.8 per cent. was consumed as fuel by the producing companies, 11,534 tons or 2.4 per cent. was used in making coke, and 400,775 tons was sold in the competitive markets.

Of this amount, 38,565 tons or 9.6 per cent. was sold in the United States and 362,210 tons or 90.4 per cent. was sold in Canada.

The following table shows the *per capita* production of the various districts for the past five years. Similar figures for the years prior to 1932 are shown in previous Annual Reports.

OUTPUT AND PER CAPITA PRODUCTION IN VARIOUS DISTRICTS.

Year.	District.	Gross Tons of Coal mined during Year.	Total No. of Employees at Producing Collieries.	Tons of Coal mined per Employee for Year.	No. of Men employed Underground in Producing Collieries.	Tons of Coal mined per Underground Employee for Year.
1932	East Kootenay District	587,875	1,001	587	752	781
	Coast District	947,100	2,607	363	1,876	504
	Whole Province	1,534,975	3,608	425	2,628	584
1933	East Kootenay District	477,677	698	684	522	915
	Coast District	787,069	2,396	328	1,719	457
	Whole Province	1,264,746	3,094	408	2,241	564
1934	East Kootenay District	627,619	754	832	551	1,139
	Coast District	719,471	2,139	336	1,499	480
	Whole Province	1,347,090	2,893	465	2,050	657
1935	East Kootenay District	407,110	819	497	614	663
	Coast District	780,858	2,152	363	1,531	510
	Whole Province	1,187,968	2,971	399	2,145	554
1936	East Kootenay District	470,606	606	776	459	1,025
	Coast District	875,865	2,208	396	1,556	563
	Whole Province	1,346,741	2,814	478	2,015	668

The following table shows the production and distribution of coal by the various collieries and districts compiled from returns furnished by the owners:—

Collieries of British Columbia—Production, 1936.

Mine.	Sold. In Canada.	Sold. In U.S.A.	Sold. Elsewhere	Total Sales.	Lost in Washing.	Used in making Coke.	Used under Companies' Boilers, etc.	Total for Colliery Use.	Stocks. First of Year.	Stocks. Last of Year.	Difference. Added to.	Difference. Taken from.	Output for the Year 1936.
Vancouver Island District.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Canadian Collieries (D.), Ltd.—													
Comox Colliery	210,778	9,435	.....	220,213	13,103	.....	3,695	16,798	2,643	3,368	722	.....	237,733
Northfield mine	2,065	.....	.....	2,065	79	.....	.....	79	.....	421	421	.....	2,565
Western Fuel Corp. of Canada, Ltd.—													
No. 1 mine	135,263	18,290	.....	183,553	50,185	.....	59,908	110,093	14,238	23,116	8,878	.....	302,524
Reserve mine	114,278	9,145	.....	123,423	16,097	.....	14,992	31,089	.....	.....	.....	.....	154,512
Lantzville Colliery	7,423	.....	.....	7,423	.....	.....	810	810	.....	.....	.....	.....	8,233
Fiddick mine	679	.....	.....	679	.....	.....	.....	.....	.....	.....	.....	.....	679
Ida Clara Colliery (Richardson)	2,372	.....	.....	2,372	.....	.....	.....	.....	.....	.....	.....	.....	2,372
Jingle Pot mine	49	.....	.....	49	.....	.....	.....	.....	.....	.....	.....	.....	49
Biggs' mine	276	.....	.....	276	.....	.....	.....	.....	.....	.....	.....	.....	276
Chambers' mine	1,697	.....	.....	1,697	.....	.....	.....	.....	.....	.....	.....	.....	1,697
Beban's mine	2,067	.....	.....	2,067	230	.....	100	330	22	22	.....	.....	2,397
Totals, Vancouver Island District	506,947	36,870	.....	543,817	79,694	.....	79,505	159,199	16,906	26,927	10,021	.....	713,037
Nicola-Princeton District.													
Middlesboro Collieries, Ltd.	21,656	.....	.....	21,656	.....	.....	3,966	3,966	375	214	.....	161	25,431
Coalmont Collieries, Ltd.	81,888	.....	.....	81,888	.....	.....	11,810	11,810	.....	.....	.....	.....	93,698
Tulameen Collieries, Ltd.	8,105	.....	.....	8,105	379	.....	2,159	2,538	.....	.....	.....	.....	10,643
Pleasant Valley Colliery	4,104	.....	.....	4,104	.....	.....	2,326	2,326	.....	.....	.....	.....	6,430
Blue Flame Colliery	14,583	.....	.....	14,583	2,338	.....	2,104	4,442	.....	237	237	.....	19,262
Black Diamond Colliery (Bromley Vale)	680	.....	.....	680	.....	.....	400	400	.....	.....	.....	.....	1,080
Tulameen Valley Coal Co. (Lind mine)	671	.....	.....	671	.....	.....	.....	.....	.....	.....	.....	.....	671
Hat Creek Colliery	267	.....	.....	267	.....	.....	.....	.....	.....	50	50	.....	317
Totals, Nicola-Princeton District	131,954	.....	.....	131,954	2,717	.....	22,765	25,482	375	501	287	161	157,562
Northern District.													
Bulkley Valley Colliery	5,266	.....	.....	5,266	.....	.....	.....	.....	.....	.....	.....	.....	5,266
Totals, Northern District	5,266	.....	.....	5,266	.....	.....	.....	.....	.....	.....	.....	.....	5,266
Grand totals, Coast District	644,167	36,870	.....	681,037	82,411	.....	102,270	184,681	17,281	27,428	10,308	161	875,865
East Kootenay District.													
Crow's Nest Pass Coal Co., Ltd.—													
Coal Creek Colliery	59,675	29,250	.....	88,925	.....	.....	3,231	3,231	518	7	.....	511	91,645
Michel Colliery	302,535	9,315	.....	311,850	46,748	11,534	8,565	66,847	239	533	264	.....	378,961
Totals, East Kootenay District	362,210	38,565	.....	400,775	46,748	11,534	11,796	70,078	787	540	264	511	470,606
Coal.													
Grand totals for Province	1,006,377	75,435	.....	1,081,812	129,159	11,534	114,066	254,759	18,068	27,968	10,572	672	1,343,471
Coke.													
Crow's Nest Pass Coal Co., Ltd.—													
Michel Colliery	15,706	14,686	.....	30,392	.....	.....	.....	.....	294	268	.....	26	30,366
Total Coke for Province	15,706	14,686	.....	30,392	.....	.....	.....	.....	294	268	.....	26	30,366

Collieries of British Columbia—Men employed, 1936.

Mine.	White Men.																		Indians.			Japanese and Chinese.									Total Men employed.		
	Supervision and Clerical.			Miners.			Helpers.			Labourers.			Mechanics and Skilled Labour.			Boys.			Labourers.			Miners.			Helpers.			Labourers.					
	U.	A.	T.	U.	A.	T.	U.	A.	T.	U.	A.	T.	U.	A.	T.	U.	A.	T.	U.	A.	T.	U.	A.	T.	U.	A.	T.	U.	A.	T.	U.	A.	T.
Vancouver Island District.																																	
Canadian Collieries (D.), Ltd.—																																	
Comox Colliery	21	11	32	116	...	116	25	...	25	142	48	190	146	31	177	23	2	25	...	...	...	...	...	...	...	...	...	...	18	18	473	110	583
Northfield Colliery	4	1	5	13	...	13	...	...	...	14	4	18	24	3	27	2	4	6	...	...	...	...	...	...	...	...	...	...	...	...	57	12	69
Western Fuel Corp. of Canada, Ltd.—																																	
No. 1 mine	21	28	49	116	...	116	...	...	...	202	113	315	70	65	135	29	19	48	...	...	...	...	...	...	...	...	...	...	59	59	438	284	722
Reserve mine	11	3	14	85	...	85	...	...	...	46	11	57	25	8	33	10	9	19	...	...	...	...	...	...	...	...	...	...	10	10	177	41	218
Lantzville Colliery	2	...	2	16	...	16	3	...	3	...	2	2	...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	21	5	26
Fiddick mine	...	...	...	10	...	10	...	...	...	...	6	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10	6	16
Ida Clara mine (Richardson)	...	...	...	5	...	5	...	...	...	...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	5	4	9
Jingle Pot mine	...	...	...	4	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	4
Biggs' mine	...	...	...	2	...	2	2	...	2	...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	2	6
Chambers' mine	...	...	...	3	...	3	2	...	2	...	2	2	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	5	3	8
Beban's mine	1	...	1	2	...	2	3	...	3	1	...	1	1	...	1	...	1	1	...	...	...	...	...	...	...	...	...	...	1	1	8	2	10
Totals, Vancouver Island District	60	43	103	372	...	372	35	...	35	405	190	595	266	109	375	64	36	100	...	...	...	...	...	...	...	...	...	...	91	91	1202	469	1671
Nicola-Princeton District.																																	
Middlesboro Collieries, Ltd.	5	1	6	38	...	38	18	...	18	16	12	28	...	12	12	...	8	8	...	...	...	...	...	...	...	...	...	...	...	...	77	33	110
Coalmont Collieries, Ltd.	7	11	18	77	...	77	...	...	...	4	22	26	40	36	73	4	4	8	...	...	...	...	...	...	...	...	...	...	1	1	132	74	206
Tulameen Collieries, Ltd.	3	2	5	20	...	20	29	...	29	5	7	12	12	15	27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	69	24	93
Pleasant Valley Colliery	2	2	4	8	...	8	4	...	4	2	7	9	...	4	4	...	3	3	...	...	...	...	...	...	...	...	...	...	...	...	16	16	32
Blue Flame Colliery	3	2	5	14	...	14	7	...	7	6	11	17	...	6	6	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	30	20	50
Black Diamond Colliery	2	2	4	2	...	2	2	...	2	2	4	6	...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	8	16
Tulameen Valley Coal Co. (Lind mine)	1	...	1	5	...	5	5	...	5	1	4	5	...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12	6	18
Hat Creek Colliery	...	...	...	1	...	1	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	2
Totals, Nicola-Princeton District	23	20	43	165	...	165	66	...	66	36	67	103	52	77	129	4	16	20	...	...	...	...	...	...	...	...	...	...	1	1	346	181	527
Northern District.																																	
Bulkley Valley Colliery	1	...	1	3	...	3	3	...	3	1	1	2	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	2	10
Totals, Northern District	1	...	1	3	...	3	3	...	3	1	1	2	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	2	10
Grand totals, Coast District	84	63	147	540	...	540	104	...	104	442	258	700	318	187	505	68	52	120	...	...	...	...	...	...	...	...	...	...	92	92	1556	652	2208
East Kootenay District.																																	
Crow's Nest Pass Coal Co., Ltd.—																																	
Coal Creek Colliery	5	2	7	64	...	64	...	...	...	8	4	12	37	28	65	2	2	4	...	...	...	...	...	...	...	...	...	...	...	...	116	36	152
Michel Colliery	13	7	20	189	...	189	18	...	18	21	26	47	100	75	175	2	3	5	...	...	...	...	...	...	...	...	...	...	...	...	343	111	454
Totals, East Kootenay District	18	9	27	253	...	253	18	...	18	29	30	59	137	103	240	4	5	9	...	...	...	...	...	...	...	...	...	...	...	...	459	147	606
Grand totals for Province	102	72	174	793	...	793	122	...	122	471	288	759	455	290	745	72	57	129	...	...	...	...	...	...	...	...	...	...	92	92	2015	799	2814

NOTE.—U.=Underground; A.=Above ground; T.=Total.

LABOUR AND EMPLOYMENT.

During 1936, 2,814 persons were employed in and about the coal mines of the Province, a decrease of 5.2 per cent. compared with 1935.

Taking the average of all the mines in Vancouver Island District, about 20 per cent. of the working-days was lost through lack of trade. In the Nicola-Princeton District the different collieries worked on an average of about 82 per cent. of the working-days. In the East Kootenay District the average for the year was about 67 per cent.

The table on page 7 shows the number of persons ordinarily employed in and about the mines, distinguishing the persons and different classes employed underground and above ground, compiled from the returns furnished by the owners.

FUEL-OIL COMPETITION.

During 1936 imports of crude oil for refining in British Columbia totalled 287,830,054 gallons, valued at $5,426,353; from the refining of this 45,159,438 gallons of gasoline was produced and the remainder sold, in various grades, as fuel-oil.

In addition to above, 24,048,703 gallons of fuel-oil was imported, duty-free, for marine use; this was valued at $692,951.

COMPETITION OF COAL PRODUCED OUTSIDE BRITISH COLUMBIA.

During 1936 the importation of coal from the United States consisted of 30 tons of anthracite screenings, 1,872 tons of bituminous coal, and 4,775 tons of lignite.

Imports from Great Britain consisted of 662 tons of bituminous coal.

Other imports consisted of 1,120 tons of various sized anthracite from China and 1 ton of anthracite from Germany.

The following table shows the amount of Alberta coal brought into British Columbia during past years:—

Year.	Short Tons.	Year.	Short Tons.
1925	117,037	1931	193,060
1926	127,858	1932	136,188
1927	187,028	1933	119,026
1928	262,198	1934	123,968
1929	247,060	1935	221,758
1930	227,385	1936	244,928

The total tonnage of coal brought into British Columbia during 1936 was 253,388 tons.

Approximately 20 per cent. of the coal used in British Columbia was produced outside the Province.

HYDRO-ELECTRIC DEVELOPMENT.

At the end of 1936 the hydro-electric horse-power in use amounted to 728,000 horse-power. The steadily increasing development of hydro-installations in British Columbia is shown in the following table:—

Year.	Horse-power developed by Hydro-electric Plants.	Year.	Horse-power developed by Hydro-electric Plants.
1900	9,366	1927	473,142
1905	29,334	1928	523,902
1910	64,474	1929	559,792
1915	254,065	1930	630,792
1920	309,185	1931	655,992
1921	309,762	1932	713,792
1922	329,057	1933	717,602
1923	355,718	1934	726,000
1924	355,718	1935	728,000
1925	414,702	1936	728,000
1926	460,562		

For the purpose of comparison it may be stated that one developed horse-power per year is equivalent to the power value of 6 tons of coal.

ACCIDENTS IN AND AROUND COAL MINES.

During 1936, 2,814 persons were employed in and around coal mines. Eight fatal accidents occurred during the year, as compared with five for 1935.

The ratio of fatal accidents per 1,000 persons employed was 2.84, as compared with 1.67 in 1935. In 1934 the ratio was 2.07; in 1933, 0.97; in 1932, 2.21; in 1931, 1.22; in 1930, 11.62; in 1929, 2.38; in 1928, 2.64; and in 1927, 2.10; the average for the ten-year period being 3.17.

The number of fatal accidents per 1,000,000 tons produced during 1936 was 5.94; during 1935 the figure was 4.21; in 1934, 4.45; in 1933, 2.37; in 1932, 5.21; in 1931, 2.81; in 1930, 28.64; in 1929, 5.33; in 1928, 5.54; and in 1927, 4.48; the average for the ten-year period being 7.19 per 1,000,000 tons of coal mined.

The following table shows the collieries at which the fatal accidents occurred during 1936 and comparative figures for 1935:—

Name of Company.	Name of Colliery.	1936.	1935.
Canadian Collieries (D.), Ltd.	Comox	----	3
Western Fuel Corporation, Ltd.	No. 1 mine	4	1
Western Fuel Corporation, Ltd.	Reserve	1	----
Coalmont Collieries, Ltd.	No. 4 mine	1	----
Tulameen Collieries, Ltd.	No. 2 mine	1	1
Crow's Nest Pass Coal Co., Ltd.	Michel	1	----
Totals		8	5

The following table shows the various causes of fatal accidents and their percentage of the whole with corresponding figures for 1935:—

Cause.	1936.		1935.	
	No.	Per Cent.	No.	Per Cent.
By falls of roof and coal	2	25.00	----	----------
By mine-cars and haulage	4	50.00	3	60.00
By carbon-monoxide poisoning	----	----------	1	20.00
By electric shock	1	12.50	----	----------
Miscellaneous	1	12.50	1	20.00
Totals	8	100.00	5	100.00

The following table shows the number of tons of coal mined for each fatal accident in their respective classes in the year 1936 and 1935:—

Cause.	1936.		1935.	
	No. of Fatal Accidents.	No. of Tons of Coal mined per Fatal Accident.	No. of Fatal Accidents.	No. of Tons of Coal mined per Fatal Accident.
By falls of roof and coal	2	673,235	----	----------
By mine-cars and haulage	4	336,618	3	399,322
By carbon-monoxide poisoning	----	----------	1	1,187,968
By electric shock	1	1,346,471	----	----------
Miscellaneous	1	1,346,471	1	1,187,968
Totals	8	168,309	5	237,593

The number of tons mined per fatal accident during 1936 was 168,309 tons, compared with 237,593 tons for 1935. The average for the ten-year period was 138,950 tons.

The following table shows the fatalities from various causes in coal mines during the year 1936, compared with 1935, according to Inspection Districts:—

District.	Number of Deaths from Accidents.					Total.	
	Falls of Roof and Coal.	Mine-cars and Haulage.	Carbon-monoxide Poisoning.	Electric Shock.	Miscel-laneous.	1936.	1935.
Vancouver Island	1	2	----	1	1	5	4
Nicola-Princeton	----	2	----	----	----	2	1
East Kootenay	1	----	----	----	----	1	----
Northern	----	----	----	----	----	----	----
Province (1936)	2	4	----	1	1	8	----
Province (1935)	----	----	----	----	----	----	5

District.	Accident Death-rate.			
	Per 1,000 Persons employed.		Per 1,000,000 Tons of Coal mined.	
	1936.	1935.	1936.	1935.
Vancouver Island	2.98	2.42	7.02	6.31
Nicola-Princeton	3.79	2.06	12.69	6.79
East Kootenay	1.65	------	2.14	------
Northern	------	------	------	------
Province (1936)	2.84	------	5.94	------
Province (1935)	------	1.67	------	4.21

The following table shows the ratio of accidents per 1,000 employees and per 1,000,000 tons of coal mined in the Coast and East Kootenay Inspection Districts for the ten-year period ended December 31st, 1936:—

District.	No. of Fatalities.	Accident Death-rate.	
		Per 1,000 Employees.	Per 1,000,000 Tons of Coal mined.
Coast	98	3.41	9.08
East Kootenay	28	2.55	4.17
Totals for Province	126	3.17	7.19

The details regarding the occurrences of the fatal accidents in coal mines during 1936 are as follows:—

The fatal accident which occurred to John W. Bilton, rope-rider, No. 1 mine, Western Fuel Corporation of Canada, Limited, on February 6th was due to deceased being struck by a car loaded with timber; the car had been derailed on an incline and deceased had put the car on the track and stood behind the car when he signalled the winchman to pull ahead. When the winch started a bull-wheel pulled out and allowed the car to run back over deceased.

The fatal accident which occurred to George Hronic, rope-rider, No. 2 mine, Tulameen Collieries, Limited, on February 13th was due to crushing sustained when a trip on which he was riding became derailed; deceased apparently fell between the cars while attempting to signal to the hoistman.

The fatal accident which occurred to Thomas White, tracklayer, No. 1 mine, Western Fuel Corporation of Canada, Limited, on May 22nd was due to a small breaker-post which fell off a bench of brushing and struck him on the back, fracturing one of the transverse spinal processes; deceased apparently was making a good recovery, but died suddenly on June 17th, on which day he was to have been discharged from the hospital.

The fatal accident which occurred to Joseph Dixon, miner, Reserve mine, Western Fuel Corporation of Canada, Limited, on August 10th was due to deceased being struck by a loaded car; this car was moving at little more than walking-pace and a fellow-employee shouted a warning to deceased to look out for the car, but the warning was either unheard or ignored; the roadway at this point was 7 feet high and 13 feet wide and free from any obstructions. Ordinary care on the part of deceased would have averted this accident.

The fatal accident which occurred to George W. Mortimer, miner, No. 1 mine, Western Fuel Corporation of Canada, Limited, on August 18th was due to a fall of roof in his working-place; this place was alongside a fault and was being abandoned after deceased completed the car he was then loading; this place was fairly well timbered, but in view of the vicinity of the above-mentioned fault special precautions in the way of extra timber should have been observed.

The fatal accident which occurred to Edward Slee, haulage-boy, No. 4 mine, Coalmont Collieries, Limited, on August 24th was due to deceased being run over by a loaded trip on the Main slope; it was part of deceased's work to place the safety-drag on loaded trips before the trips left No. 14 Right Level parting, and on this particular trip there was an empty flat car among the loaded cars on the trip and deceased apparently decided to ride out on this flat car and get off on the Main slope, but had failed to get clear of the cars when he attempted to get off the moving trip; the distance from where the trip started to where Slee was found was approximately 100 feet. The regulations prohibit such riding.

The fatal accident which occurred to Thomas Kenda, miner, No. 1 mine, Michel Colliery, on August 28th was due to shock following a compound fracture of his right leg, due to a fall of roof when he was testing same with his pick; he died on August 31st.

The fatal accident which occurred to James Waugh, driver, No. 1 mine, Western Fuel Corporation of Canada, Limited, at 10.30 p.m. on December 31st was due to electrocution.

Deceased was at work in the Protection area and all the men in this area reach and leave their work by means of Protection shaft; on this day Waugh and another driver had finished their work about 10 p.m. and instead of waiting to ascend Protection shaft with the other men of the shift they decided to walk out to No. 1 shaft by way of No. 1 level; this level is equipped for overhead electric trolley haulage, the voltage being 250, and about half-way to No. 1 shaft Waugh made contact with the trolley-wire and sustained a shock from which he did not recover consciousness.

As this was the last shift of the year there were very few men in the mine and none in this vicinity; the man who was with Waugh ran to the motor-barn, half a mile distant, and got an electric locomotive which he drove to where Waugh was lying and took him out to No. 1 shaft and brought him to the surface, where artificial resuscitation was tried without avail; about forty-five minutes elapsed between the accident and attempts at resuscitation. When men are required to travel along this level to and from their work the electric power is cut off the trolley-wire, but deceased had not been authorized to travel by this route.

EXPLOSIVES.

The following table shows the quantity of explosives used in coal mines during 1936, together with the number of shots fired, tons of coal produced per pound of explosive used, and the average pounds of explosive per shot fired (these quantities include all explosives used for breaking coal and for rock-work in coal mines):—

Vancouver Island District.

Colliery.	Quantity of Explosive used in Pounds.	Tonnage for Mine.	Total No. of Shots fired.	Tons of Coal per Pound of Explosive used.	Average Pounds of Explosive used per Shot fired.
Western Fuel Colliery, Nanaimo	75,717	302,524	144,393	3.86	0.52
Reserve Colliery	71,200	154,512	100,298	2.17	0.70
Comox Colliery	52,038	237,733	73,861	4.56	0.70
Northfield Colliery	.....	2,565	.....	.....	.....
Lantzville Colliery	6,900	8,233	9,000	1.20	0.76
Fiddick mine	1,200	679	2,900	0.56	0.41
Ida Clara mine (Richardson)	700	2,372	1,200	3.53	0.58
Jingle Pot mine	30	49	60	1.63	0.50
Biggs' mine	100	276	150	2.76	0.66
Chambers' mine	800	1,697	1,500	2.12	0.53
Beban's mine	200	2,397	400	11.98	0.50
Totals for district	208,885	713,037	333,762	3.41	0.62

Nicola-Princeton District.

Colliery.	Quantity of Explosive used in Pounds.	Tonnage for Mine.	Total No. of Shots fired.	Tons of Coal per Pound of Explosive used.	Average Pounds of Explosive used per Shot fired.
Middlesboro Collieries	5,650	25,461	9,050	4.50	0.62
Coalmont Collieries	20,600	93,698	38,000	4.54	0.54
Tulameen Collieries, Ltd.	2,550	10,643	4,000	4.17	0.64
Pleasant Valley Colliery	2,500	6,430	4,400	2.57	0.56
Blue Flame Colliery	4,800	19,262	7,489	4.01	0.64
Black Diamond Colliery	500	1,080	1,000	2.16	0.50
Tulameen Valley Coal Mine	500	671	650	1.34	0.77
Hat Creek Colliery	100	317	150	3.17	0.66
Totals for district	37,200	157,562	64,739	4.23	0.57

Northern District.

Bulkley Valley Colliery	1,800	5,266	3,000	2.92	0.60
Totals for district	1,800	5,266	3,000	2.92	0.60

East Kootenay District.

Coal Creek Colliery	4	91,645	7	45,822.50	0.57
Michel Colliery	47,242	378,961	66,807	8.02	0.70
Totals for district	47,246	470,606	66,814	9.96	0.70
Totals for Province	295,131	1,346,471	468,315	4.52	0.63

Quantities of Different Explosives used.

	Lb.
Monobel of different grades	236,446
Permissible rock-powder	58,685
Total	295,131

The following is a list of explosives permitted for use in coal mines by the Honourable the Minister of Mines under the provisions of section 101, General Rule 11, clause (2), "Coal-mines Regulation Act":—

Polar Monobel No. 4.
Polar Monobel No. 6.
Polar Monobel No. 14.
Polar CXL-ite No. 2.

MACHINE-MINED COAL.

During the year 1936 mining-machines produced approximately 880,036 tons, or 65.3 per cent. of the total.

The following table gives the district, number of machines, how driven, and type of machine used:—

District.	Number driven by		Type of Machine used.							
	Electricity.	Compressed Air.	Mavor and Coulson.	Anderson Boyes.	Hardy.	Siskol.	Sullivan.	Pickwick.	Pneumatic Pick.	Ingersoll-Rand.
Vancouver Island	1	28	4	11	3	9	1	1	----	----
Nicola-Princeton	----	22	----	----	----	11	----	----	----	11
East Kootenay	----	58	1	3	27		----	----	27	----
Totals	1	108	5	14	30	20	1	1	27	11

SAFETY-LAMPS.

There were 2,339 safety-lamps in use in the coal mines of the Province. Of this number, 179 were flame safety-lamps of the Wolf type and 2,160 were electric lamps of various makes, as follows: Edison, 2,078; Wolf electric, 83.

The following table shows the distribution of lamps by district, method of locking, and illuminant used:—

Vancouver Island District.

Colliery and Mine.	Method of Locking.		Illuminant used.	
	Magnetic Lock.	Screw or Automatic Clip.	Naphtha Gasoline.	Electricity.
Western Fuel Colliery, Nanaimo	33	545	33	545
Reserve Colliery	12	201	12	201
Comox Colliery	34	411	35	410
Northfield Colliery	----	----	----	----
Lantzville Colliery	2	28	2	28
Fiddick mine	3	10	3	10
Ida Clara (Richardson) mine	2	18	2	18
Jingle Pot mine	2	----	2	----
Biggs' mine	1	8	1	8
Chambers' mine	1	7	1	7
Beban's mine	1	9	1	9
Totals for district	91	1,237	92	1,236

Nicola-Princeton District.

Middlesboro Colliery	8	80	8	80
Coalmont Colliery	10	120	10	120
Tulameen Collieries, Ltd.	4	75	4	75
Pleasant Valley Colliery	4	53	4	53
Blue Flame Colliery	2	25	2	25
Black Diamond Colliery	1	24	1	24
Tulameen Valley Coal Co.	2	15	2	15
Hat Creek Colliery	2	8	2	8
Totals for district	33	400	33	400

Northern District.

Bulkley Valley Colliery	2	18	2	18
Totals for district	2	18	2	18

East Kootenay District.

Coal Creek Colliery	7	120	7	120
Michel Colliery	45	386	45	386
Totals for district	52	506	52	506
Totals for Province	178	2,161	179	2,160

Approved Safety-lamps, Electric and Flame.

A list of the approved safety-lamps, both electric and flame, was published in the 1930 Annual Report. The following lamps, all electric, are now also approved:—

No. 8.—The electric lamp manufactured by the Edison Storage Battery Company, Orange, New Jersey, U.S.A., under Approval No. 18 of the United States Bureau of Mines. The only

bulb approved for use in this lamp carries the symbol BM-18 and is manufactured by the National Lamp Works of the General Electric Company, Cleveland, Ohio.

No. 9.—The electric lamp manufactured by the Edison Storage Battery Company, Orange, New Jersey, U.S.A., under Approval No. 18F of the United States Bureau of Mines. This model of Edison lamp in reality represents an extension of the lamp approval given under Approval No. 18. The only bulb approved for use with this lamp carries the symbol BM-18F and is manufactured by the National Lamp Works of the General Electric Company, Cleveland, Ohio.

No. 10.—The electric lamp manufactured by the Edison Storage Battery Company, Orange, New Jersey, U.S.A., under Approval No. 18H of the United States Bureau of Mines. This lamp represents an extension of the No. 18 approval of the United States Bureau of Mines. The only bulb approved for use with this lamp carries the symbol BM-18H and is manufactured by the National Lamp Works of the General Electric Company, Cleveland, Ohio.

No. 11.—The electric lamp manufactured by the Edison Storage Battery Company, Orange, New Jersey, U.S.A., under Approval No. 24 of the United States Bureau of Mines. The only bulb approved for use with this lamp carries the symbol BM-24 and is manufactured by the National Lamp Works of the General Electric Company, Cleveland, Ohio. This lamp is known as the Edison Model J lamp.

No. 12.—The electric lamp manufactured by the Edison Storage Battery Company, Orange New Jersey, U.S.A., under Approval No. 25 of the United States Bureau of Mines. The only bulb approved for use with this lamp carries the symbol BM-25 and is manufactured by the National Lamp Works of the General Electric Company, Cleveland, Ohio. This lamp is known as the Edison Model K lamp.

(Unless otherwise specified, all lamps are cap-lamps.)

NOTE.—*While the use of flame safety-lamps is permitted, it is the policy of the Department of Mines to encourage the use of approved electric safety-lamps for all persons underground in the coal mines, except such flame-lamps as may be required by the officials of the mines in the carrying-out of their duty and in such cases as it is considered advisable to provide flame safety-lamps in addition to the electric safety-lamps.*

ELECTRICITY.

Electricity is used for various purposes on the surface at seven mines and underground at two mines.

The purpose for which it was used, together with the amount of horse-power in each instance, is shown in the following table:—

Above ground— Nature of its Use.	Aggregate H.P.
Winding or hoisting	365
Ventilation	1,202
Haulage	158
Coal-washing	1,216
Miscellaneous	2,470
Total horse-power	5,411
Underground—	
Haulage	1,655
Pumping	640
Coal-cutting	30
Miscellaneous	910
Total horse-power	3,235
Total horse-power above and under ground	8,646

Of the above amount, approximately 1,417 horse-power was operated as direct current and 7,229 horse-power as alternating current.

VENTILATION.

The reports of the District Inspectors give detailed information regarding the ventilation in the splits and main returns of the different mines; in a number of instances the formerly existing splits had to be further divided to ensure that the methane content was kept at a minimum

Methane Detection.

During the year the Burrell Methane Detector was used to test for the presence of methane in percentages less than can be detected by the flame safety-lamp, which is the usual testing medium used by firebosses throughout the Province.

Tests were made with the new improved Wolf Safety Flame safety-lamp with methane percentage indicator attachment, but as this is governed by temperature conditions it was not found to be reliable for underground use.

A few Ringrose Automatic Firedamp Alarms were tried during the year and were found to be fairly accurate in showing the presence of methane at percentages of 1.25 and upwards; this device can be set to come into operation at any point between 1.25 and 2.5 per cent. and shows a red light when the methane content reaches the predetermined setting. The Ringrose is operated by a self-contained battery.

Mine-air Samples.

Mine-air sampling was carried out as usual during the year and 308 samples were collected in the various coal mines of the Province; of this number, twenty-three were spoiled in transit and accidents in the laboratory.

The most intensive sampling is done in the mines of the Crowsnest Pass District and in No. 5 mine, Comox Colliery, where the methane production is higher than in other mining districts of the Province; many of the samples were taken in the vicinity of abandoned workings and in fire areas.

The analyses of above samples are filed in the office of the Chief Inspector of Mines.

INSPECTION COMMITTEE.

At practically all the mines throughout the Province inspection committees appointed by the workmen under General Rule 37, section 101, " Coal-mines Regulation Act," were in operation throughout the year; one exception was the Reserve mine of the Western Fuel Corporation of Canada, Limited, where the men failed to appoint such a committee.

As required by above rule, the Chief Inspector of Mines appointed two miners to carry out this inspection until such time as the men employed in the mine appointed a committee of their own selection; the above two men continued to carry out this duty to the end of the year.

COAL-DUST.

Sampling of dust as per the Regulations for Precautions against Coal-dust was well maintained during the year and a total of 800 samples was taken and analysed at the different mines, and where the analyses showed less than 50 per cent. incombustible matter immediate steps were taken to see that the mine or part of the mine was rerock dusted.

DANGEROUS OCCURRENCES.

During the year the following dangerous occurrences, in addition to those causing injuries, were reported:—

On January 4th spontaneous combustion was discovered in the gob behind No. 6 conveyor-wall, 5 East slope, No. 5 mine, Comox Colliery; the men were immediately withdrawn from the area except those engaged in dealing with the emergency. The heated material was reached and loaded out without any damage being done.

On January 15th spontaneous heating developed in 11 East level, No. 4 mine, Coalmont Collieries, Limited; this occurred in the gob where the pillars had been extracted; the men were withdrawn and this area was sealed off without further trouble.

On February 5th, in No. 1 mine, Western Fuel Corporation of Canada, Limited, Nanaimo, long-wall workings which were being driven towards the abandoned and flooded workings of

the old North-east slope, abandoned in 1917, with the intention of leaving a 50-foot barrier between the new and old workings, tapped this water some 60 feet closer than was shown by the survey. While the above-mentioned barrier was determined from the survey, precautionary drill-holes ahead were required as a definite precaution, and, as mentioned above, one of these drill-holes tapped the water ahead of the advancing face-line; this face-line was immediately stopped until the water was dealt with.

On April 13th a cave-in of some shaft-timber occurred in the Newcastle shaft of No. 1 mine, Western Fuel Corporation of Canada; this shaft was not in use except as an auxiliary airway; the cave-in was cleared up.

On May 1st, in No. 1 shaft, Reserve mine, an empty car being put off the cage at the shaft-bottom became coupled to the loaded car being put on the cage; this was not seen by the cager, who signalled to hoist. The empty car was dragged some 300 feet up the shaft and caused some slight damage.

On May 3rd spontaneous heating was discovered in the floor of the return airway in No. 4 mine, Coalmont Collieries, Limited. The heated material was dug out and no damage resulted.

On May 4th one of the cages at No. 1 shaft, Western Fuel Corporation, Limited, fouled the connecting rails at the main surface landing when the signal was given to lower the cage; the cage remained stationary and 200 feet of slack rope was paid out before the hoist was stopped; the cage was secured until the slack rope was taken up.

On August 20th the throttle-valve of the hoisting-engine, No. 1 mine, Western Fuel Corporation of Canada, Limited, stuck while the cages were at the top and bottom of the shaft respectively; repairs were made during a three-hour delay; no damage was done.

On September 12th a trip of loaded cars were accidentally pushed over the brow of the Main slope by a haulage-motor; the cars derailed about 200 feet down the slope and caved the roof at this point and caused one week's suspension of operations.

On November 28th spontaneous heating was discovered in Jackson's section, No. 1 mine, Western Fuel Corporation of Canada, Limited; this area was immediately sealed off without further trouble.

PROSECUTIONS.

During 1936 there were two prosecutions made for infractions of the "Coal-mines Regulation Act," as follows:—

Date.	Colliery.	Occupation of Defendant.	Offence charged.	Judgment.
Jan. 7	Crow's Nest Pass Coal Co., No. 1 mine, Michel	Fireboss	Failed to examine for inflammable gas prior to firing a shot; in contravention of General Rule 12	Fined $20 and costs.
Dec. 9	Canadian Collieries (D.), Ltd., No. 5 mine, Comox	Miner	Having matches in his possession in the mine; in contravention of General Rule 9	Fined $10 and costs.

GOVERNMENT RESCUE-STATIONS.

The Department of Mines has four mine-rescue stations in different parts of the Province and centrally located in the mining districts—namely, at Nanaimo, Cumberland, Princeton, and Fernie. During the year many requests were received from medical men for oxygen and the inhalators for use in emergencies, and immediate service was rendered in every case. In the larger coal-mining districts of Crowsnest, Cumberland, and Nanaimo experienced teams maintain a regular schedule of training throughout the year and so keep ready for any emergency calls.

The preliminary training course consists of twelve two-hour lessons in the actual use of oxygen apparatus and Burrell all-service gas-masks in an irrespirable atmosphere and instruction on the approved method of dealing with mine fires and recovery-work. The training itself is strenuous work, and all candidates have to undergo a special physical examination before starting training and must be under 34 years of age.

During the year, in addition to the regular teams in training, eighty-four new men took the full training and were granted certificates of competency:—

Cert. No.	Name.	Where trained.	Cert. No.	Name.	Where trained.
859	John Cunliffe	Princeton.	901	Melford Biggs	Nanaimo.
860	Thomas H. Cunliffe	Princeton.	902	John Henry Smith	Nanaimo.
861	Thomas Adamson	Cumberland.	903	Archie Cameron Wotherspoon	Nanaimo.
862	William Combs	Cumberland.	904	Leslie Wilson Younghusband	Nanaimo.
863	William Conn	Cumberland.	905	William Younghusband	Nanaimo.
864	George A. Dakers	Cumberland.	906	Joseph A. Beram	Kimberley.
865	Harvey Hurd	Cumberland.	907	William Cox	Kimberley.
866	Alexander Hunter	Cumberland.	908	James H. Dolson	Kimberley.
867	William A. Johnston	Cumberland.	909	John W. Douglas	Kimberley.
868	Thomas Leigh	Cumberland.	910	Earl C. McInnes	Kimberley.
869	William Logan	Cumberland.	911	Walter E. Riedel	Kimberley.
870	Alfred W. Maxwell	Cumberland.	912	Albert Addison	Nanaimo.
871	Thomas James Morgan	Cumberland.	913	Harold O. Broadrick	Nanaimo.
872	John Morrison	Cumberland.	914	David C. Coulthard	Nanaimo.
873	Thomas Mossey	Cumberland.	915	Douglas Haig Good	Nanaimo.
874	James Stewart	Cumberland.	916	George Moore Good	Nanaimo.
875	Alexander McAllister	Cumberland.	917	William John Higgin	Nanaimo.
876	William Shearer	Cumberland.	918	Henry John Hollister	Nanaimo.
877	Henry Westfield	Cumberland.	919	William Edward Ruuska	Nanaimo.
878	Robert Marston Alexander	Hedley.	920	Henry Joseph Salmon	Nanaimo.
879	Percy Bailey	Hedley.	921	John W. Clark	Nanaimo.
880	Alexander T. Brent	Hedley.	922	Chas. Reginald Dickinson	Nanaimo.
881	William Joseph Bromley	Hedley.	923	Asbjorn R. Fossum	Nanaimo.
882	Griffith George Francis	Hedley.	924	Robert McCourt	Nanaimo.
883	John Joseph Kelley	Hedley.	925	Joseph A. Salmon	Nanaimo.
884	Charles Luxon	Hedley.	926	Thomas McCourt	Nanaimo.
885	Samuel B. Meldrum	Hedley.	927	Owen Patrick Callaghan	Kimberley.
886	John Aubrey McDiarmid	Hedley.	928	Colin Douglas M. Chisholm	Kimberley.
887	William Henry Pearce	Hedley.	929	John Archibald Fingland	Kimberley.
888	Donald Smith	Hedley.	930	Hedley Stewart Fowler	Kimberley.
889	Emil Soderlund	Hedley.	931	Joseph Rinehardt Giegerich	Kimberley.
890	Frank Taylor	Hedley.	932	George Grahame Hunter	Kimberley.
891	William R. Triplett	Hedley.	933	Brock Lough Montgomery	Kimberley.
892	John Trudgian	Hedley.	934	Robert Mulligan	Kimberley.
893	Anton Jacob Winkler	Hedley.	935	Clarence Fred Myrene	Kimberley.
894	Basil Nixon	New West-minster.	936	John Murdo MacDonald	Kimberley.
			937	James O'Brien	Kimberley.
895	George Martin Brown	Cumberland.	938	Arthur Gerald Pentland	Kimberley.
896	Richard Bates	Cumberland.	939	Edwin Peterson	Kimberley.
897	James Craig	Cumberland.	940	Richard Shannon	Kimberley.
898	Hugh Mitchell McNeill	Cumberland.	941	Frederick Mark Waldie	Kimberley.
899	William Vahle	Cumberland.	942	Jasper Matthews Wolverton	Kimberley.
900	James Weir	Cumberland.			

MINE-RESCUE AND FIRST-AID WORK.

At all the coal-mining centres first-aid classes and training was carried out, and this was ably supported by the Vancouver Island and Coast District Mine Safety Association, the East Kootenay Mine Safety Association, the Princeton District Association, and by the Inspectors of Mines in the various districts.

The above Safety Associations held competitions in first-aid and mine-rescue work at Fernie, Princeton, Nanaimo, and Cumberland, and these competitions, in addition to demonstrating the efficiency of this work, did much to spread interest in mine-safety and induce new men to enter this field.

In the Fernie and Princeton competitions men from both coal and metalliferous mines took part in both above branches of safety-work and there can be no doubt that each learned from the other.

During the Vancouver Jubilee Celebration the Consolidated Mining and Smelting Company of Canada, Limited, the Crow's Nest Pass Coal Company, and the Canadian Collieries (D.),

Limited, each sent one of their trained mine-rescue teams to Vancouver, where these teams gave a three-day exhibition of mine-rescue work in Stanley Park, where the Department of Mines had erected a large demonstration mine for this purpose; many thousands of people witnessed this work.

SUPERVISION OF COAL MINES.

During the year nineteen coal companies operated twenty-two collieries, with thirty-two mines, employing 2,015 men underground. In the supervision of underground employees there were ten managers, one safety engineer, eighteen overmen, eighty-three firebosses and shot-lighters, a total of 112, or one official for every eighteen persons employed underground.

"COAL SALES ACT."

During the year a considerable number of inspections were made under the "Coal Sales Act"; several complaints were investigated. The majority of the complaints were in the Vancouver District and most of these were due to small dealers accused of substituting an inferior grade of coal for a superior grade. Valuable assistance was rendered in this district by the Weights and Measures Inspector for the City of Vancouver, who keeps a close check on the sale of coal in the city. Generally speaking, the regular coal-dealers try to conduct their business in accordance with the "Coal Sales Act."

LIST OF REGISTERED NAMES OF BRITISH COLUMBIA COALS, APPROVED BY THE CHIEF INSPECTOR OF MINES, IN ACCORDANCE WITH THE PROVISIONS OF THE "COAL SALES ACT."

Registered Names of Coal.	Colliery and District.	Producing Company.
Comox	Nos. 4 and 5 mines, Comox Colliery (Cumberland)	Canadian Collieries (D.), Ltd.
Old Wellington	No. 9 mine (Wellington)	Canadian Collieries (D.), Ltd.
Ladysmith-Wellington	No. 5 mine (South Wellington)	Canadian Collieries (D.), Ltd.
Ladysmith-Extension	No. 8 mine (Extension)	Canadian Collieries (D.), Ltd.
Hi-Carbon	Mixture of Canadian Collieries' coal and B.C. Electric coke	Canadian Collieries (D.), Ltd.
Nanaimo-Douglas	No. 1 mine, Upper seam (Nanaimo)	Western Fuel Corporation of Canada, Ltd.
Nanaimo	No. 1 mine, Lower seam (Nanaimo)	Ditto.
Nanaimo Reserve	Reserve mine (Nanaimo)	,,
Nanaimo-Wellington	Blend of No. 1 mine, Nanaimo, and No. 5 mine, South Wellington	,,
Mabury-Northfield	(Recovered from surface dump) (Wellington)	Mabury Engineering Corporation, Ltd.
Wellington South, Ida Clara	Ida Clara No. 1 (South Wellington)	Richardson Bros., Ltd.
Cassidy-Wellington	Cassidy Colliery (Cassidy)	Granby Consolidated M.S. & P. Co., Ltd.
Lantzville Wellington	Lantzville (Lantzville)	Lantzville Collieries, Ltd.
Biggs-Wellington	Biggs' mine (Wellington)	Biggs' mine.
Fiddick-Douglas	Fiddick mine (South Wellington)	Fiddick mine.
Little Ash-Wellington	Little Ash mine (Wellington)	Little Ash mine.
Jingle Pot	Jingle Pot (East Wellington)	Jingle Pot Colliery, Ltd.
Old Adit, Wellington	Old Adit (Wellington)	Old Adit Colliery (C. Stronach).
Chambers-Extension	Chambers (Extension)	R. H. Chambers.
Middlesboro	Middlesboro (Merritt)	Middlesboro Collieries, Ltd.
Nicola Sunshine	Sunshine (Merritt)	Sunshine Coal Co., Ltd.
Coalmont	Coalmont (Coalmont)	Coalmont Collieries, Ltd.
Princeton Blue Flame	Blue Flame (Princeton)	W. R. Wilson Mining & Investment Co.
Tulameen Coal, Princeton	Tulameen (Princeton)	Tulameen Collieries, Ltd.
Tulameen Valley Coal, Princeton	Tulameen (Princeton)	Tulameen Valley Coal Co.
Diamond, Princeton District, B.C.	Diamond (Princeton)	Pleasant Valley Mining Co., Ltd.
Sunrise, Princeton District, B.C.	Sunrise (Princeton)	Pleasant Valley Mining Co., Ltd.
Pleasant Valley, Princeton District, B.C.	Diamond and Sunrise blended (Princeton)	Pleasant Valley Mining Co., Ltd.
North Thompson Gem	North Thompson (North Thompson)	North Thompson Colliery, Ltd.
Red Triangle, Princeton Quality	Red Triangle (Princeton)	Red Triangle Coal Co., Ltd.
Hat Creek	Hat Creek (Lillooet)	Canada Coal & Development Co., Ltd.
Princeton-Black Diamond	Black Diamond (Princeton)	Black Diamond Collieries, Ltd.
Bulkley Valley	Bulkley Valley (Telkwa)	Bulkley Valley Colliery, Ltd.
Aveling	Aveling (Telkwa)	Aveling Colliery.
Crow's Nest, Coal Creek	Coal Creek (Coal Creek)	Crow's Nest Pass Coal Co., Ltd.
Crow's Nest, Michel	Michel (Michel)	Crow's Nest Pass Coal Co., Ltd.
Corbin Washed	Corbin (Corbin)	Corbin Collieries, Ltd.

BOARD OF EXAMINERS FOR COAL-MINE OFFICIALS.

FIRST-, SECOND-, AND THIRD-CLASS CERTIFICATES AND MINE-SURVEYORS' CERTIFICATES.

BY

JAMES STRANG.

The Board of Examiners which was formed on July 10th, 1919, now consists of James Dickson, Chief Inspector of Mines, Chairman; Henry E. Miard, member; and James Strang, member and Secretary of the Board.

The meetings of the Board are held in the office of the Mines Department in Victoria. Examinations are held in accordance with the amended rules of the Board of Examiners and approved by the Minister of Mines on September 28th, 1929.

Two examinations were held in 1936, the first on May 13th, 14th, and 15th, and the second on November 18th, 19th, and 20th.

The total number of candidates at the examinations were as follows: For First-class Certificates, 3 (1 passed, 2 failed); for Second-class Certificates, none; for Third-class Certificates, 16 (4 passed, 12 failed); for Mine-surveyors' Certificate, none.

The following is a list of the candidates who successfully passed in the various classes:—

First-class Certificate.—Edward R. Hughes.

Third-class Certificate.—Isaac R. Hughes, Reginald T. Taylor, William J. Heycock, and Joseph Karner.

EXAMINATIONS FOR CERTIFICATES OF COMPETENCY AS COAL-MINERS.

In addition to the examination and certificates already specified as coming under the Board of Examiners, the Act further provides that every coal-miner shall be the holder of a certificate of competency as such. By miner is meant any person employed underground in any coal mine to cut, shear, break, or loosen coal from the solid, whether by hand or machinery.

Examinations are held regularly in all the coal-mining districts.

No certificates have been granted in any case where the candidate failed to satisfy the Board as to his fitness, experience in a coal mine, and a general working knowledge of the English language.

Throughout the year fifty-seven candidates presented themselves for examination; fifty passed and six failed to qualify.

In addition to the certificates granted above, substitute certificates were granted to miners who had lost their original certificates.

The Board of Examiners desires to thank the different coal-mining companies for the use of their premises for holding these examinations where necessary.

The Inspector of Mines in each district has authority under the "Coal-mines Regulation Act" to grant, after a satisfactory examination, a provisional certificate as a coal-miner to applicants, which entitles the holder to follow the occupation of a coal-miner for a period not exceeding sixty days or until the date of the next examination before the Board.

REGISTERED LIST OF HOLDERS OF CERTIFICATES OF COMPETENCY AS COAL-MINE OFFICIALS.

FIRST-CLASS CERTIFICATES OF COMPETENCY ISSUED UNDER "COAL-MINES REGULATION ACT, 1897."

Name.	Date.	Name.	Date.
Shepherd, Francis H.	March 5, 1881	Drinnan, Robert G.	Feb. 5, 1901
Horrobin, William	May 1, 1882	Stockett, Thomas, Jr.	Aug. 3, 1901
Chandler, William	Dec. 21, 1883	Cunliffe, John	Aug. 3, 1901
Priest, Elijah	Dec. 21, 1883	Browitt, Benjamin	Aug. 3, 1901
Randle, Joseph	Jan. 18, 1888	Wilson, A. R.	Oct. 17, 1902
Matthews, John	Jan. 8, 1889	Simister, Charles	Oct. 17, 1902
Norton, Richard Henry	Aug. 26, 1889	Budge, Thomas	Oct. 17, 1902
Kesley, John	March 4, 1892	Richards, James A.	Oct. 17, 1902
Smith, Frank B.	May 30, 1896	McLean, Donald	Jan. 21, 1904
Hardy, Joseph	Dec. 17, 1896	Wright, H. B.	Jan. 21, 1904
Bradshaw, George B.	June 12, 1899	Coulthard, R. W.	Jan. 21, 1904
Simpson, William G.	June 12, 1899	Roaf, J. Richardson	Jan. 21, 1904
Hargreaves, James	Feb. 5, 1901	Manley, H. L.	Jan. 21, 1904

FIRST-CLASS CERTIFICATES ISSUED UNDER "COAL-MINES REGULATION ACT FURTHER AMENDMENT ACT," 1904–1911–1919.

Name.	Date.	Name.	Date.
Baxter, Andrew	June 10, 1911	Higgins, Alexander	Dec. 19, 1918
Bennett, John	Dec. 30, 1926	Hodge, William K.	June 16, 1925
Biggs, J. G.	July 22, 1908	Howden, Archibald	May 27, 1913
Bonar, Robert	Oct. 28, 1911	Howells, Nathaniel	Oct. 28, 1911
Bonar, Robert, Jr.	Dec. 15, 1932	Hughes, Edward R.	Dec. 29, 1936
Brace, Tom	May 13, 1915	Hughes, John C.	May 17, 1917
Bridge, Edward	July 22, 1908	Humphries, Clifford	June 10, 1911
Brown, David	May 21, 1914	Hunter, Alex. B.	July 8, 1916
Brown, Robert Joyce	May 13, 1915	Huntrods, Eustace S. F.	May 19, 1922
Caufield, Bernard	May 1, 1909	Jackson, Thos. R.	Nov. 9, 1907
Church, James A. H.	June 10, 1911	Jaynes, Frank	May 13, 1915
Cox, Richard	May 13, 1915	Johnston, John	June 30, 1928
Cunningham, John Howard	May 9, 1912	Kellock, George	June 10, 1911
D'Altroy, A. C.	Dec. 20, 1928	Laird, Robert	Nov. 15, 1917
Davies, David	June 10, 1911	Leighton, Henry	May 9, 1912
Davies, Stephen	Nov. 15, 1917	Littler, James	Dec. 2, 1929
Davies, Thos. Owen	May 21, 1914	Mackinnon, Hugh G.	May 19, 1922
de Hart, J. B.	May 17, 1917	Macauley, D. A.	June 10, 1911
Devlin, E. H.	Dec. 30, 1926	McCulloch, James	Sept. 10, 1910
Dickson, James	Oct. 31, 1912	McDonald, John	Oct. 3, 1919
Elliott, John B.	June 30, 1928	McGuckie, Thomas	July 22, 1908
Emmerson, Joseph	Nov. 9, 1907	McKendrick, Andrew	May 27, 1913
Ewart, William	May 19, 1922	McLean, Michael D.	June 16, 1925
Fairfoull, Robert	June 10, 1911	McMillan, J. H.	Sept. 10, 1910
Foster, William R.	Dec. 31, 1925	McVicar, Samuel	May 1, 1909
France, Thos.	Nov. 22, 1906	Mazey, William John	Oct. 31, 1912
Fraser, Norman	March 4, 1905	Miard, Henry Ernest	May 9, 1912
Freeman, H. N.	May 1, 1909	Millar, John K.	Nov. 22, 1906
Frew, Wm. B.	July 6, 1932	Miller, Andrew Anderson	Oct. 31, 1912
Galloway, C. F. J.	July 22, 1908	Montgomery, John W.	May 1, 1909
Gascoyne, Rowland B.	May 21, 1914	Mordy, Thomas	Sept. 10, 1910
Gillham, John	Jan. 5, 1925	Morrison, Edward	June 24, 1924
Glover, Francis	Oct. 31, 1912	Mottishaw, Sam. K.	Nov. 15, 1917
Graham, Charles	Nov. 14, 1905	Murray, George	June 21, 1921
Graham, Thomas	Nov. 9, 1907	Newbury, Arthur	June 21, 1920
Gray, James	Nov. 27, 1909	O'Brien, George	May 21, 1914
Hanson, Wm. B.	Dec. 9, 1930	Ovington, John	May 27, 1913
Henderson, Robert	Nov. 27, 1909	Peacock, Frank David	Oct. 28, 1911
Hewlett, Howe	May 27, 1913	Penman, Hugh	May 21, 1914

FIRST-CLASS CERTIFICATES ISSUED UNDER "COAL-MINES REGULATION ACT FURTHER AMENDMENT ACT," 1904–1911–1919—*Continued.*

Name.	Date.	Name.	Date.
Pettigrew, Robert	June 1, 1933	Stewart, R. T.	Sept. 10, 1910
Phelan, Arthur	May 27, 1913	Strang, James	June 10, 1911
Powell, J. W.	June 10, 1911	Stubbs, Clement	July 21, 1929
Quinn, James A.	Dec. 2, 1929	Taylor, James	May 16, 1918
Quinn, John Graham	July 8, 1916	Thorne, B. L.	Sept. 10, 1910
Ramsay, Peter Millar	May 16, 1918	Touhey, James	May 21, 1914
Reger, Frederick W.	July 6, 1932	Vincent, Thomas C.	June 24, 1924
Rolfe, Emrys	Dec. 15, 1932	Walker, William	May 16, 1918
Roper, William	May 13, 1915	Wallbank, J.	Sept. 10, 1910
Russell, John	May 21, 1914	Warburton, Ernest Leonard	July 8, 1916
Scott, Thomas Wright	Dec. 22, 1921	Wesnedge, William	Dec. 19, 1918
Shanks, John	May 1, 1909	Whittaker, John	Dec. 19, 1918
Shenton, T. J.	Sept. 10, 1910	Williams, John Samuel	Dec. 19, 1918
Smith, A. E.	Oct. 28, 1911	Williams, Thos. B.	May 17, 1917
Smith, Joseph	July 22, 1908	Williams, Thos. H.	Nov. 22, 1906
Smith, Thos. Edwin	Dec. 19, 1918	Wilson, Ridgeway R.	Nov. 15, 1917
Spicer, J. E.	Oct. 28, 1911	Wilson, Thos. M.	Dec. 23, 1927
Spruston, T. A.	Nov. 27, 1909	Wilson, William	May 16, 1918
Stevens, L. C.	Nov. 27, 1909	Yates, Frank	Dec. 31, 1925

SECOND-CLASS CERTIFICATES OF SERVICE.

Name.	Date.	No.	Name.	Date.	No.
Lee, John S.	March 4, 1905	B 9	Hunt, John	March 4, 1905	B 13
Millar, J. K.	March 4, 1905	B 10	Powell, William Baden	March 4, 1905	B 16

SECOND-CLASS CERTIFICATES OF COMPETENCY ISSUED UNDER "COAL-MINES REGULATION ACT FURTHER AMENDMENT ACT, 1904."

Name.	Date.	No.	Name.	Date.	No.
Adams, Wm. Henry	June 24, 1935	B 286	Carroll, Henry	July 22, 1908	B 62
Adamson, Robert	Sept. 10, 1910	B 120	Caufield, Bernard	Oct. 23, 1906	B 30
Allan, Alex. McDiarmid	May 27, 1913	B 167	Caufield, John	July 8, 1916	B 199
Almond, Walter	Nov. 15, 1917	B 213	Cawthorne, L.	May 1, 1909	B 93
Alstead, Robert	June 24, 1924	B 257	Challinor, Jno. Thomas	May 27, 1913	B 169
Archibald, William	Nov. 22, 1922	B 250	Challoner, Jno. Arthur	May 21, 1914	B 178
Ball, Benjamin	June 21, 1920	B 235	Chapman, Wm.	June 10, 1927	B 268
Barlow, Benjamin Robt.	Dec. 19, 1918	B 229	Churchill, James	July 22, 1908	B 65
Bastion, Albert	Nov. 21, 1923	B 256	Clark, Robt.	June 21, 1921	B 242
Bell, John	May 17, 1917	B 212	Clarkstone, Wm. W.	May 21, 1914	B 180
Beveridge, William	June 21, 1920	B 233	Commons, Wm.	Sept. 10, 1910	B 115
Bevis, Nathaniel	Sept. 10, 1910	B 123	Corbett, Garner S.	June 30, 1928	B 272
Biggs, John G.	Nov. 2, 1907	B 40	Coupland, George	May 16, 1918	B 217
Bonar, Robt. B.	June 30, 1928	B 270	Courtney, A. W.	Oct. 28, 1911	B 138
Brace, Tom	Nov. 27, 1909	B 96	Cox, Richard	May 9, 1912	B 143
Bridge, Edward	Oct. 23, 1906	B 33	Crawford, David	May 1, 1909	B 88
Brown, David	Sept. 10, 1910	B 108	Cunliffe, Thomas	May 1, 1909	B 78
Brown, George	Dec. 19, 1918	B 225	Dando, John	May 27, 1913	B 164
Brown, James L.	Oct. 28, 1911	B 136	Davidson, Hugh	May 27, 1913	B 165
Brown, John C.	Oct. 23, 1906	B 39	Davies, J. C. H.	June 15, 1934	B 285
Brown, John Todd	May 9, 1912	B 150	Davies, Stephen	Sept. 10, 1910	B 113
Brown, R. J.	Oct. 28, 1911	B 134	Dennis, Fred. W.	May 21, 1914	B 174
Brown, Robert	May 21, 1914	B 183	Devlin, Ernest H.	May 21, 1914	B 179
Brown, Robert Sneddon	May 13, 1915	B 196	Dewar, Alexander	Oct. 31, 1912	B 162
Brown, William Gold	Dec. 19, 1918	B 228	Dickenson, Clifford	May 13, 1915	B 189
Brownrigg, John H.	May 17, 1917	B 124	Dunn, Jas. W.	July 5, 1932	B 282
Bushell, J. P.	May 1, 1909	B 81	Dunsmuir, John	Nov. 14, 1905	B 26

SECOND-CLASS CERTIFICATES OF COMPETENCY ISSUED UNDER "COAL-MINES REGULATION ACT FURTHER AMENDMENT ACT, 1904"—*Continued.*

Name.	Date.	No.	Name.	Date.	No.
Duncan, James	Nov. 21, 1923	B 255	Manifold, Albert	May 9, 1912	B 145
Dykes, J. W.	May 1, 1909	B 77	Mason, Joseph	May 13, 1915	B 193
Eccleston, Wm.	May 1, 1909	B 87	Massey, H.	Nov. 27, 1909	B 99
Fairfoull, James	May 21, 1914	B 186	Mather, Thomas	June 10, 1911	B 127
Fairfoull, R.	May 1, 1909	B 83	Matusky, A.	May 1, 1909	B 91
Finlayson, James	July 29, 1905	B 21	Mayer, Ralph Waldo	May 9, 1912	B 144
Ford, Allan	May 27, 1913	B 171	Mazay, W. J.	Nov. 27, 1909	B 101
Foster, W. R.	Nov. 27, 1909	B 102	Menzies, Fred	Dec. 22, 1921	B 244
France, Thos.	May 14, 1905	B 27	Merryfield, William	July 22, 1908	B 61
Francis, David M.	May 21, 1914	B 182	Miard, Hy. E.	Sept. 10, 1910	B 107
Francis, Enoch	May 1, 1909	B 86	Michek, John	May 17, 1917	B 188
Francis, James	July 22, 1908	B 63	Middleton, Robert	July 22, 1908	B 72
Frater, George	July 8, 1916	B 204	Mitchell, Henry	July 8, 1916	B 201
Freeman, Henry N.	Nov. 2, 1907	B 45	Morgan, John	Nov. 2, 1907	B 43
Frew, Wm. M.	June 10, 1927	B 269	Morgan, William	Dec. 19, 1918	B 224
Garbett, Richard	Oct. 31, 1912	B 161	Morgan, Daniel	Nov. 21, 1923	B 254
Gibson, Munro M.	June 15, 1934	B 284	Morrison, Edward	Nov. 21, 1923	B 253
Gilham, John	June 21, 1920	B 237	Morton, Robert W.	July 22, 1908	B 59
Gillespie, Hugh	July 29, 1905	B 24	Mottishaw, S. K.	Oct. 28, 1911	B 135
Gillespie, John	Oct. 23, 1906	B 36	Murray, George	Oct. 3, 1919	B 232
Gould, Alfred	May 13, 1915	B 190	Musgrave, J.	May 1, 1909	B 90
Gourlay, Robert	Dec. 19, 1918	B 227	Myers, Peter	May 9, 1912	B 149
Graham, Chas.	March 4, 1905	B 1	MacKinnon, Hugh G.	Dec. 22, 1921	B 243
Gray, David	May 1, 1909	B 76	McKay, Walter	June 30, 1926	B 262
Gray, George	July 8, 1916	B 207	McLaughlin, Alex.	May 13, 1915	B 191
Greenwell, Archibald	May 16, 1918	B 220	McDonald, J. A.	Oct. 28, 1911	B 133
Gregory, Wm.	June 16, 1931	B 278	McDonald, John	May 27, 1913	B 172
Hamilton, Robert N.	May 21, 1914	B 175	McFegan, W.	Nov. 31, 1909	B 106
Hastings, Andrew P.	Dec. 19, 1918	B 223	McFegan, Robert	May 18, 1922	B 246
Heathcote, Joseph	July 21, 1929	B 273	McGarry, Martin	Oct. 31, 1912	B 156
Henderson, Robert	July 22, 1908	B 60	McGuckie, Thomas M.	Oct. 23, 1906	B 35
Hodge, William K.	Jan. 5, 1925	B 259	McKendrick, And.	Sept. 10, 1910	B 112
Holliday, William	Dec. 19, 1918	B 230	McLean, Michael D.	June 21, 1920	B 234
Hopkins, Harry	June 16, 1930	B 276	McMillan, D.	June 10, 1911	B 125
Horrocks, Abner G.	June 10, 1911	B 130	McNay, Carmichael	May 9, 1912	B 151
Houston, Robert	June 16, 1925	B 260	McPherson, James E.	July 22, 1908	B 73
Howells, Nathaniel	Nov. 27, 1909	B 97	Neen, Joseph	June 10, 1911	B 129
*Hughes, Edward R.	Sept. 28, 1931	B 280	Newbury, Arthur	May 21, 1914	B 184
Hughes, John C.	Sept. 10, 1910	B 109	Newton, Wm.	Sept. 10, 1910	B 116
Hutton, Isaac	May 21, 1914	B 185	Nicholl, Joseph O.	Dec. 31, 1925	B 261
Hutton, John	May 9, 1912	B 154	O'Brien, Charles	May 9, 1912	B 148
Hynds, William	Dec. 14, 1920	B 240	O'Brien, George	May 1, 1909	B 82
Hynds, John	May 18, 1922	B 247	Osborne, Hugh	Dec. 14, 1920	B 239
Jackson, Thos. R.	March 4, 1905	B 5	Ovington, John	Nov. 2, 1907	B 52
James, David	Nov. 2, 1907	B 58	Park, William	June 21, 1920	B 238
Jarrett, Fred	May 1, 1909	B 84	Parkinson, T.	May 1, 1909	B 80
Jaynes, Frank	Sept. 10, 1910	B 111	Parnham, Charles	Nov. 2, 1907	B 49
John, Francis	July 8, 1916	B 200	Pettigrew, Robt.	Dec. 15, 1931	B 281
John, Howell	Sept. 10, 1910	B 122	Quinn, James	May 21, 1914	B 181
Johnston, John	June 10, 1927	B 267	Quinn, John	May 9, 1912	B 146
Jones, Samuel	May 16, 1918	B 221	Ramsay, Peter Millar	May 17, 1917	B 209
Jones, William T.	July 22, 1908	B 66	Rankin, Geo.	Nov. 27, 1909	B 103
Jordon, Thos.	Nov. 27, 1909	B 104	Raynes, M. T.	Oct. 28, 1911	B 139
Kirkwood, John R.	Oct. 31, 1912	B 160	Rear, Albert E.	June 15, 1934	B 283
Knowles, James E.	Oct. 28, 1911	B 137	Reid, Wm.	Oct. 28, 1911	B 132
Laird, Robert	May 17, 1917	B 210	Renny, James	Oct. 28, 1911	B 140
Lander, Frank	May 13, 1915	B 195	Richards, Thomas	Nov. 2, 1907	B 57
Lane, Joseph	May 9, 1912	B 142	Richards, Samuel	May 9, 1912	B 152
Lee, Robert John	Sept. 10, 1910	B 110	Rigby, John	July 29, 1905	B 29
Littler, Jas.	June 10, 1927	B 266	Roberts, Ebenezer	Sept. 10, 1910	B 117
Littler, Matthew	Oct. 31, 1912	B 157	Robinson, William	July 22, 1908	B 69
Luck, George	June 10, 1911	B 128	Rogers, George	May 1, 1909	B 79

* Substituted for B 279, June 16, 1931.

SECOND-CLASS CERTIFICATES OF COMPETENCY ISSUED UNDER "COAL-MINES REGULATION ACT FURTHER AMENDMENT ACT, 1904"—*Continued.*

Name.	Date.	No.	Name.	Date.	No.
Roper, William	May 9, 1912	B 141	Thompson, Joseph	Sept. 10, 1910	B 114
Rowbottom, Thomas	May 16, 1918	B 222	Touhey, James	May 9, 1912	B 147
Russell, John	Nov. 2, 1907	B 47	Touhey, William	July 8, 1916	B 205
Rutherford, Jasper	May 16, 1918	B 219	Tonge, Thomas	July 22, 1908	B 71
Scarpino, Francis	Dec. 19, 1918	B 226	Tully, Thomas	Nov. 15, 1917	B 214
Scott, Thomas Wright	June 21, 1921	B 241	Virgo, John	May 1, 1909	B 89
Shanks, David	Oct. 31, 1912	B 159	Waddington, Daniel M.	June 16, 1931	B 277
Shaw, Thomas John	May 27, 1913	B 166	Walker, William	May 13, 1915	B 192
Smith, John	Oct. 3, 1919	B 231	Warburton, Ernest L.	May 27, 1913	B 170
Smart, Robert K.	Nov. 22, 1922	B 248	Watson, Adam G.	Nov. 14, 1905	B 28
Spruston, Thos. A.	Nov. 2, 1907	B 46	Watson, Arthur W.	May 17, 1917	B 211
Stafford, Matthew	June 10, 1911	B 131	Webster, James S.	June 24, 1924	B 258
Stewart, John	July 21, 1929	B 274	Wesnedge, William	Nov. 27, 1909	B 98
Stewart, J. M.	May 1, 1909	B 95	White, John	Nov. 2, 1907	B 48
Stobbart, Jacob	May 9, 1912	B 153	Williams, John Samuel	Nov. 15, 1917	B 215
Stockwell, William	Nov. 2, 1907	B 56	Williams, Watkin	Sept. 10, 1910	B 118
Strang, Thomas	Oct. 31, 1912	B 158	Wilson, Joseph	June 30, 1928	B 271
Stubbs, Clement	May 18, 1922	B 245	Wilson, Robinson	May 21, 1914	B 177
Sutherland, John	May 16, 1918	B 218	Wilson, Thomas	July 22, 1908	B 74
Taylor, James	May 13, 1915	B 194	Wilson, William	July 22, 1908	B 70
Taylor, Robt.	Dec. 30, 1926	B 265	Wood, Thos. James	May 21, 1914	B 176
Taylor, Thomas	July 8, 1916	B 203	Worthington, Joseph	May 1, 1909	B 85
Thomas, J. B.	Nov. 27, 1909	B 105	Yates, Frank	Nov. 22, 1922	B 251
Thomas, Daniel W.	Nov. 22, 1922	B 249			

COAL-MINE OFFICIALS.

Third-class Certificates issued under "Coal-mines Regulation Act Further Amendment Act, 1904," sec. 38, subsec. (2), in exchange for Certificates issued under the "Coal-mines Regulation Act Amendment Act, 1901."

Name.	Date.	No.	Name.	Date.	No.
Adam, Robert	Oct. 12, 1904	C 42	Lander, Frank	Jan. 9, 1905	C 61
Allsop, Harry	Oct. 11, 1904	C 34	Lanfear, Herbert	Jan. 27, 1905	C 63
Ashman, Jabez	Feb. 5, 1907	C 131	Miard, Harry E.	March 3, 1905	C 76
Auchinvole, Alex	March 29, 1905	C 89	Middleton, Robt.	Feb. 11, 1905	C 71
Barclay, Andrew	April 27, 1904	C 19	Miller, Thos. K.	Feb. 21, 1905	C 74
Barclay, James	April 27, 1904	C 20	McKenzie, John R.	Oct. 12, 1904	C 40
Barclay, John	April 17, 1905	C 111	McKinnon, Arch'd	April 3, 1905	C 102
Bickle, Thos.	Oct. 11, 1904	C 37	McMillan, Peter	March 29, 1905	C 94
Bowie, James	May 13, 1905	C 116	McMurtrie, John	March 29, 1905	C 96
Briscoe, Edward	Oct. 10, 1906	C 129	Myles, Walter	April 3, 1905	C 100
Campbell, Dan	March 29, 1905	C 93	Nash, Isaac	June 1, 1904	C 120
Carr, Jos. E.	Oct. 11, 1904	C 36	Neave, Wm.	Oct. 12, 1904	C 43
Carroll, Harry	March 29, 1905	C 98	Nelson, James	April 27, 1904	C 16
Clarkson, Alexander	April 27, 1904	C 18	Nimmo, Richard E.	April 18, 1911	C 133
Collishaw, John	Feb. 7, 1905	C 68	O'Brien, Geo.	Feb. 6, 1905	C 66
Courtney, A. W.	Nov. 2, 1904	C 45	Pearse, Thomas W. H.	April 14, 1916	C 138
Crawford, Frank	April 6, 1904	C 7	Power, John	Sept. 8, 1920	C 142
Davidson, David	April 3, 1905	C 106	Price, Jas.	Nov. 8, 1904	C 50
Davidson, John	March 29, 1905	C 87	Rafter, Wm.	March 29, 1905	C 95
Dobbie, John	Nov. 27, 1905	C 126	Reid, James	March 23, 1904	C 1
Dudley, James	March 22, 1905	C 114	* Roughead, George	Jan. 30, 1907	C 810
Duncan, Thomas	Aug 29, 1906	C 128	Ryan, John	Dec. 28, 1904	C 59
Dunn, Geo.	Dec. 19, 1904	C 56	Shenton, Thos. J.	July 25, 1904	C 30
Dunsmuir, John	March 29, 1905	C 90	Shepherd, Henry	June 13, 1904	C 26
Eccleston, Wm.	March 15, 1905	C 80	Smith, Geo.	March 29, 1905	C 84
Fagan, Daniel	April 6, 1905	C 109	Stauss, Chas. F.	Feb. 9, 1905	C 69
Farquharson, John	April 27, 1904	C 17	Steele, John	June 4, 1913	C 137
Findlayson, James	June 6, 1904	C 25	Stewart, Duncan H.	March 28, 1904	C 4
Gibson, Edward	May 30, 1905	C 118	Stewart, John	April 3, 1904	C 104
Gilchrist, Wm.	March 29, 1905	C 85	Stewart, Daniel W.	May 16, 1904	C 23
Gillespie, Hugh	April 6, 1904	C 8	Stobbart, Jacob	Feb. 21, 1905	C 73
Gillespie, John	April 6, 1904	C 5	Strang, James	April 27, 1904	C 10
Gould, Alfred	April 17, 1906	C 112	Sullivan, John	July 4, 1916	C 139
Green, Francis	Oct. 11, 1904	C 38	Summers, Joseph	May 17, 1920	C 141
Handlen, Jas.	June 16, 1904	C 122	Thomas, John	March 29, 1905	C 97
Hescott, John	Jan. 16, 1905	C 62	Vass, Robt.	Dec. 12, 1904	C 53
John, David	Nov. 8, 1904	C 49	Vater, Charles	April 6, 1904	C 6
Johnson, Geo.	May 9, 1904	C 124	Wilson, Austin	Feb. 7, 1905	C 67
Johnson, Wm. R.	March 1, 1905	C 75	Woodburn, Moses	March 29, 1905	C 83

* Issued in lieu of No. C 130, destroyed by fire.

THIRD-CLASS CERTIFICATES ISSUED UNDER "COAL-MINES REGULATION ACT FURTHER AMENDMENT ACT, 1904."

Name.	Date.	No.	Name.	Date.	No.
Adams, Wm. H.	Dec. 9, 1930	C 845	Archibald, Geo.	May 21, 1914	C 569
Adamson, Robert	May 1, 1909	C 323	Archibald, Thomas	Oct. 28, 1911	C 454
Adamson, Wm.	Dec. 22, 1921	C 721	Ball, Alfred	May 17, 1917	C 635
Ainsworth, Edward	May 16, 1918	C 674	Bann, Thomas	Oct. 31, 1912	C 494
Allan, Alexander	Oct. 28, 1911	C 430	Baggaley, J.	July 22, 1908	C 300
Almond, Walter	July 22, 1908	C 286	Baguley, James	Dec. 2, 1929	C 829
Alstead, Robt.	June 21, 1921	C 719	Bain, James	May 27, 1913	C 546
Ambrosi, Antonio	June 16, 1930	C 843	Bainbridge, James	Nov. 21, 1922	C 744
Anderson, John	Oct. 28, 1911	C 437	Ball, Benjamin	May 21, 1914	C 583
Anderson, Robt.	Oct. 14, 1914	C 599	Barker, Robert	June 10, 1911	C 415
Angell, William	May 21, 1914	C 591	Barlow, B. R.	May 1, 1909	C 337
Arbuckle, John	May 13, 1915	C 622	Barr, Samuel	June 10, 1927	C 809

THIRD-CLASS CERTIFICATES ISSUED UNDER "COAL-MINES REGULATION ACT FURTHER AMENDMENT ACT, 1904"—*Continued.*

Name.	Date.	No.	Name.	Date.	No.
Barrass, Robt.	June 30, 1926	C 795	Chapman, John	May 30, 1923	C 753
Bastion, Albert	May 30, 1923	C 750	Chapman, Thomas H.	Jan. 5, 1925	C 779
Bate, Horace	Dec. 30, 1926	C 802	Cheetham, Ben	July 22, 1908	C 311
Bateman, Joseph William	Oct. 28, 1913	C 551	Chester, John	Oct. 28, 1911	C 440
Beard, Henry C.	May 30, 1923	C 751	Christie, John	Dec. 20, 1928	C 820
Beeton, D. H.	May 1, 1909	C 338	Clark, Walter Pattison	May 9, 1912	C 480
Bell, Fred	May 27, 1913	C 514	Clarkson, Hugh G.	May 17, 1922	C 736
Bell, John	May 9, 1912	C 477	Clarkson, Robert	June 21, 1920	C 696
Bennett, Andrew M.	Nov. 15, 1917	C 661	Clarkstone, Wm. W.	Oct. 28, 1911	C 431
Bennett, John	Oct. 14, 1914	C 597	Cleaves, Walter	May 9, 1912	C 475
Beveridge, Wm.	June 10, 1911	C 396	Clifford, William	July 22, 1908	C 313
Biggs, James	June 1, 1933	C 858	Cloke, Chas. E.	June 16, 1925	C 782
Biggs, John C.	Dec. 22, 1933	C 860	Coates, Frank	June 16, 1925	C 789
Biggs, Thomas	Oct. 28, 1911	C 449	Coldwell, Daniel	May 17, 1917	C 639
Birchell, Richard	Oct. 1, 1907	C 266	Colgrove, Charles Henry	Dec. 19, 1918	C 679
Blakemore, Roydon E.	Dec. 27, 1934	C 869	Commons, William	July 22, 1908	C 304
Blas, Emil	June 24, 1924	C 774	Coupland, David	June 21, 1921	C 713
Blewett, Ernest	July 22, 1908	C 298	Cooke, Joseph	March 4, 1905	C 209
Blinkhorn, Thomas	Dec. 19, 1918	C 681	Cooper, John Andrew	Dec. 19, 1918	C 689
Bond, Frank	June 30, 1926	C 797	Cope, Frank	Oct. 28, 1913	C 549
Bowie, James I.	May 6, 1936	C 873	Corbett, Garnet S.	Dec. 23, 1927	C 812
Bradley, William	July 22, 1908	C 291	Coulthard, James	June 10, 1911	C 407
Bradley, Wilfred	May 17, 1922	C 733	Crawford, David	March 4, 1905	C 208
Bridge, Edward	July 29, 1905	C 223	Cullen, Alex.	July 21, 1929	C 824
Briscoe, F.	July 22, 1908	C 309	Cunningham, G. F.	Nov. 11, 1905	C 229
Broderick, Matthew	Jan. 21, 1913	C 525	Cunliffe, Thos.	Oct. 1, 1907	C 265
Brown, Arthur A.	Oct. 14, 1914	C 596	Cuthell, George W.	Dec. 2, 1929	C 832
Brown, David	Nov. 1, 1909	C 348	Dabb, Owen	May 21, 1914	C 578
Brown, George	July 8, 1916	C 626	Dando, John	May 9, 1912	C 465
Brown, George A.	Dec. 14, 1920	C 706	Davey, George	June 21, 1921	C 718
Brown, James	Sept. 10, 1910	C 364	Davidson, Hugh	May 9, 1919	C 464
Brown, James	June 10, 1911	C 412	Davies, Evan Thomas	May 9, 1912	C 463
Brown, James	July 8, 1916	C 625	Davies, John H. C.	May 17, 1922	C 729
Brown, Jas. Miller	May 13, 1915	C 615	Davis, John David	May 16, 1918	C 669
Brown, John	Sept. 10, 1910	C 392	Davis, William	May 1, 1909	C 339
Brown, Matthew	July 5, 1932	C 854	Dean, Andrew	Dec. 19, 1918	C 688
Brown, Robert	Oct. 28, 1911	C 451	Dean, Joseph	May 13, 1915	C 611
Brown, Robert D.	June 10, 1911	C 423	Delprato, Joseph	June 16, 1930	C 837
Brown, Robert S.	June 10, 1911	C 408	Derbyshire, A.	June 10, 1911	C 401
Brown, Wm. A.	May 21, 1914	C 576	Dewar, Alex.	Sept. 10, 1910	C 369
Brown, William Gold	July 8, 1916	C 629	Devlin, Edward	Oct. 23, 1906	C 241
Bryden, Thomas	June 16, 1930	C 842	Devlin, Ernest Henry	May 27, 1913	C 538
Bullen, Thomas	Sept. 10, 1910	C 379	Devlin, John	Oct. 3, 1919	C 693
Bushell, Jas. P.	Oct. 1, 1907	C 264	Devoy, William	May 17, 1917	C 638
Bysouth, Thomas	May 16, 1918	C 673	Dickenson, Clifford	May 27, 1917	C 532
Cairns, Andrew	June 10, 1911	C 420	Dickie, Leslie	Nov. 20, 1923	C 762
Cairns, Robert	May 27, 1913	C 539	Dingsdale, Geo.	Oct. 28, 1911	C 459
Caldwell, Peter	June 21, 1921	C 715	Dinsdale, William	Dec. 27, 1934	C 868
Calverly, Joseph	Sept. 10, 1910	C 375	Dockrill, Frank M.	June 15, 1934	C 865
Camamile, Hollis	Oct. 28, 1911	C 443	Doherty, J. S.	May 1, 1909	C 340
Campbell, Samuel	Nov. 15, 1917	C 662	Doney, John	March 4, 1905	C 211
Campbell, Andrew	Nov. 27, 1917	C 651	Donnachie, John	June 10, 1911	C 425
Carroll, George	Nov. 21, 1922	C 746	Dorrance, Orlin William	Jan. 21, 1913	C 517
Carr, Peter	Oct. 31, 1912	C 497	Douglas, D. B.	Oct. 23, 1906	C 235
Carruthers, Robert	Dec. 22, 1933	C 859	Dow, And. Y.	May 21, 1914	C 587
Carson, George	March 17, 1917	C 663	Drybrough, Robert	June 21, 1920	C 701
Cartwright, Wm. H.	June 24, 1924	C 768	Dunn, Andrew	Jan. 7, 1936	C 871
Cass, Wm.	Dec. 30, 1926	C 800	Dunn, James	July 21, 1929	C 821
Catchpole, Charles	July 29, 1905	C 227	Dunnigan, Richard	June 21, 1921	C 716
Caufield, Edward	May 16, 1918	C 670	Dunsmore, Alexander	Dec. 9, 1930	C 847
Caufield, John	May 1, 1909	C 321	Dykes, Joseph W.	Oct. 1, 1907	C 248
Challoner, Arthur	Oct. 28, 1911	C 433	Eccleston, Thomas	May 17, 1917	C 482
Chambers, Ralph H.	Dec. 14, 1920	C 709	Eccleston, Thomas	June 16, 1930	C 841
Chapman, Wm.	Dec. 22, 1921	C 720	Eccleston, John J.	May 30, 1923	C 757

THIRD-CLASS CERTIFICATES ISSUED UNDER "COAL-MINES REGULATION ACT FURTHER AMENDMENT ACT, 1904"—*Continued.*

Name.	Date.	No.	Name.	Date.	No.
Eckersley, John	June 15, 1934	C 866	Hemer, Herbert	Oct. 14, 1914	C 595
Edwards, John	May 27, 1913	C 542	Henney, Jonathan	June 10, 1911	C 424
Elliott, John	May 27, 1913	C 541	Hendry, James	May 9, 1912	C 471
Elliott, John B.	Dec. 23, 1927	C 811	Herd, William	Dec. 19, 1918	C 682
Elmes, Levi	July 5, 1932	C 856	Hetherington, Geo.	July 21, 1929	C 825
Evans, D.	July 22, 1908	C 284	Heycock, James E.	July 5, 1932	C 852
Ewing, Robert	May 13, 1915	C 608	Heycock, William J.	Dec. 29, 1936	C 876
Fairfoull, James	Oct. 28, 1911	C 453	Heyes, Edward	May 1, 1909	C 320
Farrow, John William	Dec. 19, 1918	C 683	Heyes, Thos. O.	Jan. 7, 1936	C 870
Ferryman, Henry	June 21, 1920	C 697	Hilton, Arthur	Dec. 2, 1929	C 831
Fitzpatrick, T. J.	Oct. 2, 1911	C 452	Hilton, Mathias	Dec. 19, 1918	C 825
Flockart, David	Jan. 21, 1913	C 531	Hilton, R. G.	Sept. 10, 1910	C 376
Ford, Allen	Oct. 28, 1911	C 445	Hindmarsh, John G.	June 30, 1926	C 799
Forsyth, William	June 16, 1930	C 836	Hindmarsh, Peter	May 30, 1923	C 755
Fowler, Robert	Oct. 31, 1912	C 495	Hodson, R. H.	March 4, 1905	C 216
Francis, David Morgan	Oct. 28, 1913	C 558	Hodge, William K.	Nov. 20, 1923	C 761
Francis, James	Oct. 1, 1907	C 250	Holdsworth, William	May 16, 1918	C 671
Frater, George	May 13, 1915	C 616	Holliday, William	July 8, 1916	C 634
Frater, Joseph	July 21, 1929	C 828	Hopkins, Harry	Dec. 31, 1925	C 791
Freeman, H. N.	Nov. 14, 1905	C 230	Horbury, Joseph W.	June 10, 1911	C 406
Frew, William M.	May 30, 1923	C 752	Horrocks, A. G.	May 1, 1909	C 324
Frew, Andrew	Nov. 27, 1909	C 360	Houston, Robert	July 8, 1916	C 631
Frodsham, Vincent	July 22, 1908	C 282	Howells, Nathaniel	May 1, 1909	C 316
Furbow, John	Jan. 21, 1913	C 528	Hughes, Edward R.	Dec. 9, 1930	C 844
Gabriel, Ernest P.	May 17, 1922	C 739	Hughes, Isaac R.	June 18, 1936	C 874
Garbett, Richard	Sept. 10, 1910	C 377	Hunter, Peter M.	June 30, 1926	C 798
Gascoyne, Rowland B.	Jan. 21, 1913	C 513	Hunter, Thomas	June 16, 1925	C 786
Geater, Jas. Gordon	May 21, 1914	C 573	Hutchison, Ben	Nov. 14, 1905	C 232
Gibson, Munro M.	Dec. 27, 1931	C 850	Hutchison, Fred	Nov. 27, 1909	C 358
Gillham, John	May 13, 1915	C 623	Hynd, John	Dec. 14, 1920	C 707
Gillies, William	May 16, 1918	C 668	Hynds, William	July 8, 1916	C 632
Glen, James	Oct. 28, 1911	C 435	Ireson, John	Oct. 31, 1912	C 507
Gordon, Davis John	May 9, 1912	C 474	Irvine, David	June 10, 1911	C 413
Gourley, Robert	May 9, 1912	C 470	Jack, John	May 21, 1914	C 582
Gray, George	May 9, 1912	C 467	Jackson, Harry	June 24, 1924	C 776
Gregory, William	May 30, 1923	C 756	James, Thos.	May 21, 1914	C 588
Gregson, John B.	Dec. 31, 1925	C 790	Jardine, Geo. Edward	Jan. 21, 1913	C 521
Green, William	Nov. 15, 1917	C 659	Jarrett, Fred. J.	Oct. 1, 1907	C 256
Greenhorn, John	May 21, 1914	C 575	Jaynes, Frank	July 22, 1908	C 277
Groat, Ed. Murray	Nov. 20, 1923	C 764	Jenkins, John	Sept. 10, 1910	C 390
Griffiths, Edward	Oct. 31, 1914	C 508	Jenkinson, Jonathan	Dec. 23, 1927	C 813
Gunnell, James	Oct. 31, 1912	C 505	John, Howell	July 22, 1908	C 305
Gunniss, Matthew	May 9, 1912	C 460	Johnston, Fred	Dec. 30, 1926	C 803
Guy, George	June 16, 1931	C 848	Johnston, Robert	May 9, 1912	C 479
Haile, Joseph G.	May 17, 1922	C 731	Jones, Alf. Geo.	May 21, 1914	C 584
Hall, James	May 17, 1922	C 742	Jones, Douglas M.	June 15, 1934	C 861
Halsall, J.	July 22, 1908	C 307	Jones, Samuel	May 27, 1913	C 518
Hamer, Joseph	Dec. 9, 1930	C 846	Jones, William E.	Jan. 21, 1913	C 556
Hamilton, John	Oct. 28, 1911	C 444	Jones, William T.	Oct. 28, 1913	C 221
Hamilton, Robert Nesbitt	Oct. 28, 1913	C 550	Jones, Samuel	March 4, 1905	C 544
Hampton, Abel E.	Jan. 7, 1936	C 872	Joyce, Walter	Nov. 27, 1909	C 361
Hampton, Samuel	Nov. 15, 1917	C 650	Judge, Peter	Sept. 10, 1910	C 391
Hancock, Arthur	Nov. 15, 1917	C 656	Karner, Joseph	Dec. 29, 1936	C 877
Hannah, Archibald	Dec. 2, 1929	C 834	Keenan, Wm. James	June 10, 1911	C 426
Hanson, T. H.	July 8, 1908	C 280	Kelly, Ernest	May 17, 1917	C 646
Hardy, Edward	June 21, 1920	C 694	Kelly, Francis	June 16, 1930	C 839
Hartley, Thomas	Oct. 31, 1912	C 510	Kemp, Wm.	Oct. 14, 1914	C 594
Hart, Daniel M.	May 17, 1922	C 730	Kirkham, Alfred	Oct. 28, 1913	C 559
Harwood, Fred	Sept. 10, 1910	C 384	Kirkeberg, H. S.	Nov. 27, 1909	C 350
Harvey, Thomas	May 9, 1912	C 466	Klejko, Steve	Dec. 14, 1920	C 703
Harvie, George	Sept. 10, 1910	C 378	Lane, Joseph	Oct. 1, 1907	C 254
Harwood, S.	July 22, 1908	C 312	Lazaruk, Steve	June 30, 1928	C 815
Hayes, Ernest	Dec. 2, 1929	C 830	Leeman, T.	May 1, 1909	C 345
Heaps, Robert	Sept. 10, 1910	C 373	Lester, Frank	May 17, 1922	C 734

THIRD-CLASS CERTIFICATES ISSUED UNDER "COAL-MINES REGULATION ACT FURTHER AMENDMENT ACT, 1904"—*Continued.*

Name.	Date.	No.	Name.	Date.	No.
Lewis, Benj. J.	Sept. 10, 1910	C 386	McNeill, Robert	Sept. 10, 1910	C 387
Leyward, Paul	May 17, 1917	C 637	McVeigh, Francis	July 5, 1932	C 855
Lindsay, William	May 17, 1917	C 642	McWhirter, Archibald	June 30, 1926	C 794
Linn, George Y.	May 17, 1922	C 737	Meek, Matthew	May 9, 1912	C 484
Litherland, David	June 30, 1928	C 816	Meikle, Harvey Alexander	July 8, 1916	C 627
Littler, James	June 30, 1926	C 792	Menzies, Frederick	Dec. 14, 1920	C 704
Littler, John	June 10, 1911	C 410	Merrifield, George	Oct. 23, 1906	C 239
Littler, Matthew	June 10, 1911	C 417	Merrifield, William	Oct. 23, 1906	C 236
Littler, Robert	June 10, 1911	C 418	Michek, John	May 21, 1914	C 563
Livingstone, Alex	Oct. 28, 1911	C 436	Miles, John	June 10, 1911	C 414
Loxton, George	June 10, 1911	C 428	Miller, Frederick	July 21, 1929	C 823
Loxton, John	June 10, 1911	C 416	Mitchell, Charles	May 1, 1909	C 322
Lloyd, Thomas	May 17, 1922	C 740	Mitchell, Henry	Sept. 10, 1910	C 366
Luck, George	May 1, 1909	C 318	Moore, George	Oct. 23, 1906	C 242
Lynch, Stewart	Oct. 28, 1911	C 432	Moore, John	May 1, 1909	C 335
Mackie, John	June 10, 1911	C 421	Moreland, Thomas	July 22, 1908	C 299
Makin, J. Wm.	Sept. 10, 1910	C 385	Morgan, William	May 17, 1917	C 636
Malone, John	May 21, 1914	C 585	Morgan, Cornelius	Dec. 22, 1921	C 725
Maltman, James	Oct. 31, 1912	C 501	Morgan, John	June 24, 1924	C 773
Manifold, A.	May 1, 1909	C 336	Morris, David	May 9, 1912	C 472
Marrs, John	May 17, 1917	C 640	Mottishaw, Samuel K.	Oct. 23, 1906	C 237
Marsh, Daniel Parks	May 27, 1913	C 543	Murdoch, Jno. Y.	May 21, 1914	C 564
Martin, James	June 10, 1911	C 398	Murray, Robt.	June 30, 1926	C 796
Mason, Joseph	July 22, 1908	C 297	Myers, Peter	Oct. 28, 1911	C 446
Massey, Henry	May 1, 1909	C 317	Nash, George William	May 17, 1917	C 565
Mather, Thomas	July 22, 1908	C 293	Nash, George F.	Dec. 22, 1921	C 727
Matusky, Andrew	Oct. 1, 1907	C 259	Nee, Wm. R.	Dec. 22, 1921	C 724
Mawson, J. T.	Nov. 27, 1909	C 359	Neen, Joseph	Nov. 27, 1909	C 352
Maxwell, Geo.	May 21, 1914	C 571	Nelson, Horatio	Oct. 1, 1907	C 263
McAlpine, John	March 4, 1905	C 217	Neilson, William	May 9, 1912	C 481
McArthur John Malcolm	May 17, 1917	C 648	Newman, John	Oct. 14, 1914	C 603
McArthur, Robert	Dec. 22, 1921	C 723	Nicholson, James	May 9, 1912	C 469
McBroom, Al.	July 2, 1908	C 287	Nimmo, James	May 9, 1912	C 461
McCourt, John	Oct. 14, 1914	C 605	Norris, Joshua	Oct. 28, 1913	C 557
McCourt, Thos.	Dec. 30, 1926	C 805	Nuttall, Wm.	June 16, 1925	C 780
McCulloch, James	May 1, 1909	C 315	Oakes, Robert	Oct. 31, 1912	C 498
McDonald, Allen	June 30, 1928	C 817	OBrien, Charles	Nov. 27, 1909	C 349
McDonald, John	Oct. 28, 1911	C 448	Odgers, Eli	Jan. 21, 1913	C 523
McFagen, Alexander	May 9, 1912	C 490	Orr, Alexander	Oct. 28, 1911	C 434
McFegan, Robert	June 21, 1920	C 698	Osborne, Hugh	Oct. 28, 1913	C 555
McFegan, W.	May 1, 1909	C 319	Oswald, Geo. L.	Sept. 10, 1910	C 370
McGarry, Martin	May 1, 1909	C 326	* Owen, Thomas	May 1, 1909	C 347
McGrath, James	July 8, 1916	C 630	Park, William	Dec. 19, 1918	C 684
McGuckie, Thomas	July 29, 1905	C 226	Parks, Alexander	Jan. 21, 1913	C 519
McGuire, Thomas	Oct. 28, 1913	C 553	Parker, John H.	June 15, 1934	C 864
McIntyre, Neil	May 21, 1914	C 574	Parker, L.	May 1, 1909	C 341
McKay, Walter	Nov. 20, 1923	C 763	Parkinson, James Wm.	Nov. 15, 1917	C 655
McKenzie, Peter	June 10, 1911	C 427	Parkinson, T.	July 22, 1908	C 289
McKibben, Matthew	May 21, 1914	C 580	Parkinson, Thomas	June 24, 1924	C 769
McKinley, John	Oct. 28, 1914	C 442	Parrott, Jas. E.	May 21, 1914	C 590
McLaren, John	May 30, 1923	C 754	Parson, Herbert	May 13, 1915	C 621
McLaughlin, James	May 9, 1912	C 485	Parsons, Albert	June 10, 1927	C 808
McLachlan, Alex.	June 10, 1912	C 419	Patrick, Andrew	June 16, 1931	C 849
McLean, M. D.	Sept. 10, 1910	C 389	Pearson, Jonathan	May 9, 1912	C 473
McLellan, William	March 4, 1905	C 219	Penman, Hugh	Oct. 28, 1913	C 552
McLeod, James	July 22, 1908	C 296	Perry, Geo. Harewood	May 17, 1917	C 643
McLeod, John	May 13, 1915	C 609	Phillips, Richard S.	May 17, 1917	C 620
McMeakin, James	May 13, 1915	C 612	Phillips, James	Nov. 21, 1922	C 749
McMillan, D.	Sept. 10, 1910	C 363	Pickup, A.	July 22, 1908	C 310
McMillan, Edward	Oct. 31, 1912	C 493	Picton, W.	May 1, 1909	C 333
McMillan, Neil	Nov. 15, 1917	C 654	Plant, Samuel	Nov. 14, 1905	C 233
McNay, Carmichael	July 22, 1908	C 306	Pollock, John	May 30, 1923	C 760
McNeill, Adam L.	July 22, 1908	C 281	Poole, Samuel	May 27, 1913	C 536

* Issued as substitute for No. C 342.

THIRD-CLASS CERTIFICATES ISSUED UNDER "COAL-MINES REGULATION ACT FURTHER AMENDMENT ACT, 1904"—*Continued.*

Name.	Date.	No.	Name.	Date.	No.
Price, Walter	Sept. 10, 1910	C 371	Smith, Thos. J.	Oct. 1, 1907	C 271
Puckey, John Thomas	Dec. 19, 1918	C 687	Smith, Thomas	May 9, 1912	C 486
Quayle, Alex. B.	Jan. 5, 1925	C 778	Smith, Thomas	Dec. 14, 1920	C 705
Quinn, James	Oct. 28, 1911	C 441	Snow, Aubrey	June 15, 1918	C 675
Quinn, John	Oct. 28, 1911	C 429	Sopwith, Reginald Scott	Jan. 21, 1913	C 512
Radford, Albert	May 21, 1914	C 579	* Sparks, Edward	Oct. 1, 1907	C 314
Rallison, R.	July 22, 1908	C 279	Spencer, G.	May 1, 1909	C 329
Rallison, James	May 30, 1923	C 759	Spruston, Thomas A.	March 4, 1905	C 206
Rankin, George	July 22, 1908	C 275	Stafford, M.	Sept. 10, 1910	C 382
Rankin, Wm. Shaw	May 9, 1912	C 489	Starr, Wallace	May 9, 1912	C 488
Raynor, Fred	Oct. 1, 1907	C 257	Staton, Edward	May 21, 1914	C 581
Rear, Albert E.	June 10, 1927	C 807	Steele, Walter	Oct. 28, 1911	C 439
Reid, Thos.	May 21, 1914	C 592	Stewart, George	May 27, 1913	C 534
Reid, Wm.	June 10, 1911	C 403	Stewart, James M.	Oct. 23, 1906	C 240
Reilly, Thomas	July 22, 1908	C 303	Stewart, James B.	June 16, 1925	C 785
Renney, Jas.	Nov. 27, 1909	C 354	Stewart, John	Dec. 30, 1926	C 801
Richards, James	Nov. 1, 1907	C 249	Stobbart, David	June 16, 1925	C 781
Richards, Samuel	Oct. 23, 1906	C 244	Stockwell, William	Oct. 23, 1906	C 238
Richardson, J. H.	Oct. 28, 1911	C 458	Stone, Wm. C.	June 21, 1921	C 714
Rigby, John	July 29, 1905	C 225	Strachan, John	Oct. 14, 1914	C 604
Roberts, Arthur	June 24, 1924	C 772	Strang, James	May 13, 1915	C 614
Roberts, Ebenezer	May 1, 1909	C 327	Strang, Thomas	June 10, 1911	C 400
Robinson, Michael	May 1, 1909	C 332	Strang, Wm.	June 10, 1911	C 395
Robinson, Asa	June 16, 1925	C 787	Surtees, Edward	June 16, 1930	C 835
Robson, James	June 16, 1925	C 788	Sutherland, John	May 27, 1913	C 545
Robson, Thomas	May 21, 1914	C 566	Sweeney, John	May 17, 1922	C 735
Rogers, Ellis	May 13, 1915	C 624	Taylor, Charles M.	March 4, 1905	C 213
Roper, William	July 22, 1908	C 274	Taylor, Henry	Dec. 20, 1928	C 818
Rowan, John	Oct. 14, 1914	C 602	Taylor, Hugh	Jan. 21, 1913	C 530
Rowbottom, Thomas	Oct. 31, 1914	C 492	Taylor, James	May 21, 1914	C 567
Royle, Edward	Oct. 31, 1912	C 506	Taylor, Jonathan	Dec. 19, 1918	C 680
Russell, Robert	Nov. 27, 1909	C 351	Taylor, J. T.	Oct. 28, 1911	C 447
Rutherford, Jasper	May 17, 1917	C 644	Taylor, Leroy	Sept. 10, 1910	C 381
Rutledge, Edwin	July 22, 1908	C 302	Taylor, Reginald T.	June 18, 1936	C 875
Sanders, Henry	June 15, 1934	C 863	Taylor, Robert	June 21, 1920	C 695
Scales, Joseph	May 17, 1922	C 738	Taylor, Thomas	May 21, 1914	C 577
Scott, Henry	July 22, 1908	C 294	Tennant, Joseph	June 24, 1924	C 770
Saunders, Eustace L.	Jan. 21, 1913	C 520	Thacker, Geo.	May 27, 1913	C 537
Scarpino, Francis	May 17, 1917	C 649	Thomas, Thomas	Sept. 10, 1910	C 365
Seddon, James	Oct. 3, 1919	C 824	Thomas, John B.	Nov. 14, 1905	C 231
Shanks, David	Sept. 10, 1910	C 372	Thomason, Charles	Nov. 15, 1917	C 657
Sharp, James	May 1, 1909	C 325	Thomson, Charles	June 24, 1924	C 765
Sharpe, Henry	June 16, 1925	C 783	Thompson, Thomas	Oct. 1, 1917	C 267
Sharples, J. T.	Sept. 10, 1910	C 380	Thompson, John	Oct. 31, 1912	C 509
Shaw, Robert	June 1, 1933	C 857	Thompson, Joseph	Oct. 1, 1907	C 269
Shea, Thomas J.	Dec. 22, 1921	C 722	Tiberghien, Alphonse	June 15, 1934	C 867
Shields, Thomas	May 16, 1918	C 667	Tolley, John	Dec. 19, 1918	C 678
Shipley, John W.	Oct. 28, 1911	C 456	Touhey, William	May 27, 1913	C 547
Shooter, Joseph	Oct. 1, 1907	C 261	Travis, Joseph	June 21, 1920	C 699
Shortman, J.	May 1, 1909	C 331	Tully, Thomas	May 9, 1912	C 468
Simister, J. H.	Nov. 27, 1909	C 353	Tune, Elijah	May 9, 1912	C 476
Simister, W.	May 1, 1909	C 334	Unsworth, John	June 16, 1925	C 784
Sim, James	Dec. 14, 1920	C 711	Uphill, Vernon R.	June 15, 1934	C 862
Simms, Hubert Allan	Jan. 21, 1913	C 526	Valentine, Wilfrid	July 21, 1929	C 826
Sinclair, William	Jan. 21, 1913	C 527	Vardy, Robt.	May 21, 1914	C 570
Skelton, Thos.	May 1, 1909	C 344	Vaton, Harry	July 5, 1932	C
Slee, Thomas	June 30, 1926	C 793	Vaughan, John Henry	Oct. 28, 1913	C 560
Smellie, John	May 29, 1923	C 758	Vincent, Thomas C.	Nov. 21, 1922	C 745
Smith, A. E.	Sept. 10, 1910	C 367	Waddington, D. M.	June 10, 1927	C 806
Smith, John Watterson	May 16, 1918	C 665	Walker, George	July 8, 1916	C 633
Smith, Joseph	March 4, 1905	C 207	Walker, Jas. Alexander	Oct. 31, 1912	C 496
Smith, Richard Beveridge	Oct. 28, 1913	C 561	Walker, Robert C.	May 17, 1922	C 728
Smith, Thomas	Dec. 30, 1926	C 804	Walker, Wm.	May 21, 1914	C 586

* Issued in lieu of No. C 255, destroyed by fire.

THIRD-CLASS CERTIFICATES ISSUED UNDER "COAL-MINES REGULATION ACT FURTHER AMENDMENT ACT, 1904"—*Continued.*

Name.	Date.	No.	Name.	Date.	No.
Wallace, Fred	Oct. 1, 1907	C 260	Williams, Cadwaladr	June 16, 1930	C 838
Waller, Wm. E.	July 5, 1932	C 851	Williams, John Sam.	June 10, 1911	C 404
Walls, John	Dec. 14, 1920	C 710	Williams, Watkin	June 22, 1908	C 301
Warburton, Ernest L.	June 10, 1911	C 399	Wilson, Joseph	June 24, 1924	C 767
Ward, Ernest Hedley	May 17, 1917	C 641	Wilson, Joseph	June 30, 1928	C 814
Wardrop, James	Oct. 31, 1912	C 504	Wilson, Robinson	June 10, 1911	C 397
Watson, Adam G.	March 4, 1905	C 212	Wilson, Thomas M.	Oct. 1, 1907	C 272
Watson, Arthur W.	May 27, 1913	C 535	Wilson, William	Oct. 1, 1907	C 262
Watson, George	July 22, 1908	C 288	Wilson, William	May 17, 1917	C 647
Watson, Joseph	Jan. 21, 1913	C 515	Winstanley, Robert	Nov. 21, 1922	C 747
Watson, William	Oct. 22, 1906	C 246	Winstanley, H.	July 22, 1908	C 283
Watson, William	May 17, 1917	C 645	Wintho, Thomas A.	July 29, 1905	C 222
Watson, John	May 17, 1922	C 743	Witherington, George	Oct. 28, 1913	C 554
Weaver, William	Nov. 17, 1922	C 748	Wood, Thos. James	Oct. 31, 1912	C 491
Webb, Herbert	Oct. 28, 1911	C 457	Worthington, J.	July 22, 1908	C 295
Webster, James Stewart	Dec. 19, 1918	C 685	Wright, John	May 21, 1914	C 593
Weeks, John	March 4, 1905	C 214	Wright, Robert	May 21, 1914	C 589
West, James Gloag	May 16, 1918	C 676	Wright, William	Jan. 21, 1913	C 522
Whalley, William	Dec. 19, 1918	C 686	Yates, Frank	May 17, 1922	C 732
White, James	Oct. 31, 1912	C 499	Yates, John	June 16, 1930	C 840
White, John	Oct. 22, 1906	C 245	Yeowart, Hudson	June 24, 1924	C 771
Wicks, Roy	July 21, 1929	C 827	Young, Alexander	May 16, 1918	C 666
Wilkinson, Edward	Oct. 28, 1911	C 438			

MINE SURVEYOR CERTIFICATES ISSUED UNDER THE "COAL-MINES REGULATION ACT AMENDMENT ACT, 1919."

Name.	Date.	No.	Name.	Date.	No.
Anderson, Harry C.	May 19, 1922	59	Lymn, Albert Crompton	Oct. 3, 1919	17
Baile, Wynne Jeffreys	Oct. 3, 1919	16	MacDonald, John	May 19, 1922	46
Bonar, Robert B.	Dec. 30, 1926	64	McKenzie, Frank	June 10, 1927	66
Bowerman, Everard S.	Dec. 14, 1920	39	Miard, Harry Ernest	Oct. 3, 1919	2
Boyce, Joseph Patrick	Oct. 3, 1919	5	McCulloch, Robert	Oct. 3, 1919	6
Caufield, Bernard	May 19, 1922	54	Owen, Wm. Arthur	Oct. 3, 1919	10
Corbett, Garnett S.	May 19, 1922	49	Pettigrew, Robt.	Dec. 9, 1930	75
Cox, Richard	May 19, 1922	57	Priest, Elijah	May 19, 1922	53
Crosscombe, James S.	May 31, 1923	60	Rafter, Wm.	May 19, 1922	51
D'Altroy, A. C.	July 21, 1929	68	Reger, Frederick Wm.	Oct. 3, 1919	7
Daniell, Geo. W. B.	Oct. 3, 1919	29	Richards, Chas. Clifton	Oct. 3, 1919	19
Davis, Gerald D.	Oct. 3, 1919	28	Ridley, James	Oct. 3, 1919	18
Delaney, James	Oct. 3, 1919	21	Roaf, Jos. R.	Oct. 3, 1919	14
Dickson, James	Oct. 3, 1919	3	Richards, James A.	Oct. 3, 1919	15
Drewry, Wm. Stewart	May 19, 1922	56	Rutherford, John A.	Dec. 2, 1929	70
Edwards, Jas.	June 10, 1927	65	Schjelderup, Vilhelm	July 21, 1929	69
Freeman, Harry N.	May 19, 1922	47	Scott, Thos. Wright	Oct. 3, 1919	4
Gardner, Harold H.	June 16, 1930	72	Spruston, Thos. A.	May 19, 1922	52
Gibson, Munro M.	Dec. 15, 1931	77	Strachan, Robert	May 19, 1922	45
Gregory, P. W.	Nov. 17, 1919	32	Stropkay, John	June 16, 1931	76
Graham, Charles	May 19, 1922	50	Sandland, Joseph	May 31, 1923	61
George, Frank J.	May 19, 1922	48	Stewart, R. T.	Nov. 17, 1923	62
Hargreaves, James	Nov. 29, 1920	33	Townsend, Neville F.	Nov. 17, 1919	31
Heaney, Chas. J.	June 16, 1930	73	Vallance, Wm. Dixon	Oct. 3, 1919	8
Hepburn, James T.	Dec. 14, 1920	37	Verkirk, Lucas	June 21, 1921	42
Holdsworth, William	Oct. 3, 1919	9	Waddington, Geo. W.	June 21, 1920	35
Holmes, Terence C.	June 16, 1930	74	White, Harold	Oct. 3, 1919	25
Hughes, Edward	Dec. 14, 1920	38	Williams, John S.	Dec. 15, 1932	78
Hunter, George	Oct. 3, 1919	30	Williams, Paul E. R.	Dec. 2, 1929	71
Howden, Archibald	May 19, 1922	55	Wilson, R. Robinson	Oct. 3, 1919	12
Jackson, Thos. R.	May 19, 1922	43	Wilson, Arthur Rupert	Oct. 3, 1919	13
King, Alfred Geo.	Oct. 3, 1919	27	Wilson, Chas. Jas.	Oct. 3, 1919	22
Kneen, Percy	Dec. 20, 1928	67	Wilson, Hartley Paul	Oct. 3, 1919	24
Lancaster, Peter	Oct. 3, 1919	23	Wilton, Douglas D.	May 19, 1922	59
Lauderbach, Wilfrid P.	June 16, 1925	63	Wilkie, Octavius B. N.	Oct. 3, 1919	26
Lindoe, Luke	June 21, 1921	41	Wright, Austin	Dec. 14, 1920	40

GOVERNMENT MINE-RESCUE STATIONS.

NANAIMO.

BY

RICHARD NICHOL.

The equipment maintained at this station consists of six sets of the McCaa two-hour oxygen apparatus; six sets of the Gibbs two-hour apparatus; twelve sets of the Burrell all-service masks; one H.H. inhalator; one Sparklet resuscitator; and seventy self-rescuers, with sufficient supplies to maintain the above in service.

There were no emergency calls for the rescue apparatus during the year, but the inhalator was called for a number of times and requests for demonstration of the inhalator at Nanaimo, Ladysmith, and South Wellington were given immediate attention.

There were also twenty-three emergency calls for oxygen from the Nanaimo and Ladysmith Hospitals and from local medical practitioners.

Two trained teams from the Western Fuel Corporation of Canada, Limited, maintained practice-work during the year and twenty-two new men completed the full training course and received certificates of competency in mine-rescue work.

Practically all of above new men were below 30 years of age.

CUMBERLAND.

BY

JAMES L. BROWN.

The equipment of this station consists of eleven sets of the McCaa two-hour oxygen apparatus; twelve sets of the Burrell all-service gas-masks; one H.H. inhalator; one Sparklet resuscitator; and twenty self-rescuers, together with adequate supplies.

On January 5th I accompanied Inspector O'Brien in making an inspection of a spontaneous heating in No. 5 mine, Comox Colliery, with some of the testing equipment, but this showed no carbon monoxide.

During the year four fully trained teams from the Comox Colliery carried out regular practice-work at this station and twenty-three new men took the full training course and received certificates of competency in this work; the above trained teams are paid by the Colliery for the time spent in rescue-training.

There were a number of emergency calls from the Cumberland Hospital for oxygen; these were given immediate attention.

PRINCETON.

BY

ALFRED GOULD.

The equipment at this station consists of eleven sets of the MaCaa two-hour oxygen apparatus; eleven sets of the Burrell all-service gas-masks; one H.H. inhalator; and seventeen self-rescuers, with adequate supplies to maintain same in service.

The only emergency calls during the year were for oxygen treatment at the Princeton Hospital, which were given immediate attention.

Upon instructions, I visited the *Nickel Plate* mine of the Kelowna Exploration Company at Hedley at intervals during April, May, and June, and gave a full course of rescue-work and training to sixteen men, who completed the course and obtained certificates of competency in this work.

Part of the equipment from the Princeton Station was used for this training.

FERNIE.

BY

JOHN T. PUCKEY.

The equipment at this station consists of eleven sets of the McCaa two-hour oxygen apparatus; twelve sets of the Burrell all-service gas-masks; one H.H. inhalator; and thirty self-rescuers, together with adequate supplies.

During the year twenty men from the *Sullivan* mine of the Consolidated Mining and Smelting Company of Canada, Limited, took a full course of training and received certificates of competency in this work during the early part of the year; the above included most of the active mine officials.

In December I attended to a number of calls from the Fernie Hospital for oxygen.

Two trained teams from Coal Creek Colliery carried on regular practice during the year; these teams are paid by the Crow's Nest Pass Coal Company for the time they devote to this work.

INSPECTION OF COAL MINES.

VANCOUVER ISLAND INSPECTION DISTRICT.

BY

GEO. O'BRIEN.

Western Fuel Corporation of Canada, Ltd.

J. A. Boyd, President, Montreal, Que.; Lieut.-Col. C. W. Villiers, Vice-President, Nanaimo, B.C.; P.S. Fagan, Secretary-Treasurer, Nanaimo, B.C.; John Hunt, General Manager, Nanaimo, B.C. This company operated the No. 1 and Reserve mines, Nanaimo.

No. 1 Mine, Nanaimo.—William Frew, Mine Manager; T. J. Wood, Overman, North Side; John Sutherland, Overman, South Side. This mine is situated at the southerly end of the Esplanade in the City of Nanaimo and adjacent to the shore-line of the Strait of Georgia. It is the oldest working coal mine in British Columbia and has four shaft openings, as follows: No. 1 and No. 2 shafts on the Esplanade; Protection shaft, Protection Island; Newcastle shaft, Newcastle Island.

A detailed description of the power plant and equipment has been given in previous annual reports. No additions were made during the year.

No. 1 mine was in actual operation 272 days during the year and the average daily output was 1,100 tons. This average is lower than the average for 1935. The output is produced from the North and South sides of the mine, the proportion being about 45 and 55 per cent. respectively. The mine is gradually becoming exhausted and the daily output is decreasing, so also is the number of men employed underground decreasing. At the end of the year the average number employed underground was 400 daily, whereas at the end of 1935 the average was 525 daily. On the surface the average number employed daily was 265, and includes pit-head, power plants, washery, wharves, machine-shops, car-shops, colliery railway, office staff, engineering staff, etc. There are twenty certificated mine officials employed daily in the supervision of mining operations, or one mine official for every twenty men employed underground and for every 55 tons of coal produced.

Both the Douglas and Newcastle seams are operated and a large proportion of the workings are submarine, having an average cover of 450 feet. The total output is hoisted from No. 1 shaft, which is 600 feet in depth.

Practically the whole of the workings in the Newcastle seam are operated on the long-wall conveyor system, the walls averaging about 300 feet in length and equipped with conveyors of the Meco type driven by compressed air. All face-lines are machine-mined, the average depth of undercut being about 6 feet. The Douglas seam operation is largely confined to the recovery of pillars, some of which are machine-mined.

Where possible, the undercutting is done in the rock-bands in the seam or in the clays immediately below the sea. A good proportion of the machine cuttings is carried along the face-lines by the air-current and has the effect of rock-dusting, which reduces to a great extent the dangers from coal-dust where explosives are used. The surplus cuttings are packed in the waste, or gob. Very light charges of powder are used and a good percentage of lump coal is produced.

Ventilation of the underground workings is achieved by two fans, one situated at Protection shaft, which is operated as a " blower " fan; the other is situated at No. 2 shaft on the Esplanade and is operated as an exhaust-fan. These fans are, approximately, 1¾ miles apart. The ventilation was kept up to a very high standard during the year and very little inflammable gas was found in the live workings.

The haulage system underground is very extensive and is divided into two types, animal and mechanical. Animals are used for gathering purposes from the face-lines to near-by sidings, where trips are made up for the mechanical haulage. Steam, compressed air, and electricity are used for the mechanical haulage on the different levels and slopes.

The pumping system in the mine is very extensive and all three forms of power are used, steam-power being confined to the large pumps at the bottom of No. 1 shaft.

Most of the workmen are transported by ferry across the bay to Protection Island, a distance of about 1½ miles, where they descend the Protection shaft. A very small percentage of the men descend No. 1 shaft.

Precautions against the menace of coal-dust were efficiently carried out during the year by means of rock-dusting and water-sprinkling. Regular sampling of the mine-air and mine-dust was carried on, air samples being taken monthly in every split and main returns. Dust samples were taken on haulage-roadways, the analyses of which showed the dust to be well within the requirements of the " Coal-mines Regulation Act."

Regular inspections were made by the miners' " gas committee " as provided for in General Rule 37. This committee very kindly furnished copies of all reports of inspection.

Report-books as required by the " Coal-mines Regulation Act " are kept at the mine and were regularly examined and found to be conforming to regulations.

There were four fatal accidents in No. 1 mine during the year, and four serious non-fatal accidents. Of the four fatal accidents, one was caused by haulage and mine-cars; one by a fall of rock; one by being struck with a breaker-post; and one by electrocution. Of the four serious non-fatal accidents, one was caused by a fall of rock; one by a fall of coal; and two by mine-cars and haulage. In addition to the above there were a large number of small accidents, necessitating loss of time from a few days to several weeks. It is regrettable to report that a large percentage of these accidents could have been avoided had ordinary precautions been taken by the victims themselves.

Reserve Mine, Nanaimo.—William Roper, Mine Manager; A. W. Courtney, Overman; Joseph Wilson, Shiftboss. This mine is situated in the Cranberry District, about 5 miles south of the City of Nanaimo. The Douglas seam, the only one in operation, is reached by two shafts at a depth of 1,000 feet.

The mine was in actual operation 278 days during the year and the average daily output was 562 tons. The average number of men employed daily underground is 195 for the twenty-four-hour period, and about forty men are employed on the surface daily. There are twelve certificated mine officials employed daily in the supervision of mining operations, or one mine official for every sixteen workmen and for every 47 tons of coal produced. No coal-mining machines are used in this mine. A large part of the output is produced from pillar-extraction. There is some solid work being opened up by a new slope which is expected to give good results in the coming year. The seam is very badly distorted by faults and rolls, which appear to be characteristic of this area and is not conducive to a well-defined plan of development being followed. The output is shipped over the company's railway to the wharves at Nanaimo.

The ventilation was kept up to a fairly high standard during the year, but there were occasions when inflammable gas was found in the live workings in small quantities and was removed without delay. Precautions against the danger of coal-dust were carried out by means of rock-dusting in dry and dusty areas. Regular sampling of mine-air and mine-dust was carried out during the year.

Report-books as required by the " Coal-mines Regulation Act " are kept at the mine and were regularly examined and found to conform to regulations.

During the year one fatal accident and four serious non-fatal accidents occurred in this mine. The fatal accident was caused by mine-cars and haulage; and of the four non-fatal accidents, one was caused by a fall of coal and three by falls of rock. Investigation of these accidents again proved that none of them should have occurred had simple precautions been taken by the victims themselves.

In addition to the above major accidents, there were a number of small accidents necessitating the lay-off of workmen from a few days to several weeks.

Canadian Collieries (Dunsmuir), Ltd.

J. A. Boyd, President, Montreal, Que.; Lieut.-Col. C. W. Villiers, Vice-President, Nanaimo, B.C.; P. S. Fagan, Assistant Secretary, Nanaimo, B.C.; John Hunt, General Superintendent, Nanaimo, B.C. The mines operated by this company during the year were No. 5 mine and No. 8 mine, Comox Colliery, Cumberland; and the Northfield mine at Northfield, near Nanaimo.

The Comox Colliery is situated in the Comox District near the City of Cumberland. The shipping-point is at Union Bay, a distance of about 12 miles from the colliery, and a company colliery railway connects both points. The whole output from the Comox Colliery is shipped over this railway.

The Northfield Colliery is situated close to the Island Highway, about 4 miles north of the City of Nanaimo. This colliery is connected to the Esquimalt & Nanaimo Railway by a spur at Northfield, and the output from this mine is hauled over the Esquimalt & Nanaimo Railway to Nanaimo, where it is transferred to the Western Fuel Corporation of Canada, Limited, railway, and from thence to the loading-wharves at Nanaimo. This is a new colliery put into operation toward the end of the year.

No. 5 Mine, Comox Colliery.—Robert Laird, Mine Manager; Samuel Jones, Overman, East Side; A. W. Watson, Overman, West Side. The coal-seam is reached by a shaft 280 feet in depth and the seam now being worked is known as the No. 2 seam. All the workings in this mine are on the dip side of the shaft and are reached by four slopes driven from the No. 1 Seam level. The face of the Main slope is about 1½ miles from the shaft-bottom. Practically the whole of the operations in this mine are carried out on the long-wall conveyor system, with the exception of the solid work being driven for development purposes. The long-wall faces average about 300 feet in length. There are altogether ten of these walls in operation and all are equipped with conveyors of the Meco type driven by compressed air. All long-wall faces are machine-mined by compressed-air-driven mining-machines of the Anderson-Boyes type, the depth of undercut averaging about 6 feet. All cutting is done in rock-bands in the seam where possible, or in the under-clays immediately below the seam. In the solid work cutting is done by puncher machines of the post type, also driven by compressed air.

No. 5 mine was in actual operation 247 days during the year and the average daily output was 962 tons. The average number of all classes of workmen employed daily underground during the twenty-four-hour period is 400. There are about forty men employed on the surface.

There are twenty certificated mine officials employed daily in the supervision of mining operations, or one official for every twenty men employed and for every 48 tons of coal produced.

The ventilation was kept up to a very high standard during the year, but there were occasions when inflammable gas and gas-caps were found in the live workings. There are now seven splits of air in the mine and the gas content of the return airways is kept down as low as possible. The analyses of samples taken in the main return airway showed that the methane content averaged between 1 and 1½ per cent. An additional fan was put into operation toward the end of the year to augment the existing fan and the total air entering the mine is now about 200,000 cubic feet per minute. The average outflow of methane is approximately 3,500,000 cubic feet in twenty-four hours. Every precaution is being taken to combat this large outflow of methane.

Rock-dusting is extensively done throughout the mine, and in this respect 90,000 lineal feet of roadways, or approximately 3,600,000 square feet of surface, was rock-dusted, in which 319,000 lb. of rock-dust was used. In addition to this, water-sprinklers are installed at the delivery end of every conveyor, and at all main sidings where trips are made up for the Main Slope haulage in an effort to keep the coal-dust below the point of explosibility.

In connection with the improvement and enlarging of airways for the purpose of increasing the ventilation, a new airway 1,400 feet long, with an area of 7 by 12 feet, was driven on the West side of the Main slope from No. 2 West district to a point just below No. 5 East district where it joins the main return over a new overcast at this point. The main return airway has been enlarged to an area of 100 square feet for a distance of 1,600 feet, connecting to the above new airway from the West side. Another new airway, 7 by 12 feet in area, is now under construction on the East side of the Main slope, which will be driven a distance of 1,600 feet to connect the East side to the main return.

A 1,400-foot rock drive was completed during the year, connecting the Main slope to the shaft-bottom level, thus doing away with one stage of haulage. A 500-horse-power electrically driven hoist was installed at the top of the Main slope, having a 6-foot drum carrying 5,300 feet of 1⅛-inch rope with an average rope-speed of 13 miles per hour peak load. An Ironton storage-battery locomotive was installed to haul the trips from the top of the Main slope to the shaft-bottom. Both of the installations are working very satisfactorily.

Regular sampling of mine-air and mine-dust was carried on during the year and a good general knowledge of the condition of the mine atmosphere is obtained as a result. Regular inspections were made by the miners' "gas committee" under General Rule 37, and this committee very kindly furnished copies of reports of every inspection made by them during the year.

All report-books required by the "Coal-mines Regulation Act" are kept at the mine and were regularly examined and found to conform with the regulations.

The writer is very pleased to be able to report that no fatal accidents occurred at this mine during the year. There were, however, two non-fatal accidents of a serious nature and both were caused by falls of coal at the face. There were a number of minor accidents necessitating from a few days' lay-off to a few weeks in some instances. This speaks volumes for the workmen and officials in their campaign for the reduction of accidents.

No. 8 Mine, Comox Colliery.—John S. Williams, Mine Manager. This mine was reopened in November after a shut-down of twenty-two years. There are several seams in this area which are reached by two shafts 1,000 feet in depth. At the present time the Upper (or No. 1) seam is being developed from the 700-foot level on the triple-entry system. Very little development had been done prior to the shut-down in 1914. The present plan of development is the long-wall conveyor system with walls about 300 feet long. A large shaft-pillar 1,000 feet in diameter will be left in to support the shafts, and only narrow entries will be driven through this pillar for development purposes. There was no coal production up to the end of the year, but it is expected that there will be a fairly good production early in 1937. About forty men were employed cleaning up and repairing during the twenty-four-hour period, but this number will be considerably increased in a short time.

Northfield Mine.—Arthur Newberry, Mine Manager. This mine was reopened during the year after a shut-down of forty-two years. There are several seams in this area, but the one now being developed is the famous Wellington seam. The coal is reached by two shafts 440 feet in depth. This colliery is situated close to the Island Highway, about 4 miles north of the City of Nanaimo. The first coal produced since reopening was in October, when 73 tons were sent to the surface. In November the output for the month was 997 tons and in December 1,495 tons. It is expected that the daily output will increase rapidly. A considerable amount of diamond-drilling was necessary to contact the flooded workings of the old No. 5 mine of the Wellington Colliery. This was successfully done, the water being contacted on December 13th. The water was allowed to run to the main sump of the Northfield shaft under control and was then pumped to the surface by powerful electrically driven pumps. Efforts are now being made to contact the flooded workings of the old No. 6 mine of the Wellington Colliery.

In addition to the cleaning-out and repairing of both shafts, a large amount of repair-work and rock-driving has been done underground; 3,400 feet of old roadways have been cleaned out and repaired and 1,170 feet of rock-driving done.

All surface machinery is electrically driven, power being supplied by the Nanaimo-Duncan Utilities Power and Light Company. All buildings are practically fire-proof.

Lantzville Colliery.

No. 1 Mine, Lantzville.—Arthur Challoner, Overman. This colliery is situated on the shore of Nanoose Bay in the Strait of Georgia, about 9 miles north of the City of Nanaimo. The mine is entered by means of a slope 270 feet long and dipping landwards at an angle of 30 degrees. The Wellington seam is operated on a semi-long-wall system and is hand-mined. In this area the seam averages about 2½ feet in thickness and is of excellent quality.

The mine worked 265 days during the year and produced 8,233 tons. There are eighteen men employed underground and five on the surface and the employees operate the mine on a co-operative basis.

The ventilation was kept up to a very high standard throughout the year and no explosive gas or gas-caps were found at the time of inspections during the year. No accidents were reported during 1936.

Biggs' Mine.

James Biggs, Operator. This mine is situated about 1 mile from the town of Wellington and about 7 miles north of the City of Nanaimo, and is on the site of the old original Wellington Colliery which was operated by the Dunsmuir interests many years ago. The present work consists of recovering the few remaining pillars left in by the former operators. Very little work was done during the year, however, only fifty-one days being worked and 276 tons of coal produced.

The mine is ventilated by natural means, which is quite ample for this small operation. No inflammable gas or gas-caps were found during the period of operation. The mine is very damp and there is no coal-dust hazard. No accidents were reported during 1936.

Jingle Pot Mine. A. McLachlan and Associates, Operators; A. McLachlan, Overman. This mine is situated on the site of the original Jingle Pot mine at East Wellington, about 3 miles from the City of Nanaimo. The present operation consists of recovery of pillars left in by the former operators. Very little work was carried on during the year, only sixty-four days being worked and 64 tons of coal produced.

The mine is ventilated by natural means, which is quite ample for this small operation. No inflammable gas or gas-caps were found during the period of operation. The mine is very damp and there is no coal-dust hazard. No accidents were reported during 1936.

Fiddick Mine. Richard Fiddick, Sr., Operator. This mine, situated at South Wellington, was permanently closed down in the month of May and all material and equipment was taken out of the mine. A total of ninety-nine days had been worked up to the time of suspension of operations and 762 tons of coal produced. No accidents were reported during the period of operation.

Richardson Bros.' Mine. Richardson Bros., Operators. This mine is situated on the site of the former operations of the Pacific Coast Coal Company near the Esquimalt & Nanaimo Railway Station at South Wellington and close to the Fiddick mine. The present work consists of the recovery of the pillars in the Douglas seam left in by the former operators. The mine worked steadily during the year, a total of 303 days being worked and 2,646 tons of coal produced. The mine is ventilated by natural means, which is quite ample for this small operation. No inflammable gas or gas-caps were found at the time of inspections. The mine is very damp and there is no coal-dust hazard. No accidents were reported during 1936.

Chambers' Mine. Ralph H. Chambers, Operator. This mine is situated at Extension on the original site of the old No. 1 mine which was operated by the Dunsmuir interests many years ago, and the present work consists of the recovery of the pillars left in by the former operators. The mine is reached by a good road known as the Nanaimo Lakes Road, and the output is hauled by trucks to Nanaimo, a distance of about 7 miles. The mine worked fairly steadily during the year, a total of 243 days being worked and 1,910 tons of coal produced.

The mine is ventilated by natural means, which is quite ample for this small operation, and no inflammable gas or gas-caps were found at the time of inspections during the year. This mine is very damp and there is no coal-dust hazard. No accidents were reported during 1936.

Beban's Mine. Frank Beban, Operator. This is a new mine brought into production during the year and is situated on the same site as that of Chambers' mine. This mine is being developed to reach a solid area believed to have been left by the former operators. Operations were commenced in July and a slope sunk down to the coal. Since that time the mine has worked fairly steadily, a total of 140 days being worked and 1,538 tons of coal produced.

Up to the time of writing the ventilation is by natural means and is quite ample for this small operation. No inflammable gas or gas-caps were found during the period of operation. The mine is very damp and there is no coal-dust hazard.

A small steam-boiler and compressor was installed toward the end of the year. A puncher machine of the post type is now in operation and more will be added if conditions warrant the additions.

No accidents were reported from this mine during the period of operation.

Loudon's Mine. Wm. D. Loudon, Operator. This mine was opened in the month of December and is at present closed down due to weather conditions and surface inflow of water. It is located near the No. 9 mine of the Canadian Collieries (Dunsmuir), Limited, about 1 mile from the town of Wellington. The operation was intended to recover some pillars of the Wellington seam left in by the former operators. A slope was driven down to the coal, but due to the inflow of surface water and poor equipment for handling same the mine was closed after working fourteen days and about 50 tons of coal produced.

PROSPECTING FOR COAL.

Cowie's Prospect, South Wellington.—Cowie and Associates, Operators. This prospect is situated in the Cranberry District adjacent to the City of Nanaimo. The area between South

Wellington and Extension is being prospected. A small shaft was sunk a distance of about 30 feet, and the writer was informed by the owners that a seam of coal 4 feet thick was located at the bottom of this shaft. The shaft was full of water at the time of inspection and has not been dewatered since the reported discovery. Some surface-trenching was done to correlate the coal-measures.

Westwood's Prospect, East Wellington.—Ira Westwood, Operator. This prospect is situated near the site of the Old Jingle Pot mine at East Wellington. A small slope was sunk down into the shales a distance of about 50 feet on a 30-degree pitch, but the coal-seam was not located at the time of writing. Work was carried on very intermittently during the year.

Valdes Island Prospect, Valdes Island.—H. M. Davidson and Associates, Operators. This prospect is situated on the west side of Valdes Island at a point locally known as West Bay. A 6- by 7-foot slope was driven down a distance of about 50 feet on a pitch of 18 degrees in the shale-measures, but work was discontinued in October due to lack of finances. The coal-seam had not been located at the time of closing down.

Somenos Prospect, Cowichan Municipality.—Kovich and Associates, Operators. This prospect is situated on Section 12, Range 4, in the Somenos District of the Cowichan Municipality, near Duncan. It consists of a 6- by 7-foot slope being driven down in the shales on a grade of 25 per cent. The slope is down about 50 feet, but the coal-seam has not yet been reached.

All workmen in the coal mines of Vancouver Island are equipped with Edison electric cap-lamps. All firebosses and shotlighters are provided with flame safety-lamps of the Wolf type for gas-testing. All shot-firing is done electrically by battery and cable under the supervision of certificated officials and permitted explosives only are used.

All serious accidents, both fatal and non-fatal, were specially investigated, and in the case of fatal accidents the inquests were attended. In this connection the writer wishes to thank the Coroner of the Nanaimo District for the privilege of being permitted to question all witnesses to determine, if possible, the underlying cause of these deplorable accidents. It is regrettable to have to report that the majority of the accidents could have been avoided had only ordinary precautions been taken by the unfortunate victims. This is a serious situation and calls for greater efforts by all concerned. Until such time as all employees and officials become safety-minded and live up to the principles of "safety first," these deplorable accidents will continue to cause untold suffering to those left behind. Eternal vigilance is the price of safety, so let the slogan for 1937 be "Safety first and less accidents."

NICOLA-PRINCETON INSPECTION DISTRICT.

BY

JOHN G. BIGGS.

The following companies operated in this district during 1936: The Coalmont Collieries, Limited; Middlesboro Collieries, Limited; Tulameen Collieries, Limited; the Wilson Mining and Investment Company, Limited (Blue Flame Colliery); the Pleasant Valley Mining Company, Limited; the Black Diamond Coal Company, Limited (Bromley Vale Colliery); and the Tulameen Valley Coal Company.

The Coalmont Collieries, Limited; the Middlesboro Collieries, Limited; the Pleasant Valley Mining Company; and the Wilson Mining and Investment Company, Limited (operating the Blue Flame Colliery), have continued to operate during the year, while the Tulameen Collieries, Limited, ceased to operate during the month of March, and the material was withdrawn and the mine allowed to fill with water. The Black Diamond Collieries, Limited (operating the Bromley Vale coal mine), ceased operations during the month of October. The Lind coal mine, situated on the Tulameen flats, was sold during the year to interests known as the Tulameen Valley Coal Company, which commenced operating in a small way during the month of November.

Coalmont Collieries, Ltd. Blake M. Wilson, President, Vancouver, B.C.; General J. W. Stewart, Vice-President, Vancouver, B.C.; A. H. Douglas, Secretary, Vancouver, B.C.; D. McLeod, Treasurer, Vancouver, B.C.; George Murray, Manager, Blakeburn, B.C. This is the largest coal operation in the district and consists of

Nos. 4 and 5 mines, at present employing about 210 men. The mining operations are conducted at Blakeburn, situated on the North Fork of Granite Creek at an elevation of 1,600 feet above, and 4 miles by road from, the town of Coalmont, where the mine-tipple, screening plant, and power plant is located on a spur off the main line of the Kettle Valley Railway. The coal is transported over the mountain to the mine-tipple below at Coalmont by means of an aerial tramway 2½ miles long; the buckets on the tramway constitute the body of the mine-cars and have a capacity of 1 ton. (Plant and tipple described in previous reports.)

No. 4 Mine.—James Littler, Overman; Robert Murray, Frank Bond, Thomas Bryden, Robert Barrass, and James Dunn, Firebosses. This mine is situated 1 mile north of the top terminal of the aerial tramway, to which the coal is hauled on an electric-trolley railroad from the mine; this electrical haulage enters No. 4 mine main level for some 1,600 feet.

During the year work chiefly consisted of the recovery of pillars in the Nos. 14 East and 16 West sections, both of which were nearly exhausted at the end of the year, and preparations are being made for the extraction of pillars in the upper section of the mine.

Ventilation is produced by an 84-inch double-inlet belt-driven mine-fan driven by a 75-horse-power electric motor. On the Main slope below the No. 6 level ventilation measured 12,000 cubic feet of air per minute passing into the lower section of this mine for the use of forty men. The brattice and stoppings were in fairly good order, the working-places well timbered, a sufficient supply of suitable timber provided for the use of the miners, and no trace of methane was found. The roads were well timbered, in fair condition, and analysis of material taken from the roads showed them to be in accordance with the requirements of the Coal-dust Regulations. However, the roads and working-places in the lower section of this mine are subject to "squeeze," making it a very hard matter to keep the same in working condition.

No. 5 Mine.—William G. Brown, Wilfred Valentine, and Robert Barrass, Firebosses. The portal of this mine is 2,800 feet north of No. 4 mine and 252 feet higher, and is connected to No. 4 mine yard by a double-track surface incline; this mine is in the same seam as No. 4 mine. The main entrance is by a slope on a pitch of 20 degrees; this having been driven 2,600 feet, at which point inferior coal was encountered and retreating recovery of developed coal commenced. Due to previous experiences with spontaneous combustion in other parts of this field, only the main development roads were driven until the extraction was started as above; this will allow the abandoned areas to be filled with the mine-water and prevent hazardous gob-fires.

Ventilation is produced by a small electric-driven mine-fan situated near the portal of the counter-slope, and during the last visit of inspection ventilation measured showed 6,000 cubic feet of air per minute passing into this mine for the use of twenty-one men. The air was well conducted around the working-faces and the mine free from any trace of methane. The working-places were well timbered and a sufficient supply of suitable timber was provided for the use of the miners. The roads were well timbered, in fairly good condition, and treated with "inert dust"; analysis of material taken from the same show them to be in accordance with the requirements of the Coal-dust Regulations.

A well-appointed surgery and first-aid room is maintained at Blakeburn under the supervision of a first-aid man who is in daily attendance to render any service that may be required, while the resident doctor resides at the camp and is in daily attendance at the office. A mine-rescue station, with smoke-room, is also provided at the camp and is equipped with Gibbs self-breathing apparatus, Burrell all-service gas-masks, inhalator, charging-pump, and other equipment necessary for mine-rescue work; this is supplemented by the modern equipment at the Government mine-rescue station at Princeton.

Middlesboro Collieries, Ltd. His Honour E. W. Hamber, President, Vancouver, B.C.; E. McDonald, Secretary, Vancouver, B.C.; Robert Fairfoull, Superintendent, Merritt, B.C. This colliery is situated 1 mile south of Merritt and consists of No. 2 South and No. 3 North mines. There were no changes in the surface installations, which have been described in previous reports.

No. 2 South Mine.—James Fairfoull, Overman; Leslie Dickie, Thomas Rowbottom, and William Ewart, Firebosses. The main development of this mine is by an adit-level which, owing to the basin-like structure of this area, curves around until it again reaches the surface about 1,000 feet from the main portal; the seam is 8 feet thick and lies at a steep pitch. Numerous chutes driven to the surface facilitate ventilation, and during the last inspection

the writer measured 12,500 feet of air per minute passing through this mine for the use of fifty men. The working-places were well timbered. The roads were well timbered, in good condition, and, being naturally wet, free from coal-dust.

No. 3 North Mine.—This is a slope operation and has been driven down the pitch for a distance of 450 feet and a raise has been put up to the surface for ventilation. The mine is free from any trace of gas, is well timbered, and in good working condition; analyses of material taken from the roads show the same to be in accordance with the requirements of the Coal-dust Regulations.

Compressed air is the only power used underground for haulage, pumping, and the operation of the coal-cutting machines at the mines of the Middlesboro Collieries and very little shot-firing is required. Electric head-lamps are in use by all the employees underground and safety-lamps of the Wolf type are used by the officials for the purpose of inspection. General and special rules are posted at the mines. No accidents of a serious nature were reported at this operation during the present year.

Tulameen Collieries, Ltd. T. M. Wilson, Manager, Princeton, B.C. This mine is situated approximately 2 miles west of the town of Princeton and has a railroad connection with the Kettle Valley Railway; the plant has been described in previous reports. Operations were suspended in March and the mine allowed to fill with water; work was not resumed during the year.

Pleasant Valley Mining Co., Ltd. W. R. Wilson, President, Vancouver, B.C.; R. R. Wilson, Vice-President, Vancouver, B.C.; Miss M. Duncan, Secretary-Treasurer, Vancouver, B.C.; T. Cunliffe, Superintendent, Princeton, B.C. This colliery is situated on the south side of the Tulameen River, 2 miles west of Princeton. A large modern steam-power and screening plant is installed on the river-flats and the mining operations conducted in the adjoining hill. All work at the present time is confined to the development of the No. 2 mine, situated on the same elevation as the screening plant and 1,700 feet west.

No. 2 Mine.—Thomas Cunliffe, Overman; David Francis and William Foster, Firebosses. There has been little change made at this mine during the present year and practically all the work has been confined to the development of the main and counter levels, which have been extended to a distance of 4,500 feet from the portal of the mine; during the last 1,000 feet there has been a marked improvement in the thickness and quality of the coal. Horse-haulage is used for hauling the mine-cars from the time to the screening plant.

Ventilation is produced by a small compressed-air-driven mine-fan situated near the portal of the counter-level, and ventilation measured showed 9,000 cubic feet of air per minute passing into this mine for the use of eighteen men. The air was well conducted around the working-faces and the mine free from explosive gas. The working-places were well timbered and a sufficient supply of suitable timber provided for the use of the miners. The roads were well timbered, in fairly good condition, and, being naturally wet, free from dangerous coal-dust. The coal is all mined by compressed-air machines of the " post-puncher " type and little shot-firing is done with a view to producing a high percentage of lump coal. Edison head-lamps are used by the employees underground and safety-lamps of the Wolf type are used by the officials for the purpose of inspection.

Wilson Mining and Investment Co., Ltd. W. R. Wilson, President, Vancouver, B.C.; H. P. Wilson, Vice-President, Fernie, B.C.; Miss M. Duncan, Assistant Secretary-Treasurer, Vancouver, B.C.; John Gillham, Superintendent, Princeton, B.C.

Blue Flame Mine.—John Gillham, Manager; Arthur Hilton and John Yards, Firebosses. This coal-mining operation is situated on the north side of Lamont Creek, 10 miles west of Princeton, and has been developed from the surface croppings. It is accessible by a branch road from the Hope–Princeton Highway, and the coal is hauled by motor-trucks from the screening plant at the mine to the bunkers situated on a spur off the main line of the Kettle Valley Railway east of the railway-tunnel near Princeton.

The face of the Main level is now approximately 4,000 feet from the portal and the seam in this area is 7 feet thick and on a pitch of 30 degrees; the faces are driven up the pitch and the coal handled to the Main level by chutes. The mine is operated on a modified " panel " system. All the coal at the working-faces is mined by machines of the " post-puncher " type.

This mine is ventilated by a 4-foot direct steam-driven enclosed-type ventilating-fan situated near the entrance to the counter-slope, and during the last inspection the ventilation

measured showed 8,000 cubic feet of air per minute passing into this mine for the use of eighteen men. The working-places were well timbered and a sufficient supply of suitable timber provided for the miners. The roads were well timbered, in good condition, and analysis of material taken from the roadways showed them to be in accordance with the requirements of the Coal-dust Regulations. The mine was free from explosive gas. Edison electric head-lamps are used by the employees underground, while safety-lamps of the Wolf type are used by officials for the purpose of inspection. There was no change made at this power plant during the year.

Tulameen Valley Coal Co. (formerly Lind Mine). T. A. Betz, President, Princeton, B.C.; George Thallhaimer, Superintendent, Princeton, B.C.; John Yates, Manager, Princeton, B.C. This mine is situated near Princeton and was developed by means of a slope on the pitch of the seam, which dips 20 degrees towards the Tulameen River; the seam is all clean coal and 7 feet thick; the slope had been driven 150 feet at the end of the year and a small amount of lateral work done.

A small power plant and screening installations were in operation at the end of the year; the coal is handled from the mine by motor-trucks.

Eight men were employed and general conditions were found to be satisfactory at the different inspections during the year.

Black Diamond Collieries, Ltd. (formerly Bromley Vale). James Brown and George Gray, Shiftbosses. This is a small coal operation situated on Bromley Creek, 5 miles west of the town of Princeton, and accessible by a side-road from the Hope–Princeton Highway; the output is hauled from the bunkers at the mine by motor-truck. This mine has been developed by a short rock tunnel driven 100 feet, where a 12-foot seam of coal was intersected at an angle of 30 degrees; the upper section of the seam is of poor quality and operations have been confined to the lower 6 feet. The Main level followed the strike of the seam for several hundred feet, at which point the ground was faulted, with the result that the pillars were extraced in this area. Slopes are being driven from this level and the coal down the dip appears to improve with depth.

This mine is well ventilated and free from methane; the working-places and roadways are well timbered and, being naturally wet, free from coal-dust. There were twelve men working at this mine.

There has been no change made with the power plant during the year, which consists of a return-tubular boiler and a compressor having a capacity of 350 feet of free air per minute. Electric head-lamps of the approved type are used by the employees underground, while safety-lamps of the Wolf type are used by the officials for the purpose of inspection. There is also a small screening plant and bunkers at this mine.

Hat Creek Colliery.* L. D. Leonard, Manager, Ashcroft, B.C.; Robert Hamilton, Fireboss. This mine worked intermittently and on a small scale during the year, with only a few men employed. Conditions were generally satisfactory.

NORTHERN INSPECTION DISTRICT.

BY

CHARLES GRAHAM.

Bulkley Valley Colliery. F. M. Dockrill, Lessee and Operator; Edward R. Hughes, Overman. This mine is located on Goat Creek, a tributary of Telkwa River, about 7 miles from Telkwa, to which point the coal is hauled by motor-truck and shipped via Canadian National Railway; the market is chiefly domestic and limited to the line of the Canadian National Railway between Prince George and Prince Rupert.

The Main slope has been extended and a second pair of levels turned off to the right. Pillar-extraction is proceeding on No. 1 level.

A small electric-driven fan with a capacity of about 3,500 cubic feet per minute has been installed, which provides adequate ventilation for the ten men and one horse employed. No inflammable gas has been detected on any inspection. The mine is wet and dust treatment is

* By Thos. R. Jackson.

applied to take care of coal-dust. The production this year was 5,266 tons, the largest production to date.

Northwest Anthracite Syndicate. Thos. Campbell, Superintendent; James Taylor, Mine Manager. This mine is situated in Glacier Gulch, on Hudson Bay Mountain, near Smithers. The crosscut tunnel has intersected various seams, all of which show severe crushing. Some raising has been done on one of the seams, which are highly inclined. There is a considerable improvement in the seam conditions in the raise. A second opening was made to the surface to improve the ventilation, which is natural. The work has been done on a small scale and there have been several stoppages during the year. No signs of inflammable gas were found in the mine.

Skeena Development Syndicate. Nothing has been done at this property during the past year on account of the bridge across the Telkwa River having been washed out in October, 1935. To date no attempt has been made to rebuild the bridge. A small amount of coal for blacksmithing purposes was mined from the surface of a seam near the site of this bridge.

EAST KOOTENAY INSPECTION DISTRICT.

BY

JOHN MACDONALD.

Two collieries only were operated during 1936—namely, Coal Creek and Michel—both of which are owned and operated by the Crow's Nest Pass Coal Company, Limited, with head office in Fernie; Corbin Colliery still remains closed and, at the time of writing, there are no immediate signs of operations being resumed in this locality. Both Coal Creek and Michel Collieries report increased production as compared with 1935, while at Corbin a quantity of 109 tons of loose coal was gathered off the benches at the " big showing " to provide a supply of fuel for the local school, colliery office, and a few residences.

Ventilation has been maintained at the usual high standard and is treated in detail at a later stage in this report.

The general conditions in regard to the treatment of coal-dust have been found satisfactory, except on a few occasions where certain roadways required additional treatment, these being given attention as soon as was reasonably possible after the attention of the management had been directed to same. Crushed limestone-dust is the medium generally used to reduce the hazard of coal-dust on all roadways where necessary, and is also used to treat all entrances leading to old workings and extracted areas. Seven hundred and fifty-eight samples of dust were taken in the district in accordance with the Coal-dust Regulations, sixteen of which were under the standard set by Regulation No. 4. In all cases where the analysis show samples to be under the standard, the particular places where such samples were taken receive additional treatment.

Explosives are still used generally at Michel to loosen the coal after it is mined, but none are used for this purpose at Coal Creek. The regulations governing the handling and use of explosives have been strictly attended to by the present staff of officials. All particulars regarding the amount of explosives used and total number of shots fired are given in the regular returns under this heading.

Coal-cutting machines are now being operated satisfactorily on the long-wall faces in the " B " seam district of No. 1 mine, and also on one new wall which has been opened out in No. 3 mine, Michel Colliery; these, together with the large number of punching-machines used for mining coal, are producing practically 80 per cent. of the total output at the above colliery. Full information regarding the tonnage produced by machinery is given in the annual returns under this heading.

A total of 146 lost-time accidents were investigated and reported on in detail, and the pity of it is that, in the opinion of the writer, nearly 70 per cent. of these would never have happened if the men had only exercised reasonable care in the performance of their various duties.

At all collieries operating in the East Kootenay Inspection District, the Edison electric cap safety-lamp is used exclusively by the workmen, Wolf safety-lamps being carried by the officials and bratticemen for testing purposes, all lamps being given every attention in well-

equipped lamp-rooms located in a central position at each colliery; Burrell gas-detectors are provided at all mines and readings are taken regularly to check the methane content in the return air-currents. Copies of the " Coal-mines Regulation Act " and special rules are posted up at each mine and all report-books required to be kept at the mines have been examined periodically. Following is a brief summary of conditions prevailing in the mines during 1936:—

Crow's Nest Pass Coal Co., Ltd. W. R. Wilson, President, Fernie, B.C.; A. H. MacNeill, K.C., Vice-President, Vancouver, B.C.; J. S. Irvine, Secretary, Fernie, B.C.; A. A. Klauer, Treasurer, Fernie, B.C.; H. P. Wilson, General Manager, Fernie, B.C.; B. Caufield, Manager, Michel, B.C.; C. Stubbs, Manager, Coal Creek, B.C.

During 1936 this company operated Coal Creek and Michel Collieries, Coal Creek Colliery being situated at Coal Creek, a distance of 5 miles from Fernie, where it has railway connection with the Canadian Pacific Railway over the Morrissey, Fernie & Michel Railway. Michel Colliery is situated on both sides of Michel Creek, a distance of 24 miles in a north-easterly direction from Fernie.

Coal Creek Colliery.—C. Stubbs, Manager. Following the procedure of the past two years, No. 1 East was the only mine operated during the year, the whole of the output coming from Nos. 26, 27, and 28 Incline districts on the west side of the main tunnel. Extensive repairs to airways and old roadways in the No. 16 East old workings have been carried on steadily with a view to providing efficient ventilation in this section of the mine, and also providing an easier means of access for regular inspections being made around these old workings.

No changes of any importance have been made to the surface plant at this colliery, nor has it been considered necessary to proceed with any new development, although certain changes involving a modified extraction of pillars have been introduced. During 1935 " shaker conveyors " were installed and used principally to cut through the large pillars in preparation for extraction, and also in the driving of levels and rise headings in the blocking-out of developed ground. This work was continued during the present year and pillar-extraction begun in three different sections and under different conditions in each section.

In two of these districts the seam has a thickness of 10 feet, being divided by a friable shale-parting varying from 6 to 8 inches in thickness, the upper section of the coal averaging from 3 to 5 feet in height. In these sections the full thickness of the seam is taken by advancing the conveyor across the strike, leaving in small stumps of the pillars for the purpose of controlling the roof-action. At the time of writing, no break in the main roof has yet occurred, and it is assumed that the pillar-stumps left in will have the effect of causing the floor to heave and the stronger roof-strata to bend.

In the third section the seam conditions are different and permit a variation of method. The section of top coal above the shale-parting averages 7 feet in thickness and extraction is confined to this upper portion. The immediate roof consists of shale having a thickness of from 2 to 8 feet, with the strong conglomerate above this. A conveyor-face is prepared by driving a pair of headings up the pitch a distance of 300 feet and then advancing the face and conveyor across the strike to the next pair of headings outby. Small pillars are left between the gob and the new face with the same object in view as in the other districts, but here the shale roof overlying the seam can be readily broken by drawing the timber, although up to the present no sign of movement can be detected in the main conglomerate roof. This system is still in the experimental stage, but sufficient information has been procured to warrant the continuance of the plan.

No. 1 East Mine.—J. Caufield, Overman. This mine is ventilated by an electrically driven 11- by 7½-foot Sirocco fan, which, running at a speed of 174 r.p.m., produced an average quantity of 136,000 cubic feet of air a minute, under a water-gauge of 3.6 inches. At the present time the ventilation is divided into two splits; the quantity passing in each at the last inspection measured as follows:—

No. 1 spit: 30,000 cubic feet of air a minute for the use of thirty men and four horses. The Burrell gas-detector was not acting satisfactorily on this occasion, but the safety-lamp reading indicated a methane content of 0.6 per cent. travelling in the air-current.

No. 2 split: 24,500 cubic feet of air a minute for the use of thirty men and four horses. Burrell gas-detector, 0.6 per cent. methane.

Main return: 137,200 cubic feet of air a minute. Safety-lamp indicated 0.6 per cent. methane. (NOTE.—A large proportion of the above total quantity of air is being used to ventilate abandoned districts in this mine.)

Explosive gas has been found in five different places during the course of inspection, while Burrell readings taken in the return air-currents have varied from 0.5 to 1.1 per cent. methane. Roadways and timbering have been kept in good shape generally and fairly well treated with rock-dust, all roadways and working-places being treated regularly where such treatment is considered necessary. Three hundred and twenty-six samples of dust were taken in accordance with Regulation No. 4 of the Coal-dust Regulations, all but five of which were above the minimum standard set by the above regulation.

Michel Colliery.—B. Caufield, Manager. During the latter part of the year the tipple has been remodelled and enlarged to hold three new wet jigs of the " Vissac " type; these were installed specially to clean the following sizes of coal; No. 1 jig, from 3/16 to 1¼ inches; No. 2 jig, from 1¼ to 2 inches; No. 3 jig, from 2 to 8 inches. Installed in connection with the new washers are all the necessary conveyors, elevators, motors, sludge-tanks, and two return-tubular boilers for the heating and drying of the washed product.

The above installation necessitated considerable changes being made at the feed end of the tipple to conform to the new arrangements; a new four-track double Howe-truss bridge, 65 feet in length and resting on concrete pillars, was erected over the Michel Creek near the mine entrance. Three of these tracks will carry loaded cars, while the other one will take care of the empties. At the tipple end all loaded tracks will converge to a point where a creeper-chain will pick up the loads and deliver them to a tippler estimated to handle 300 tons per hour; from this point the coal will be delivered to the screens by means of a 42-inch conveyor-belt. All coals will pass over a new screening installation, where the various sizes are separated and sent on to the jigs, the lumps larger than 8 inches being passed into a set of rolls and broken down to that size and then carried by means of a flight-conveyor to the top of the screening plant to be rescreened; the coal under 3/16 inch in size passes over new " Hummer " screens and then transferred to the air-cleaning plant. When this plant is in full operation, all sizes of coal from fine dust to lump will be cleaned mechanically, provision being made to load any size or mixture of coal after it leaves the jigs by an arrangement of both belt and flight conveyors, and railway-cars can be loaded on any or all of the eight tracks supplying the different loading-points at the tipple. Mine-run coal can also be loaded either from the jigs or direct from the shaking screens over a picking-table, the disposal of refuse from the jigs being taken care of by means of elevators, conveyor, rock-bin, and finally by trucks to the dump.

A new method of work has been tried out in No. 3 mine by the introduction of a retreating system of long-wall on a 30-degree pitch. The coal is undercut to a depth of 6 feet by means of a chain coal-cutter operating up the pitch. After the mined coal is shot down, a scraper-loader is used to pull the loose coal on to a " Meco " conveyor, which loads the mine-cars on a suitable parting prepared for the purpose. While this system may be termed as still in the experimental stage, the results obtained to date have been generally satisfactory, and further improvements along these lines are anticipated with greater experience in the working-out of the many details connected with this method of work.

No. 3 Mine.—Robt. McFegan, Overman. This mine operates the upper No. 3 seam and is ventilated by an electrically driven 12- by 6- foot Sullivan fan, which, running at a speed of 240 r.p.m., produced an average quantity of 135,000 cubic feet of air a minute, under a water-gauge of 3.1 inches. Ventilation is divided into three splits; the quantity passing in each at the last inspection measured as follows:—

No. 1 split: 12,500 cubic feet of air a minute for the use of forty-eight men and six horses. Safety-lamp indicated a trace of methane.

No. 2 split: 10,000 cubic feet of air a minute for the use of thirty-two men and three horses. Safety-lamp indicated a slight trace of methane.

No. 3 split: 3,800 cubic feet of air a minute for the use of seven men and one horse. Safety-lamp, *nil.*

Main return: 26,400 cubic feet of air a minute for the use of eighty-seven men and ten horses. Safety-lamp indicated 0.4 per cent. methane travelling in the air-current.

While explosive gas has been found on two occasions during the regular course of inspection, the ventilation has been generally good all over the mine and the methane content has

never exceeded 0.5 per cent. in any of the return air-currents. A steady programme of repairs has been carried out on all return airways with a view to providing the highest possible standard of ventilating efficiency. One hundred and thirty-five samples of dust were taken in accordance with Regulation No. 4 of the Coal-dust Regulations, all of which were above the minimum standard set by the above regulation.

No. 1 Mine.—W. McKay and R. B. Bonar, Overmen. This mine is reached by a crosscut tunnel from the upper No. 3 seam of No. 3 mine, which intersects Nos. 2, 1, "A," and "B" seams; Nos. 1 and "B" only being operated at present. This mine is ventilated by No. 3 mine-fan. Ventilation is divided into two splits; the quantity passing at the last inspection measured as follows:—

No. 1 seam, return: 20,800 cubic feet of air a minute for the use of forty-two men and six horses. Safety-lamp, 0.4 per cent. methane.

"B" seam, return: 21,600 cubic feet of air a minute for the use of fifty-four men and five horses. Burrell gas-detector, 0.6 per cent. methane.

Main return: 73,500 cubic feet of air a minute for the use of ninety-six men and eleven horses. Safety-lamp, 0.5 per cent. methane.

Main return (all mines): 140,000 cubic feet of air a minute for the use of 183 men and twenty-one horses. Safety-lamp, 0.4 per cent. methane.

Explosive gas was found on one occasion during the regular course of inspection and the ventilation in general has been maintained at a standard sufficient to keep the methane content down to 0.5 per cent. in the main return. Burrell and safety-lamp readings taken have varied from a trace of methane in No. 1 seam return to 1.1 per cent. in "B" seam return. Roadways and timbering have been kept in a good state of repair and fairly well treated for coal-dust. Two hundred and ninety-seven samples of dust were taken in accordance with Regulation No. 4 of the Coal-dust Regulations, eleven of which failed to reach the minimum standard set by the above regulation.

No. 3 East Mine.—J. Henney, Shiftboss. Following the practice of recent years, operations in this mine have been confined to repairing the main roadways and patrolling the fire seals which enclose an old fire area adjacent to the main return airway. It was not considered necessary to operate the fan as the natural ventilation passing was sufficient to keep all accessible workings clear of noxious gases.

Corbin Colliery.—M. M. Gibson, Acting-Accountant, in charge. With the exception of gathering a little over 100 tons of loose coal off the benches at the "big showing" during the latter part of September and October to provide a supply of fuel for the colliery office, school, and a few residences, this colliery remained closed during the year, and at the present time there are apparently no immediate prospects of operations being resumed in this locality. In addition to Mr. M. Gibson, who is in charge, two watchmen are constantly employed in patrolling the property.

INSPECTION OF METALLIFEROUS MINES.

BY

JAMES DICKSON.

During 1936 the "Workmen's Compensation Act" was amended to include silicosis as a compensable disability, and at the same session the "Metalliferous Mines Regulation Act" was amended as follows:—

AN ACT TO AMEND THE "METALLIFEROUS MINES REGULATION ACT."

HIS MAJESTY, by and with the advice and consent of the Legislative Assembly of the Province of British Columbia, enacts as follows:—

1. This Act may be cited as the "Metalliferous Mines Regulation Act Amendment Act, 1936 (Second Session)."

2. The "Metalliferous Mines Regulation Act," being chapter 46 of the Statutes of 1935, is amended by inserting therein the following as section 26A:—

"26A. (1.) Except as permitted by the Workmen's Compensation Board, every workman whose employment takes him into any mine, or into any ore-crushing or rock-crushing operation of any mine, except where the ore or rock is crushed in water or a chemical solution and is kept constantly in a moistened or wet condition, shall be examined by a physician selected by and at the expense of the employer, at least once in every twelve months; and every workman who is being given such employment, to whom the certificate mentioned in subsection (2) has not been issued, shall be so examined.

"(2.) If the physician finds upon examination that the workman is free from diseases of the respiratory organs and fit for work underground, he shall certify in the prescribed form that such is the case and shall deliver the same to the workman.

"(3.) Every such certificate shall remain in force for not more than twelve months from the date of issue, and, if so required by the manager or superintendent of the mine in which the workman is employed, it shall be delivered to and remain in the custody of such manager or superintendent during the period of the workman's employment, and shall be returned to him on his being discharged from or leaving the same.

"(4.) Except as provided in subsection (1), a workman as to whom such a certificate is not in force shall not, without the written permission of the Workmen's Compensation Board, be employed in underground work in any mine or in any ore-crushing or rock-crushing operations of any mine for a greater period than two months in any twelve-month period, except where the ore or rock is crushed in water or a chemical solution and is kept constantly in a moistened or wet condition.

"(5.) Notwithstanding the provisions of section 41, the Workmen's Compensation Board shall prescribe the nature of the medical examination to be made, the information to be obtained and recorded, and the form of certificate to be issued under the foregoing provisions, and generally make rules for the better carrying-out of the requirements of this section. Upon request from the Board the medical officer so examining shall furnish to the Board the information and record from which the diagnosis was made in any case."

PRODUCTION.

The output from the metalliferous mines for 1936 was 4,456,521 tons, a decrease of 459,626 tons from the tonnage of 1935. This tonnage was produced from 168 mines, of which seventy produced 100 tons or more.

FATAL ACCIDENTS IN METALLIFEROUS MINES, PLACER MINES, AND MILLS.

There were fourteen fatal accidents in and around the metalliferous mines and concentrators in 1936, being a decrease of one from the figures of 1935. There was also one fatal accident in the quarries of the Province.

There were 4,799 persons under and above ground in the metalliferous lode mines and 720 persons in the concentrators in 1936. The ratio of fatal accidents per 1,000 persons employed was 2.53.

The tonnage mined per fatal accident during 1936 was 318,322 tons, compared with 327,743 tons during 1935.

The tonnage mined per fatal accident for the last ten-year period was 404,358 tons.

The following table shows the mines at which fatal accidents occurred during 1936 and comparative figures for 1935:—

Mining Division.	Mine.	No. of Accidents.	
		1936.	1935.
Vancouver	Britannia	4	1
Lillooet	Minto	1	----
Lillooet	Bralorne	1	----
Lillooet	Bradian	----	1
Lillooet	Pioneer	----	1
Lillooet	Pilot Gold	----	2
Kamloops	Homestake	----	1
Cariboo	Cariboo Quartz	1	----
Cariboo	Island Mountain	----	2
Atlin	Clydesdale Lease	----	1
Nass River	Bonanza	----	2
Nelson	Reno	1	2
Nelson	Nugget	----	1
Nelson	Gold King Claim	----	1
Nelson	Ymir Yankee Girl	1	----
Osoyoos	Nickel Plate	1	----
Windermere	Thunderbird	1	----
Trail Creek	Velvet Gold (mill)	1	----
Fort Steele	Sullivan (concentrator)	1	----
Zeballos River	Privateer Claim	1	----
Totals		14	15

The following table shows the cause, the percentage to the whole of the fatal accidents, with comparative figures for 1935:—

Causes.	1936.		1935.	
	No.	Percentage.	No.	Percentage.
By blasting	4	28.57	4	26.65
By falling down chutes or shafts	2	14.29	2	13.34
Haulage	----	-------	2	13.34
By falls of ground	5	35.71	6	40.00
By carbon-monoxide poisoning	----	-------	1	6.67
Snowslide	1	7.14	----	-------
Miscellaneous (concentrators)	2	14.29	----	-------
Totals	14	100.00	15	100.00

FATAL ACCIDENTS IN METALLIFEROUS MINES.

The fatal accident which occurred to Albert James Walsh, teamster, *Motherlode* mine, Reno Gold Mines, Limited, on February 22nd was due to deceased being crushed by a snow-slide while on his way from the mine to the bunk-house. This accident occurred after deceased had finished his shift at the mine.

The fatal accident which occurred to Alvia L. Taggart, mucker, Bralorne Mines, Limited, on February 28th was due to a fall of ground; deceased was engaged in washing down a stope and apparently the washing process removed debris that had been sustaining a slab of rock which fell on deceased.

The fatal accident which occurred to E. Wesley Rusnell, mill-helper, Velvet Gold Mining Company, on May 6th was due to a severe crushing of his right arm when it was caught between the crushing-rolls in the mill; he had tried to release a large piece of ore from the rolls by means of a bar which was caught by the rolls and pulled his arm into the rolls with above result.

The fatal accident which occurred to James Thomson, timberman, and William Brockbank, helper, Britannia Mining and Smelting Company, on June 29th was due to a fall of ground.

The two deceased were engaged in timbering in the vicinity of a large slab of rock on the hanging-wall; this was held by two sprags which were found displaced when the accident was discovered. It could not be established whether the sprags gave way or if deceased had made some change in the course of their work; both men had been instantly killed.

The fatal accident which occurred to Melville N. Gallpen, carpenter, *Sullivan* mine, Consolidated Mining and Smelting Company of Canada, Limited, on June 25th was due to deceased being dragged into a hopper by a conveyor and instantly killed. Deceased had been detailed to make some minor repairs to the bottom of the hopper and at the same time a mechanic was carrying out repairs on the conveyor, which was shut down for this purpose. The conveyor is driven by an electric motor and all employees engaged in repairs on machinery are required to place a " Not to Go " notice on the switch controlling the machinery on which they are at work; the mechanic removed his notice when he was finished and the electrician threw in the switch as he was unaware that there was another man still repairing. Deceased had failed to place his own notice on the switch.

The fatal accident which occurred to L. Venier, skip-tender, Britannia Mining and Smelting Company, Limited, on July 10th was due to deceased being struck by drill-steel which he was conveying in the *Victoria* shaft. The steel threw him off the cage, which crushed him in passing and caused him to fall 390 feet to the bottom. The regulations require that steel and other material be secured while being handled in shafts, but while deceased was an experienced skip-tender he had omitted to observe this precaution and the movement of the cage caused some of the steel to project and spike the shaft-timbers with above result; two other men who were on the cage at this time narrowly escaped with their lives.

The fatal accident which occurred to Albert Moline, miner, Thunderbird Mines, Limited, on October 24th was due to blasting; at the face of No. 3 tunnel a drill-steel had become stuck in a drill-hole at one side of the tunnel, and on the following round a 2-foot hole had been drilled under the stuck drill and loaded with two sticks of powder to release the drill; this shot had been spit along with the face-round, but after blasting it was found that the face-shots had cut off the fuse of the side-shot about 6 inches from the collar of the hole and left the shot unfired. Instead of attempting to put off this shot again at this time, it was decided to leave it until the next round was ready for blasting, when another stick of powder, detonator, and a 7-foot fuse was used in this hole. This fuse was coiled around the projecting drill and was spit first, and the men then proceeded to spit the round and had this half-completed, using 2-foot spitters, when the side-shot went off and instantly killed Moline, who was standing opposite; the other two men narrowly escaped with their lives as the concussion knocked them down and part of the face-round had been spit. It would appear that when the fuse of the side-hole had been spit and released the spitting end had contacted and spit the cut-off fuse of the previous attempt to fire this shot and that this short fuse fired the original charge; this short fuse would be about 12 inches long at time of this second spitting.

The fatal accident which occurred to Sam Myneo, miner, Britannia Mining and Smelting Company, Limited, on October 27th was due to deceased drilling into unexploded powder left by the previous round in a small shaft that was being sunk for a powder-blast; the previous shift had mucked out the shaft and had cleaned the floor with compressed air, but apparently had not discovered the powder which had remained unexploded by the blast; deceased was instantly killed.

The fatal accident which occurred to Edward Ivory, mucker, Minto Gold Mines, Limited, on November 8th was due to deceased falling down a hoist-raise from above the 300 level to the 400 level; deceased had gone up the ladder-way from the 400 level to examine the contents of an ore-pocket above the 300 level and by some means had got into the hoisting compartment and fell as above. He was alone at the time. Deceased was an athlete and on the previous night had injured one of his arms while training, and on complaining of his injury to the shiftboss a short time before the accident the shiftboss advised him to go home, but Ivory said he would finish his shift; it is probable that his injured arm prevented him from climbing safely.

The fatal accident which occurred to Gordon Ritchie, miner, Cariboo Gold Quartz Mining Company, Limited, on November 20th was due to a fall of ground; this place had been blasted and partly barred down. Deceased had tried to bar down a slab that was seen to be loose, but was held in position by the muck from the blast, and later started to work in front of this

slab, which rolled over and broke his neck. The Coroner's jury returned a verdict that the accident was due to neglect on part of deceased.

The fatal accident which occurred to John Dobrocky, miner, Kelowna Exploration Company, Limited, on November 22nd was due to a fall of ground in the Bulldog tunnel; deceased had gone back from the face to get a supply of steel when at a point 30 feet from the face a piece of ground fell, killing him instantly.

The fatal accident which occurred to Chow Gar Chong, Chinese labourer, in the Blubber Bay quarry of the Pacific Lime Company, Limited, on November 28th was due to deceased being struck by a crane-boom which temporarily got out of control when its position was being changed; deceased was on top of a truck to release the load of rock carried by the crane at this time. This accident was largely due to improper supervision of the work being carried on at this operation.

The fatal accident which occurred to Claude Everts, prospector, Zeballos River area, on November 30th was due to an explosion of detonators on a placer claim; deceased was 22 years of age and apparently had very little experience in the use of explosives. Information gained on investigating this accident showed that deceased did not appear to be aware of the potential danger of handling detonators roughly, and it is presumed that he caused the explosion by forcing a badly cut and gritty fuse into the detonator-shell; he had a box with twelve detonators in his hands at the time and all exploded. Everts died the following day.

The fatal accident which occurred to Alex Hrynuik, miner, *Ymir Yankee Girl* mine, on December 28th was due to an explosion of powder in the underground magazine on the 900 level of this mine. Deceased had entered the magazine for some purpose and, in contravention of the regulations, had taken his lighted carbide-lamp with him; it is presumed that his lamp had fallen into a box of powder and caused this, and all the other powder in the magazine, to explode. There was about 225 lb. of powder in the magazine at this time; there were no remains of Hrynuik.

A study of above fatalities and their causes shows that a proper observance of the different safety regulations and a common-sense regard for the potential dangers of mining on the part of all mine employees would do much to reduce fatalities in mines.

The same applies equally to the non-fatal accidents, of which over 600, involving a disability of seven days or more, were reported and investigated by the different Inspectors during the year; intensive safety education by the management and safety committees at the different mines offers the greatest opportunity to reduce the toll of accidents.

DANGEROUS OCCURRENCES.

On January 19th the cage of No. 2 shaft, *Pioneer* mine, was being slowly hoisted between the adit-tunnel and the surface when it became jammed due to ice in the shaft; the hoistman applied more power to release the cage and the extra strain broke the sheave-wheel and the back-legs of the head-frame. There were no persons in the shaft at this time.

On January 21st, in the *Pacific Eastern* mine, methane gas was discovered after blasting at the face of the main crosscut; a flame safety lamp is used for testing purposes in all suspected places; no person was injured.

On January 26th, in the *Pacific Eastern* mine, methane gas was discovered after blasting at the face of the main east drift; no person was injured.

On February 17th, in the Melvin shaft of the Consolidated Gold Alluvials of British Columbia, Limited, a large amount of slime and water entered from an old level known as the Jones level, which had tapped alluvial ground many years before; the Melvin shaft is a deepening and enlargement of the shaft from which the Jones level had originally been driven. Following the above occurrence, the position of the Jones level was located a short distance from the Melvin shaft and a 10-inch-diameter bore-hole was put down from the surface to this level a distance of 136 feet; through this hole a large amount of hay was tamped to form a plug and a second bore-hole 6 inches in diameter was put down to the level, and through this 30 cubic yards of concrete was forced to make a solid plug in the level. This work was successfully completed.

On August 17th, in the *Pioneer* mine, two miners were severely burned by an explosion of methane gas in a raise off the 2,600 level. This raise had been blasted at the end of the day shift (3 p.m.), and when the above men entered the raise at 7 p.m. they ignited gas which had

accumulated. Wolf flame safety-lamps were ordered to be used for testing all suspected places, and the use of electric safety-lamps were ordered to be used, instead of carbide-lamps, in all the lower levels.

On September 10th, in the *Sullivan* mine, 3,901 shaft, the hoist-drum broke when a loaded skip was being started up from the 3,250 ore-pocket and allowed the skip to drop some 40 feet to the bottom of the shaft; no person was injured.

On December 5th, in the *Velvet* mine, two trammers had taken an empty car off the cage at the No. 2 station and due to a failure of the signal system the cage was taken away without their knowledge; when they pushed a loaded car from the station the car went down the shaft and the men had a narrow escape from also falling down the shaft; the signal system was remedied.

On December 17th, in the *Pioneer* mine, an ascending cage in No. 2 shaft split one of the cage-guides and caused the cage to hang up; on attempting to lower the cage the rope became kinked at the cage-clamp and had to be shortened. No further damage resulted and no person was injured.

On December 17th, in the *Pacific Eastern* mine, methane gas was discovered after blasting at the bottom of the main winze; no person was injured.

PROSECUTIONS.

During the year 1936 there were three prosecutions made for infractions of the "Metalliferous Mines Regulation Act" and special rules, as follows:—

Date.	Colliery.	Occupation of Defendant.	Offence charged.	Judgment.
April 29	Crocker Lease (underground placer)	Owner	Failure to comply with safety order under section 7 until requirements of General Rule 60 (*a*) had been fulfilled	Fined $100 and costs.
May 6	Richfield Cariboo Gold Mines, Ltd.	Contractor	Failed to report accident; in contravention of section 14 (1)	Fined $20 and costs.
June 9	Velvet Gold Mining Co., Ltd.	Manager	Failed to report fatal termination of an accident; in contravention of section 14 (2)	Fined $100 and costs.

EXPLOSIVES USED IN MINING.

During 1936 the explosives used in the metalliferous mines in British Columbia comprised 8,789,000 lb. of high explosives, 3,292,000 fuse detonators, 707,200 electric detonators, 103,000 delay detonators, and 18,937,000 feet of safety-fuse; the use of electric and delay detonators is increasing each year.

During the year 23,200 Hot Wire Lighters were used for spitting rounds, and it is anticipated that the increased safety factor, in giving the miner a quite accurate knowledge of the time elapsed since he started spitting a round of shots, of this device will result in a much increased application.

The use of this Hot Wire Lighter would have averted some of the accidents due to explosives reported elsewhere in this report.

AIR-SAMPLING.

Most of the air samples taken in the metalliferous mines were taken to determine the effect produced by blasting at the faces of long drifts, and where traces of carbon monoxide were found by analyses steps were taken to have the ventilation augmented and a greater length to time between blasting and men returning to work.

DUST AND VENTILATION.

The work done by the Inspectors of Mines in testing the dust content of the air in mines and mills during the past two years has aroused interest in this work to the extent that at the more progressive mines the management has taken up this work to determine the dust condi-

tions produced by drilling, blasting, and handling of ore, and also in mills where dry-crushing is carried on; at *Britannia*, *Sullivan*, *Premier*, *Pioneer*, and *Bralorne* mines the Konimeter is being used for this purpose.

While it will require some time to correlate the information obtained, there is no doubt that this will result in showing where dust production can be reduced and how the dust that is produced can be most efficiently controlled and removed from the mine.

During the year an increased use of sprays at transfer-chutes and dumps was noted, and at two of the larger mines tests are being carried out with the new-type drill in which the exhaust air is not discharged through the drill-steel; an increased water-pressure being applied to remove the drilling debris.

The blasting of rounds at the end of the shift is practically standard throughout the Province and, with a few exceptions, there is an interval of from two to four hours between blasting and the next shift entering the mine.

In conjunction with above efforts to reduce the amount of dust produced and prevent the exposure of men to dust after blasting, there has been a steady advance in the application of augmented and controlled ventilation, although several important mines still depend on natural ventilation with all its fluctuations and deficiencies, which probably cost more in one year than would the installation of a modern ventilating-fan.

At the *Sullivan* mine of the Consolidated Mining and Smelting Company of Canada there are now three fans in constant operation, having capacities of 100,000, 60,000, and 30,000 cubic feet of air per minute respectively. These fans are situated on the surface at different shafts and in December they were passing a total of 187,000 cubic feet of air per minute for a total of 230 men on shift, or well over 800 cubic feet per man per minute. The above fans are of the Jeffrey Aerovane type and are driven by electric motors. The total power costs for above fans is $380 per month.

On the main bulldoze level in *Britannia* mines a 75,000-cubic-foot-capacity Jeffrey Aerovane fan was installed during the year and removes the smoke and dust from blasting immediately. This fan, together with the great difference in elevation between the upper and lower openings of the mine, ensures a large volume of air passing through the mine.

At several other mines fans of smaller size, but still larger than those formerly considered suitable, have been installed, and general efforts are being made not only to have more air passing through the mines, but also to control and direct the air to the stopes and working-faces.

Adequate ventilation offers the most efficient and economical means of removing dust from mines.

MINE-LIGHTING.

The use of the electric safety cap-lamp in the mines increased greatly during 1936, as shown by the following installations: *Sullivan* mine, 510 lamps; *Reno* mine, 100 lamps; Kelowna Exploration Company, Limited, 50 lamps; *Hedley Mascot* mine, 25 lamps; Nicola Mines and Metals, Limited, 25 lamps; Cariboo Gold Quartz Mining Company, Limited, 180 lamps; *Bralorne* mine, 260 lamps; *Vidette* mine, 80 lamps; *Pioneer* mine, 42 lamps; and *Britannia* mines, 40 lamps; the above lamps are all of the Edison Model "K" type, and in addition to above the *Pioneer* mine has ordered 100 of the Wheat-type electric cap-lamp; the small installation at *Britannia* mine is in the nature of a test unit.

The increased safety and efficiency offered by the electric safety-lamp fully warrants the change from the carbide-lamp which was formerly the standard miner's lamp in the metalliferous mines in British Columbia.

The different Inspectors report that, with few exceptions, the miners are pleased with the new electric safety-lamp.

FIRST-AID AND SAFETY WORK.

First-aid work has been maintained at all the longer-established mines and during the year this work was taken up at a number of the newer mines.

In the Hedley District a large number of the men at the Kelowna Exploration Company and the Hedley Mascot Company took up first-aid work and qualified for certificates, and twenty men of the former company also qualified for certificates in mine-rescue work under the Department of Mines Instructor from Princeton.

During the year most of the officials of the *Sullivan* mine of the Consolidated Mining and Smelting Company of Canada, Limited, took a full course in mine-rescue work and qualified for certificates.

Safety committees are in operation at all the larger mines and at a number of the smaller ones, and are doing splendid work in spreading safety education with consequently safer working practice.

A study of the fatal accidents, reported elsewhere in this report, will show that a keener appreciation of potential danger on the part of the individual mine employee would greatly reduce mine fatalities; the same applies equally to non-fatal accidents, of which over 700 were reported and investigated during 1936.

At the different mines where safety committees are in force regular meetings are held and the cause and possible prevention of accidents are discussed; among the many points raised at some of these safety committee meetings may be mentioned the following: The keeping of replacement rungs in the vicinity of ladder-ways so that broken rungs could be replaced at once; the safest way to carry explosives up a raise; the frequent barring-down of roof or back during the shift; the use of goggles during operations such as starting holes and moiling; the need for paying special attention to a safe withdrawal time when spitting rounds in wet ground; the increased use of safety equipment such as good gloves, safety-hats, safety-shoes, and goggles, etc. Many of the points raised would appear, at first sight, to be comparatively unimportant and would probably in most cases escape the attention of an Inspector or mine official, but in many accidents one of these apparently minor points can be the main contributing factor, and in having these things brought to attention and rectified the safety committee is making a worth-while contribution to safety in mines.

HEALTH AND WELFARE.

The solarium installed at the *Sullivan* mine (*see* 1935 Report) has been kept in constant operation during the year and 95 per cent. of the underground employees regularly avail themselves of the benefits of this installation.

During the year considerable improvements have been made in the bunk-house accommodation at many of the mines, but much more requires to be done in this direction, particularly in the case of some of the formerly abandoned mines that have been reopened recently.

In a number of instances double-tier bunks, prohibited by the Provincial Board of Health, were found in use and evidence of overcrowding was found in cases where the mine and crew were expanding beyond the proper capacity of the living accommodation; these matters are being dealt with and it is expected that 1937 will show a considerable improvement.

At many of the newer mines the bunk-houses are more in line with modern requirements and are reasonably comfortable for this mode of living.

At Wells the Cariboo Gold Quartz Mining Company has built a number of modern houses for officials and employees and a modern small hospital equipped with X-ray and other medical aids was built during the year; this is situated less than a mile from the mine of this company and the *Island Mountain* mine.

At Bralorne the bunk-houses have been improved and sixty houses fully modern have been built for married employees; a large recreation-hall was also built during the year with sufficient floor-space; additions were also made to the modern fully equipped hospital during the year and other improvements to general social and living conditions have raised Bralorne from the status of a "mine camp."

Mining activity at Hedley has also resulted in a large number of new houses being built for the accommodation of married mine employees. Both the Kelowna Exploration Company and the Hedley Mascot Company built houses and many of the employees have built their own homes.

Medical service in the different mining areas has greatly improved in the last few years, as practically at all the producing mines there is either a resident medical man or one easily available.

QUARRIES.

Quarries of the Province are still showing increased activity. The improvement in 1935 still continues its upward trend. There were 931 men in quarries and sand-pits, as compared

with 536 men in 1935, and there were 288 men employed in processing plants, as compared with 270 men in 1935.

There was one fatal accident in quarries during the year; this was due to the boom of a crane falling over a truck while it was being loaded, the man being in the truck at the time. Lack of proper supervision and discipline was the cause of this accident.

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