

Of the fourteen fatal accidents, causing sixteen deaths, ten occurred in the West Coast Inspection District.

From the foregoing summary it will be seen that ten lives were lost by falls in the mine, which are becoming more prevalent as the stage of pillar-extraction is being advanced by the bord-and-pillar system.

During the first operation of driving bords on seams ranging in thickness up to 30 ft. or more, no special danger was experienced from falls, the coal being worked in two or more layers; but now that the pillar-extraction stage has been reached at several of the mines, the great height to be supported on timber has proved in many cases a difficult and dangerous proposition, especially where the seam is highly inclined. In such cases "bumps," or diagonal movements of the roof rocks, take place near the edges of the "gob," and the timber, however carefully erected, often proves ineffective, as the superincumbent weight does not fall directly upon the same, but strikes it obliquely, throwing down the props even when standing in great numbers.

The difficulty could no doubt be overcome by leaving behind "ribs" and "stumps" of coal of adequate dimensions to support the weight, but these measures, remedial doubtless in the above cases, would possibly create further dangers from gas-accumulations and spontaneous fire of the crushed coal; likewise the loss of marketable coal, together with the increased cost of production owing to more solid work (which is paid for at a higher rate than pillar-work), might have a very injurious effect on the coal-mining industry, and possibly lead to cessation of operations in some cases.

The position is a somewhat difficult one, for in no other country, as far as I am aware, does such valuable fuel occur in seams of such considerable thickness. At the Dutch Government's State Collieries at Sumatra a seam of 50 ft. in thickness is almost completely extracted in layers commencing at the floor. As each layer is removed sand is sluiced into the space formerly occupied by the coal-seam; the layer of coal above is then attacked and in turn filled in by the hydraulic sand filling; and so on until all coal is removed and replaced by sand; but the local conditions in Sumatra are favourable to this method, and it is to be regretted that the undulating form of the New Zealand coal-seams and the absence of beds of sand in proximity to the same render this system inapplicable to this country.

The discovery of a safe and economical method by which a high percentage of the thick coal-seams of New Zealand may be extracted is a subject that deserves special research, but I am not sanguine of an entirely satisfactory solution.

The following statement shows the tons of mineral raised (coal and shale), persons employed, lives lost, &c., from 1878 to 1910:—

Year.	Output of Mineral.	Persons employed.			Tons of Mineral raised per each Person employed Underground.	Tons of Mineral raised per Life lost.	Persons employed per each Life lost.	Lives lost per Thousand Persons employed.	Number of Deaths.
		Above.	Below.	Total.					
Prior ...	709,931	...	...	...	...	...	...	...	...
1878 ...	162,218	147	366	513	443	4,771	15	66·27	34†
1879 ...	231,218	...	...	802	...	115,609	401	2·49	2
1880 ...	299,923	...	...	1,038	...	149,961	519	1·92	2
1881 ...	337,262	...	...	963	...	337,262	963	1·04	1
1882 ...	378,272	...	...	1,043	...	189,136	521	1·91	2
1883 ...	421,764	361	888	1,249	475	210,882	624	1·60	2
1884 ...	480,831	393	890	1,283	540	160,277	421	2·34	3
1885 ...	511,063	338	1,145	1,483	456	170,354	494	2·01	3
1886 ...	534,353	392	1,213	1,605	440	*	*	*	0
1887 ...	558,620	388	1,111	1,499	503	139,655	375	2·66	4
1888 ...	613,895	414	1,275	1,689	481	153,474	422	2·36	4
1889 ...	586,445	466	1,251	1,717	261	146,611	313	2·37	4
1890 ...	637,397	512	1,334	1,846	477	79,674	231	4·33	8
1891 ...	668,794	416	1,277	1,693	523	167,198	423	2·36	4
1892 ...	673,315	485	1,196	1,681	563	673,315	1,681	0·66	1
1893 ...	691,548	590	1,298	1,888	533	138,305	377	2·64	5
1894 ...	719,546	506	1,393	1,899	516	119,924	316	3·16	6
1895 ...	726,654	525	1,274	1,799	618	145,331	360	3·33	5
1896 ...	792,851	590	1,347	1,937	588	12,013	29	34·07	66‡
1897 ...	840,713	531	1,381	1,912	609	210,178	478	2·09	4
1898 ...	907,033	556	1,447	2,003	627	907,033	2,003	0·49	1
1899 ...	975,234	554	1,599	2,153	609	325,078	717	1·39	3
1900 ...	1,093,990	617	1,843	2,460	593	273,497	615	1·62	4
1901 ...	1,239,686	688	2,066	2,754	600	413,228	918	1·09	3
1902 ...	1,365,040	803	2,082	2,885	655	682,520	1,443	0·69	2
1903 ...	1,420,229	717	2,135	2,852	665	355,057	713	1·40	4
1904 ...	1,537,838	763	2,525	3,288	609	384,459	822	1·21	4
1905 ...	1,585,756	833	2,436	3,269	651	264,293	546	1·83	6
1906 ...	1,729,536	1,174	2,518	3,692	687	288,256	615	1·62	6
1907 ...	1,831,009	1,143	2,767	3,910	662	152,584	326	3·07	12
1908 ...	1,860,975	992	2,902	3,894	641	372,195	778	1·28	5
1909 ...	1,911,247	1,159	3,032	4,191	633	273,035	599	1·79	7
1910 ...	2,197,362	1,136	3,463	4,599	634	137,335	283	3·55	16
Totals ...	31,231,548	...	...	...	...	...	...	...	233

* No life lost.

† Year of Kaitangata explosion.

‡ Year of Brunner explosion.