

the quantity of air required by the law is not always attained. In no colliery airway, however, have I obtained a sample of mine-air which can be regarded as unduly vitiated or noxious. The greatest quantity of noxious or inflammable gas recently obtained by me in any airway—Oxygen, 19·86 per cent.; carbon dioxide, 0·44 per cent.; methane, 0·85 per cent. This sample was taken in the return from Mundy's and No. 6 Districts at Kaitangata No. 1 Colliery on the 13th January of the current year, being a very hot day, with low and falling barometer—viz., 29·7 in. in the mine.

Inflammable gas was reported as follows:—

Name of Colliery.	Number of Days on which Gas was reported.	Maximum Estimated Quantity of Gaseous Mixture reported.
		Cubic Feet.
Taupiri Extended	122	3,000
Kaitangata No. 1	72	200
Liverpool No. 1 (Morgan Seam)	43	1,700
Liverpool No. 3	2	Traces.
Millerton	4	Traces.
Ironbridge	2	30
Pukemiro	2	200
Rotowaro	2	Small
Wairaki	1	Small.

During the year only one accident from firedamp-ignition occurred. A fan-attendant incautiously ignited by a naked light a small quantity of gas at the fan outside the stone drive to the low level at the Morgan Seam, Liverpool No. 1 Colliery. He received slight burns.

(b.) SYSTEMATIC TIMBERING.

[Section 40 (9) and Regulation 56.]

During the year one fatal and five serious but not fatal accidents occurred from falls, as against seven fatal and three serious but not fatal during the previous year. This is a considerable improvement, but it would be too sanguine to expect this considerable immunity to be maintained. In the latest annual report of H.M. Inspector of Mines for Lancashire, North Wales, and Ireland (Mr. A. D. Nicholson), it is truly stated that "There will never be any appreciable reduction in the number of accidents arising from falls of ground until every roof is regarded as dangerous and is timbered accordingly." Accidents from falls seldom occur from an obviously dangerous roof, which generally is supported forthwith, but from a roof which conceals a joint or fissure, but is considered safe by those working under it. The toll of fatal accidents from falls at New Zealand collieries well exceeds one hundred, which testifies to as many errors of judgment. The experience in other countries is similar, falls of ground being the most prolific cause of accident. It cannot too often be instilled into the minds of those employed below ground that all roof should be regarded as potentially dangerous and as concealing a joint or back. The regulations pertaining to systematic timbering should be strictly observed.

In the last presidential address at the fifty-third annual meeting of the South Staffordshire and Warwickshire Institute of Mining Engineers the following reference was made to accidents by falls: "To falls of ground were attributable over 50 per cent. of all the deaths from accidents in and about mines, and it was safe to say that a considerable number of these might be avoided by—(a) More careful examination of the roof and sides, and keener appreciation of the dangers likely to arise from the presence of 'slips'; (b) strict adherence to the systematic setting of supports in accordance with prescribed distances; (c) the increased use of temporary supports until the ground is cleared for the permanent timber, and also prior to commencing repair work; (d) more attention to the spragging of coal and overhanging sides."

On the 2nd July an opinion was published by the editor of the *Colliery Guardian*, of considerable importance, regarding the interpretation of the regulation pertaining to systematic timbering in the United Kingdom and New Zealand—as to whether timbering may be limited by the manager to a place where its necessity is obvious, and discontinued if the roof improves. The opinion in brief was that timber supports shall be continuous and of the class and at such intervals throughout the district or locality as specified in the notice of the manager approved by the Inspector. The manager, however, with the approval of the Inspector, may amend the notice as he feels disposed.

As the result of several accidents, the method of breaking down top coal in thick coal-seams by the retreating method was brought under consideration by certain mine-managers and Inspectors. In such operations a difficulty often arises, the roof on the goaf side of the hanging lip of top coal being frequently too high for props; yet miners, although often forbidden, hazard their lives by filling fallen coal under such high and unsupported roof. To reduce the risk of accident in such cases it is recommended as a slight measure of safety that there shall be erected a covered false set of timber immediately in by the lip set, and that one or more inclined props or struts shall be placed to support the lip face.