

SAFETY IN MINES THROUGH EDUCATION.

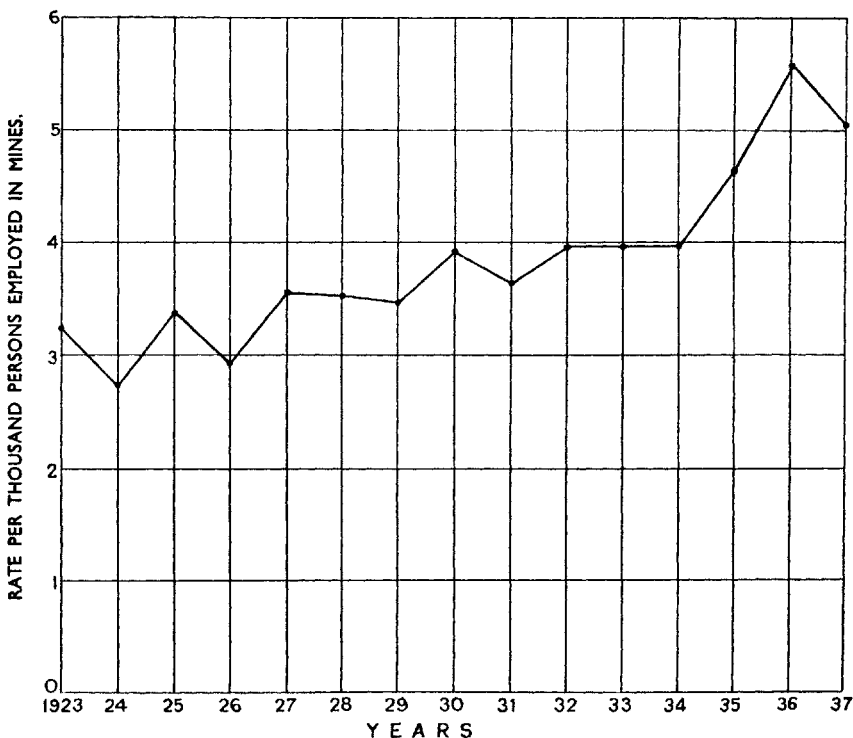
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Coal Mining in India for commercial purposes dates back to 1774; but due to transport difficulties no serious attempt could be made till the opening of the East Indian Railway as far as Ranigunj in 1855.

At the time, the output was mainly derived from open workings and the annual quantity was even less than 100,000 tons. Attention to the safety of the workmen was unnecessary and was hardly thought of.

Proper measures for safety were officially introduced by the Government of India in 1901 by the promulgation of the Indian Mines Act including Rules and Regulations based on the British Mines Regulations.

The mines were then shallow and the total annual output was 6.6 million tons. Along with the gradual development of the industry and as necessity



SERIOUS INJURIES (INCLUDING DEATHS)
PER 1,000 PERSONS EMPLOYED.

TEXT-FIG. 1.

arose, further legislation continued to be introduced and enforced and probably the limit of legislation has now been reached.

It is well known that Indian Mines, in which a number of thick seams occur in close proximity to one another, present enormous difficulties and the danger of mining increases considerably with the depth and intensity of mechanisation.

The danger is all the greater during the de-pillaring operations in 'Bord and Pillar' work—the common method practised in India—and it might be pointed out here that more than half of the present output is being obtained from such de-pillaring work.

From calculations based on information collected from the Reports of the Chief Inspector of Mines, as shown in the graph (Figure 1), we find that at all mines under the Indian Mines Act, the rate of serious injuries, inclusive of the number of lives lost per thousand persons employed, is gradually increasing. Even if we eliminate the figures of 1935 and 1936, which might be considered unusual, the position does not show an improvement.

It should, however, be mentioned here that the death rate per thousand persons employed in coal mines continues to be satisfactory, the average being 1.31 for the preceding 15 years up to 1937, as compared with 1.06 of Great Britain for the equivalent period ending 1936.

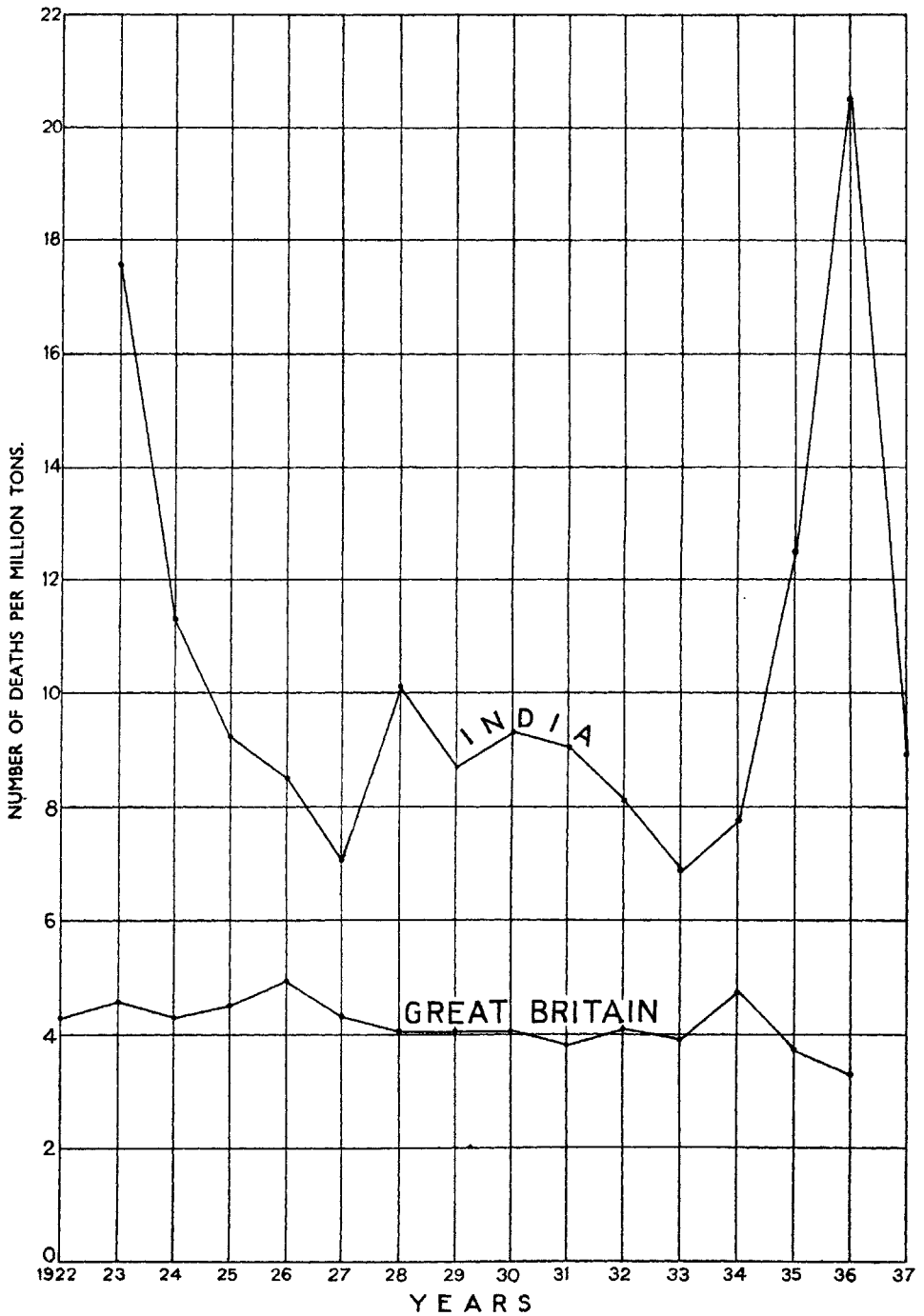
The classification given below affords us data for the examination of the causes of the fatal accidents taken over an average of the preceding 15 years.

	<i>Per cent.</i>			
(a) Misadventure	64.04
(b) Fault of the deceased	18.04
(c) Fault of fellow workmen	4.30
(d) Fault of the subordinate officials	7.36
(e) Fault of the management	5.62
(f) Faulty material	0.74

Figure 2 illustrates the Indian position regarding the death rate per million tons raised at coal mines in comparison with that of Great Britain. It will be observed that this death rate in India is more than double that of Great Britain and also that of America where the rate is more or less equal to that of Great Britain.

From a careful study of the above chart and the classification of the causes, we find that the death rate due to the fault of the deceased, fault of fellow workmen and misadventure and also the death rate per million tons of coal raised could be greatly improved if the labour available for the mining industry were of better quality.

The position now is that everything has been done which is possible by legislation, through the best efforts of the Mines Department in co-operation with the management of mines. There seems to be hardly any room for



NUMBER OF DEATHS PER MILLION TONS OF COAL RAISED.

TEXT-FIG. 2.

the introduction of any further regulations which might improve matters in this direction.

Since the early years of the present century the Government of India had under consideration the question of devising means of reducing large avoidable waste of coal, of improving the methods of extraction, and of affording greater protection to life and property. In 1919, this resulted in Mr. Treharne Ree's report on methods of mining which was followed by the report of the Coal Fields Committee of 1920 and lately the report of the Coal Mining Committee in 1937.

The main recommendation in these reports relates to the filling of the voids made during the recovery of the coal by incombustible stowing material—commonly known as Sand Stowing.

This method, although expensive, if and when introduced, will undoubtedly go a great way to minimise the danger to life and property.

The Government of India have already started taking action in this respect, and I, therefore, at the moment, feel that there is no necessity to deal further with this aspect of the question.

Now let us examine the type of labour we get in our coal mines.

The Indian mining labour was primarily agriculturist who took to mining as a secondary occupation. Comparatively higher earnings have tempted some of them seriously to take up mining work as their profession, but still quite a large proportion of the labour periodically disappears from the mines to return to their villages for the purpose of cultivation. Practically the whole of such labour force is illiterate, ignorant, non-ambitious and inefficient and unable to realise the necessity of obeying or observing the Mining Regulations.

It is our common experience to see them congregating below ground in dangerous places, often deranging ventilating arrangements, etc.; neither do they consider it illegitimate to rob coal from the pillars or to enter prohibited or fenced off areas in order to get easy coal. Their ignorance is sometimes colossal and the writer has personal experience of a miner piercing the top of his safety-lamp in order to improve the illumination. Fortunately in this case there was no gas present, otherwise the result could better be guessed than imagined.

The problem of labour in the coalfields, therefore, is a most difficult one, as the quality is nowhere near the requirements of the industry. The labour should be healthy, efficient, disciplined and trained with a sense of safety. With such qualities, the output per man can be considerably increased, thus reducing the death rate to a minimum in relation to the tonnage of production of the mineral. A good and efficient labourer not only improves his own wage-earning capacity and status, but is also less of a danger to himself and to others, and is more of an asset to his employer.

The introduction of sand stowing, further safety legislation, the formation of rescue stations and brigades or the appointment of safety officers, etc.

cannot, however, result in the maximum benefit, unless the workmen concerned are capable of understanding the dangers associated with modern mining and are made sufficiently alert and alive to such dangers and know how to avoid or to combat them. Mere legislation in the Statute Book cannot produce results unless the people concerned are educated enough to observe and benefit by it. It is, therefore, very necessary that urgent and immediate attention should be paid for their suitable education, which has so far been sadly neglected both by the owners and the Government, though much has already been and is being done to improve the housing, sanitation, water-supply, medical help and general welfare of the labour.

Considerable attention has been paid in recent years to the education of the Supervisory Staff and of Mining Engineers. The Indian School of Mines, the Provincial Evening Mining Classes and the Benares Hindu University are already supplying trained Surveyors and Mining Engineers. The Provincial Governments and the State Railways have established classes at suitable centres in the coalfields for the training of Overmen, Sirdars and other supervisory staff. There is thus fairly adequate provision for the management and supervision of mines but the same cannot be said in regard to the labour force.

The urgency of the question of the education of the labour force was felt long ago and although it was known to all of us that the accident rate amongst this class was highest, no serious attempt was made in this direction. Even this very important aspect escaped the attention of the Royal Commission on Labour who visited the coalfields in 1930.

There are a few primary schools in the coalfields established by the Colliery Owners for the education of miners' children. But the number is far too inadequate to be of any use. In 1930, the Bengal Rural Primary Education Bill was passed as Bengal Act VII of 1930, under which Act a cess was to be levied on the Mines and Quarries for the introduction of primary education. In practice, however, nothing has been done.

Adult education, if anything, is in a still worse state. The approximate number of adult labour in coal mines is in the region of 180,000. The cost of educating them should not be prohibitive and the benefits derived will more than justify the expense. It is not suggested to give the adults fairly extensive primary education, but a start should be made in giving them the necessary safety education through films and lantern slides accompanied by lectures and demonstrations, etc., that is to say, by combining recreation with enlightenment, more or less on the same lines as was followed successfully in the United States of America in educating the Negro mining population.

Regarding the labourers' children, compulsory elementary education, with syllabuses made to cover practical instruction in mining and its dangers, should immediately be introduced. The expense of such education should be shared by Coal Owners and the Provincial Governments alike.

The above course is a suggestion for the consideration of all concerned and a proper committee should be immediately established to go into the question thoroughly and draw up a comprehensive and workable scheme.

It is gratifying to mention here that the ministry of Bihar has recently taken up the question of adult education all over the province including the mining areas. The District Officers and the Educational Authorities of the province have, it is learnt, enthusiastically taken up the work and Local Committees have been established to impart elementary education to the adults within these areas.

In the modern campaign for greater safety in coal mines as practised in other parts of the world, one of the principal items is education of mining labour. In India this has been entirely lost sight of, and it is time we devote serious attention to this problem. I would, therefore, conclude by appealing to the Colliery Owners, Labour Organisations and Governments (both provincial and central) to give their immediate consideration to so important a matter and thereby help to increase the efficiency of the labour as well as reduce the accident rate in our mines.