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ANNUAL REPORT

OF THE

CHIEF INSPECTOR OF MINES IN INDIA

FOR THE YEAR ENDING

31st DECEMBER 1928



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FROM

R. R. SIMPSON, Esq., M.Sc.,
CHIEF INSPECTOR OF MINES IN INDIA,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
DEPARTMENT OF INDUSTRIES AND LABOUR,
SIMLA.

Dated Dhanbad, the 2nd May 1929.

SIR,

I have the honour to submit the report upon the inspection of mines in British India for the year ending 31st December 1928.

INTRODUCTION.

The Indian Mines Act, 1923, applies to British India only and not to the Indian States. For the complete figures of production of all minerals raised from excavations of all depths in British India and the Indian States reference may be made to the statements of the "Mineral Production of India" published annually in the Records of the Geological Survey of India, and to the "Quinquennial Review of the Mineral Production of India" published every five years by the same Department. Detailed information of the mineral industries in Mysore—where the Kolar goldfield is situated—and Hyderabad (Nizam's Dominions) is given in the annual reports of the Chief Inspectors of Mines in those States.

Section I.—Persons employed.

During the year 1928 the daily average number of persons working in and about the mines regulated by the Indian Mines Act was 267,671, as compared with 269,290 in the previous year. The decrease was 1,619 persons, or 0.60 per cent. Of these persons 117,940 worked underground, 79,458 in open workings and 70,273 on the surface. The distribution in respect of sex was as follows:—

	<i>Males.</i>	<i>Females.</i>
Underground	86,155	31,785
In open workings	51,005	28,453
Surface	52,430	17,843
TOTAL	189,590	78,081

The provincial distribution of the females who worked underground was:—

Province.	Mineral worked.									Total.
	Coal.	Mica.	Salt.	Mang- anese.	China clay.	Ste- tite.	Lime- stone.	Ochre.	Asbes- tos.	
Assam	94	...	...	...	...	...	...	...	...	94
Bengal	8,428	...	...	...	...	...	...	...	...	8,428
Bihar and Orissa	18,693	1,761	...	6	13	30	1	...	...	20,504
Central Provinces	1,193	...	...	201	...	31	...	1	...	1,426
Madras . . . . .	...	894	...	...	...	...	...	...	12	906
Punjab . . . . .	...	...	361	...	...	...	...	...	...	361
Ajmer-Merwara . . . . .	...	22	...	...	...	...	...	...	...	2
United Provinces . . . . .	...	...	...	...	...	8	...	36	...	44
	28,408	2,677	361	207	13	69	1	37	12	31,785
										females employed under- ground.

The number of persons employed in coal mines was 164,139, which is 1,074 less than the number employed in 1927. Of these persons 41,929 were coal cutters, 8,774 were male loaders and 36,427 were females—chiefly loaders.

The number of persons employed in metalliferous (including mica, stone, clay and salt) mines was 103,532, which is 545 less than the number employed in 1927. 75,323 were males and 28,209 were females. Of these females only 3,377 worked underground.

In the coalfields of Bengal and Bihar and Orissa there was a scarcity of coal mining labour towards the end of the year; it was caused by the excellence of the rice crop in areas adjacent to the coalfields. Wages remained at about the same level as in the previous year. There were more cases of cholera and small-pox than in 1927, and the death rates in the Asansol and Jharia Mining Settlements rose to 20.9 and 18.28 per thousand, respectively, as compared with 16.62 and 16.73 per thousand, respectively, in the previous year.

At the collieries in Upper Assam owned by the Assam Railways and Trading Company, Limited, the total number of persons working at the mines was 4,295 and during the year 829 workers were recruited and 738 were repatriated. There were no strikes or epidemics. Wages remained about the same, but short time was worked as the demand for coal was poor. For some years past the management has been gradually reducing the number of women employed underground, and at the end

of October 1928 their employment underground ceased entirely. The majority of the women have been given work on the surface and in quarries. Some, however, are disinclined to work for lower wages on the surface and prefer to stay at home.

In the Central Provinces there was a sufficient supply of mining labour except at times when the harvest was being gathered and marriage ceremonies were being performed. There was little change in the rates of wages, and there were no strikes, but at individual mines in the Pench Valley coalfield there were one or two short stoppages due to adjustments of the conditions of work. At manganese mines there was a good deal of sickness amongst the workers. At Gumgaon mine in the Nagpur district cholera broke out in epidemic form. There were 48 cases of which 28 proved fatal. An extensive programme of inoculation was immediately taken in hand and, in spite of opposition, the entire labour force was inoculated within a short time, and the epidemic was soon brought under control. In the Balaghat and Bhandara districts there was a severe outbreak of malaria, and in the Pench Valley coalfield an outbreak of cholera (27 deaths) and a few cases of plague. At Kandri mine in the Nagpur district a maternity and infant welfare centre was opened and placed in charge of a qualified nurse. A dispensary has been equipped in accordance with suggestions received from the provincial branch of the Indian Red Cross Society to which it is affiliated. The building of new quarters for labourers employed in the larger manganese mines was continued, but difficulty in securing suitable land is said to have been experienced.

At the lead-silver, iron and limestone mines worked by the Burma Corporation, Limited, in the Northern Shan States, Burma, the general improvement in labour conditions was maintained. In all departments of the Company's activities 16,275 persons were employed. There was no alteration in the standard rates of wages, and no outbreak of epidemic disease at the mine. At out-stations between Namtu and Namyao on the Burma Railways there were 20 cases of cholera with 18 deaths, but the disease did not assume an epidemic form. Additional permanent quarters and barracks for the accommodation of employees and their families were erected. Early in the year His Excellency the Governor of Burma visited the mines and opened the new road connecting Bawdwin and Namtu. In replying to an address of welcome His Excellency said that "during the time he had served in the Assembly he heard many objections in regard to the introduction of foreign capital into India, and much talk about the so-called exploitation of India by foreign capitalists. He wished that those who talked so glibly on these subjects could be with him here to-day and see for themselves the benefits of the application of capital, whether foreign or otherwise, to the development of an Eastern country. They would find not merely a great mining property but a happy contented and well-cared-for labour force".

At the tin and wolfram mines in the Tavoy and Mergui districts there was a shortage of labour throughout the year. No strikes or outbreaks of epidemic disease were reported. The labourers are chiefly Chinese and Indians, the majority being Chinese. Most of them work under what is known as the "tribute" system, an arrangement by which the miner is paid by the amount of ore produced. Burmans and

Karens are employed in clearing jungle and camp building only, as for harder work they are found to be unsatisfactory.

At the mica mines in Bihar and Orissa, although labour was plentiful, the superintendent of the mines owned by the premier company operating in the mica field reported that wages had increased by 9 per cent. As it was somewhat remarkable that wages should have gone up at a time of poor trade and abundant labour an explanation was sought. It appears that the rise of wages has followed an increase in superficial mining, and that in order to protect their own properties from intruders his firm has had to resort to superficial mining. The plan of posting watchmen had failed, the watchmen having been detected in farming out the superficial mining rights to workmen employed by other firms. The only alternative had been to keep their own miners in occupation. As work of this kind is considered to be preferable to regular work in underground mines it had been necessary to offer higher wages to the workers in established mines.

At a group of four slate mines in Bihar and Orissa workmen struck work, but their differences with their employers were soon composed.

In respect of sanitation and housing accommodation at the Katni limestone mines the Deputy Commissioner, Jubbulpore, reports as follows:—"At Katni insufficient attention is paid to providing housing accommodation for the labourers, and conditions in the case of all the smaller limestone quarries are most undesirable. Owing to the poor financial condition of the small mine owners, which is illustrated by the large number of unworked holdings, it is difficult to suggest a remedy—but sooner or later efforts must be made to tackle this problem before it grows unmanageable. The medical authorities believe that the cholera epidemic which was particularly severe in Katni Tahsil last hot weather started from this locality where the labour is in the habit of drinking tainted water owing to a lack of any proper supply or system of drainage in the locality. Another difficulty in dealing with this matter is the fact that the labour force is not permanent but transitory and fluctuating. I may mention that the larger concessions have and are doing all that they can for the adequate housing of their labour."

At the stone quarries worked by the Public Works Department at Mokpalin in the Thaton district ticket-of-leave prisoners were employed until April 1928. Subsequently owing to the establishment of a camp jail in the quarries area ticket-of-leave workers were replaced by convict labour. The camp jail was at first intended to accommodate 1,100 convicts but it is understood that it will shortly be extended to accommodate double that number. Convicts are also employed in the Myogyi stone quarries in the Toungoo district.

The difficulty in obtaining labour for mining purposes in the Frontier districts of Burma is illustrated by the remarks made by the Commissioner, Federated Shan States, which are as follows:—"The Shan labourer besides has independent ideas as to when and how much he should labour and will not readily exchange the *dolce far niente* conditions of his life for work that keeps his nose to the grindstone, without receiving adequate compensation in the shape of earnings beyond his dreams."

Figures showing the average output of coal per person employed are given below:—

	Tons of coal per person employed.			
	Underground and in open workings.		Above and below ground.	
	1926.	1923-27.	1926.	1923-27.
British India	188	177	131	114
Bengal and Bihar	192	183	134	106
Assam	99	122	71	76
Baluchistan	92	54	72	32
Central Provinces	151	119	106	77
Punjab	99	83	60	48

There was again a small improvement in the average, and, as in the previous year, the improvement may be ascribed to the greater use of coal-cutting machinery. In 1927 the output of coal per person employed above and below ground in the United Kingdom was 252 tons. In 1926 comparative figures in certain other countries were:—Japan 132 tons; Transvaal 426 tons; United States of America 780 tons.

In the table on page 6 figures are given of the wages paid in December in each important mining field in India. In the coalfields there was a small decline, the amounts being 5 per cent. in the Jharia coalfield, 2 per cent. in the Raniganj coalfield, 4 per cent. in the Giridih coalfield, 2 per cent. in the Assam coalfield, 8 per cent. in the Punjab coalfield and 7 per cent. in the Pench Valley coalfield. The wages earned by miners in the Burma lead-silver mines rose by $4\frac{1}{2}$ per cent., although there was no change in the standard rates. That the enforcement of the provision for a compulsory rest-day for workers in mines has affected the wages of certain workers is illustrated by a complaint received from certain workers in coal mines. In the words of the written complaint "what is gaiety and rest if in one month four days pice cut goes". On enquiries being made at the colliery at which these men were employed it was ascertained that whilst the wages of miners and winding and haulage enginemen had not been effected, yet the pump-minders, boiler-firemen and electric generating plant attendants were receiving pay for six days work in the week instead of seven days as heretofore. The explanation given was, that to comply with the Act and to give each worker a day of rest, more men had to be employed. Although at stone mines in the

Daily earnings in rupees, annas and pies during the month of December 1928 in each important mining field in British India.

Mining Field.	Underground.						Open workings.						Surface.			
	Overmen and Sirdars Foremen and Mates.	Miners.	Loaders.	Skilled Labour.	Un-skilled Labour.	Females	Overmen and Sirdars Foremen and Mates.	Miners.	Loaders	Skilled Labour.	Un-skilled Labour.	Females	Clerical and Supervising staff.	Skilled Labour.	Un-skilled Labour.	Females.
Jharia Coalfield (Bihar and Orissa)	1 4 9	0 13 6	0 10 9	0 13 0	0 9 9	0 8 9	1 2 0	0 14 0	0 5 6	0 10 6	0 7 9	0 8 3	1 6 9	0 12 3	0 8 6	0 6 9
Baniganj Coalfield (Bengal)	1 1 9	0 12 6	0 10 3	0 12 6	0 9 0	0 7 0	0 14 0	0 9 0	0 7 0	0 11 0	0 8 0	0 6 0	1 2 9	0 11 6	0 8 6	0 6 9
Girdih Coalfield (Bihar and Orissa)	1 7 3	0 17 9	0 10 9	0 14 0	0 7 9	0 6 9	1 0 0	0 12 0	0 9 0	...	...	0 6 0	1 5 9	0 14 3	0 7 9	0 5 9
Assam Coalfields	1 9 9	1 7 0	1 3 0	1 2 0	0 13 9	...	1 3 0	1 5 8	1 3 0	1 6 0	1 0 9	1 4 0	1 8 3	1 0 6	0 11 9	0 7 9
Punjab Coalfields	1 3 3	0 14 3	0 11 9	0 15 0	0 9 3	...	1 1 6	1 0 0	...	...	...	...	0 15 6	1 2 9	0 8 9	0 4 6
Baluchistan Coalfields	1 10 3	1 3 3	1 2 3	0 15 6	...	...	...	...	...	...	...	...	...	1 0 0	2 8 0	...
Penoh Valley Coalfield (Central Provinces).	1 6 0	1 0 6	0 8 6	0 9 6	0 8 0	0 7 6	...	...	...	0 8 0	0 8 0	0 6 0	1 5 9	0 10 8	0 11 9	0 5 9
Bihar and Orissa Mica	0 10 9	0 6 9	...	0 8 0	0 4 9	0 4 0	0 10 3	0 7 8	...	0 7 9	0 6 0	0 4 9	1 0 6	0 8 6	0 6 9	0 4 0
Madras Mica.	0 11 3	0 6 3	...	0 6 3	0 4 9	0 3 6	0 7 9	0 5 6	...	0 5 6	0 4 3	0 3 6	0 10 6	0 8 3	0 5 0	0 3 3
Central Provinces Manganese	1 7 0	0 11 3	...	1 0 0	0 7 9	0 6 6	0 14 0	0 0 0	...	0 15 9	0 7 3	0 4 9	1 6 0	1 3 3	0 7 9	0 4 9
Madras Manganese	...	...	...	...	...	...	0 16 0	0 6 9	...	0 6 0	0 7 9	0 3 6	1 5 9	0 13 6	0 13 0	0 5 0
Central Provinces Limestone	...	...	...	...	...	...	0 14 3	0 7 8	...	0 12 9	0 6 9	0 5 0	0 14 9	0 7 0	0 8 0	0 4 6
Bihar and Orissa Iron	...	...	...	...	...	...	1 0 0	0 10 6	...	0 14 8	0 7 0	0 5 9	2 2 6	1 0 0	0 6 9	0 5 6
Barma Lead.	15 1 0	1 13 0	...	2 10 0	1 6 3	...	4 9 3	...	...	...	1 5 9	...	2 6 9	3 12 3	1 6 3	0 10 0
Barma Tin	0 6 9	2 3 3	...	2 0 0	1 2 0	...	2 4 9	1 7 6	...	1 15 6	1 5 0	0 12 0	3 3 9	2 4 9	1 2 3	1 0 0
Punjab Salt	1 15 0	2 0 9	...	1 15 3	1 3 0	0 8 0	2 0 0	2 0 0	...	...	...	...	0 12 3	1 2 9	0 11 9	0 8 3
Bihar and Orissa China Clay	...	...	...	...	...	...	0 10 0	0 4 9	...	0 10 0	0 6 0	0 3 3	1 1 0	0 9 9	0 5 6	0 3 9
Punjab Slate.	0 6 9	0 6 3	...	0 4 0	0 2 3	...	0 12 6	0 9 0	...	0 8 0	0 6 0	...	1 6 6	...	0 7 0	...
United Provinces Stone	...	...	...	...	...	...	0 9 6	0 7 6	...	0 7 9	0 6 6	0 4 9	0 9 9	0 5 9	0 11 6	0 2 6

United Provinces the average daily earnings (see table on page 6) are 7½ annas yet it appears that much lower wages are paid in some instances. The Collector of the Hamirpur district reports that "owing to unfavourable agricultural conditions there was a temporary fall in wages, unskilled labourers being available at two annas per day".

In June 1928 draft regulations for prohibiting the employment of women underground in mines were published, and opinions were invited *inter alia* as to whether a check on the gradual reduction in the number of women employed in the mines to be exempted during a transition period should be obtained by means of a system of tokens or badges to be attached to the person, or by prescribing that the number of women employed underground day to day should not exceed a definite and gradually decreasing percentage of the total number of persons, men and women, employed underground. The consensus of opinion was in favour of the latter method, and it has been substantially adopted in the regulations published in Notification No. M.-1055, dated the 7th March 1929. With effect from the first day of July 1929 the employment of women underground in mines other than coal mines in Bengal, Bihar and Orissa and the Central Provinces, and salt mines in the Punjab, has been prohibited. In the coal mines mentioned above, women may continue to be employed in the underground workings after the 1st July 1929, but their total number shall not be a greater percentage of the total number of persons, both men and women, employed underground than 29, and this permitted percentage will be reduced by 3 every year till finally extinguished in July 1939. Similarly the number of women who may be employed underground in the salt mines will gradually decrease from 40 per cent. in 1929-30 to *nil* in July 1939. A copy of the regulations will be found in Appendix IV, Statement No. 8. Although these new regulations do not apply to quarries the Railway Board has decided to reduce the number of women employed in loading coal in the coal quarries worked by the State Railways *pari passu* with the reduction in the number of women employed in underground coal workings. This self-denying ordinance, however, will not be extended to women employed in the removal of over-burden less than 60 feet thick.

Section II.—Output of minerals.

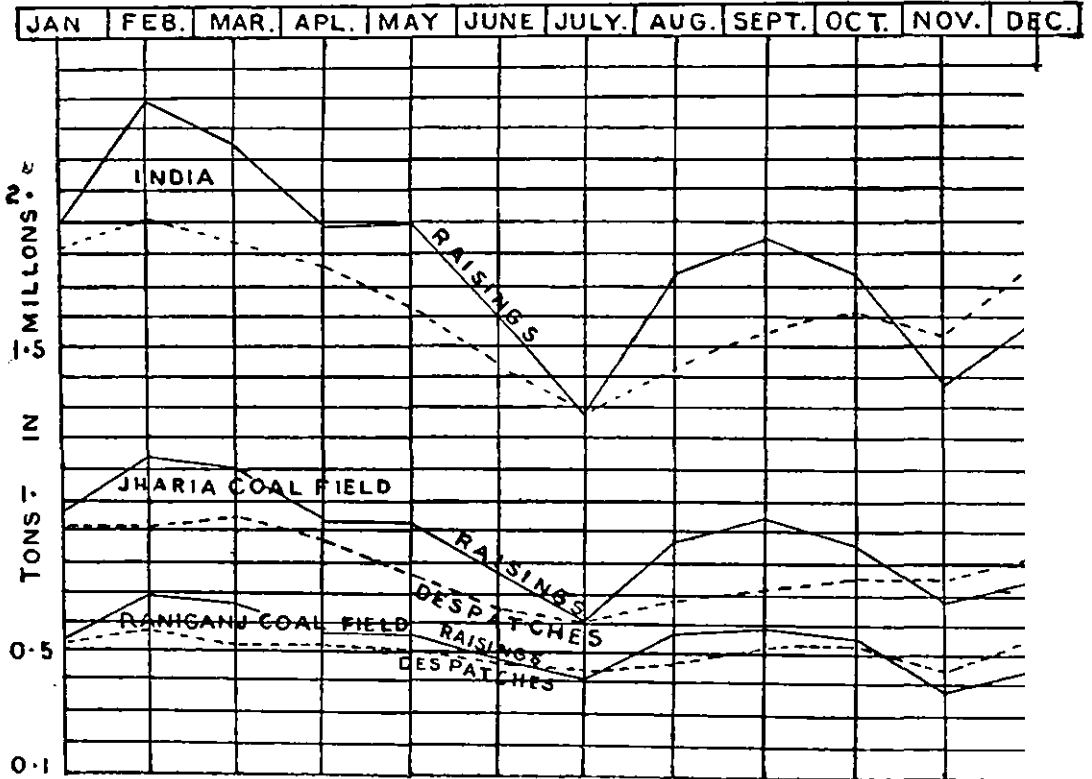
COAL.

The statement given below shows the output of coal in the various provinces in British India during the years 1927 and 1928:—

	Output in tons.	
	1928.	1927.
Assam	297,501	322,517
Baluchistan	11,217	8,945
Bengal	5,639,993	5,554,990
Bihar and Orissa	14,788,580	14,493,062
Central Provinces	732,353	666,758
Punjab	46,152	62,704
	<u>21,515,796</u>	<u>21,108,976</u>

The total output in 1928 was 21,515,796 tons of a declared value of Rs. 8,37,52,449. The increase in the output was 406,820 tons or 1·93 per cent. The output was within a quarter of a million tons of the record production in 1919 when 21½ million tons was produced. The opening stocks in 1928 were 1,721,288 tons and the closing stocks 1,625,718 tons, which is 153,212 tons less than in the previous year, and more than a million tons less than the closing stocks at the end of 1925. In the chart inserted below the raisings and despatches of coal are shown month by month.

RAISINGS & DESPATCHES OF COAL MONTH BY MONTH IN 1928



The maximum output was obtained in February and, except for a stationary period in April and May, was followed by a continuous fall to the minimum in July. For the next two months there was a steady increase followed by a decline to a figure in November which was only 70,000 tons greater than the minimum attained in July. For ten months the raisings were in excess of despatches; in July they were equal to despatches, and in November the despatches were 160,000 tons in excess of raisings.

The total despatches of coal were 19,283,904 tons, and 1,264,914 tons, or 5·88 per cent. of the raisings, were consumed on the collieries. The proportion of coal used on the collieries has steadily decreased from a maximum of 14·31 per cent. in 1922 to 5·88 in 1928. The present figure

is the lowest recorded and 1·07 per cent. less than in the previous year. The figure is indicative of the severe economies which have been necessitated by the depressed state of the coal industry.

The quantity of coal used for coking at the collieries was 1,062,549 tons, and 689,002 tons of soft coke and 56,533 tons of hard coke were made. The quantity of soft coke manufactured at the collieries for domestic consumption increased by 13 per cent., as compared with 18 per cent. in the previous year. The quantity of hard coke made at the collieries is small. Most of the hard coke is now made at coke-making plants which do not come under the Mines Act, and 1,108,551 tons of coal were despatched to coke-making plants of this kind in 1928. The decrease of 186,435 tons on the figures recorded in the previous year is presumably one of the effects of the prolonged strike of iron and steel workers at Jamshedpur. Analyses of the figures relating to the output of coal and the manufacture of coke will be found in Appendix I, Table No. 3.

The output in Bihar and Orissa increased by 295,518 tons, and in Bengal the increase was 85,003 tons. The output in the Punjab decreased from 62,704 tons in 1927 to 46,152 tons in 1928, and is symptomatic of the decline in the importance of the coal industry in that province and Baluchistan. Mineowners were mainly concerned in keeping the mines open in the hope of a rising market. There was an increase in the Central Provinces and a decrease in Assam. Figures of output for the principal coalfields are as follows:—

Coalfield.	1928.	1927.	Percentage of increase + or decrease —
Jharia . . .	10,665,479	10,583,487	+ 0·77
Raniganj . . .	6,460,490	6,472,036	— 0·18
Bokaro . . .	2,026,791	1,790,594	+ 13·19
Giridih . . .	804,118	855,253	— 5·98
Karanpura . . .	390,493	262,014	+ 49·04
Pench Valley . . .	556,481	505,913	+ 10·00
Assam . . .	297,501	322,517	— 7·76

The outputs of the Jharia and Raniganj coalfields were practically stationary, but there were large increases in the outputs of the Bokaro and Karanpura coalfields, and for the first time the production of the Bokaro coalfield exceeded two million tons. The increase in the Pench Valley coalfield was about 10 per cent.

The market for Indian coal continued to be weak until the closing months of the year. With a view to economy in the cost of production the large concerns were obliged to strive for maximum outputs, but the excess production could not be absorbed and the pressure to sell resulted in even lower prices being obtained than in the previous year. In the closing months of the year a degree of firmness manifested itself and promised to continue. The direct cause of this change was the reduction of raisings brought about by a poorer supply of labour. When the crops are exceptionally good, as they were in 1928, the miners do not show the same inclination to return to the collieries for work as they do in normal years.

In last year's annual report it was said that the time may be approaching when some measure of combination for the improvement and regulation of prices may become practicable. It is of interest to record that during the year 1928 a certain number of the larger firms came to an agreement by which minimum prices for a certain high grade coal and for small coal, respectively, were fixed.

The improvement in the exports of coal, which was so marked a feature of the year 1926, continued. 2,280,492 tons of cargo coal (including coal, coke and patent fuel) were exported from Calcutta, as compared with 2,253,251 tons in 1927. Bunkers, however, again showed a small decline, the figures being 840,316 tons as compared with 870,289 tons in the previous year. The Indian Coal Grading Board continued to give satisfaction in the work of grading coal and granting certificates of the quality and condition of coal intended for export. A publication containing a list of coals graded by the Board up to 31st December 1928, copies of the Act and rules and other information was published at the end of the year.

In the Central Provinces there was a steady and increasing demand for coal, and outputs were maintained at a fairly high level throughout the year.

The number of collieries using electric energy was 111, and the aggregate horse power employed at collieries increased from 59,539 to 64,478, *i.e.*, by 8 per cent. During the year electric plant was installed and brought into operation in four additional mines, but three mines using electricity were closed down. A generating station for the supply of electricity to a group of collieries worked by the State Railways in the Bokaro coalfield was brought into service early in the year. It is interesting to note that the aggregate horse power installed in 1923 was no more than 36,008, and that in spite of the depressed state of the coal trade the increase since then has been 79 per cent.

The number of coal-cutting machines in use increased from 141 to 146; of these 131 were driven by electricity and 15 by compressed air. 75 machines were at work in the Jharia coalfield, 67 in the Raniganj coalfield and 4 in the Central Provinces. Coal-cutting machines were in use in fifty mines, and the total area undercut by the machines was 8,372,689 sq. feet, as compared with 55 mines and 7,555,748 sq. feet undercut in the previous year.

Attention is invited to the standard specification issued by the British Engineering Standards Association of a round type flame-proof plug and socket for use with coal-cutting machines and other portable apparatus in mines. Plugs and sockets constructed to the standard specification are greatly superior to the flat type of plug in common use at present, especially from the point of view of earth connection of apparatus and the ease and facility with which the plugs can be inserted and withdrawn.

Electricity was used at 19 metalliferous mines and the aggregate horse power installed was 6,789.

Statistics of the electrical plant in use at mines in the various provinces of British India and in certain mine fields are contained in Appendix I, Tables 7, 8 and 9.

During the year 2,186,269 lb. of gunpowder, 250,590 lb. of high explosives, and 108,467 lb. of "permitted" explosives were used at coal mines under the Act. These figures compare with 2,029,125 lb. of gunpowder, 243,244 lb. of high explosives and 192,115 lb. of "permitted" explosives used in 1927.

In Appendix I, Table 10, particulars are given of the number of mechanical ventilators in use in coal mines under the Act. Seventy-four mechanical ventilators were in use in 1928, as compared with 67 in 1927.

In Appendix I, Table II, particulars are given of the number of safety lamps in use in coal mines under the Act. 17,798 safety lamps were in use in 1928, as compared with 17,600 in 1927.

IRON ORE.

The production of iron ore was 1,206,754 tons, valued at Rs. 27,74,688, as compared with 1,068,281 tons in 1927, the increase being 12·96 per cent.

The development of the iron ore mines in the Singhbhum district was continued, and it is satisfactory that the high quality of the ore was maintained. Considerable improvements were made in the mechanical arrangements for transporting the ore from the mines to the railway. The mines are situated at or near the tops of hills from 1,000—2,000 feet in height, and their produce is transported by locomotives, aerial ropeways, and gravity inclines on which either skips or wagons are used.

MANGANESE ORE.

There was a decrease of 22·59 per cent. in the output of manganese, the figures of production being 716,626 tons, valued at Rs. 98,22,390, as compared with 878,521 tons in 1927. The demand for manganese ore was poor, and on account of low prices very little second grade ore was exported. The depression is said to have been due to a fear that the Russian Soviet Government with a view to establishing foreign credits was about to flood the market with manganese ore obtained from mines formerly worked by concessionaires. The f.o.b. price for first grade ore was 13·80*d.* per unit, whilst the average for all grades was 12·46*d.* Sea freights to Europe were 17*s.* 6*d.* per ton, and to English ports 19*s.* per ton.

During the year the railway administrations were approached with a view to obtaining a reduction in the freight on manganese from mine to port. It was pointed out that the freights to Calcutta and Bombay, are, respectively, 25 per cent. and 50 per cent. in excess of the pre-war rates. Up to the end of the year no concession, however, had been granted.

LEAD-SILVER ORES.

The output of lead-silver ores from the Bawdwin mines in the Northern Shan States, Burma, was 443,654 tons, as compared with 449,817 tons in 1927. The decrease was, therefore, 1·37 per cent. 77,143 tons of refined lead, 1,241 tons of antimonial lead, 7,404,728 ounces of refined silver, 10,978 tons of copper matte and 2,899 tons of nickel spiss were

produced. The experimental zinc plant at the Namtu mill produced 64,122 tons of zinc concentrates.

The average values of metals extracted were as follows:—Refined lead Rs. 283-11-9 per ton, antimonial lead Rs. 255-7-2 per ton; and refined silver Rs. 1-9-9 per ounce.

The quantities of materials used for the purpose of fluxes were as follows:—Iron ore, 54,025 tons; limestone, 46,297 tons; quartz rock, 100 tons; and iron pyrites, 2,073 tons.

To obtain rapid loading of the skips in the Marmion shaft a skip loading pocket, 8 feet high and 50 feet long, dipping towards the shaft at about 45°, is being installed at the eighth level. The flow of ore into the skip-loading cartridges, and from the cartridges into the skip will be regulated by gates operated by compressed air.

The output of the mine is now beyond the capacity of the smelting plant, and sufficient ore is being produced in six working days to keep the smelter and mill going at full capacity; except for special work no underground work is now being done on Sundays.

In the process of recovering the fire-area it has been found that unless a positive ventilating pressure is maintained the heat and gases emitted from the strata render work impossible. Double doors are fitted near the commencement of an intended cross-cut, and one or more air pipes, 9" diameter, connected to Venturi blowers are installed. By means of the Venturi blowers a positive pressure is maintained inside the doors and hot sulphurous gases are forced back into the strata.

GOLD.

The output of gold in 1928 was no more than 7 ozs. Towards the end of the year the small crushing and separating plant at Kundarkocha mine in the Singhbhum district was about ready for operation.

TIN AND WOLFRAM ORES.

The output of tin ore was 2,777 tons, valued at Rs. 45,37,601, as compared with 2,656 tons in 1927. 622 tons of wolfram ore valued at Rs. 2,99,549 were produced, as compared with 530 tons in 1927.

In the Mergui district increasing interest is being taken in the possibilities of dredging, and a large amount of prospecting by boring and pitting has already been done. A road from Palauk to the Bankadun river—a distance of 7 miles—is being constructed by the Public Works Department and will be of great value for transporting dredging machinery for the exploitation of the alluvial flats on that river and the Palauk river. Other areas said to be of value are at Ke Chaung in the Bokpyin township, and on the Bokpyin Chaung river; also at Karathuri, Toitui and Kazat. The average depth of the dredgable areas is from 16 to 18 feet and the ground is, as a rule, free from clay and large boulders. The dredging areas proved up to the present are not large in comparison with those of the Malay Peninsula, but some of them are so situated near the coast or navigable tidal rivers that a single dredge could be used without dismantling in more than one area.

CHROMITE ORE.

The production of chromite ore was 17,167 tons, valued at Rs. 2,73,979, as compared with 17,086 tons in 1927.

As an example of the difficulties encountered by mineowners on the North-West Frontier the experience of the Junior Inspector who visited the chromite mines in Baluchistan towards the end of the year may be mentioned. During his journey into the hills to inspect the mines he heard that one of the chromite dumps had been raided and looted. On reaching the mine he found that not only was this report correct, but also that two of the mine munshies had been carried off into captivity.

COPPER ORE.

The output of copper ore was 18,055 tons, valued at Rs. 7,22,200, as compared with 5,010 tons in 1927. The whole of the production was from a single mine at Mosaboni in the Singhbhum district, where ore reserves exceeding three quarters of a million tons, with an average assay value of 3.78 per cent. of copper, are said to have been proved. The whole of the new plant for the production of refined copper had been erected by the end of the year.

There was a marked increase in the price of copper, and at the close of the year the price was approximately Rs. 63 per cwt.

As mentioned in an earlier paragraph 10,978 tons of copper matte were produced in the smelting of lead-silver ores in Burma.

ZINC ORE.

From the composite ore mined at the Bawdwin mine in the Northern Shan States, Burma, 64,122 tons of zinc concentrates were produced for shipment. The production in 1927 was 58,286 tons.

GEMS.

The production of the Burma ruby mines was as follows:—

	Carats.	Value. Rs.
Rubies	32,010	1,22,181
Sapphires	4,500	54,853
Spinel	3,870	478
TOTAL	<u>40,380</u>	<u>1,77,512</u>

The ground at Khaungdwin mine proved poor, and is now being worked only by tributors. The Kathe mine was more profitable and is still being worked, but Enjouk mine proved disappointing and work there has been suspended for a time.

The Government revenue from royalties increased from Rs. 1,03,040 in 1927 to Rs. 2,41,660 in 1928.

MICA.

The quantity of mica consigned was 44,629 cwt., valued at Rs. 23,93,555, as compared with 42,081 cwt. in 1927. The output of dressed mica in 1928 was 51,390 cwt., as compared with 51,682 cwt. in 1927. Prices are said to have declined about 10 per cent.

A bill framed with the object of preventing thefts of mica was introduced in the Bihar and Orissa Legislative Council, but rejected without discussion. In the absence of adequate means to enable those engaged in legitimate mining to prevent thefts of the mineral and protect their mines from illicit working the industry remained in a thoroughly unsatisfactory condition. Progress in development has come to a standstill, reserves have been attacked, and there is an increasing tendency for the larger firms to get out of a business in which they are not permitted to enjoy profits.

The proportion of spotted mica produced in the mines in the Nellore district, Madras, is said to be increasing yearly. Towards the end of the year the trade in Madras mica is said to have shown some improvement due to a better demand from European markets.

ROCK-SALT.

The production of rock-salt increased from 145,311 tons in 1927 to 145,543 tons in 1928.

LIMESTONE.

The reported production of limestone increased from 1,132,235 tons in 1927 to 1,404,578 tons in 1928.

At certain limestone mines in the Shahabad district the economic limit of open working has almost been reached. Two of the more important mineowners are seriously considering the question of resorting to underground mining.

STONE.

From the one hundred and forty-four stone mines from which figures were obtained 988,281 tons of igneous rock, 725,860 tons of unspecified rock, 58,996 tons of laterite, 71,860 tons of sandstone, 16,295 tons of gravel, and 1,294,087 tons of *murum* were produced. The total production was 3,155,379 tons, as compared with 2,456,503 tons in 1927.

CLAYS.

From the twenty-two clay mines from which figures were obtained 82,777 tons of fire-clay, 7,186 tons of china clay and 28,836 tons of ordinary clay were produced.

OTHER MINERALS.

22,542 tons of magnesite, valued at Rs. 1,41,742; 7,734 tons of slate, valued at Rs. 1,91,136; 7,283 tons of gypsum, valued at Rs. 15,933; 11,167 tons of bauxite, valued at Rs. 83,753; 1,803 tons of steatite, valued at Rs. 42,274; 1,195 tons of ochre, valued at Rs. 10,657; 805 tons of apatite, valued at Rs. 14,490; 620 tons of barytes, valued at Rs. 4,610; 345 tons of kyanite, valued at Rs. 5,175; and 170 cwt. of asbestos, valued at Rs. 1,275 were produced. Small quantities of corundum, fuller's earth and bismuth were also produced.

Section III.—Accidents.

During the year 1928 at mines regulated by the Indian Mines Act, 1923, there were 221 fatal accidents, which is 12 more than in 1927 and 6 more than the average number in the preceding five years.

These accidents involved the loss of 259 lives, which is 12 more than in 1927. Of these persons 210 were males and 49 were females. In one case seven lives, in one case six lives, in one case four lives, in four cases three lives and in sixteen cases two lives were lost. There were in addition 654 serious accidents involving injuries to 683 persons, as compared with 680 serious accidents involving injuries to 713 persons in the previous year.

The proportions of accidents which occurred to males and females underground, in open workings and on surface during the year were as follows:—

	No. of fatal accidents.	No. of males killed.	No. of females killed.	Death rate per 1,000 persons employed.		No. of serious accidents.	No. of males injured.	No. of females injured.	Serious injury rate per 1,000 persons employed.	
				Males.	Females.				Males.	Females.
Underground .	167	157	37	1·82	1·16	412	384	45	4·46	1·42
Open workings .	30	30	4	0·59	0·14	65	63	8	1·33	0·28
Surface . . .	24	23	8	0·44	0·45	177	167	16	3·20	0·81

It may be noticed that whilst the death rate per thousand females employed increased from 0·78 to 1·16, the serious injury rate per thousand females employed decreased from 1·92 to 1·42.

The causes of the fatal accidents have been classified as follows:—

	Number of fatal accidents.	Percentage of total number of fatal accidents.
Misadventure	147	66·52
Fault of deceased	39	17·65
Fault of fellow workmen	9	4·07
Fault of subordinate officials	12	5·43
Fault of management	13	5·88
Faulty material	1	0·45
TOTAL	221	100·00

There were two accidents caused by ignitions of fire-damp, which is the same as in the previous year. In one of these cases one person was killed and three injured, and in the other two persons were killed and two injured. In neither of the mines concerned had gas been previously found.

There were 121 fatal accidents and 128 serious accidents from falls of roof and sides. The fatal accidents were 20 more in number than in 1927. A large number of the accidents took place in places where pillars of coal were being extracted, and many of them were due to persons having passed through fences with the object of getting coal with the minimum of effort. As coal miners are paid by the amount of coal loaded it is difficult to prevent them from attempting to salve coal

which in the opinion of the officials—as evidenced by the fences erected—cannot be got with safety. Twenty-one of the accidents took place in open workings.

A remarkable reduction in the number of accidents by falls of roof and sides in the chambering method of mining practised in the Assam coal mines has been effected by improved methods of lighting. A new type of Ceag electric lamp has been introduced into the workings. It contains two batteries and is capable of throwing a beam for a distance of 50 feet.

For the inspection of lofty workings the electric torch or flash-light is a most useful and effective appliance. Supervising officials are using it to an increasing extent. For use in gassy mines a flash-light bearing a metal label signifying official approval of the Bureau of Mines, United States of America, is on sale in Calcutta.

There were fifteen fatal accidents in shafts, which is five more than in the previous year, but one less than in 1926. One person was killed by the gearing of a hand winch coming out of mesh, six by falling down shafts, three by things falling down shafts. In one case a woman, instead of using the by-pass road, attempted to cross the bottom of the shaft and was struck down by the descending cage. There were twenty-five serious accidents in shafts.

One person lost his life by suffocation by gas; he had been warned not to enter the underground gallery containing the foul gas.

The number of fatal accidents caused by explosives was 14, or four less than in the previous year. In six cases the accidents were due to gross carelessness in the use of gunpowder. In five cases the persons killed had failed to retire sufficiently far or returned too soon to places where blasting was being done. There were 36 serious accidents.

In a single accident seven persons in the workings of an upper seam were drowned by an irruption of water which came from the workings of a lower seam. The water had been held back temporarily by a filling of ashes in the shaft connecting the two seams. Eventually the pressure of the accumulated water was sufficient to sweep out the filling and flood the workings in the upper seam.

There were 28 fatal accidents on haulage roads, which is 4 more than in 1927 and 2 more than in 1926. In two cases the fatalities were due to broken ropes and in three cases to broken couplings. Three of the accidents happened to persons who were sitting dangerously near tram-lines, and two to persons who were riding on tubs without permission. The number of serious accidents was 149; 100 of the accidents occurred on tram lines on which tubs are pushed by hand.

Of the two fatal accidents caused by underground machinery one was caused by a coal-cutting machine swinging round and knocking out the anchor post, whilst in the other case a head fitter engaged in supervising the erection of a pump was killed by his clothes becoming entangled in the machinery. There were ten serious accidents.

Of the accidents caused by surface machinery one was caused by a blow from the handle of a winch, and would have been avoided if the pawl fitted to the winch had been set in position. The other was due to a man being struck by a bucket entering a junction station on an aerial ropeway.

Five fatal accidents occurred on surface railways and tramways belonging to the mine. The number is ten less than in the previous year. There were 67 serious accidents.

Two fatal accidents and eight serious accidents were caused by electricity. In one of the two fatal cases the victim had been attempting to get a bird's nest on a tower carrying a transmission line.

Twelve miscellaneous accidents took place underground and sixteen on the surface. Four of the latter were caused by persons falling from ledges in quarries. One, by which six persons lost their lives, was due to a collapse of dwellings caused by an unexpected collapse of underground workings.

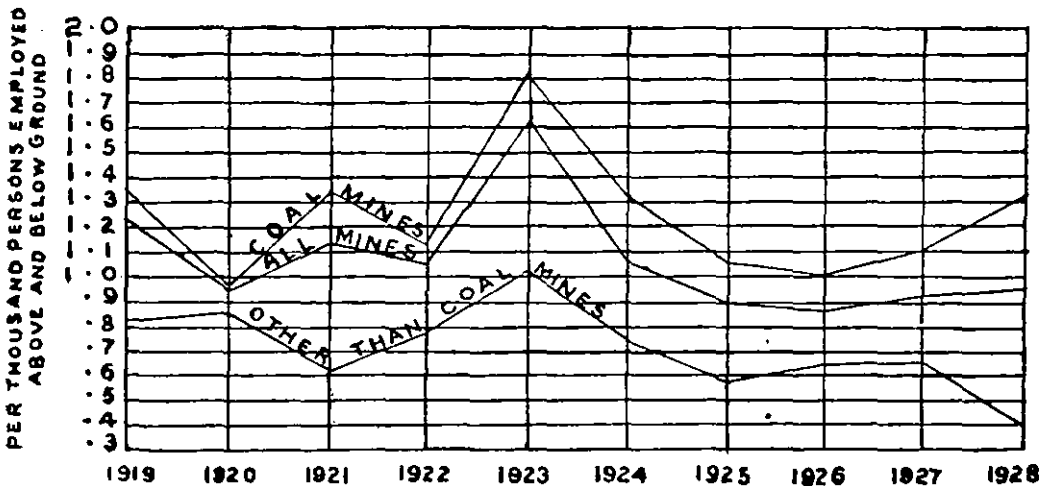
Twenty-four accidents causing 27 deaths were excluded from the statistics for reasons which are given in Appendix II. Four were cases of drowning and two of suicide, two were caused by storms and one was a case of heart failure.

The death rate per thousand persons employed above and below ground was 0.97, whilst that of the preceding five years was 1.08. At coal mines only the rate was 1.33, as compared with 1.10 in 1927. At mines other than coal mines the rate declined from 0.63 (in 1927) to 0.40.

The increase in the death rate at coal mines is greatly to be regretted. It is due to an increase in the dangerous operation of extracting pillars in thick coal seams.

The chart below shows graphically the variations in the death rates during the decade 1919—1928.

**CHART SHOWING
THE DEATH RATE FROM ACCIDENTS DURING THE
PERIOD 1919 - 1928**



THE HIGH RATE IN 1923 WAS DUE CHIEFLY TO AN EXPLOSION IN A COAL MINE WHICH CAUSED THE LOSS OF 74 LIVES.

The death rate per million tons raised at coal mines was 10·13, while that of the preceding five years was 10·98.

Deaths occurring in each class of mine were as follows:—218 in coal mines, 2 in mica mines, 7 in manganese mines, 5 in silver-lead mines, 8 in tin and wolfram mines, 6 in limestone mines, 6 in stone mines, 3 in iron mines, 2 in a fireclay mine, 1 each in salt and copper mines.

Three persons lost their lives by ignitions of gas, 84 by falls of roof, 58 by falls of side, 16 in shafts, 1 by suffocation by gases, 17 by explosives, 7 by irruption of water, 29 by haulage, 14 by other accidents underground and 30 on the surface.

The number of serious accidents reported was 654, as compared with 680 in the previous year.

A list of the fatal accidents appears in Appendix II, Table I, where each is described briefly. The details of certain accidents are reported at greater length as follows:—

EXPLOSIONS AND IGNITIONS OF FIRE-DAMP.

No. 1.—The Lodna Colliery Company (1920), Limited's Ningah coal mine.

At this colliery a pair of shafts has recently been sunk to the Poniat seam at a depth of 1,300 feet. Although there is no record of fire-damp having been detected in the working of this seam yet in the sinking of the shafts safety lamps were used as a precautionary measure. After the connection of the shafts and the extension of workings to a distance of some hundreds of feet from the shafts the safety lamps were withdrawn as no gas had ever been found and their use was, therefore, not considered to be necessary.

About a year after the completion of the sinking of the shafts the north main level had been extended to a distance of 500 feet and had entered troubled ground where owing to a change in the direction of the dip it had become necessary to take down roof to a height of from 8 to 10 feet, causing a large cavity. This place was at the junction of four galleries, but the galleries were small and the amount of air passing was, therefore, restricted.

During the night shift four shots were fired in the roof and the removal of the stone and the dressing down of unsound pieces of stone had not been completed at 7-30 A.M. when the four stone cutters employed on the day shift commenced work. Shortly after there was an ignition of gas and all four of the men were burnt; one of them succumbed to his injuries a few days later.

On the following day the Inspector of Mines, No. 2 Circle, made careful tests with a hydrogen flame safety lamp but failed to detect fire-damp. At that time, however, the natural ventilation had been supplemented by the discharge of air from a compressed air main. The Inspector was of the opinion that a little gas had been liberated from the disturbed ground by the firing of the shots, and that had there not been a large cavity in the roof the gas would have been dissipated and would have escaped detection.

As it was not considered that the use of safety lamps is ordinarily necessary conditional permission to continue to use open lights in the workings of the colliery was accorded. The conditions attaching to the exemption are as follows:—

- (a) The daily inspection required under Regulation 70 shall be made with a locked safety lamp;
- (b) In all galleries driven in advance of the ordinary galleries and in narrow main galleries driven more than 20 feet ahead of the ordinary galleries, and in cavities above the coal seam, safety lamps shall be used; and
- (c) A current of air shall be conducted round the working places.

No. 2.—The Tata Iron and Steel Company, Limited's Jamadoba coal mine.

Jamadoba colliery is one of the most extensive mines in the Jharia coalfield, and holds the record for production of coal. Nos. 17 and 18 seams have been worked over an area of approximately three-quarters of a square mile. The workings are ventilated by a fan which produces 188,000 cubic feet of air per minute. Open lights are used. No fire-damp has ever before been detected in No. 17 seam, but in 1916 a small quantity was emitted in the workings of 18 seam, although only for a short time.

At the time of the accident two parallel galleries in 17 seam were being driven to the rise with the object of developing a virgin area of coal intermediate between dip workings and disused workings near the outcrop of the seam. These galleries had been driven about 400 feet, and four cross-connections had been made; a fifth was on the point of connection. The circulation of air through these galleries was small. The main gallery was 14 feet wide up to the last connection, but from that point to the face—a distance of 110 feet—the width was no more than 5 feet.

On 28th September the night shift miners left the main gallery at 4 A.M., and the gallery remained untenanted until 8 A.M. when four miners entered it with the object of commencing work. No sooner had they reached the face, however, carrying open lamps, than there was an ignition of fire-damp. Three of the men were severely burnt and two of them subsequently died. The fourth man was burnt, but not severely.

On the morning of the following day the Inspector of Mines, No. 1 Circle, found an accumulation of fire-damp extending to a distance of 60 feet from the face of the main gallery. He also found traces of gas in two adjacent galleries. As there was water percolating from the roof and sides and the gallery was wet throughout conditions for the initiation and propagation of a coal-dust explosion were unfavourable.

For some six months prior to the explosion it had been the custom to use a safety lamp in making the first statutory inspection after the week-end stoppage of work, and no gas had ever been found.

Some two or three weeks after the explosion a dip gallery was connected to the rise gallery in which the explosion occurred. As soon as the connection was made a good current of air passed through the gallery and carried away the gas. None has since been detected.

In view of the fact that inflammable gas is only occasionally found in small quantities and that the workings are adequately ventilated by mechanical means it was not considered necessary to insist upon the use of safety lamps throughout the whole of the workings. A conditional exemption under Coal Mines Regulation 123 was, therefore, granted.

FALLS OF ROOF.

Nos. 84 and 70.—The Government of India's Serampur coal mine.

On 15th March 1928 coal was being loaded in a depillaring area when a mass of coal, weighing some 5 or 6 tons, burst from the side of a pillar and fell upon the loaders, killing three of them instantly.

On 17th December 1928 a gang of miners was engaged in removing loose coal from the floor of a gallery preparatory to setting up a "cog" when a "bump" occurred and a portion of the roof coal fell on them. Three men were seriously injured and one of them died shortly after.

The coal seam worked at this colliery is 24 feet in thickness and lies at a depth of 450 feet. It is worked on the "pillar and stall" system, and the pillars are very much larger than is usual in Indian mines, *e.g.*, 175 feet square at the place where the second accident occurred. The sandstone roof is exceptionally strong and the pillars can be removed over large areas before collapse takes place. Prior to collapse the weight of the roof overlying these empty spaces is carried by the adjacent pillars, and the leverage which it exerts is so great that what are known as "bumps", accompanied by loud rending noise, occur causing masses of coal to burst from the sides of the pillars. It is difficult to provide against a contingency of this kind, for the "bumps" occur intermittently and with great suddenness.

The Inspector of Mines, No. 1 Circle, wrote to the Colliery Superintendent pointing out that accidents of this type were unusual in former times, and asking if he considered that any modification of the system of work could be made with a view to their prevention. The reply received was as follows:—

"The conditions under which work is being carried out at the present time are entirely different to those which prevailed some years ago, more especially in the district in which the accidents mentioned by you have occurred. The seam at this point is very highly inclined, the roof is not of ordinary texture and pillar cutting operations have been carried out retreating from a large dyke. The exceptional hardness of the roof has made it possible to extract pillars over a greater area than usual, consequently when the roof comes on "weight" it breaks over pillars on the edge of the goaf, crushing them to a considerable distance from the goaf edge. This cannot, however, be discovered until the extraction of the pillars is in progress. When these pillars are being extracted the support under the stone roof has naturally decreased and the roof sinks causing pieces of coal to burst off the sides of the pillars when "bumps" occur. This has been specially noticeable on the dip side and does not happen where the seam is less highly inclined. Furthermore, when the roof starts to "weight" and eventually collapses it appears to do so only over a limited area and the fall is only a limited

thickness. I am of opinion that these "bumps" will continue until a sufficient area of the main roof has broken down thoroughly. The greatest care has been and is still being taken to prevent accidents in the districts referred to and I do not think any change in the present system will improve matters."

No. 39.—The Aldih Coal Company, Limited's Bhutgoria coal mine.

At this mine a coal seam, 8 feet 3 inches thick, dipping at 1 in 7, is worked. In the first working of the seam the full thickness of the coal was removed. The upper portion of the seam, 1' 6" in thickness, consists of inferior coal which in the present market is unsaleable; and, therefore, in the extraction of the pillars it is left unmined and supported by props.

On 2nd June the day shift miners had completed the extraction of a pillar of coal, and timbermen on the night shift, under the supervision of an overman, had withdrawn the props from the depillared area. At a point 27 feet from the outer edge of the goaf a fence had been placed across the loading level. Half an hour later the roof coal fell not only over the whole area of the goaf but also in the loading level up to a distance of 30 feet from the edge of the goaf, and this in spite of the fact that in the loading level the roof coal had been supported by props 4 feet apart.

A tram-line mistry and a labourer had been engaged in removing the fish-plate bolts from one of the tram-lines in the loading level preparatory to the removal of the rails. When they heard sounds indicating that a fall in the goaf was about to occur the labourer retreated but the mistry continued working and was struck and killed instantly by the edge of the falling roof coal. Presumably he thought that as he was so far from the goaf there was no danger.

From the edge of the fall for a distance of 70 feet out-by the roof coal had previously been taken down because it had become unsound, but the roof coal which fell and caused the accident had not been taken down; it had been considered sound, although, as stated above, it had been supported by props.

After the accident the Inspector, No. 1 Circle, with a view to the prevention of a similar accident, suggested:—(a) that the roof coal should be taken down in all loading levels to a distance from the goaf never less than the length of two pillars; and (b) that the rails should be removed from the loading level before the timber is withdrawn from a goaf. The suggestions were accepted.

No. 17.—The Tata Iron and Steel Company, Limited's Jamadoba coal mine.

No. 45.—The Bansdeopur Coal Company, Limited's Bansdeopur coal mine.

At Jamadoba colliery in a seam, 8' 6" in thickness, three miners were at work in a gallery, 10 feet wide and 6½ feet high, when a mass of roof coal, 2 feet thick, fell over an area, 22 feet in length and 10 feet in width; three men were killed instantly.

The reason for leaving the upper part of the seam unworked is that in normal workings the roof coal is sound, whereas the stone above is soft and unsound.

After the accident the Inspector of Mines, No. 1 Circle, examined the cavity and found that on the dip side at B (see plan A) there was a strong cleavage plane, and, running parallel with it, a number of small faults. He at once suspected the presence of disturbed ground, and after examining the galleries near by found that there was an igneous dyke running parallel with the gallery at a distance of some 8 feet.

The manager had inspected the place on the previous day, the day shift overman had inspected on the previous shift and the overman on duty had inspected some two or three hours before the fall took place. They had all been satisfied that the place was safe. The Inspector formed the opinion that the disturbance in the roof might have been detected, but he did not think that the officials could be accused of more than an error of judgment.

At Bansdeopur colliery pillars of coal in a seam, 24 feet thick, were being extracted. A gallery, 16 feet wide and 8 feet high, was being driven on the floor of the seam parallel to and within a few feet of an igneous dyke. Whilst work was going on in this gallery a mass of coal, 8 feet thick, fell without warning over an area, 16 feet in width and 30 feet in length. Two men were killed and two seriously injured.

The manager had inspected and tested the place on the previous day. The Assistant Manager had thoroughly tested the roof about four hours before the accident took place, and the sirdar in charge had inspected only a few minutes before the fall took place. All of these officials considered the place to be safe.

After the coal fell a slip in the roof coal could be seen, and it extended along the west side of the gallery for the full length of the fall. A careful examination of the fallen coal showed that there had been another slip running approximately along the centre of the gallery. These slips were confined to the section of roof coal which fell and their continuation in the lower part of the seam could not be detected at the two ends of the cavity. For this reason it was considered that the supervising staff had not been negligent, and that they were justified in assuming that the roof was safe.

The lesson to be learnt from these two accidents is that where galleries are being driven adjacent and parallel to faults or dykes the presence of slips running parallel to the fault or dyke should be anticipated, and the roof should be adequately supported with timber whether such support appears to be necessary or not.

No. 16.—Sreemati Murala Devi's Madanpur coal mine.

At this mine a seam, 14 feet thick, was being worked and as the shale roof of the seam was not good it had been the practice to drive narrow galleries and to leave 2 or 3 feet of roof coal unworked. Latterly, however, and with a view to economy in cost of working the output of coal had been maintained by widening the galleries and undermining the pillars. In the course of these operations very few supports had been

set, and it is not surprising that a miner was eventually killed and two others injured by a fall of roof.

The place of accident was a gallery, 24 feet wide. Roof coal and stone, 4' 6" in thickness, had fallen over an area, 20 feet in length and 16 feet in width; in other parts of the workings there were similar falls of roof showing that work had been carried on without proper regard for safety.

There was some difficulty in assessing the relative responsibility of those concerned. The owner of the mine is a *purdah* lady. Her husband was accustomed to visit the mine occasionally, and her letters were signed by a representative. Neither of these individuals would admit that he was an agent, as defined in section 3 (a) of the Act. The permanent manager had taken leave and had been dismissed whilst on leave and before the accident took place. During his absence an overman had been acting as manager. It appears that neither the former manager nor the temporary manager had been allowed much real authority.

Criminal proceedings were instituted against the agent and the acting manager, and they were convicted and punished.

The facts in this case are representative of the disregard of safety and proper methods of mining which is apt to follow a depression in the coal trade. A mineowner who cannot find funds to work his mine in a safe and proper manner would be well advised to close the mine until better times come rather than to adopt methods which, if continued, will inevitably bring about a collapse of the workings and the ruin of his enterprise.

FALLS OF SIDE.

No. 110.—Ma Hpon's Muan Chon tin mine.

This accident is a striking example of the unsound mining practices which are not uncommon in the mining of tin by open excavation in the jungles of South Burma.

On the slopes of a hill a stock-work of pegmatite in schist had been exposed by ground sluicing. In order to mine the stock-work a cutting or drain had been driven from B (see plan B) through barren schists until the pegmatite was reached, after which the cutting was opened out in the mining of the stock-work. A second drain had been made at F.

At the time of the accident two miners were working in the sluicing drain at A and B, and another miner was working in the sluicing drain at C, when a mass of ground, weighing about 1½ tons, fell on the latter, killing him instantly and seriously injuring one of the other miners.

The accident was due to bad mining. The side of the excavation was almost vertical and the ground that fell was pegmatite which had been left hanging on the footwall of the vein. The footwall was clearly defined and the pegmatite should have been stripped off it from the top downwards.

The owner of the mine is a Burmese lady. The injured man was her son and the deceased and the two other miners employed were her nephews. The manager of the mine was her son. In view of these facts it was decided not to institute criminal proceedings for contraven-

tion of the regulations requiring the sides of open excavations to be maintained in a safe condition.

MISCELLANEOUS ON SURFACE.

No. 212.—*The Burrakur Coal Company, Limited's Mudidih coal mine.*

At Mudidih colliery in the Jharia coalfield the coal seams which have been worked are Nos. 15, 14, 13, 12 and 11 seams, but at present Nos. 14, 13 and 12 only are being worked. A general section of the strata between the top of 15 seam and the bottom of 13 seam is as follows:—

	Feet.
<i>15 Seam, Top Section—</i>	
Coal	7
Strata	14
<i>15 Seam, Bottom Section—</i>	
Coal	9
Strata	170
<i>14 Seam—</i>	
Coal	25
Middle stone	5
<i>13 Seam—</i>	
Coal	17

The area concerned in this case is that worked from Nos. 1 and 6 pits (see plans C and D) which are, respectively, 197 and 222 feet deep to the roof of 14 seam. The area is some 2,900 feet on the strike by 1,200 feet on the dip. To the dip of the area there is a fault which has thrown up the strata about 100 feet vertically so that No. 12 seam has been brought up to the level of No. 13 seam, and an area of workings in No. 12 seam is now being developed beyond the fault and some 500 feet to the dip of No. 1 pit.

Within the area the greater part of 15 seam has been worked out and the first working of Nos. 14 and 13 seams has been almost completed, *i.e.*, galleries 12 to 15 feet wide have been driven with centres 60 to 80 feet apart forming rectangular pillars 45 to 68 feet square. In the galleries in 14 seam the full thickness (22 to 25 feet) of the coal seam has been worked, but in 13 seam the thickness of coal worked has been about 7 or 8 feet only, or less than half the full thickness of the seam. The workings of 14 seam are separated from the workings of 13 seam beneath them by layers of inferior coal and stone, 5 feet thick, and the galleries and pillars in 13 seam have not been driven vertically below the corresponding galleries and pillars in 14 seam.

For some considerable time prior to the accident no work had been done in No. 13 seam; pillars were being extracted in four separate areas in 14 seam. Two of these depillaring areas are on the west and are known, respectively, as the North and South Goaves; they are served by No. 1 pit which is fitted with cages for the purpose. The two other depillaring areas are known as the East and West (or South) Goaves; they are served by No. 6 pit which also is fitted with cages. In its journey from the North Goaf to No. 1 pit the coal passed down a self-acting incline referred to hereafter as the New Jig.

Mr. G. C. Leach was the agent of the colliery and up to 22nd March it had been managed by Mr. D. Blair, and after that date by Mr. A.

Pearce. Mr. A. Campbell was the Assistant Manager and the subordinate staff employed at No. 1 pit comprised an overman, two deputy overmen and nine sirdars.

The limits of the areas under which pillars were to be extracted had previously been marked on a plan by the agent, and copies of this plan had been supplied to the manager and superior supervising officials. At the West Goaf the limit was 175 feet from a point in the workings immediately below the nearest part of a miners' village (see plan A) situated close to the manager's office, and built some 12 years ago. Extraction was, however, still 60 feet short of this limit. Thirteen pillars had been extracted, and on 2nd April the first subsidence of the surface over the goaf had taken place. Prior to this there had been some anxiety as to the stability of the pillars to the rise of the West Goaf. These pillars are to the east of the New Jig and beneath the outskirts of the miners' village. The possibility of danger to the inhabitants of the village had occurred to at least one official—Deputy overman Jehal Kol—who on the night of 2nd April, when the expected surface subsidence over the West Goaf was due, turned out the inhabitants of the nearest part (W block, known as Khilan dhowrah) of the village. These persons spent the night sleeping on the adjacent platforms of Sam bazar, but re-occupied the building next day after the surface subsidence over the West Goaf had taken place.

On 4th and 5th April overman Scott reported that "the movement two pillar lengths east of New Jig still continues", and on 6th April the manager, accompanied by the assistant manager, inspected the pillars in 14 seam to the rise of the West Goaf. In three places the partition between 14 and 13 seams had broken down. In one of these places the break-through had occurred some years ago, but in the other two places the break-throughs had occurred recently. He found the pillars crushed, but not severely. He heard no movement or sound of pieces of coal falling from the pillars.

On 7th April, deputy overmen Jehal Kol and S. N. Neogi reported in writing that the pillars were "bad", but as they had made similar reports on 4th, 5th, 6th and 7th April and were accustomed to report verbally and at once when anything was seriously wrong, their superiors did not attach any particular significance to their written reports on 7th April.

On Sunday, 8th April, no miners went underground, and the subordinate staff of the depillaring areas in Nos. 1 and 6 pits made no underground inspections. At 5 p.m. on that day, however, the sirdar in charge of 12 seam workings from No. 1 pit, under instructions from overman Scott, inspected the 14 seam workings and found all quiet east of the New Jig. At 10 p.m. the sirdar who relieved this man noticed nothing wrong on his way to the 12 seam district, and he and a pump khalassie were in the latter district when at about 4 a.m. on 9th April their lamps were blown out by the rush of air caused by the collapse of pillars east of the New Jig. After relighting their lamps these men went to No. 1 pit, but, finding the shaft signals out of order, they ascended at No. 3 pit, and on their way heard loud noises of falling stone and coal east of New Jig.

The surface subsidence is said to have occurred at about 4-30 A.M. It involved the eastern half of the miners' village referred to above. The estimated number of persons in the whole of the dwellings was about 400. Three lines of "dhowrahs" (barracks) containing forty separate rooms in which some 200 persons were lying asleep subsided some ten feet vertically. Such portions of these buildings as were on the edge of the subsidence subsided unevenly and were wrecked, and in them six persons (including four children) were killed by suffocation, five persons were severely injured and forty were slightly injured.

As shown on the plan the average dimensions of the pillars in 14 seam were 52 feet by 61 feet. If it is assumed that the average width of the galleries was 15 feet the percentage of coal extracted was no more than 38. The galleries, however, were lofty (22 to 25 feet) and only five feet beneath them there were galleries and pillars in 13 seam of approximately the same horizontal dimensions, but lesser height (7 feet). The pillars and galleries in the lower seam were not vertically coincident with the pillars and galleries in the upper seam. The continuity of the strata is disturbed by faults and the coal seams are traversed by pronounced joints which form planes of weakness. The extraction of pillars to the dip of this area (*i.e.*, in the West Goaf) increased the weight of overlying rock carried by the pillars within the area, and crushed the pillars to such an extent that they became unable to carry the weight and, therefore, eventually collapsed. The surface effect of this collapse was enhanced by the fact that 15 seam had already been extracted beneath the same area. The miners' village was close to the outcrop of 15 seam and beneath it there were small pillars of coal in 15 seam which, when equilibrium was upset by the collapse in 14 and 13 seams, in their turn collapsed and magnified the surface subsidence.

The sequence of events prior to the accident as disclosed in the daily reports and the evidence recorded afterwards gives the impression that an eventual collapse might have been foreseen by the superior officials. They appear, however, to have considered that as the workings were shallow the pillars were of so large a size that they would safely withstand the super-incumbent weight. They were encouraged in this view by the fact that the pillars withstood successfully the additional weight which they had to carry prior to the surface subsidence over the West Goaf which took place on 2nd April. There was reason to assume that after this subsidence matters would improve, and it appears from the written reports that there was improvement until 6th April. On that date the manager (Mr. Pearce) who at the time of the accident had been in charge of the colliery for no more than eighteen days, accompanied by the assistant manager (Mr. Campbell), made a thorough examination of the affected area and they have stated in evidence that they then thought conditions to be better than they were on 3rd April when they had made a previous inspection. Notwithstanding this, however, Mr. Pearce on 6th April reported in writing to the agent that "some of the pillars in 14 seam seem to be sinking into 13 seam and the floor of 14 seam breaking up in many places". On 8th April both he and Mr. Campbell had seen and initialled the deputy overmen's unfavourable reports. Both these officials are men of long experience of mining both in India and in England. They appear to have carried out their duties with proper diligence, but in this case their judgment was faulty and

the manager displayed a lack of initiative. The fact that he had been manager for three weeks only should, however, be remembered.

Mr. G. C. Leach, agent, had drawn up the scheme of depillarment in 14 seam and had given written orders with a marked plan defining the areas to be goaved. In the case of the West Goaf the area was nowhere nearer than 175 feet horizontally from the village. He had carried out similar operations before with more or less success at this and other collieries. He was fully aware of the risks, and had provided an elaborate organisation to supervise the work.

The Local Government directed the Additional Deputy Commissioner, Dhanbad, to hold an inquiry under section 21 of the Indian Mines Act, 1923, and appointed as assessors the Chief Inspector and Mr. J. B. Wardlaw, agent for the collieries of the Bengal Coal Company, Limited. Their report was subsequently published and the following are quotations therefrom:—

“ The ultimate responsibility must, therefore, rest with the decision to do pillar extraction in 14 seam. * * * * * The present available data are insufficient on the question of extent of surface subsidence in relation to the area and depth of underground workings: on the question of “ draw ” or the extension of effect outside the surface area vertically above the excavated area: on the amount of weight or pressure at which the breaking point would be reached, etc. This lack of definite data should entail excessive caution in regard to surface buildings and super-structures.

Beyond this error or miscalculation we do not think Mr. Leach can be blamed for not having had the dhowrahs vacated immediately before the collapse. He had provided an elaborate organization, a numerous staff, who were charged with the responsibility of working the mine under his general supervision. We feel that he was honestly but not intelligently served. We have no doubt that if he had been informed promptly, accurately and in detail of the progress of events in a connected way and not merely in isolated and haphazard written reports, or if he had himself realized the general or total situation he would have taken such action as would have prevented loss of life.* * * * *

There can be hardly any doubt that his (Mr. Pearce, the manager) failure to have the dhowrahs vacated must have been due to insufficient acquaintance with the conditions in the colliery and that he had failed to grasp fully the position of the workings in respect of surface buildings. It is to be remembered that he had been only 18 days in charge of the colliery when the subsidence occurred. The omission to have the dhowrahs vacated was a grievous error of judgment on his part.

Mr. Campbell's evidence is lacking in candour. He had long experience of pillar extraction and had been assistant manager of the colliery for two years. He had a new manager who had to rely more or less implicitly on the information given by him. His moral as distinct from formal responsibility was greater. He had all the evidence before him of the imminence of an extensive collapse of the workings. He ignored clear indications underground and the written reports of the subordinate staff.* * * * *

As the superior staff were fully aware of the conditions we do not think that the overmen and sardars can be held responsible for what

occurred. As discussed above, the men's contention appears to be right that there were no such standing verbal orders as are alleged and that they did not go down on Sunday, the 8th, simply for want of definite orders. They also regularly submitted the statutory daily reports of underground inspections and mentioned conditions as it appeared to them from time to time.

We agree with the consensus of expert opinion that—

(1) The powers possessed by the Chief Inspector of Mines under section 19 of the Indian Mines Act are comprehensive enough and it is not necessary to give him further discretionary powers in respect of pillar extraction.

(2) The wording of Regulation 78 has been left deliberately vague and not further defined in order not to hamper the discretion of the mining man to ascertain the complete conditions of a mine and to provide all possible safeguards or remedies for unfavourable circumstances which may exist in the layout or scheme of pillar extraction and thus to minimize risks.

A large amount of discretion is always necessary. The question is whether that discretion has been well used in the past or that obvious precautions have been so much disregarded that some clearer definition of the very general terms of Regulation 78 is not necessary. This could possibly be achieved without overriding the objection of the industry to the alteration of the terms of Regulation 78 by the issue of an official note or authoritative comment indicating certain obvious dangers and certain obvious precautions, the omission of which would raise a natural presumption that the provisions of Regulation 78 had been violated.

While such illustrations would not be a part of law, they would indicate the spirit of the law for the guidance of the industry as well as for courts should a prosecution under Regulation 78 ever be instituted. For instance, the non-vacating of inhabited buildings on surface over workings in the proximity of a goaf and the collapse of adjacent workings which involves or is likely to involve inhabited surface buildings might be regarded as a presumptive breach of Regulation 78.

(3) The management are not ordinarily required to notify pillar extraction to the Mines Department. They notify in special circumstances when they extract near railways, roads and public works. Otherwise, even in cases of risk and apprehended danger they are not required to notify pillar extraction. A provision may usefully be enacted which will require them to notify pillar extraction in all cases. This would enable the Mines Department to exercise a closer control over depillaring operations.

(4) The conditions reached in the coalfield are such that similar collapses are not at all unlikely in the future. The extent of loss of life is often a matter of chance. Under these circumstances, we recommend a continuation of the work of the Subsidence Committee and the collation of data bearing on collapses and underground fires in Indian mines.

(5) Lastly, we recommend a greater vigilance on the part of the industry in the case of pillar extraction operations in the vicinity of inhabited buildings. Mine-owners and managers should themselves try

to get into closer touch with the Mines Department for possible advice in cases in which they feel that their own judgments may prove faulty or uncertain”.

EXPLOSIVES.

No. 141.—The East Indian Coal Company, Limited's Bararee coal mine.

This accident by which one person was killed and three injured was due to an explosion which took place in a steam heated building used for drying country gunpowder. At the time of the explosion no one was in the immediate vicinity of the building and its double doors had been locked for some two hours. It appears reasonably certain, therefore, that the explosion was due to spontaneous ignition of the contents of the building.

The building is said to have contained some 60 lb. of country gunpowder, 12 lb. of compressed gunpowder and 7 lb. of dynamite, the latter having been placed on a wooden shelf separately from the gunpowder which was on an iron plate insulated by firebrick and sand from steam pipes which warmed the building.

As the ignition temperature of gunpowder exceeds 500° F. the possibility of spontaneous ignition of the gunpowder may be ruled out. The ignition temperature of dynamite is about 360° F., but it is by no means necessary for the temperature to reach the igniting point before an explosion can occur, for at temperatures far below the igniting point chemical decomposition sets in and sufficient heat is generated to cause spontaneous ignition. The critical temperature of nitro-glycerine is said to be in the neighbourhood of 122° F. There appears to be little doubt, therefore, that in this case the initial explosion was due to spontaneous ignition of the dynamite contained in the building.

Where at any mine it is the practice to dry or store gunpowder in an artificially heated building written orders should be issued prohibiting the keeping of any explosive other than gunpowder in the building. It is regrettable that in this particular case the danger had been overlooked.

As within recent times many steam heated buildings have been built at collieries for the storage of gunpowder a warning circular was sent to owners, agents and managers of collieries.

IRRUPTION OF WATER.

No. 154.—The Burrakur Coal Company, Limited's Bhaskajuri coal mine.

At this colliery two coal seams, 100 feet apart, have been worked. The lower seam—known as the Poniat seam—is 16 feet in thickness, (see plan E) and the upper (or Koithi) seam 12 feet in thickness. The strata are inclined at 1 in 5·4. There are five shafts to the top seam, and three of them have been sunk to the bottom seam. The main shaft—No. 2 pit—is 420 feet deep to the top of the bottom seam, and the secondary shaft—No. 1 pit—is 340 feet deep to the top of the bottom seam.

The bottom seam being of better quality was worked first, but the workings were abandoned in 1916 owing to a collapse of pillars followed

by an outbreak of spontaneous combustion. At the time of the abandonment, and purely as a measure of isolation, the three shafts were filled with boiler ashes up to the level of the top seam inset. An outlet for water which might accumulate in the bottom seam was provided by leaving in place in No. 2 shaft a range of pipes, 9" in diameter, which had formerly been used as a delivery pipe for the pumps in the bottom seam.

Since 1916 underground work had been confined to the top seam. The first working of the coal lying to the rise of No. 2 pit had been completed and large areas of the pillars so formed had been extracted. In this process of extraction access to the barrier of coal separating the workings from the workings of an adjacent colliery at a higher level had been cut off except on the west. The whole of the recent development of workings had been to the dip and these had been extended to a vertical depth about 110 feet greater than the depth of No. 2 pit.

Between the workings of Bhaskajuri colliery and the outcrops of the seams lie the workings of Joyramdanga mine—a large colliery, the workings of which extend in the strike direction for a distance of some 7,000 feet. In 1927-28 fires broke out in the workings of the lower seam at Joyramdanga colliery, and these fires eventually got beyond control. It was decided to attempt to put out the fires by flooding, and from September to 20th December 1928 large quantities of water were permitted to flow or were pumped into the workings.

The flooding of Joyramdanga colliery would undoubtedly cause a certain amount of water to percolate through the unworked barriers of coal separating those workings from the workings of Bhaskajuri colliery. As a matter of fact, however, there was very little increase in the amount of water pumped from Bhaskajuri colliery. A small percolation was, however, perceptible along the western barrier in the top seam.

At 6 A.M. on 20th December an irruption of water into the workings of the top seam took place at Bhaskajuri colliery. The water came from the bottom seam, *viâ* No. 2 shaft, and with such violence that the cage was lifted up for several feet. The cage attendants had no great difficulty in effecting their escape into the rise workings, but the pump attendant, who was in the pump chamber near by, was overwhelmed and drowned. The water flooded the shaft level and ran down into the dip workings where the majority of the 102 persons underground at the time were at work. Of these persons in the dip workings six were drowned. The others with more or less difficulty succeeded in making their way into the rise workings and were raised to the surface *viâ* Nos. 1 and 4 pits.

From the fact that after the irruption of water into the workings of the top seam at Bhaskajuri colliery the level of the water in the workings of Joyramdanga colliery did not fall it was evident that the barrier in the bottom seam had not broken down. The most probable explanation of the irruption is that percolation through the barrier in the bottom seam increased to an extent beyond the capacity of the water pipe in No. 2 shaft, and that, therefore, water accumulated in the bottom seam workings until its pressure was sufficient to force out the filling of ashes which had been placed there in 1916.

The questions arising out of this accident are of such importance that the Local Government thought fit to appoint the District Magistrate to hold a special inquiry, under Section 21 of the Indian Mines Act, 1923, into its cause and circumstances. Dr. D. Penman and Mr. J. Mackie were appointed to act as assessors in holding the inquiry.

The following is quoted from the report subsequently submitted by the Court:—

“ So far as we can see there is no regulation which clearly covers this accident. There are two regulations however which have an indirect bearing on it. Regulation 76 deals with the requirements regarding the thickness of barrier between two properties. This regulation was published in 1926 and we are of opinion that as a result of this regulation it should have occurred to the managements of both Bhaskajuri and Joyramdanga collieries that a joint survey was advisable particularly as regards the workings which after 1926 continued to be made in Bhaskajuri along the western boundary of the top seam. Apparently these workings in Bhaskajuri colliery had been made according to the line of the Bhaskajuri colliery only, without consideration of whether the boundary line assumed by the management of Joyramdanga colliery was the same. !

There is, however, this excuse to be given for the management of the Bhaskajuri colliery—that the line of their workings followed more or less accurately the line of the boundary pillars on the surface. The pillars are said to have been erected by a former official of the Burrakur Coal Company who own the Bhaskajuri colliery, and these pillars have not only been accepted in the District Survey and Settlement Operations of 1917-19, as showing the boundary between the mouzas of Joyramdanga and Bhaskajuri, but were marked on the old plans of Joyramdanga in addition to the boundary accepted by the management of Joyramdanga and up to which workings had proceeded. For current use, however, a trace had been made on which these boundary pillars were not shown. The Mines Department survey in December then showed nothing more than could have been found by a comparison of the plans of Bhaskajuri and Joyramdanga. The difference in the boundaries of the two properties according to their respective maps—is a difference of relay of an earlier boundary—not a difference in the boundary itself.

Whether Regulation 76 enjoins upon the management of two adjoining collieries to ascertain whether they are working to a common boundary or not is open to doubt: but that they should do so as a measure of self-protection even without the compulsion of a regulation is indisputable. The regulation in question states that in the case of a disputed boundary there shall be no working to within 25 feet of the boundary claimed by the owner of the adjacent mine. This assumes that the claims of both owners are known to the other which may or may not be the case: and it is possible that both managements may be working without being aware of the fact that there is a discrepancy between the boundaries although in a district where a record of rights has been prepared any difference between the boundary of the mouza as shown on the settlement maps and the boundary as shown on the mines plans should suggest the possibility of the existence of a disputed boundary. Most of the colliery boundaries are revenue boundaries

whether determined by the *thak*, Revenue survey or district and settlement operations and in the case of a dispute, or suspected discrepancy proceeding under section 44 of the Survey Act for the relay of a previously determined boundary, *i.e.*, Revenue Survey or District settlement, would probably clear up the points at issue between the two managements, and would be more effective than a joint survey as mentioned by the Chief Inspector of Mines, because in default of agreement between the two managements the Chief Inspector has the right under paragraph 2 of section 76 to prohibit the working up to 50 feet from the boundary, and enforcement of this right would probably bring any recalcitrant owner speedily to order.

These considerations apply not only to new properties but also to those which already exist, and we suggest that it is the duty of the managements of adjoining collieries to ascertain as accurately as possible whether they are complying in full with the requirements of the regulation. Because it would appear that surface and underground boundaries are not always the same, if the colliery plans had to show the district settlement boundary in addition to the boundary claimed, it would be possible for the Inspecting officers of the Department of Mines to see at once whether disputes were likely to arise over the underground boundaries—and action under section 76 (2) could be taken.

Regulation 81 may also, we think, be held to have some bearing on the accident. Part of this regulation requires that reasonable provision should be made to save a mine from inundation of water from a neighbouring mine and to ascertain, control, or remedy any such inundation which may occur. A technical point arises in the consideration of this regulation and that is as to whether the inundation which caused the accident at Bhaskajuri colliery was from a neighbouring mine. Primarily there was an inrush of water from the bottom seam of the same mine but this inrush was promoted and was directly due, we believe, to the heavy percolation of water from Joyramdanga colliery and therefore the actual inundation was directly due to water finding its way from a neighbouring mine. There is, however, a technical difficulty involved and we would suggest that this matter should be considered by the Chief Inspector of Mines and the regulation either so modified that it includes such an occurrence as happened at Bhaskajuri colliery or that a new regulation be introduced which covers the case in point. In this connection we may mention that there might easily be a case of heavy percolation from the neighbouring mine into part of the seam of another colliery which had been isolated because of fire. If that was so the district on fire might become filled up with water unknown to the management until the fire stoppings gave way causing an inundation of the mine with possible loss of life.

It is clear from the evidence taken at the enquiry that the management of Bhaskajuri mine did not apprehend any danger from the bottom seam. We think, however, that a consideration of the conditions in the two mines might have suggested that there might be even greater danger of heavy percolation of water through the barrier of the bottom seam than through the barrier of the top seam. We ourselves made an inspection of the top seam barrier while the west side of Joyramdanga colliery was still full of water and the amount of percolation was

not, in our opinion, such as to cause serious concern. As nothing was known of the strength of the barrier of the bottom seam while it was possible to inspect the barrier of the top seam we think that attention should have been directed primarily to the bottom seam barrier. Since nothing was known of its actual strength no one could tell whether there might not be a sudden inrush through the top corner of the barrier when the water rose to that point. We consider that that was undoubtedly also a place of likely danger and that the possibility of an outbreak of water from the bottom seam should have been given at least equal attention to the possibility of a breakdown of the barrier in the top seam.

We are surprised at the confession of the manager of Bhaskajuri colliery that he did not know that water was coming up from the bottom seam to the top seam in No. 2 shaft. Apparently although that fact was unknown to the manager it was known to the Agent, the Mechanical Engineer in charge of the pumps and the overman. In our opinion danger from the bottom seam was indicated by the fact that the water in Joyramdanga colliery was not rising at a rate consistent with the amount of water being pumped into these workings and by the fact that the small amount of percolation through the barrier into the Bhaskajuri top seam workings did not account for the apparent loss of water from Joyramdanga. If the management of Bhaskajuri colliery had appreciated the extent of the feeder coming up No. 2 shaft from the bottom seam and had made regular and reliable observations of the quantity of water flowing therefrom it is possible that the danger arising from this source might have been apprehended.

At the same time we wish to express the view that there are certain important extenuating considerations. In the opinion of the Agent of the colliery the ash plug was not forced up by static pressure but by a sudden inrush of water. He also held that any excess of water pressure would have found relief through fissures and cracks in the broken strata between the two seams. We do not agree with these opinions but they no doubt influenced the agent's views on the conditions of the mine before the accident.

He said in evidence that he did not fear an inundation from the bottom seam and it may be that the fact that the ash plug had held for twelve years operated to prevent an apprehension of a danger of the ash plug suddenly giving way.

We consider that where a lower seam has been abandoned and there is a possibility of that seam becoming filled with water a properly designed and constructed dam should be built in the shaft capable of sustaining the maximum head to which the water can attain. We do not think that any reliance can be placed on an ash plug which may be subjected to heavy water pressure. A very little excess of pressure above the actual weight of the ash plug might be sufficient to push it out. It should be pointed out, however, that the ash plug in this instance was presumably not intended by the management to resist water pressure but merely to seal off the bottom seam against fire.

We desire to draw attention to Regulation 75 which requires that adequate precautions should be taken against an irruption of water from an upper seam to a lower seam. We consider that this regulation

should be amplified so as to require also adequate precautions against an inrush of water from a lower seam to an upper seam as was the case in the accident under discussion.

We consider further that when the management of one colliery adjoining another colliery propose to flood any part of the workings of their colliery which is to the rise of another colliery the fact should be intimated in writing to the Chief Inspector of Mines and also to the management of the other colliery."

It may be mentioned that the difference between the common boundary as shown on the plans of Bhaskajuri and Joyramdanga collieries was obscured by the plans being on different scales. The Agent of Joyramdanga colliery has since been asked to have the existing plans—which are on the scale of 1 inch to 80 feet—redrawn on the regulation scale (1 inch = 100 feet).

As the owners of Joyramdanga colliery propose to resume their efforts to fill the mine with water the owners of Bhaskajuri colliery have thought fit to discontinue underground operations.

HAULAGE.

No. 170.—The New Manbhum Coal Company, Limited's Gaslitan coal mine.

Two trolley-men were pushing four loaded tubs along an underground tram-line with a gradient of 1 in 50 in favour of the load. They had left behind them in a siding twenty-five other loaded tubs, but had failed to secure them properly. One of these tubs ran away from the siding and collided with the tubs which they were pushing. One of the trammers was injured and, tetanus supervening, died a week later.

It had apparently been the custom to put dirt or stones under the wheels of the tubs to keep them stationary in the siding. The practice is, I fear, only too common; it should be sternly discouraged. At the loading points sufficient sprags should be kept to hold in position the maximum number of loaded tubs, and no reliance should be placed on the braking effect of substances—such as dirt or stones—placed in front of the wheels.

UNDERGROUND MACHINERY.

No. 184.—The Dhemo Main Collieries, Limited's Dhemo Main coal mine.

At this mine a geared pump erected under the supervision of the underground engine-wright was being tested. In the course of the test the engine-wright attempted to climb on to the seating of the pump, but slipped and, his clothes becoming entangled in the machinery, was fatally injured.

Accidents of this kind would be unlikely to occur if managers would insist on persons who work near machinery wearing tight fitting clothes.

Section IV.—Prosecutions and additions to the Act.

PROSECUTIONS.

During the year judgments in prosecution were given as follows:—

NOTE.—The reference to Regulations in this section is to the Indian Coal Mines Regulations, 1926, or the Indian Metalliferous Mines Regulations, 1926. The Rules referred to are those framed by the Local Government concerned under section 30 of the Act.

The owner and manager of the Bhurangya Coal Company's Bhurangya colliery were prosecuted under Rules 12, 14 and 14-A for failing to give notice of mining operations under a public road. The owner was fined Rs. 20 and the agent Rs. 40, in default simple imprisonment for one week.

The owner and manager of the New Suratara Coal Company (1920), Limited's New Suratara colliery were prosecuted under section 23 (a) for allowing persons to work seven days in a week. They were fined Rs. 20 each, in default simple imprisonment for two days.

The manager and clerk of Messrs. The Khas Kenda Colliery, Limited's Khas Kenda colliery were prosecuted under sections 28 and 35 (d) of the Act, and Regulation 149 for failing to maintain properly the register of the hours of work of persons employed in the mine and for falsifying the register. The manager and clerk were fined Rs. 30 and Rs. 10, respectively, or in default simple imprisonment for ten days.

For contravention of the same sections of the Act the contractor, manager and two clerks of the Bengal Coal Company, Limited's Chanch colliery were prosecuted. The contractor and manager were fined Rs. 40 each and the clerks Rs. 20 each.

The owner and manager of Khas Sitalpur Colliery Company's Khas Sitalpur colliery were prosecuted under Regulation 141 for failing to keep the return wheel of a surface endless haulage securely fenced, guarded or cased, as a result of which a workman was fatally injured. They were fined Rs. 100 each, in default rigorous imprisonment for two months.

The agent and manager of Sreemati Maheswari Devi's Chak Tulsibad colliery were prosecuted under Regulations 15 (4), 137 and 141 for failing to maintain the mine plan up to date, for failing to keep the top of a shaft properly fenced and for failing to keep the moving parts of a winding engine properly fenced. They were fined Rs. 20 each, in default simple imprisonment for a fortnight.

The owner of Ramjatan Singh's Pandedih colliery was prosecuted under Regulations 23 and 137 for working the mine without a qualified manager and for failing to fence the inclines and quarry in a proper manner. He was fined Rs. 30, in default simple imprisonment for one week.

The owner of Jivan Ganji's Pinalgoria colliery was prosecuted under section 15 of the Act, read with Regulation 23, for failing to appoint a qualified manager. He was fined Rs. 8, in default simple imprisonment for one week.

For contravention of the same Regulation the agent of Pragji Valabji Doshi's New Chasnala colliery, and the owner of the West Raneedih Colliery Company's West Raneedih colliery were fined Rs. 10 and Rs. 8, respectively, in default simple imprisonment for one week and ten days, respectively.

The agent and manager of the North Busra Coal Company's Pandebra colliery were prosecuted under section 26 of the Act for employing a child. They were fined Rs. 10 each, in default simple imprisonment for one week.

For contravention of the same section of the Act the owner of Lala Bishambher Nath Budhoolal and Company's Upper Ghorawari colliery was prosecuted on two occasions. He was fined Rs. 20 on one occasion and Rs. 30 on the other.

The owner and manager of Charu Chandra Mitra's Chitting Buru mine were prosecuted under Regulation 43 (1) and Rules 9 and 19 for failing to maintain a report book, a register of work persons and copies of the Indian Mines Act, 1923, and rules made by the Local Government. The owner was fined Rs. 10. The manager was acquitted.

The owner and manager of the Goenka Coal Company's South Kenda colliery were prosecuted under Regulation 76 (1) for mining within 25 feet of the boundary. They were fined Rs. 15 each, in default simple imprisonment for a fortnight.

For contravention of the same regulation the agent and manager of the Commercial Colliery Company's Tisra colliery were prosecuted. The manager was fined Rs. 12, in default to undergo simple imprisonment for one day; the agent was warned.

The owners (seven) of Messrs. Jankidas and Sons and others' South Kalikapur colliery were prosecuted under Rules 18 and 17 for failing to have the top or entrance of every opening into the mine fenced by a structure of a permanent character after the workings of the mine had been closed, and for failing to maintain fencing round subsidences caused by mining operations. Four of the owners were fined Rs. 15 each and the others Rs. 10 each.

The manager of Messrs. Kanga and Company's Alkusa and Kiska collieries was prosecuted under Regulations 58 (h), 141 and Rule 17 for not keeping the protection boards at the bottom of the pits in repair, for not fencing the haulage engine at an incline and for not fencing dangerous subsidised areas on the surface. He was fined Rs. 25.

The owner and manager of Umedbhai Patel's Kalimati colliery were prosecuted under Regulation 69 for failing to make and keep secure the sides of open workings. They were fined Rs. 10 each, in default simple imprisonment for one week.

The owners (two) and manager of Messrs. B. M. Ganeriwalla and Company's Palasthali colliery were prosecuted under Regulation 15, read with Rule 25 and Regulations 25 and 26, for failing to keep a plan of the workings at the mine, for not appointing in writing competent persons, and for failing to maintain the sides of an incline in a safe condition. The owners were fined Rs. 100 each. The manager was acquitted.

The owner and manager of the East Nandi Coal Company, Limited's East Nandi colliery were prosecuted under Regulations 58 (c), 67 and 141 for not providing an adequate brake to a winding engine, for not securing the roof of a travelling road and for not fencing the moving parts of a winding engine. They were fined Rs. 10 each, in default simple imprisonment for one week.

The owner of Messrs. Sarat Kamini Coal Company's Egarcoor colliery was prosecuted under Rule 18 for failing to erect permanent fencing round abandoned inclines. He was fined Rs. 3, in default simple imprisonment for three days. |

The owner and manager of Ramgopal Shewratan Mohta's Kohinor colliery were prosecuted under Regulations 139 and 146, read with sections 16 and 39 of the Act, for omitting to maintain properly the fences of disused galleries. The owner was acquitted. The manager was fined Rs. 200, it being a second offence.

Two miners of the North Burrakur Coal Company, Limited's Lodna colliery were prosecuted under Regulations 82 and 84 for robbing coal from the sides of pillars. They were sentenced to pay a fine of Rs. 50 each, in default to undergo rigorous imprisonment for one month.

Five miners of the Burrakur Coal Company, Limited's Loyabad colliery were prosecuted for the same offence. Three were fined Rs. 30 each, in default to undergo simple imprisonment for 15 days; the others could not be traced and the case against them was dropped.

For contravention of the same Regulations three miners of the Eastern Coal Company, Limited's Amlabad colliery were prosecuted. Two were sentenced to rigorous imprisonment for 21 days and one was acquitted.

The contractor and manager of Messrs. The Bokaro and Ramgarh Limited's Dhori colliery were prosecuted under Rule 15 for neither making safe an excavation which was dangerous nor keeping it securely fenced. They were fined Rs. 500 each, in default simple imprisonment for three months. The judgment was confirmed on appeal.

The owner of Jagannath Marwari's Mugma mine was prosecuted under Regulations 38 and 40 for failing to slope, step or otherwise make secure the sides of open workings. He was fined Rs. 20, in default simple imprisonment for one week.

Two overmen of the Aldih Coal Company, Limited's Bhutgoria colliery were prosecuted under Regulations 67 and 139 for failing to maintain working places in a secure condition and for failing to fence a goaf. They were fined Rs. 25 each, in default simple imprisonment for ten days.

The agents (two), the late manager and the temporary manager of Srimati Murala Devi's Madanpur colliery were prosecuted under Regulation 67 for failing to keep the roofs and sides of working places secure, as a result of which a fatal accident occurred. One of the agents and the temporary manager were fined Rs. 50 each, in default simple imprisonment for one month.

The manager and overman of the Damagurria Coal Company, Limited's Damagurria colliery were prosecuted under Regulations 67 and 69 and Special Rule 41 for failing to make and keep secure the sides of open workings, as a result of which a fall of side occurred and three persons lost their lives. The manager was fined Rs. 60, and the overman Rs. 100, in default rigorous imprisonment for sixty days and three months, respectively. |

The manager and sirdar of Messrs. H. Verma and M. Kanhaiyalal Limited's Junnerdeo No. 2 colliery were prosecuted under Regulations 67 and 69 for failing to make and keep secure the roof and sides of working places with the result that a fatal accident occurred. They were each fined Rs. 25.

The owner and manager of the Krishna Coal Company's Searsole colliery were prosecuted for disobeying an order under section 19 (2) of the Act and violating Regulations 138 and 15 by failing to erect gates or permanent fences at the entrance of an incline, and for failing to keep a surface plan on the same scale as the plan of the mine. The manager was fined Rs. 100, or in default to undergo simple imprisonment for one month and the case against the owner was dropped.

The owner of W. C. Bhattacharjee's Pandedih colliery was prosecuted under Regulation 17 for failure to submit a copy of the plan of an abandoned mine. The case was dropped on compassionate grounds.

Forty-four prosecutions were instituted for failure to submit annual and monthly returns within the prescribed time. In thirty-one cases fines aggregating Rs. 614 were imposed; the other cases were dropped on various grounds.

Information was received of the following:—

The Engineer of the East Indian Coal Company, Limited's Bararee colliery was prosecuted under Regulation 169 of the Indian Boilers Regulations, 1924, for failing to have a boiler effectively disconnected before allowing persons to enter it with the result that three persons were fatally scalded. He was fined Rs. 100, in default simple imprisonment for one month.

Information was received of the following prosecutions instituted by mine officials against subordinates:—

The manager of the Aldih Coal Company, Limited's Bhutgoria colliery prosecuted a miner under Regulations 84 and 148 for working in a fenced area. He was fined Rs. 30, in default simple imprisonment for two weeks.

The manager of the Standard Coal Company, Limited's Benahir colliery prosecuted a shot-firer under Regulation 117 for not making an examination of a place after blasting and not taking precautions to prevent persons entering the place until he had done so. He was sentenced to six months' rigorous imprisonment.

The manager of the Niga Coal Syndicate's Satpukuria Ghagarburi colliery prosecuted a lampman under Regulation 127 (a) for issuing safety lamps with defective gauzes to underground workmen. He was fined Rs. 10, in default simple imprisonment for one week.

The manager of the Burma Government, Public Works Department's Mokpalin quarry prosecuted two drillers under Regulation 82 for attempting to deepen an old shot-hole with the result that an accident occurred and one of the accused was injured. They were fined Rs. 5 each.

The manager of the Equitable Coal Company, Limited's Bejdih colliery prosecuted a workman under section 40 of the Act for interfering with a winding engine, thereby causing an accident. The case was dropped as the accused could not be traced.

The manager of the same Company's Dishergarh West colliery prosecuted a signalman for causing through negligence in the performance of his duties an accident in which two men lost their lives. He was fined Rs. 100, in default simple imprisonment for two months.

For contravention of the same regulation the manager of the Raneegunge Coal Association, Limited's Kustore colliery prosecuted a signalman; the man was acquitted.

The manager of the Dhemu Main Collieries, Limited's Dhemu Main colliery prosecuted a mason under Regulation 127 (e) for smoking underground. He was fined Rs. 25.

The manager of the Jainty Central Colliery, Limited's Jainty Central colliery prosecuted a coal cutter under sections 39 and 40 (1) of the Act, read with Regulations 143, 146 and 147 for leaving his working place, crossing a fence, and removing a prop which was holding up the roof, with the result that the roof fell and injured him. The case was dropped as the accused died of his injuries.

The manager of the Bengal Coal Company, Limited's Damudarpur colliery prosecuted a shot-firer and a coal cutter under Regulations 101, 108 and 118; the coal cutter for firing shots without the authority and knowledge of the manager, for having explosives in his possession and for returning to a place before a shot had properly exploded; and the shot-firer for aiding and abetting. The former was fined Rs. 5 and the latter Rs. 15.

The manager of Messrs. Apar Collieries Limited's Charanpur colliery prosecuted a coal cutter under Regulation 103 for not returning to the magazine explosives which remained over after he had finished his shift. The case has not been finally disposed of as the accused has not yet been traced.

ADDITIONS TO THE ACT.

In Notification Nos. 787/1429-1, 267-1 and 489-1, dated the 16th May 1923, 2nd May 1928 and 22nd August 1928, respectively, the Government of India, in the Foreign and Political Department, applied certain enactments and the Indian Coal Mines Regulations, 1926, with certain modifications to Berar. The notifications are reproduced in Appendix IV, Statements Nos. 3, 6 and 7.

In Notification No. 494-1, dated the 24th August 1928, the Governor-General in Council was pleased to appoint the officer for the time being holding the appointment of the Chief Inspector of Mines in India to be the Chief Inspector of Mines for Berar.

Sections 23, 24, 25, 28, 30 and 31 of the Indian Mines Act, 1923, were amended by Act XIII of 1928. (The Indian Mines (Amendment) Act, 1928.) A copy of the Act is reproduced in Appendix IV, Statement No. 8.

In Notification No. M-1051, dated the 1st March 1928, the Government of India, Department of Industries and Labour, published certain further amendments in the schedule to Notification No. M-1051, dated the 23rd December 1926, in respect of the exemption, partially or wholly, of mines from the operation of the Indian Mines Act, 1923. The original notification, as amended to date, is reproduced in Appendix IV, Statement No. 4.

In Notification No. 10742-Rev./Ind., dated 27th March 1928, the Government of the Punjab declared that the provisions of section 18 of the Indian Mines Act, 1923, shall apply to all coal mines and mines other than coal mines in the Punjab at which more than twenty persons are employed. The notification is reproduced in Appendix IV, Statement No. 5.

The Governments of Bengal and Bihar and Orissa have approved the model code of bye-laws for coal mines reproduced in Appendix IV, State-

ment No. 9. Copies in pamphlet and sheet form are stocked for sale as follows:—

In English	} From the Officer-in-Charge, Bengal Secretariat Book Depôt, Calcutta.
In Bengali	
In Gujrati	
In Hindi	

From the Superintendent, Government Printing, Gulzarbagh, Patna.

Abstracts of the Indian Mines Act and of the regulations and rules were issued during the year and the vernaculars in which they should be posted up at coal and metalliferous mines were prescribed by Local Governments as follows:—

Assam	Assamese, Urdu and Hindi as the Chief Inspector or Inspector may decide in each case.
Baluchistan	Urdu.
Bengal	Bengali, Hindi or Gujrati as the Chief Inspector or Inspector may decide in each case.
Bihar and Orissa	Bengali, Hindi or Gujrati, as the Inspector may decide in each case.
Bombay	Vernacular not prescribed.
Central Provinces	The court language of the district.
Madras	Tamil, Telegu, Kanarese and Malayalam.
Punjab	Urdu.

Copies of the Abstracts may be purchased from:—

The Officer-in-Charge, Bengal Secretariat Book Depôt, Calcutta	In Bengal.
The Superintendent, Government Printing, Bihar and Orissa, Patna	In Bihar and Orissa.
The Superintendent, Government Printing, Nagpur	In the Central Provinces.
The Assam Secretariat Book Depôt, Shillong	In Assam.
The Superintendent, Government Printing and Stationery, Burma, Juda Ezekiel Street, Rangoon	In Burma.
The Superintendent, Government Printing, Punjab, Lahore	In the Punjab.
The Assistant Revenue Commissioner in Baluchistan, Quetta	In Baluchistan.
The Superintendent, Government Printing and Stationery, Queens Road, Bombay	In Bombay.
The Superintendent, Government Press, Madras	In Madras.

Section V.—General Remarks.

VISIT OF MEMBERS OF THE INDIAN STATUTORY COMMISSION TO THE COALFIELDS.

In December Sir George Lane-Fox, M.P., recently Secretary for Mines, Lord Strathcona and Mr. Vernon Hartshorn, M.P., members of the Simon Commission, spent a day in the Jharia Coalfield, and obtained personal knowledge of Indian coal mining conditions. Three collieries were visited and at one of them an underground inspection of the workings was made.

HEALTH AND SANITATION.

The Asansol Mines Board of Health held eleven ordinary and six special meetings during the year. Dr. J. W. Tomb, the Chief Sanitary Officer, was on leave for six months and during his absence Dr. B. Mukherjee officiated.

There were 537 cases of cholera with 292 deaths and 143 cases of small-pox with 13 deaths during the year, as compared with 288 cases of cholera with 120 deaths and 542 cases of small-pox with 72 deaths during the year 1927. Where cholera occurred the Board's staff carried out the various routine measures of disinfection and administered the "Essential Oils cholera prophylactic" daily to contacts in infected houses, with the result that the disease was held in check and remained confined to the localities of its origin. The general health of the Settlement was good, the death rate being 20·9 per 1,000 and the infant mortality rate 139·1. The education of the children in lower and upper primary schools of the Settlement in elementary hygiene by means of the Board's primer "Sara! Swasthyatatta" was carried on with satisfactory results.

The Jharia Mines Board of Health held eleven ordinary and eight special meetings during the year. Dr. J. N. Mitra officiated as Medical Officer of Health throughout the year. Within the Settlement there were 678 cases of suspected cholera which resulted in 203 deaths, as compared with 391 cases and 83 deaths during the previous year. The total deaths from cholera on collieries amounted to 36 as against 12 in the preceding year. There were 1,541 cases of suspected small-pox with 56 deaths, as against 1,492 cases with 58 deaths in the previous year. The death rate was 18·28 per 1,000 and the birth rate 35·47 per thousand, as against 16·73 and 33·74 per thousand, respectively, during the previous year. †

In the Board's laboratory 248 samples of food were analysed and 146 samples were found to be more or less adulterated. Prosecutions were instituted in the worst cases. For some years past the Board has been waging war against the widespread practice of food adulteration. As it was felt that the campaign has not as yet brought about much improvement a sub-committee of the members, at the request of the Board, drew up a code of rules requiring, among other things, vendors of food-stuffs to take out licenses, and to sell vegetable and ordinary ghee in different coloured tins. On consideration of the draft rules the Board, however, found that the matter was of such complexity that it was unable to recommend to the Local Government that any further action should be taken at present.

Statistics of rainfall in the eastern coalfields have been recorded as follows:—

	1928.	1927.
<i>Jharia Coalfield—</i>		
Jealgora	46·92	45·70
Topchanchi reservoir	55·93	54·89
<i>Raniganj Coalfield—</i>		
Kulti	70·42	48·65
<i>Giridih Coalfield—</i>		
Giridih	53·01	43·63

AMBULANCE WORK.

Classes in First-aid to the injured were held at 17 centres in the Jharia coalfield. 253 students attended and 159 St. John Ambulance Association First-aid certificates were awarded. The examinations were conducted by Lt.-Col. R. H. Price, I.M.S. (Retired), Drs. L. G. deRozario, H. K. Chakrabarty and R. J. Sinha.

Similar classes were held at nine centres in the Raniganj coalfield. 164 persons attended the classes, 141 were examined and 120 certificates were awarded. The lectures were given by colliery Doctors and the examinations were conducted by Drs. P. C. Biswas, B. Sen Gupta, M. N. Huq, S. N. Majhi and D. N. Tewari. The considerable decrease in the numbers attending the classes was due to the fact that candidates for coal mine managers' certificates of competency are now in possession of First-aid certificates, and at most mines the prescribed number of men have been trained in First-aid. A suggestion for the organisation of an ambulance competition open to teams from individual mines is under consideration.

The Central Provinces Manganese Ore Company, Limited, arranged for lectures in First-aid to be given at all their mines, and for candidates to be examined for the St. John Ambulance Association certificate.

MINING EDUCATION.

At the Indian School of Mines the total number of students on the roll at the commencement of the session 1927-28 was 89, there being 48 in the first year and 41 in the second year. In addition one student was delegated for training at the School by the Northern India Salt Revenue Department. On the results of the examinations held at the end of the session 46 students were promoted to the second year and 39 students were promoted to the third year. Students of the third year chose specialised courses as follows:—Geology 10, Metal Mining 8, Coal Mining 21. At the commencement of the third session in November the total number of students enrolled was 125. During the year additional equipment was installed, the main items being a small ore-crushing and ore-dressing plant and a mine fan installation. The annual prize distribution was held on April 16th, and the prizes were distributed by Dr. L. L. Fermor, Offg. Director, Geological Survey of India, President of the Governing Body. Most of the members of the Governing Body were present at the prize giving; three members of the Simon Commission visited the School during December. The mine survey camp was pitched at Pootki colliery in the Jharia coalfield during the months of November and December, when 80 students of the second and third years were in attendance. There was also a camp for students

of geology at Nudkharkee in the western part of the Jharia coalfield. In the month of February the second year students paid a visit to mica mines in the Hazaribagh district. Many visits to collieries in the Jharia coalfield were also made.

The Principal of the Bengal Engineering College has reported that three students of the second year qualified for promotion to the senior or third year and three students appeared and were successful at the examination for the Diploma in the principles of mining. The annual mining camp was held at Lodna colliery in the Jharia coalfield where the usual courses of practical work were undertaken and visits of inspection were paid to various mines and plants in the vicinity. On account of the opening of the Indian School of Mines no mining students have been admitted to the College since 1927, and the mining classes are to be abolished from April 1929.

The three-year courses of evening instruction in mining subjects were continued at the lecture centres at Raniganj and Sitarampur in the Raniganj coalfield, and at Jharia and Sijua in the Jharia coalfield. In the Raniganj coalfield the teaching staff consisted of Mr. L. Millar assisted by Babu Nirmal Chandra Sarkar and Dharendra Nath Sarkar, and in the Jharia coalfield Mr. Griffith Jones assisted by Babus U. Prosad and B. K. Palit. The total number of students enrolled was 141, of whom 47 attended the classes of the third stage. Of these 47 students, 17 attended the final examination and 11 were successful. The examiners were Dr. D. Penman and Mr. J. H. Lang. Courses of ten lectures were delivered in Hindi to overmen and sirdars at six centres in the Jharia coalfield and one centre in the Raniganj coalfield. Similar lectures in Bengali were delivered at six centres in the Raniganj coalfield. 534 students attended. The lecturers were Babus S. N. Bhattacharjee, B. K. Bose, P. R. Chakrabarty, M. B. Roy, S. K. Ghosh, P. Chakrabarty, J. G. Banerjee and D. P. Naug. Special demonstrations in gas testing were given in the vernacular by the mining lecturers at the Jharia and Sitarampur centres.

Owing to lack of support the mining classes at Chandametta in the Pench Valley coalfield were suspended early in the year.

Mining and Geological Institute of India.

The total membership, including subscribers, of the Mining and Geological Institute of India at the close of the year was 321. In addition to the annual meeting one ordinary general meeting was held for the reading and discussion of papers; two meetings took the form of lantern lectures delivered by Mr. G. V. Hobson and Mr. B. Starks Field, respectively. The lectures dealt with the mines, metallurgical plants, engineering works and places of scenic interest visited by those gentlemen during their tour, as delegates of the Institute, with the Second (Triennial) Empire Mining and Metallurgical Congress in Canada in 1927. Three meetings took the form of geological excursions conducted by Dr. C. S. Fox of the Geological Survey of India, in selected parts of the Jharia coalfield. Excursions were also made to the Indian Iron and Steel Company, Limited's works at Burnpore, to the Eastern Coal Company, Limited's coke plant and power house at Bhowra colliery in the Jharia coalfield, and to the Bengal Coal Company, Limited's Parbelia colliery in the Raniganj coalfield.

Three parts of the Transactions were published during the year, but on the recommendation of the Prize Committee neither the Government prize nor the Institute medals were awarded.

Mr. G. C. Leach continued to represent the Institute on the Governing Body of the Indian School of Mines, and Mr. J. Thomas on the Coal-Dust Explosion Committee. The latter gentleman whilst in England also represented the Institute on the Council of the Institute of Fuel, London.

A Subsidence Committee was appointed, the following being its terms of reference:—

- (1) To supplement and bring up to date the observations made by the original Subsidence Committee between the years 1914 and 1921;
- (2) to consider the extent and effects of subsidence resulting from the continual extraction of pillars of coal;
- (3) to consider the causes of premature collapse and the practicability of modified methods of working to prevent such collapses;
- (4) to consider the relation of underground fires to the extraction of pillars and premature collapses;
- (5) to consider the warning given by goaves;
- (6) to consider the methods of working contiguous seams.

The members of the Committee are:—Dr. C. S. Fox, Messrs. A. B. Hughes, P. S. Keelan and J. Mackie, Dr. D. Penman, Messrs. J. E. Phelps, R. R. Simpson and J. Thomas.

THE ASSOCIATION OF COLLIERY MANAGERS IN INDIA; THE INDIAN MINE MANAGERS ASSOCIATION; AND THE INDIAN COLLIERY EMPLOYEES ASSOCIATION.

The number of members of the Association of Colliery Managers in India during the year was 101. Some of the subjects dealt with by the Council were:—(1) the prohibition of the employment of women underground in mines; (2) unemployment; (3) proposed amendments of the Indian Mines Regulations; (4) proposed amendments of the Workmen's Compensation Act; (5) report of the inquiry into the accident by subsidence at Mudidih colliery. The members paid a visit to the Kumardhubi Engineering Works. Dr. Penman gave a lantern lecture on coal-dust explosions after which practical demonstrations with various Indian coals were given. Dr. C. S. Fox conducted a geological excursion in the Jharia coalfield. The representatives of this Association and of the Indian Mine Managers Association attended the monthly meetings of the Railway and Collieries Advisory Committee.

The membership of the Indian Mine Managers Association increased from 126 to 137 during the year. Among the subjects dealt with by the Council were:—(a) the draft regulations for prohibiting the employment of women underground in mines; (b) hours of employment in coal mines and (c) unemployment.

The Secretary of the Indian Colliery Employees Association, Jharia, reports that the Association has not yet been registered under the Indian

Trades Union Act, 1926, and that in addition to the three whole-time workers stationed at Jharia, Katrasgarh and Nowagarh two voluntary workers have recently been engaged for work at new centres at Kirkend and Raniganj. There is said to have been no increase in the number of members since last year when the number was said to be 2,000, of which 1,500 were miners. At the invitation of the Association the Ninth All-India Trade Union Congress was held at Jharia in December. During the year the Association dealt with about the one hundred cases; four of these were under the Workmen's Compensation Act and eighty-three were cases of alleged irregularity or non-payment of wages. Among the declared objects of the Association are:—shorter hours of work, minimum wages, old age pensions, and some degree of influence in the conduct of the management of mines.

MINING BOARDS IN BENGAL, BIHAR AND ORISSA AND THE CENTRAL PROVINCES.

The Bengal Mining Board held two meetings during the year. Among the subjects discussed at the meetings and by correspondence were (a) draft regulations prohibiting the employment of women underground in mines; (b) unemployment among mine workers; (c) proposed amendments of the Indian Mines Regulations, 1926, and (d) draft bye-laws for coal mines. The non-official members of the Board were Messrs. P. S. Keelan, C.I.E., Bhudev Prasanna Mukherjee, A. L. Ojha, M.L.C., and H. M. Tarlton.

The Mining Board for coal mines, Bihar and Orissa, held one meeting during the year. Among the subjects discussed at the meeting and by correspondence were (a) proposed prohibition of the employment of women underground in mines, and (b) bye-laws for coal mines. The non-official members of the Board were Messrs. J. B. Argyle, G. C. Leach and A. L. Ojha, M.L.C.

No meetings of the Bihar and Orissa Mining Board for mines other than coal mines were held, the business being dealt with by correspondence. The non-official members of the Board were Messrs. W. T. Vizer Harmer and G. A. Young.

The Central Provinces Mining Board did not meet during the year. The subjects dealt with by correspondence were (a) amendments to the Indian Mines Regulations, 1926, and (b) proposals to reduce the railway freight on manganese ore. The non-official members of the Board were Messrs. L. H. Bartlett, R. S. Davies and Rai Sahib Mathura Prasad.

COAL-DUST COMMITTEE.

The work of the Coal-Dust Committee was continued throughout the year. Experiments were carried out in the underground galleries of Godhur colliery in the Jharia coalfield. In July a demonstration was given in the presence of the members of the Association of Colliery Managers in India. At the Indian School of Mines experiments were made on the effect of stone dust in preventing the ignition of coal-dust, and on the ignition of coal-dust by electric arcs.

BOARD OF EXAMINERS.

Eight meetings of the Board of Examiners were held during the year. The non-official members were Messrs. J. Mackie, N. N. Sarkar and J. B. Wardlaw. The local examiners appointed were Messrs. A. Farquhar and R. Fenwick for coal mine managers' first class certificates, and Messrs. S. M. Chatterjee, W. Cooksey, J. G. Cunningham and J. E. Phelps for coal mine managers' second class certificates, and Mr. Alex. R. Roy for coal mine surveyors' certificates. Messrs. J. H. Lang, W. Kirby and N. Barraclough, Inspectors of Mines, were the official examiners, and acted as secretaries.

Eight first class certificates and one second class certificate of competency to manage a coal mine were granted in lieu of British certificates of the same class. At the examinations for coal mine managers' certificates held at Dhanbad in February 77 candidates sat for first class certificates and 159 for second class certificates. One first and six second class certificates were granted. At the examination for coal mine surveyors' certificates of competency held at Dhanbad in November there were 58 candidates, of whom 17 were successful.

Four hundred and eighty-four persons attended examinations for coal mine sirdars' certificates of competency and 404 certificates were granted. Out of 465 holders of sirdars' certificates examined in gaste-testing 219 were successful and their certificates were duly endorsed to that effect. Under Coal Mines Regulation 49 the certificates of three sirdars were suspended, one for three months and the others for six months.

OFFICIAL DUTIES, 1928.

Mr. R. R. Simpson was Chief Inspector of Mines throughout the year.

Mr. W. Kirby held charge of No. 1 Circle from 1st January to 21st March and from 14th October to 31st December. He was on leave out of India from 22nd March to 13th October.

Mr. N. Barraclough, Inspector of Mines, held charge of No. 1 Circle from 22nd March to 13th October during the absence on leave of Mr. W. Kirby.

Mr. J. H. Lang held charge of No. 2 Circle throughout the year.

Mr. H. M. Mitra, Electric Inspector of Mines, was on duty throughout the year.

Mr. G. S. Cameron, Junior Inspector of Mines, was on leave out of India from 13th March to 11th November.

Messrs. N. G. Chatterjee, J. F. Waters, H. K. Chatterjee and A. Young, Junior Inspectors of Mines, were on duty throughout the year.

Since the year 1923 the number of coal mines being worked has decreased from 942 to 556, and the number of metalliferous (including stone) mines at work has increased from 601 to 1,393.

During the year 982 mines were inspected and many of them several times. 2,410 separate inspections were made. The cause and circumstances of practically all fatal accidents and serious accidents of importance, and all complaints of breaches of regulations were investigated.

As in other years many inspections were made on the invitation of mine-owners, superintendents or managers desirous of obtaining advice on safety matters. The number of complaints received from workmen in respect of wages and hours of work tends to increase. An increasing proportion of the time of Inspectors is occupied in investigating cases of actual or threatened damage to dwelling houses and roads by reason of the underground workings of coal mines.

Orders were issued as follows:—

Section, Regulation or Rule.	No. of orders.
Under Section 19 (2)	2
Under Coal Mines Regulation 23	4
Under Coal Mines Regulation 76 (2)	1
Under Coal Mines Regulation 106	2
Under Rule 14-A. of the Rules made by the Governments of Bengal and Bihar and Orissa	26

Exemptions, partial or complete, and permissions were granted as follows:—

Regulation.	No. of cases.
Under Coal Mines Regulation 53 (6)	3
Under Coal Mines Regulation 88	1
Under Coal Mines Regulation 123	2

Information was received of four cases of fires in coal stocks on the surface, nine underground fires, four collapses of underground workings and four irruptions of water into mines.

The number of original cases under the Land Acquisition (Mines) Act, 1885, at the end of 1928 stood at 584, twenty-one of which were cases disposed of during the year. There were twenty-four applications for modifications of restrictions and six complaints of violations of restrictions, all of which were dealt with. The Act applies to Bengal and Bihar and Orissa only. In other provinces where Government owns the minerals, Local Governments were advised as to the restrictions necessary in cases where mineowners have sought permission to work minerals beneath railways, villages, etc.

I have the honour to be,

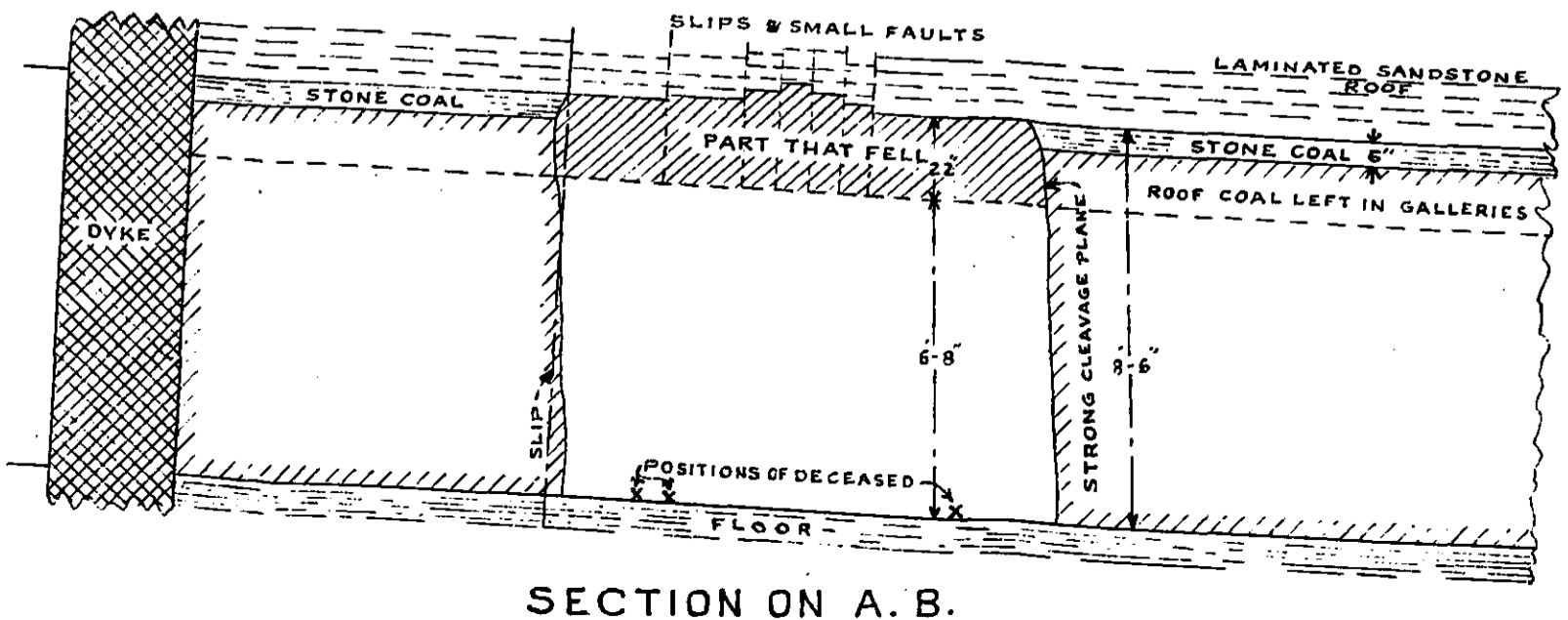
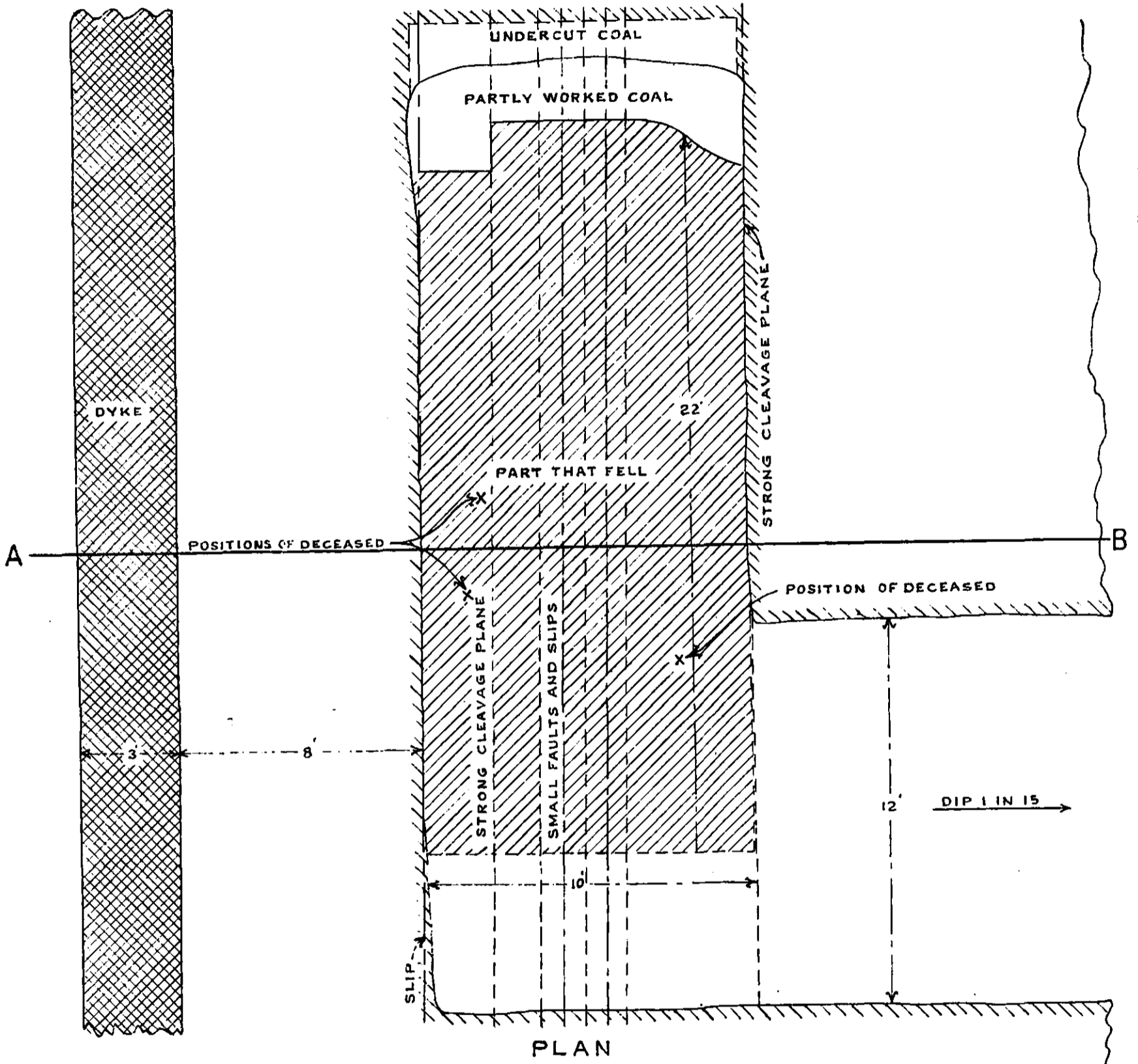
SIR,

Your most obedient servant,

R. R. SIMPSON,

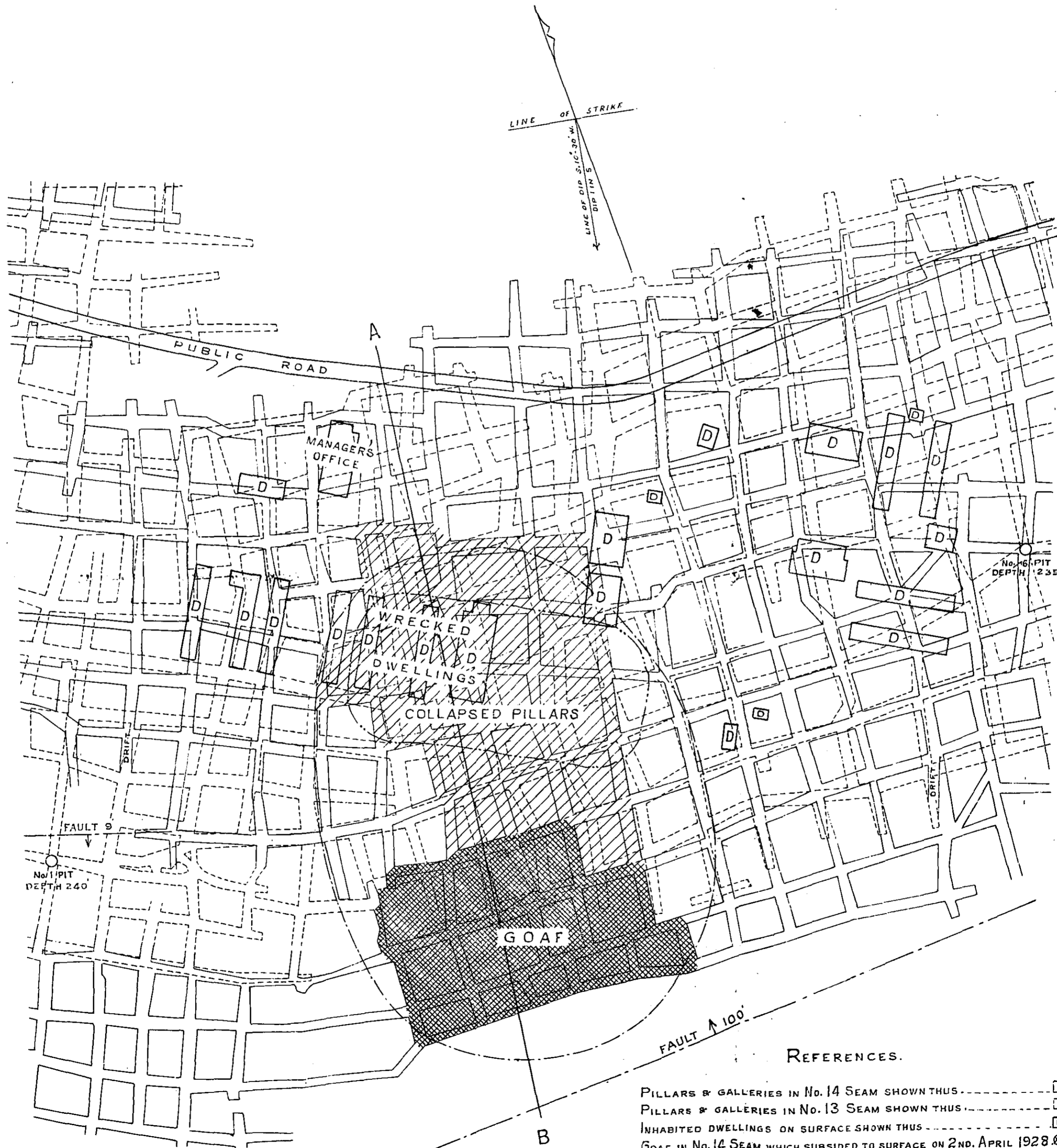
Chief Inspector of Mines in India.

PLAN AND SECTION ILLUSTRATING REPORT ON FATAL ACCIDENT BY FALL OF ROOF AT THE TATA IRON & STEEL Co. LTDs. JAMADOBA MINE. SCALE 1 INCH = 4 FEET.



SECTION ON A. B.

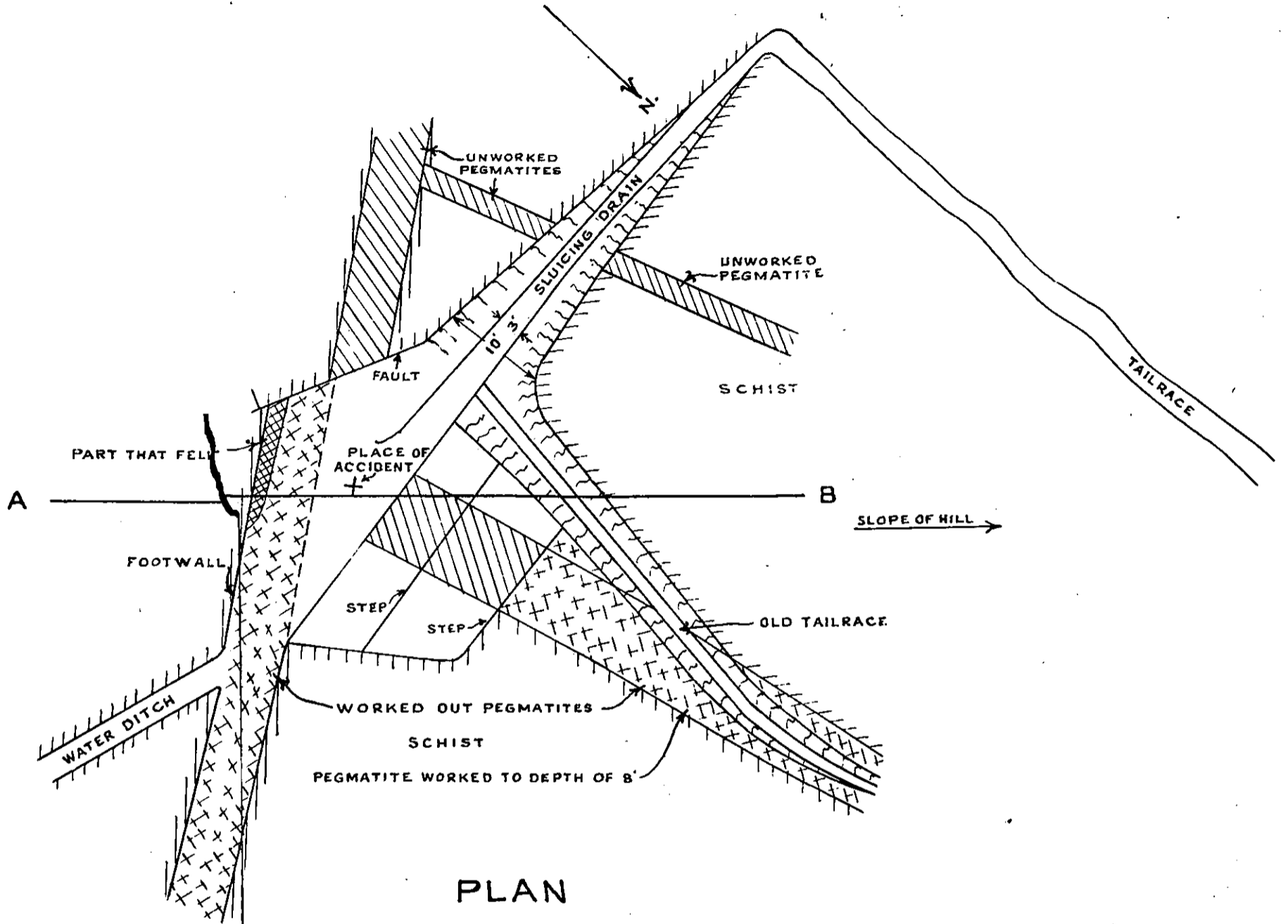
PLAN ILLUSTRATING REPORT ON
FATAL ACCIDENT BY SURFACE SUBSIDENCE
AT
THE BURRAKUR COAL Co. LTD'S. MUDIDIH MINE
SCALE 1 INCH = 100 FEET.



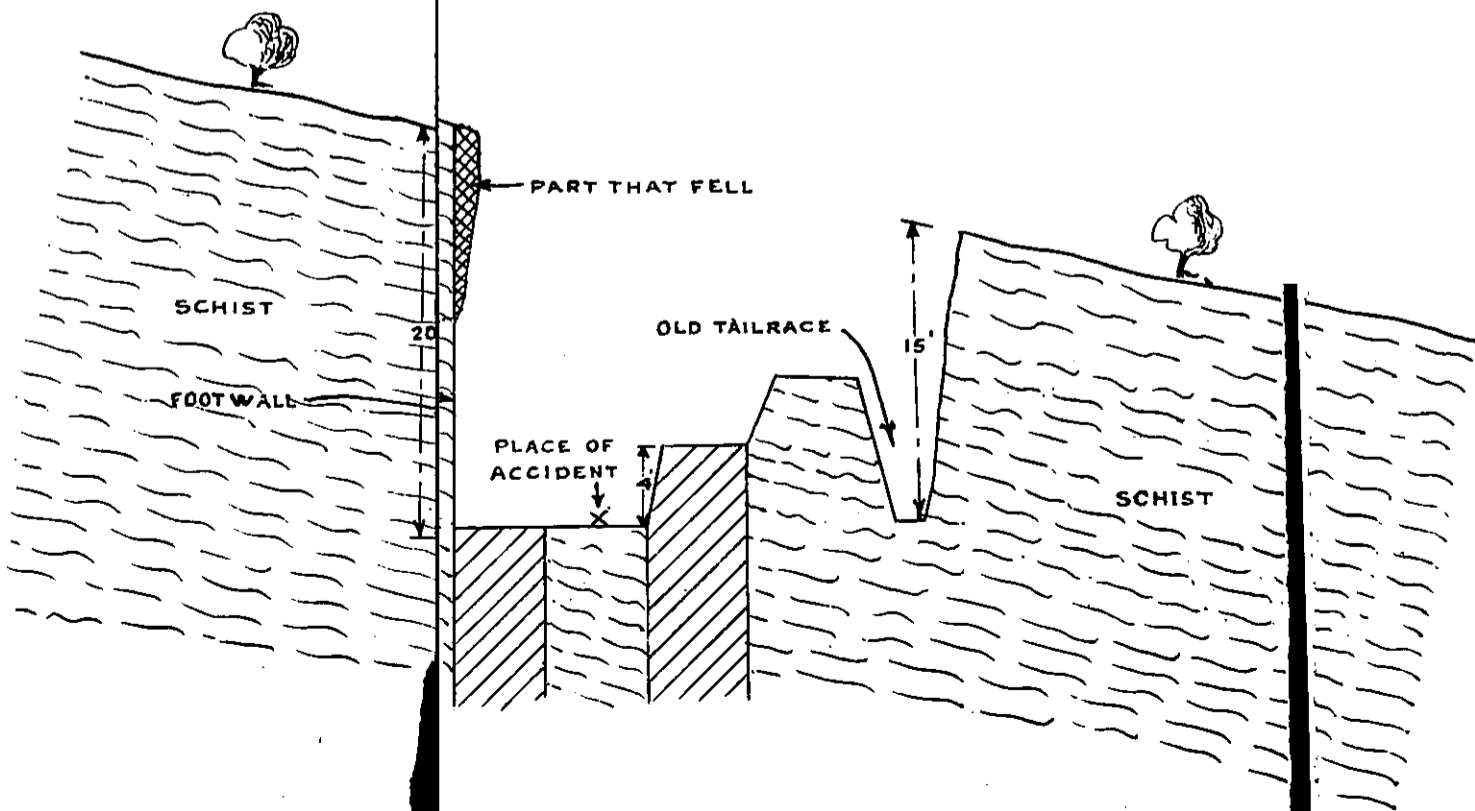
REFERENCES.

- PILLARS & GALLERIES IN No. 14 SEAM SHOWN THUS
- PILLARS & GALLERIES IN No. 13 SEAM SHOWN THUS
- INHABITED DWELLINGS ON SURFACE SHOWN THUS
- GOAF IN No. 14 SEAM WHICH SUBSIDED TO SURFACE ON 2ND. APRIL 1928
- PILLARS WHICH COLLAPSED ON 9TH. APRIL 1928.
- EDGE OF UNDERGROUND SUBSIDENCE SHOWN THUS
- EDGE OF SURFACE CRACK SHOWN THUS

PLAN AND SECTION ILLUSTRATING REPORT ON
FATAL ACCIDENT BY FALL OF SIDE
AT
MA HPON'S MUANCHON TIN MINE.
NOT TO SCALE.

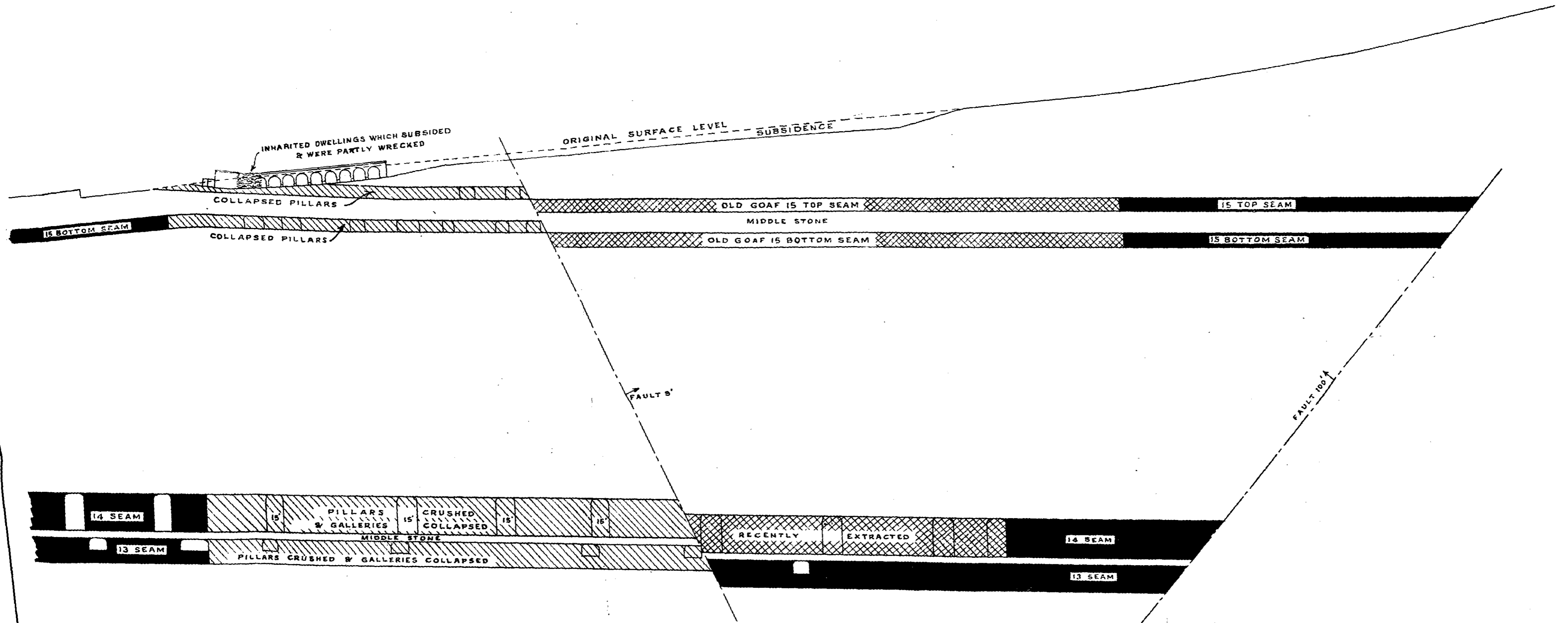


PLAN



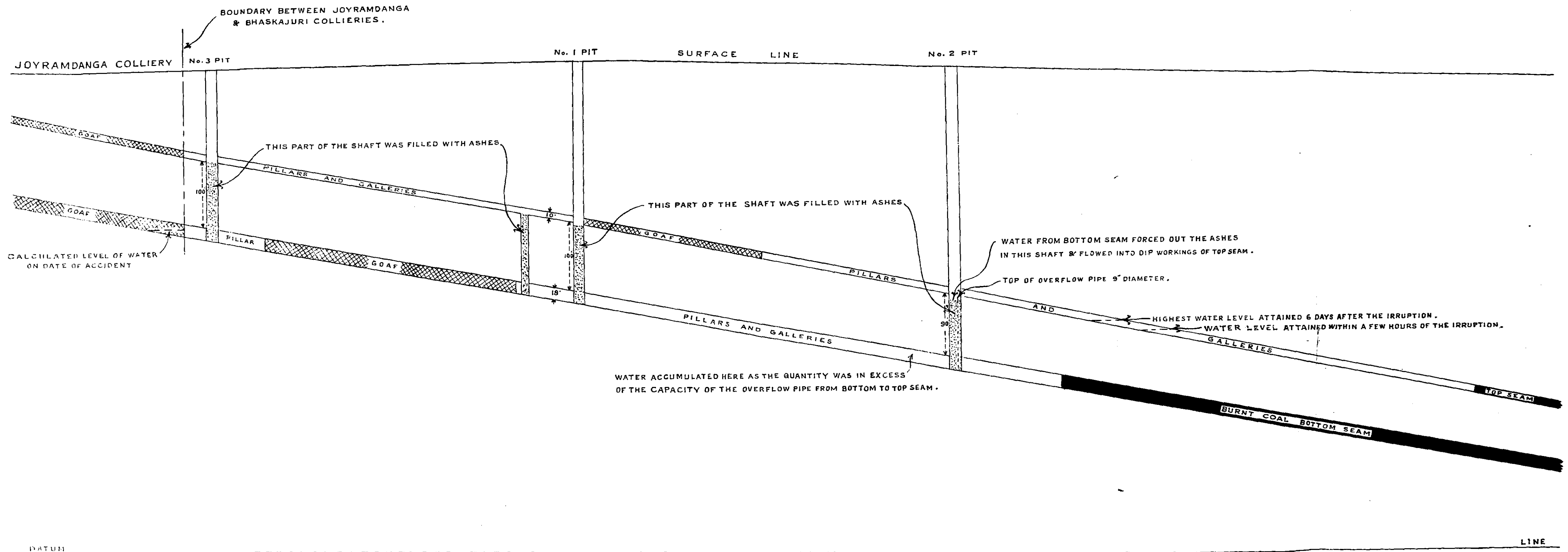
SECTION ON A. B.

SECTION ILLUSTRATING REPORT ON
 FATAL ACCIDENT BY SURFACE SUBSIDENCE
 AT
 THE BURRAKUR COAL CO. LTD'S. MUDIDIH MINE.
 SCALE 1 INCH = 100 FEET.



SECTION ON LINE A. B. IN PLAN.

SECTION ILLUSTRATING REPORT ON
 FATAL ACCIDENT BY IRRUPTION OF WATER
 AT
 THE BURRAKUR COAL Co. LTD's. BHASKAJURI MINE.
 SCALE 1 INCH = 100 FEET.



APPENDIX
STATISTICS OF MINES

Table
Number of workers and output of minerals during the

Province.	District and Mineral field.	Total Output.	Average number of							
			Underground.						Females.	Total Males and Females.
			Males.							
			Ore-men and Siclars.	Coal-cutters.	Loaders.	Other skilled labour.	Other unskilled labour.	Total Males.		
Tons.							CC			
Assam .	Lakhimpur	139,926	73	357	324	354	669	1,777	94	1,571
	Naga Hills	58,575	13	49	81	104	140	385	...	385
	Total	297,501	85	405	405	458	809	2,162	94	2,256
Baluchistan .	Quetta-Pishin	6,075	8	23	48	1	...	79	...	79
	Sibi Khost	2,643	5	19	10	...	...	43	..	43
	Total	11,217	13	41	67	1	...	122	...	122
Bengal	Bankura, Raiganj	7,760	5	28	2	...	17	52	33	85
	Birbhum	585	3	3	3	...	2	10	..	10
	Burdwan	5,631,028	703	10,788	2,034	2,976	3,793	36,403	6,308	38,708
	Total	5,639,063	600	10,810	2,039	2,976	3,811	20,465	6,428	26,893
Bihar and Orissa.	Hazaribagh—									
	Bokaro	2,026,791	26	373	16	84	78	677	187	714
	Girdih	804,116	217	2,041	1,227	180	743	5,311	1,258	6,569
	Jharia	31,565	7	70	8	31	28	135	69	204
	Karanpura	390,483	5	350	26	36	35	467	240	707
	Ramgarh	380	...	..	...	...	...	...	...	...
	Manbhum—									
	Jharia	10,033,024	1,221	16,050	3,729	4,060	5,275	31,244	15,722	46,966
	Raiganj	703,275	109	1,910	308	300	907	3,550	1,109	4,659
	Palamu—									
Daltonganj	929	...	...	...	...	...	...	...	...
Hutar	215	...	5	6	...	1	12	4	1	
Sambalpur, Hingra-Bampur.	31,683	0	41	16	43	...	105	50	15	
Carried over	14,563,399	1,504	22,689	5,385	4,741	7,002	41,421	18,598	60,01	

DIX I.

AND MINERALS.

No. I.

year 1928 at mines under the Indian Mines Act.

persons employed daily in and about the mines.

Overmen and Birdars.	Open workings.							Total Underground and Open workings.	Surface.						Grand Total.	
	Males.					Females.	Total Males and Females.		Males.					Total Males and Females.		
	Coal-outlets.	Loaders.	Other skilled labour.	Other unskilled labour.	Total Males.				Clerical and supervising staff.	Skilled labour.	Unskilled labour.	Total Males.	Females.			
A.L.																
9	19	71	08	250	479	377	756	2,027	29	180	565	783	151	934	3,561	
...	...	...	...	...	...	...	...	385	16	70	167	250	...	250	644
9	48	21	05	258	479	277	756	3,012	45	365	732	1,042	151	1,193	4,205	
...	...	...	...	...	...	...	...	79	...	10	23	33	...	33	113
...	...	...	...	...	...	...	...	49	...	...	...	...	...	...	43
...	...	...	...	...	...	...	...	123	...	10	23	33	...	33	155
9	8	...	...	5	15	14	29	114	13	8	3	24	6	30	144
...	...	...	...	...	...	...	...	10	...	1	2	3	1	4	14
10	105	7	43	270	500	600	1,100	29,067	1,463	3,063	5,257	9,283	3,047	13,730	43,007	
21	173	7	42	381	524	674	1,198	30,091	1,476	3,072	5,202	9,810	3,054	13,764	43,855	
130	4,225	85	130	1,930	6,505	5,967	12,472	12,186	124	500	1,541	2,145	465	2,030	15,816	
1	60	30	...	...	117	83	200	6,769	100	157	1,125	1,382	448	1,830	8,599
...	...	...	...	...	...	...	...	204	30	24	50	104	40	153	357
6	375	54	50	317	607	437	1,234	1,070	63	133	593	609	306	675	2,845	
...	0	8	...	10	30	...	30	30	2	1	2	5	...	5	35	
33	417	80	54	140	674	431	1,105	48,071	1,777	4,845	10,672	17,294	6,756	24,050	73,121	
12	98	37	30	54	220	130	350	5,000	185	412	1,040	1,637	598	2,233	7,242	
1	4	...	...	...	5	8	8	8	...	...	...	...	...	...	8
...	...	...	...	...	...	...	...	16	...	...	3	3	3	6	23
...	...	...	...	...	...	...	...	155	...	52	...	52	18	65	220
172	5,211	234	275	2,460	8,368	7,041	15,309	75,418	2,201	6,134	14,520	23,251	8,696	31,847	107,263	

APPEN
STATISTICS OF MINES

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Number of workers and output of minerals during the

Province.	District and Mineral field.	Total Output.	Average number of							Total Males and Females.
			Underground.							
			Males.						Females.	
Overman and Strikers.	Coal-cutters.	Loaders.	Other skilled labour.	Other unskilled labour.	Total Males.					
Bihar and Orissa.	Brought forward	Tons. 14,633,269	1,594	22,089	5,335	4,741	7,002	41,431	18,598	CO 60,019
	Sonthal Parganas—									
	Jainty	48,069	11	127	35	40	41	244	38	273
	Raniganj.	67,222	12	187	10	33	08	300	67	376
	Total	14,788,580	1,617	23,003	5,370	4,813	7,171	41,974	18,693	60,667
Central Provinces.	Chanda, Ballarpur . . .	176,872	22	633	586	88	218	1,227	146	1,373
	Chhindwara, Poneh Valley .	556,481	72	1,367	264	407	235	2,335	1,047	3,382
	Total	732,353	94	2,000	590	495	453	3,562	1,193	4,755
Panjab .	Jhelum	24,074	20	145	15	20	128	334	...	334
	Mianwali	18,161	4	29	28	8	17	61	...	61
	Shahpur	3,817	...	27	...	...	...	27	...	27
	Total	46,052	24	201	38	34	145	442	...	442
	Grand Total (Coal) for 1928 .	31,515,796	2,033	36,469	8,450	8,777	12,380	68,727	28,408	97,135
	Ditto of preceding year.	31,108,976	2,901	36,952	8,213	8,702	13,498	60,315	28,041	97,356
	Difference	+406,820	-868	-483	+237	+15	-118	+8,412	+3,367	-221

DIX I—contd.

AND MINERALS—contd.

No. I—contd.

year 1928 at mines under the Indian Mines Act—contd.

persons employed daily in and about the mines.

Overmen and Sirdars.	Open workings.							Total Under-ground and Open workings.	Surface.					Total Males and Females.	Grand Total.	
	Males.						Total Males and Females.		Males.				Total Males and Females.			
	Coal-cutters.	Loaders.	Other skilled labour.	Other unskilled labour.	Total Males.	Females.			Clerical and supervising staff.	Skilled labour.	Unskilled labour.	Total Males.				Females.
AL—contd.	172	5,211	234	275	2,408	6,368	7,041	15,390	75,418	2,291	6,134	14,828	23,251	8,500	31,647	107,265
...	372	18	28	74	120	21	141	413
...	376	31	40	73	143	26	181	557
172	5,211	234	275	2,408	6,368	7,041	15,390	70,060	2,340	6,202	14,672	23,514	8,655	31,169	108,235	
...	1,378	53	67	251	391	100	491	1,864
7	8	3	23	18	20	27	80	3,408	88	381	562	1,031	600	1,591	5,060	
7	8	3	23	18	19	27	86	4,541	141	405	513	1,422	600	2,022	6,033	
...	334	18	24	186	178	...	178	512
...	81	0	6	52	64	25	80	150
3	20	...	...	...	23	...	23	50	34	...	...	34	...	34	64
3	20	...	...	...	23	...	23	465	58	20	168	276	25	301	766
212	5,370	315	435	3,031	9,448	6,019	17,463	114,507	4,000	10,047	21,000	36,007	13,445	49,642	164,189	
155	4,834	1,748	468	3,002	10,907	5,800	16,607	113,063	4,101	10,820	22,421	37,646	13,642	51,268	165,213	
+57	+026	-1,48	-38	-681	-1,364	+2,219	+855	+034	-341	-770	-431	-1,561	-157	-1,708	-1,074	

APPEN
STATISTICS OF MINES

Table

Number of workers and output of minerals during the

Province.	District and Mineral field.	Total Output.	Average number of persons employed						
			Underground.						
			Males.				Total Males.	Females.	Total Males and Females.
			Foremen and Mates.	Miners.	Other skilled labour.	Other unskilled labour.			
		Tons.	IRON						
Bihar and Orissa	Singhbhum . . .	1,181,740	...	...	...	10	10	...	10
Burma . . .	Hezada . . .	...	...	...	...	...	...	...	...
	Mandalay . . .	550	...	...	...	...	...	...	...
	Northern Shan States.	74,254	4	39	...	71	114	...	114
	Total . . .	74,813	4	39	...	71	114	...	114
Central Provinces.	Drug . . .	195	...	...	...	...	...	...	...
	Grand Total (Iron ore) for 1928.	1,206,754	4	39	...	81	124	...	124
	Grand Total (Iron ore) for preceding year.	1,068,281	...	...	...	...	...	...	...
	Difference . . .	+138,473	...	...	...	...	...	...	...
			MANGANESE						
Bihar and Orissa	Singhbhum . . .	23,199	3	8	4	2	17	6	23
Bombay . . .	Belgaum . . .	1,603	...	...	...	...	...	...	...
	North Kanara . . .	3,601	...	...	...	...	...	...	...
	Panch Mahals . . .	63,040	3	32	4	6	45	...	45
	Total . . .	68,244	3	32	4	6	45	...	45

DIX I—*contd.*AND MINERALS—*contd.*No. I—*contd.*year 1928 at mines under the Indian Mines Act—*contd.*

daily in and about the mines.

Open workings.							Total Underground and Open workings.	Surface.						Grand Total.
Males.					Females.	Total Males and Females.		Males.				Females.	Total Males and Females.	
Foremen and Mates.	Miners.	Other skilled labour.	Other unskilled labour.	Total males.				Clerical and supervising staff.	Skilled labour.	Unskilled labour.	Total Males			
ORE.														
129	2,109	191	625	3,054	1,562	4,616	4,626	190	492	1,247	1,929	488	2,417	7,048
...	...	...	8	8	...	8	8	...	...	...	...	...	...	8
...	...	...	...	...	...	...	...	10	8	90	108	...	108	108
2	...	3	314	319	3	322	436	9	5	440	454	42	496	932
2	...	3	322	327	3	330	444	19	13	530	562	42	604	1,048
...	...	...	28	28	28	56	56	...	...	...	...	...	...	56
131	2,109	194	975	3,409	1,593	5,003	5,126	209	505	1,777	2,491	530	3,021	8,147
...
...
ORE.														
39	356	24	9	428	313	741	764	17	16	31	64	33	97	861
3	116	8	3	130	63	193	193	2	...	...	2	...	2	195
8	125	10	3	146	67	213	213	9	3	62	74	11	85	296
89	1,181	41	...	1,311	1,018	2,329	2,374	33	68	416	512	156	668	3,042
100	1,422	59	6	1,587	1,148	2,735	2,780	44	66	478	588	167	755	3,535

APPEN
STATISTICS OF MINES

Table

Number of workers and output of minerals, during the

Province.	District and Mineral field.	Total output.	Average number of persons employed						
			Underground.						
			Males.					Females.	Total Males and Females.
			Foremen and Mates.	Miners.	Other skilled labour.	Other unskilled labour.	Total Males.		
Burma	Northern States. Shan	Tons.							
		442,503*	120	2,435	241	1,438	4,234	...	LEAD 4,234
	Southern States. Shan	1,151	21	235	23	10	292	...	292
	Grand Total (Lead ore), for 1928.	443,654	141	2,673	264	1,448	4,526	...	4,526
	Grand Total (Lead ore) for preceding year.	450,777	...	...	...	...	...	...	...
Difference . . .	-7,123	...	...	...	...	...	...	...
Burma	Northern States. Shan	Tons.							
		1,241							ANTI MONIAL Figures included
	Total of preceding year.	503	...	...	...	...	...	...	...
Difference . . .	+738	...	...	...	...	...	...	...

*Refined Lead

DIX I—*contd.*AND MINERALS—*contd.*No. I—*contd.*year 1928 at mines under the Indian Mines Act—*contd.*

daily in and about the mines.

Open workings.							Total Underground and Open workings.	Surface.						Grand Total.
Males.					Females.	Total Males and Females.		Males.				Females.	Total Males and Females.	
Foremen and Mates.	Miners.	Other skilled labour.	Other unskilled labour.	Total Males.				Clerical and super- vising staff.	Skilled labour.	Unskilled labour.	Total Males.			
ORE.														
1	59	60	...	60	4,294	130	123	442	695	...	695	4,989
...	292	3	36	59	98	5	108	395
1	59	60	...	60	4,586	193	159	501	793	5	798	5,384
...
...
LEAD.														
with those for Lead ore.														
...
...

xtracted 77,143 tons.

APPEN
STATISTICS OF MINES

Table
Number of workers and output of minerals during the

Province.	District and Mineral field.	Total Output.	Average number of persons employed						
			Underground.					Females.	Total Males and Females.
			Males.						
			Foremen and Mates.	Miners.	Other skilled labour.	Other unskilled labour.	Total Males.		
Burma		Tons.							TIN
	Amherst	9	1	2	6	8	17	...	17
	Mergui	1,052	4	101	...	30	135	...	185
	Tavoy	1,712	11	372	53	2	438	...	438
	Thaton	4	...	...	...	...	...	...	..
	Grand Total (Tin Ore) for 1928.	2,777	16	475	50	40	590	...	590
	Grand Total (Tin Ore) for preceding year.	2,656	...	...	...	...	...	...	...
Difference	+121	...	...	...	...	...	...	...
Burma		Tons.							WOLFRAM
	Mergui	29	}						Figures included
	Tavoy	593							
	Grand Total (Wolfram Ore) for 1928.	622	...	...	...	...	...	Ditto	Ditto
	Grand Total (Wolfram Ore) for preceding year.	530	...	...	...	...	...	...	...
Difference	+92	...	...	...	...	...	...	...
Baluchistan		Tons.							CHROMITE
	Zhob	15,002	5	30	...	...	35	...	35
	Total	15,002	5	30	...	...	35	...	35

DIX I—contd.

AND MINERALS—contd.

No. I—contd.

year 1928 at mines under the Indian Mines Act—contd.

daily in and about the mines.

Open workings.							Total Underground and Open workings.	Surface.							Grand Total.
Males.					Females.	Total Males and Females.		Males.					Females.	Total Males and Females.	
Foremen and Mates.	Minors.	Other skilled labour.	Other unskilled labour.	Total Males.				Clerical and supervising staff.	Skilled labour.	Unskilled labour.	Total Males.	Total Males and Females.			
ORE.															
4	1	34	226	265	...	265	232	3	...	5	8	...	8	200	
42	1,475	692	787	2,996	5	3,001	3,186	73	22	293	388	...	388	3,524	
56	1,521	228	895	2,700	157	2,857	3,295	66	269	175	510	...	501	3,805	
1	...	10	7	18	1	19	19	...	...	10	10	...	10	29
103	2,997	964	1,915	5,979	163	6,142	6,732	142	291	483	916	...	916	7,648	
...	
...	
ORE.															
with those for Tin Ore.															
Ditto	Ditto	Ditto	Ditto	...	...	...	...	...	...	...	...	...	...	...
...	
...	
ORE.															
7	98	...	...	105	...	105	140	3	41	...	44	...	44	184
7	98	...	...	105	...	105	140	3	41	...	44	...	44	184

DIX I—contd.

AND MINERALS—contd.

No. I—contd.

year 1928 at mines under the Indian Mines Act—contd.

daily in and about the mines.

Open workings.							Total Underground and Open workings.	Surface.						Grand Total.
Males.				Females.	Total Males and Females.	Males.				Females.	Total Males and Females.			
Foremen and Mates.	Miners.	Other skilled labour.	Other unskilled labour.			Total Males.		Clerical and supervising staff.	Skilled labour.			Unskilled labour.	Total Males.	
MATHE.														
with those for lead ore.														
...	
...	
SPEISS.														
with those for lead ore.														
...	
...	
CENTRATES.														
with those for lead ore.														
...	
...	
MS.														
1	4	37	267	309	...	309	309	7	73	118	198	...	198	507

DIX I—contd.

AND MINERALS—contd.

No. I—contd.

year 1928 at mines under the Indian Mines Act—contd.

daily in and about the mines.

TITL.	Open workings.						Total Underground and Open workings.	Surface.						Grand Total.
	Males.					Females.		Males.					Total Males and Females.	
	Foremen and Mates.	Miners.	Other skilled labour.	Other unskilled labour.	Total Males.			Clerical and supervising staff.	Skilled labour.	Unskilled labour.	Total Males.	Females.		
...	2	45	...	10	12	23	126	4	4	...	8	...	8	134
4	13	...	22	39	45	84	152	2	2	18	23	...	22	174
...	...	18	...	18	3	21	21	2	...	1	3	4	7	28
1	4	85	74	164	4	168	430	...	...	...	...	...	...	430
...	...	...	...	...	...	...	24	...	...	...	...	...	...	24
1	4	85	74	164	4	168	454	...	...	...	...	...	...	454
5	19	1.1	96	231	64	295	753	8	6	19	33	4	37	790
...
...
TR.	15	67	44	20	155	89	194	194	1	1	4	6	6	200

ADIX I—*contd.*

AND MINERALS—*contd.*

No. I—*contd.*

year 1928 at mines under the Indian Mines Act—*contd.*

daily in and about the mines.

Open workings.							Total Underground and Open workings.	Surface.						Grand Total.
Males.					Females.	Total Males and Females.		Males.				Females.	Total Males and Females.	
Foremen and Mates.	Miners.	Other skilled labour.	Other unskilled labour.	Total Males.				Clerical and supervis- ing staff.	Skilled labour.	Unskilled labour.	Total Males.			
TE—<i>contd.</i>														
2	8	25	18	53	...	53	96	1	...	3	4	...	4	100
6	108	84	41	239	...	239	239	...	...	...	...	...	...	239
8	116	100	59	293	...	292	335	1	...	3	4	...	4	339
23	183	153	88	447	39	486	529	2	1	7	10	...	10	539
...
...
STONE.														
93	853	70	373	889	229	1,118	1,125	51	149	223	414	35	449	1,574
9	40	10	...	59	25	84	84	3	2	26	31	...	31	115
3	...	2	338	243	...	243	243	...	...	...	...	...	...	243
12	40	12	238	302	25	327	327	3	2	25	31	...	31	358
12	298	...	...	250	137	387	387	7	9	45	61	101	165	552
100	941	121	705	1,867	2,350	4,217	4,217	32	109	346	487	333	825	5,043
...	93	46	...	139	93	231	231	8	...	45	53	28	81	312
2	...	...	18	20	9	29	29	3	...	9	12	...	12	41
114	1,272	167	723	2,276	2,588	4,864	4,864	50	118	445	613	470	1,033	5,947

APPEN

STATISTICS OF MINES

Table

Number of workers and output of minerals during the

Province.	District and Mineral field.	Total Output.	Average number of persons employed						
			Underground.						
			Males.					Females.	Total Males and Females.
			Foremen and Mutes.	Miners.	Other skilled labour.	Other unskilled labour.	Total Males.		
		Tons.							
Punjab	Attock . . .	161,414	...	...	...	...	...	...
	Jhelum . . .	65,460	...	...	...	...	...	...
	Rawalpindi . . .	218,505	...	...	...	...	...	...
	Total . . .	440,379	...	...	...	...	...	...
	Grand Total (Limestone) for 1928 . . .	1,404,578	...	3	...	3	6	1	7
	Grand Total of preceding year . . .	1,182,235
Difference . . .	+ 272,343	...	...	...	...	...	...	...
		Tons.							
Bengal . . .	Birbhum . . .	94,629	...	...	...	...	...	...
Bihar and Orissa . . .	Singbhum . . .	17,569	...	...	...	...	...	...
	Sonthal Parganas . . .	282,550	...	...	...	...	...	...
	Total . . .	300,119	...	...	...	...	...	...
Bombay	Colaba . . .	430	...	...	...	...	...	...
	Bombay Suburban . . .	35,035	...	...	...	...	...	...
	Surat . . .	66,955	...	...	...	...	...	...
	Total . . .	102,420	...	...	...	...	...	...

DIX I—contd.

AND MINERALS—contd.

No. I—contd.

year 1928 at mines under the Indian Mines Act—contd.

daily in and about the mines.

Open workings.							Total Underground and Open workings.	Surface.						Grand Total.
Males.					Females.	Total Males and Females.		Males.				Females.	Total Males and Females.	
Foremen and Males.	Miners.	Other skilled labour.	Other unskilled labour.	Total Males.				Clerical and supervising staff.	Skilled labour.	Unskilled labour.	Total Males.			
STONE—contd.														
30	52	46	140	268	...	268	268	6	4	286	296	...	296	564
3	88	...	...	91	...	91	91	4	2	256	262	...	262	353
7	280	...	...	287	...	287	287	3	...	730	733	...	733	1,020
40	420	46	140	646	...	646	646	13	6	1,372	1,291	...	1,291	1,937
259	2,085	295	1,474	4,113	2,842	6,955	6,962	117	266	1,966	2,549	505	2,854	9,816
...
...
ROCK														
1	300	59	50	440	15	455	455	11	37	506	554	189	743	1,198
2	252	...	...	254	122	376	376	1	...	4	5	9	14	390
15	245	497	406	1,163	160	1,323	1,323	61	304	205	570	171	741	2,064
17	497	497	406	1,417	282	1,699	1,699	62	304	209	575	180	755	2,454
...	2	...	...	2	...	2	2	1	...	2	3	2	5	7
...	...	...	65	65	...	65	65	3	42	79	124	...	124	196
3	48	40	472	563	23	586	586	4	...	...	4	...	4	590
3	50	40	587	630	23	653	653	8	42	81	181	2	183	786

APPEN
STATISTICS OF MINES

Table
Number of workers and output of minerals during the

Province.	District and Mineral field.	Total Output.	Average number of persons employed						
			Underground.						
			Males.					Females.	Total Males and Females.
			Foremen and Matea.	Minors.	Other skilled labour.	Other unskilled labour.	Total Males.		
		Tons.							
Burma	Bassain . . .	10,000	..	..	..	..	..	..	IGNEOUS
	Kyaukse . . .	15,000	..	..	..	..	..	..
	Thaton . . .	413,629	..	..	..	..	..	..
	Tonngoo . . .	52,394	..	..	..	..	..	..
	Total . . .	491,023	..	..	..	..	..	..
Central Provinces.	Chhindwara . . .	90	..	..	..	..	..	..
	Grand Total (Igneous rock) for 1928.	988,231	..	..	..	..	..	..
	Grand Total of preceding year.	934,737	..	..	..	..	..	..
	Difference . . .	+ 53,544	..	..	..	..	..	..
Bihar and Orissa.	Gaya . . .	65,292	..	..	..	..	..	..	STONE
	Shahabad . . .	17,070	..	..	..	..	..	..
	Singhbhum . . .	59,327	..	..	..	..	..	..
	Total . . .	141,689	..	..	..	..	..	..
Punjab	Jhelum . . .	100,450	..	..	..	..	..	..
	Rawalpindi . . .	119,224	..	..	..	..	..	..
	Total . . .	219,674	..	..	..	..	..	..

DIX I—contd.

AND MINERALS—contd.

No. 1—contd.

year 1928 at mines under the Indian Mines Act—contd.

daily in and about the mines.

Open workings.								Total Underground and Open workings.	Surface.						Grand Total.
Males.					Females.	Total Males and Females.	Males.				Females.	Total Males and Females.			
Foremen and Males.	Miners.	Other skilled labour.	Other unskilled labour.	Total Males.			Clerical and supervis- ing staff.		Skilled labour.	Unskilled labour.			Total Males.		
ROCK—contd.															
4	40	50	...	94	...	94	94	...	...	...	...	...	...	94
...	11	15	7	33	20	53	53	2	...	...	2	...	2	55
38	805	485	398	1,726	56	1,782	1,782	48	120	172	335	10	345	2,127	
11	145	16	98	290	25	315	315	7	6	...	13	...	13	328	
53	1,021	566	503	2,143	101	2,244	2,244	52	126	172	350	10	360	2,604	
1	..	10	...	11	20	31	31	...	...	...	...	...	...	31
75	1,868	1,112	1,526	4,641	441	5,082	5,082	183	509	968	1,610	381	1,991	7,073	
...	
...	
(UNSPECIFIED).															
27	460	...	...	487	185	672	672	...	...	...	...	...	...	672
4	10	...	70	84	16	102	102	...	...	...	...	...	...	102
13	127	...	...	140	194	334	334	4	...	...	4	...	4	388
44	597	...	70	711	897	1,106	1,106	4	...	...	4	...	4	1,112
2	145	80	100	327	...	327	327	2	...	...	2	...	2	329
12	145	...	...	157	...	157	157	8	3	217	228	...	228	385
14	290	80	100	484	...	484	484	10	8	217	230	...	230	714	

DIX I—*contd.*AND MINERALS—*contd.*No. 1—*contd.*year 1928 at mines under the Indian Mines Act—*contd.*

daily in and about the mines.

Open workings.							Total Underground and Open workings.	Surface.						Grand Total.	
Males.					Females.	Total Males and Females.		Males.					Females.		Total Males and Females.
Foremen and Mates.	Miners.	Other skilled labour.	Other unskilled labour.	Total Males.				Clerical and supervis- ing staff.	Skilled labour.	Unskilled labour.	Total Males.				
FIED)—<i>contd.</i>															
32	272	...	683	937	583	1,520	1,520	8	23	1	32	...	32	1,552	
8	266	120	110	504	178	682	682	20	11	11	42	18	60	742	
8	312	...	...	320	56	376	376	13	176	68	257	101	358	734
9	515	...	...	524	20	544	544	6	2	245	253	...	253	797
57	1,365	120	743	2,285	837	3,122	3,122	47	212	325	584	119	703	3,825	
115	2,252	200	913	3,480	1,234	4,714	4,714	61	215	542	818	119	937	5,651	
...	
...	
RITE.															
...	...	...	32	32	...	32	32	...	...	...	...	...	...	32
8	240	12	6	266	...	266	266	11	3	...	14	...	14	280	
8	240	12	38	298	...	298	298	11	3	...	14	...	14	312	
1	...	...	89	40	12	52	52	...	...	...	...	...	...	52
9	240	12	77	338	12	350	350	11	3	...	14	...	14	364	
...	
...	

APPEN
STATISTICS OF MINES

Table

Number of workers and output of minerals during the

Province.	District and mineral field.	Total Output.	Average number of persons employed						
			Underground.						
			Males.					Females.	Total Males and Females.
			Foremen and Mates.	Minors.	Other skilled labour.	Other unskilled labour.	Total Males.		
Bihar and Orissa.	Shahabad	Tons 15,511	SAND
United Provinces.	Allahabad	48,610	...	...	...	...	...	...
	Banda	7,739	...	...	...	...	...	...
	Total	56,349	...	...	...	...	...	...
	Grand Total (Sandstone), for 1928.	71,860	GRA
	Grand Total of preceding year.	40,381	...	...	...	...	...	...
	Difference	+ 31,529	...	...	...	...	...	...
Bihar and Orissa.	Singhbhum	11,592	
Bombay	Kaira	4,703	...	...	...	...	...	...
	Grand Total (Gravel) for 1928.	16,295	...	...	...	...	...	...
	Grand Total of preceding year.	11,103	...	...	...	...	...	...
	Difference	+ 5,192	...	...	...	...	...	...

DIX I—contd.

AND MINERALS—contd.

No. 1—contd.

year 1928 at mines under the Indian Mines Act—contd.

daily in and about the mines.

Open workings.								Total Underground and Open workings.	Surface.						Grand Total.
Males.					Females.	Total Males and Females.	Males.				Females.	Total Males and Females.			
Foremen and Mates.	Miners.	Other skilled labour.	Other unskilled labour.	Total Males.			Clerical and supervis- ing staff		Skilled labour.	Unskilled labour.			Total Males.		
STONE.															
5	72	10	...	87	20	107	107	2	100	...	102	...	102	209	
11	82	...	168	261	102	363	363	...	3	1	4	...	4	367	
1	15	3	30	49	19	68	68	3	4	4	11	...	11	79	
12	97	3	198	310	121	431	431	3	7	5	15	...	15	446	
17	169	13	198	397	141	538	538	5	107	5	117	...	117	655	
...	
...	
VEL.															
with those	for Stone	(unspecified).													
...	...	...	25	25	...	25	25	...	...	22	22	...	22	47
...	...	...	25	25	...	25	25	...	...	22	22	...	22	47
...	
...	

APPEN
STATISTICS OF MINES

Table

Number of workers and output of minerals during the

Province.	District and mineral field.	Total Output.	Average number of persons employed						
			Underground.						
			Males.					Females.	Total Males and Females.
			Foremen and Matos.	Miners.	Other skilled labour.	Other unskilled labour.	Total Males.		
		Tons							MU
Bihar and Orissa.	Singhbhum . . .	8,241				Figures included with those for			
United Provinces.	Allahabad . . .	5,704				Figures included with those for			
Bombay	Kaira	4,058				Figures included with those for			
	Bombay Suburban	1,275,084	...	...	...	...	...	...	...
	Total	1,279,142	...	...	...	...	...	...	...
	Grand Total (Muram) for 1925.	1,294,087	...	...	...	...	...	...	...
	Grand Total of preceding year.	1,083,060	...	...	...	...	...	...	...
	Difference	+211,027	...	...	...	...	...	-	...
									FIRE
Bengal . . .	Burdwan	16,640	...	...	...	...	...	...	...
	Bhagalpore	99	...	4	...	...	4	...	4
Bihar and Orissa.	Manbhum	10,469	...	...	...	...	...	...	...
	Palamanu	5,880	...	...	...	...	...	...	...
	Sambalpur	1,090	...	...	...	...	...	...	...
	Total	17,538	...	4	...	...	4	...	4

DIX I—contd.

AND MINERALS—contd.

No. 1—contd.

year 1928 at mines under the Indian Mines Act—contd.

daily in and about the mines.

Foremen and Mates.		Open workings.					Total Males and Females.	Total Underground and Open workings.	Surface.					Total Males and Females.	Grand Total.		
		Males.							Females.	Males.						Females.	
		Minors.	Other skilled labour.	Other unskilled labour.	Total Males.	Total Males.				Clerical and supervising staff.	Skilled labour.	Unskilled labour.	Total Males.				
RUM.																	
stone (unspecified).																	
stone (unspecified)																	
Gravel																	
45	...	47	786	878	479	1,357	1,357	21	52	10	83	2	85	1,442			
45	...	47	786	878	479	1,357	1,357	21	52	10	83	2	85	1,442			
45	...	47	786	878	479	1,357	1,357	21	52	10	83	2	85	1,442			
...			
...			
CLAY.																	
...	42	22	...	64	34	98	98	...	...	...	...	...	...	98
...	...	2	...	2	...	2	6	...	...	...	...	1	1	7
5	138	...	30	173	102	275	275	2	1	86	89	45	134	409			
1	16	4	...	21	22	43	43	1	12	13	26	7	33	76			
1	8	...	...	9	...	9	9	1	...	13	1	1	15	24	
7	162	6	30	205	124	329	333	4	13	112	129	54	183	516			

APPEN
STATISTICS OF MINES

Table
Number of workers and output of minerals during the

Province.	District and mineral field.	Total output.	Average number of persons employed							Total Males and Females.
			Underground.							
			Males.							
			Foremen and Mates.	Miners.	Other skilled labour.	Other unskilled labour.	Total Males.	Females.		
Rajputana	Ajmer Merwara	Nil	...	...	...	...	...	...	...	BER
	Total of preceding year.	...	...	...	...	...	...	...	...	...
	Difference	...	...	...	...	...	...	...	...	...
Burma	Tavoy	lbs. 82	...	...	...	...	...	...	...	BIS
	Total of preceding year.	48	...	...	...	...	...	...	...	...
	Difference	+ 34	...	...	...	...	...	...	...	...
	Grand Total Metal-liferous Mines for 1928.	...	933	11,815	1,232	3,448	17,428	3,377	20,805	...
	Grand Total of preceding year.	...	885	11,505	1,312	3,749	17,451	3,809	21,260	...
	Difference	...	+ 48	+ 310	- 80	- 301	- 23	- 132	- 455	...
	Grand Total (all Minerals), for 1928.	...	...	...	...	...	86,165	31,78	117,940	...
	Grand Total of preceding year.	...	...	...	...	...	86,766	31,850	118,616	...
	Difference	...	...	...	...	...	- 611	- 6	- 676	...

DIX I—contd.

AND MINERALS—contd.

No. 1—contd.

year 1928 at mines under the Indian Mines Act—contd.

daily in and about the mines.

Open workings							Total Underground and Open workings.	Surface.						Grand Total.
Foremen and Mates.	Males.				Females.	Total Males and Females.		Males.				Females.	Total Males and Females.	
	Miners.	Other skilled labour.	Other unskilled labour.	Total Males.				Clerical and super- vising staff.	Skilled labour.	Unskilled labour.	Total Males.			
YL	...	10	...	10	...	10	10	...	...	...	...	...	...	10
...
...
MUTH. for tin ore.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...
...
1,751	25,788	3,018	10,105	41,562	20,434	1,996	82,801	1,636	3,703	10,991	16,333	4,306	20,731	108,532
1,720	25,812	2,566	9,123	39,221	21,897	61,118	82,378	1,867	3,834	10,555	16,257	5,444	21,699	104,077
+31	-24	+1,352	+982	+2,341	-1,463	+878	+423	-231	-131	+440	+78	-1,046	-968	-545
...	...	...	...	51,005	28,453	79,458	197,398	...	...	...	52,440	17,843	70,273	267,671
...	...	...	...	50,028	27,697	77,725	196,341	...	...	...	53,906	19,046	72,952	269,290
...	...	...	...	+977	+756	+1,733	+1,057	...	...	...	-1,473	-1,208	-2,676	-1,1619

DIX I—contd.

No. 2.

each important mining field during the year 1928.

Overmen and Sirdars. — Foremen and Mates.	Open workings.					Surface.			
	Miners.	Loaders.	Skilled Labour.	Un-skilled Labour.	Females.	Clerical and Supervising Staff.	Skilled Labour.	Un-skilled Labour.	Females.
46	44	46	45	46	45	58	52	51	51
46	44	43	45	47	45	58	51	50	49
48	40	40	...	...	37	48	48	47	48
50	50	50	54	50	50	51	52	52	50
35	35	...	...	...	...	45	45	42	36
...	...	...	...	...	...	...	42	45	...
45	...	...	54	54	54	52	52	52	50
44	42	...	50	46	41	46	48	50	50
46	45	...	45	47	45	47	45	45	43
46	44	...	46	46	43	47	45	44	44
52	49	...	45	44	51	51	49	49	45
49	49	...	49	49	48	48	50	46	48
48	47	...	48	47	45	48	48	48	44
47	...	...	...	47	...	52	40	40	52
48	46	...	49	49	43	50	50	49	...
48	48	...	...	...	...	48	52	46	48
43	40	...	48	43	43	46	44	45	44
52	48	...	52	52	...	46	...	48	...
47	47	...	47	53	49	46	50	45	32

Table

Analysis of figures relating to

Province.	District and mineral field.	Coal.					
		Opening stock.	Raisings.	Total.	Despatches.	Colliery consumption.	Coal delivered for coking.
		Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Assam .	Lakhimpur . . .	...	238,928	238,928	219,199	16,645	3,082
	Naga Hills . . .	125	58,575	58,700	57,899	656	...
	Total . . .	125	297,501	297,628	277,098	17,301	3,082
Baluchistan .	Quetta-Pishin . . .	1,465	8,675	10,160	9,267	...	...
	Sibi-Khost . . .	60	2,542	2,602	2,602	...	...
	Total . . .	1,545	11,217	12,762	11,869	...	...
Bengal .	Bankura, Raniganj .	628	7,780	8,408	6,590	1,495	...
	Birbhum „ . . .	4,423	585	5,013	928	78	...
	Burdwan „ . . .	372,352	5,631,628	6,004,580	5,262,163	426,384	27,134
	Total . . .	378,008	5,639,993	6,018,001	5,269,681	427,957	27,134
Bihar and Orissa.	Bokaro . . .	8,515	2,026,791	2,035,306	1,979,018	10,067	11,751
	Giridih . . .	15,393	894,116	819,511	755,422	43,458	...
	Hazaribagh Jharia . . .	44,183	81,555	75,788	23,195	5,929	16,215
	Karanpura . . .	2,749	390,493	393,242	375,785	15,628	...
	Ramgarh . . .	103	386	489	489	...	...

Table

Analysis of figures relating to

Province.	District and mineral field.	Coal.						
		Opening stock.	Raisings.	Total.	Despatches.	Colliery consumption.	Coal delivered for coking.	
		Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	
Bihar and Orissa—contd.	Man- bhum {	Jharia	1,145,219	10,633,924	11,779,143	9,077,334	574,796	927,080
		Raniganj	68,797	763,275	832,072	660,901	47,522	77,337
	Palaman, Daltonganj	...	929	929	...	929	...	
	.. Hutar	249	205	445	75	97	...	
	Sambalpur-Hingir Rampur	2,301	31,623	33,924	24,386	8,312	...	
	Southal Parganas {	Jainty	1,648	48,059	49,743	38,080	10,021	...
		Raniganj	32,450	57,222	89,672	63,565	12,094	...
		Total	1,321,634	14,783,580	16,110,214	12,998,280	763,853	1,032,333
Central Pro- vinces.	Chanda, Ballarpur	9,173	175,872	185,045	158,991	20,105	...	
	Chhindwara, Pench Valley	9,143	556,481	565,624	524,059	33,824	...	
	Total	18,316	732,353	750,669	683,050	53,929	...	
Punjab	Jhelum	959	24,674	25,633	23,345	1,731	...	
	Mianwali	701	18,161	18,862	17,244	143	...	
	Shahpur . . . . .	...	3,317	3,317	3,317	...	...
	Total	1,660	46,152	47,812	43,906	1,874	...	
	Grand Total, 1928	1,721,288	21,515,796	23,237,084	19,283,904	1,264,914	1,062,549	

DIX I—contd.

No. 3—contd.

output of Coal and Coke, 1928.

		Coke.									
Coal despatched to coke factories.	Closing stocks.	Opening stocks.		Coke made.		Despatches.		Colliery consumption.		Closing stocks.	
		Hard.	Soft.	Hard.	Soft.	Hard.	Soft.	Hard.	Soft.	Hard.	Soft.
Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1,055,905	1,199,983	4,492	9,950	51,587	595,709	50,457	596,567	595	2,218	5,027	6,874
...	46,812	...	1,450	...	60,186	...	59,280	...	611	...	1,745
...
...	273	...	...	...	...	...	...	...	...	...	...
...	1,226	...	...	...	...	...	...	...	...	...	...
...	1,642	...	...	...	...	...	...	...	...	...	...
...	14,013	...	60	...	...	...	6	...	...	...	54
1,108,551	1,315,748	4,492	11,490	54,792	670,266	53,415	670,203	627	2,849	5,242	8,704
...	5,949	...	...	...	...	...	...	...	...	...	...
...	7,741	...	...	...	...	...	...	...	...	...	...
...	13,690	...	...	...	...	...	...	...	...	...	...
...	557	...	...	...	...	...	...	...	...	...	...
...	1,475	...	...	...	...	...	...	...	...	...	...
...
...	2,032	...	...	...	...	...	...	...	...	...	...
1,108,551	1,625,718	4,501	11,972	56,533	689,002	55,099	689,205	667	2,998	5,268	8,771

APPENDIX I—*contd.*

Table No. 4.

Numbers of mines opened, closed and inspected, during the year 1928.

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.				INSPECTIONS.	
			Worked under mechanical power.	Not worked by mechanical power.	Opened during the year.	Closed during the year.	Number of mines inspected.	Number of inspections.
COAL.								
Assam .	Lakhimpur	7	5	2	...	...	7	22
	Naga Hills	1	...	1	...	...	1	3
	Total	8	5	3	...	...	8	25
Baluchistan .	Quetta-Pishin	8	...	8	...	1	3	3
	Sibi, Khoat	2	...	2	...	...	2	2
	Total	10	...	10	...	1	5	5
Bengal .	Bankura, Raniganj	4	...	4	1	2	4	18
	Birbhum „	1	...	1	...	...	...	...
	Burdwan „	169	160	9	4	26	170	665
	Total	174	160	14	5	28	174	678
Bihar and Orissa.	Hazaribagh— Bokaro	5	5	...	...	...	5	18
	Giridih	8	5	3	...	...	7	25
	Jharia	4	4	...	...	1	3	4
	Karanpuri	3	3	...	...	...	3	7
	Bamgarh	1	...	1	...	1	...	...
	Maubhum— Jharia	242	178	61	9	29	242	804
	Raniganj	43	18	25	5	12	40	151
	Palamanu— Daltongunj	1	1	...	1	...	2	2
	Hntar	1	...	1	...	...	1	1
Sambalpur, Hingir-Rampur	1	1	...	...	...	1	1	

APPENDIX I—contd.

Table No. 4—contd.

Numbers of mines opened, closed and inspected, during the year 1928—contd.

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.				INSPECTIONS.	
			Worked under mechanical power.	Not worked by mechanical power.	Opened during the year.	Closed during the year.	Number of mines inspected.	Number of inspections.
COAL—contd.								
Bihar and Orissa—contd.	Sonthal Parganas—							
	Jainty	4	1	3	...		1	2
	Raiganj	5	4	1	...	1	2	4
	Total	318	220	98	15	44	316	1,019
Central Provinces.	Chanda, Ballarpur	8	7	1	1	2	8	14
	Chhindwara, Pench Valley	25	14	11	9	4	22	129
	Total	33	21	12	10	6	30	143
	Punjab.	Jhelum	10	...	10	1	1	8	9
Mianwali		1	...	1	...	...	1	1
Shahpur		2	...	2	...	...	1	1
Total		13	...	13	1	1	10	11
Grand Total (Coal) for 1928		556	406	150	31	80	543	1,881
Grand Total of preceding year		644	425	219	32	99	583	1,791
Difference		-88	-19	-69	-1	-19	-40	+90

APPENDIX I—*contd.*Table No. 4—*contd.*Numbers of mines opened, closed and inspected, during the year 1928—*contd.*

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.				INSPECTIONS.	
			Worked under mechanical power.	Not worked by mechanical power.	Opened during the year.	Closed during the year.	Number of mines inspected.	Number of inspections.
IRON ORE.								
Bihar and Orissa	Singhbhum	6	8	3	1	...	5	11
Burma	Henzada	1	...	1	1	...	...	...
	Mandalay	1	...	1	...	...	...	...
	Northern Shan States	5	...	5	...	...	3	3
	Total	7	...	7	1	...	3	3
Central Provinces. }	Drug	1	...	1	...	...	...	...
	Grand Total (Iron ore) for 1928	14	3	11	2	...	8	14
	Grand Total of preceding year.	14	3	11	1	1	6	7
	Difference . . . . .	...	...	...	+1	-1	+2	+7
MANGANESE ORE.								
Bihar and Orissa.	Singhbhum	16	...	16	7	2	7	7
Bombay	Belgaum	4	...	4	...	...	...	...
	North Kanara	2	...	2	...	...	...	...
	Panch Mahals	2	...	2	...	...	2	6
	Total	8	...	8	...	...	2	6

APPENDIX I—*contd.*Table No. 4—*contd.*Numbers of mines opened, closed and inspected, during the year 1928—*contd.*

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.				INSPECTIONS.	
			Worked under me- chanical power.	Not worked by me- chanical power.	Opened during the year.	Closed during the year.	Number of mines inspected.	Number of inspec- tions.
MANGANESE ORE—<i>contd.</i>								
Central Pro- vinces.	Balaghat	82	1	81	11	27	7	8
	Bhandara	18	1	17	2	6	1	1
	Chhindwara	5	1	4	1	3	3	3
	Nagpur	40	5	35	2	14	25	26
	Total	145	8	137	16	50	36	38
Madras	Bellary	5	...	5	1	1	4	4
	Kurnool	1	...	1	...	...	...	...
	Vizagapatam	9	1	8	2	4	3	3
	Total	15	1	14	3	5	7	7
Grand Total (Manganese Ore) for 1928.		194	9	175	26	57	52	58
Grand Total of preceding year.		220	10	210	45	55	150	219
Difference		-36	-1	-35	-19	+2	-98	-161
LEAD ORE.								
Burma	Northern Shan States	1	1	...	...	...	1	10
	Southern Shan States	3	2	1	1	...	3	10
	Grand Total (Lead Ore) for 1928	4	3	1	1	...	4	20
	Grand Total of preceding year.	4	3	1	...	...	1	7
Difference . . . . .		...	...	...	+1	...	+3	+13

APPENDIX I—*contd.*Table No. 4—*contd.*Numbers of mines opened, closed and inspected, during the year 1928—*contd.*

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.				INSPECTIONS.	
			Worked under mechanical power.	Not worked by mechanical power.	Opened during the year.	Closed during the year.	Number of mines inspected.	Number of inspections.
GOLD.								
Bihar and Orissa	Singbhum	1	...	1	...	...	1	1
Madras	Anantapur . . . . .	...	...	...	...	...	...	...
	Grand Total (Gold) for 1928 .	1	...	1	...	...	1	1
	Grand Total of preceding year.	2	1	1	...	1	2	2
	Difference	-1	-1	...	...	-1	-1	-1
TIN AND WOLFRAM ORE.								
Burma	Amherst	7	...	7	7	1	1	1
	Mergui	121	4	117	45	29	1	1
	Lavoy	72	5	67	17	7	1	1
	Thaton	3	...	3	1	...	3	3
	Grand Total (Tin and Wolfram Ore) for 1928.	203	9	194	70	37	6	6
	Grand Total of preceding year.	200	7	193	44	46	27	28
	Difference	+3	+2	+1	+26	-9	-31	-22

APPENDIX I—*contd.*Table No. 4—*contd.*Numbers of mines opened, closed and inspected, during the year 1928—*contd.*

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.				INSPECTIONS.	
			Worked under mechanical power.	Not worked by mechanical power.	Opened during the year.	Closed during the year.	Number of mines inspected.	Number of inspections.
CHROMITE ORE.								
Baluchistan .	Quetta-Pishin . . . . .	...	...	...	...	...	...	...
	Zhob	32	...	32	...	...	2	3
	Total	32	...	32	...	...	2	3
Bihar and Orissa.	Singhbhum	3	...	3	1	1	3	3
	Grand Total (Chromite Ore) for 1928	35	...	35	1	1	5	6
	Grand Total of preceding year	37	...	37	2	...	8	9
	Difference	-2	...	-2	-1	+1	-3	-3
COPPER ORE.								
Bihar and Orissa.	Singhbhum	2	2	...	1	...	2	3
Burma	Honzada	1	...	1	...	...	...	...
Madras	Nellore	1	...	1	...	1	...	...
	Grand Total (Copper Ore) for 1928.	4	3	2	1	1	2	3
	Grand Total of preceding year.	3	1	2	...	...	1	2
	Difference	+1	+1	...	+1	+1	+1	+1
GEMS.								
Burma	Katha	2	2	...	...	...	...	...
	Total of preceding year	2	2	...	1	...	...	...
	Difference . . . . .	...	...	...	-1	...	...	...

APPENDIX I—contd.

Table No. 4—contd.

Numbers of mines opened, closed and inspected, during the year 1928—contd.

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.				INSPECTIONS.	
			Worked under mechanical power.	Not worked by mechanical power.	Opened during the year.	Closed during the year.	Number of mines inspected.	Number of inspections.
MAGNESITE.								
Madras . . .	Salem	4	...	4	1	..	2	2
	Total of preceding year	3	...	3	...	...	2	3
	Difference	+1	...	+1	+1	...	...	+1
BAUXITE.								
Bombay . . .	Kaira	1	...	1	...	...	1	1
Central Provinces.	Jubbulpore	1	...	1	...	1	...	...
	Grand Total (Bauxite) for 1928	2	...	2	..	1	1	1
	Grand Total of preceding year	3	...	3	2	..	...	...
	Difference	-1	...	-1	-2	+1	+1	+1
STEATITE.								
Bihar and Orissa.	Singbhum	4	...	4	...	...	...	...
Central Provinces.	Bhandara . . . . .	...	...	...	...	...	1	1
	Jubbulpore	5	...	5	2	...	...	...
	Total	5	...	5	2	...	1	1
Madras . . .	Nellore	2	...	2	...	...	2	2

APPENDIX I—*contd.*Table No. 4—*contd.*Numbers of mines opened, closed and inspected, during the year 1928—*contd.*

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.				INSPECTIONS.	
			Worked under mechanical power.	Not worked by mechanical power.	Opened during the year.	Closed during the year.	Number of mines inspected.	Number of inspections.
STEATITE—<i>contd.</i>								
United Provinces.	Hamirpur	15	...	15	5	11	11	11
	Jhansi	2	...	2	...	...	...	...
	Total	17	...	17	5	11	11	11
	Grand Total (Steatite) for 1928	28	...	28	7	11	14	14
	Grand Total of preceding year	16	...	16	6	2	8	8
	Difference	+12	...	+12	+1	+9	+6	+6
SLATE.								
Bihar and Orissa.	Monghyr	5	...	5	...	1	6	6
Punjab	Gurgaon	3	...	3	...	...	3	3
	Kangra	5	...	5	...	...	...	...
	Total	8	...	8	...	...	3	3
	Grand Total (Slate) for 1928	13	...	18	...	1	9	9
	Grand Total of preceding year	18	...	18	2	2	5	5
	Difference	-5	...	-5	-2	-1	+4	+4

APPENDIX I—contd.

Table No. 4—contd.

Numbers of mines opened, closed and inspected, during the year 1928—contd.

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.				INSPECTIONS.	
			Worked under mechanical power.	Not worked by mechanical power.	Opened during the year.	Closed during the year.	Number of mines inspected.	Number of inspection.
LIMESTONE.								
Bihar and Orissa.	Shahabad	10	2	8	...	...	10	11
	Singhbhum . . . . .	...	...	...	...	...	1	1
	Total	10	2	8	...	...	11	12
Burma	Amherst	2	...	2	1	...	1	1
	Northern Shan States	3	...	3	...	...	2	2
	Total	5	...	5	1	...	3	3
Central Provinces.	Bilaspur	3	...	3	...	...	...	...
	Jubbulpore	16	2	14	3	5	13	14
	Raipur	2	...	2	...	...	...	...
	Yeotmal	1	...	1	...	...	...	...
	Total	22	2	20	3	5	13	14
Punjab	Attock	2	...	2	...	...	1	2
	Jhelum	1	...	1	...	...	1	1
	Rawalpindi	1	...	1	...	...	1	1
	Total	4	...	4	...	...	3	4
Grand Total (Limestone) for 1928.		41	4	37	4	5	30	33
Grand Total of preceding year.		45	3	42	13	4	22	24
Difference		-4	+1	-5	-9	+1	+8	+9

APPENDIX I—*contd.*Table No. 4—*contd.*Numbers of mines opened, closed and inspected, during the year 1928—*contd.*

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.				INSPECTIONS.	
			Worked under mechanical power.	Not worked by mechanical power.	Opened during the year.	Closed during the year.	Number of mines inspected.	Number of inspections.
			IGNEOUS ROCK.					
Bengal	Birbhum	4	1	3	...	...	4	7
Bihar and Orissa.	Singbhum	2	...	2	...	...	...	...
	Sonthal Parganas	57	...	57	15	15	64	90
	Total	59	...	59	15	15	64	90
Bombay	Bombay Suburban	2	...	2	...	...	2	4
	Colaba	1	...	1	...	1	1	2
	Surat	6	...	6	6	...	6	12
	Total	9	...	9	6	1	9	18
Burma	Bassein	1	...	1	...	...	1	1
	Kyaukse	1	...	1	1	...	...	...
	Toungoo	3	...	3	1	...	3	3
	Thaton	9	...	9	2	...	8	15
	Total	14	...	14	4	...	12	19
Central Provinces.	Chhiudwara	1	...	1	1	...	...	...
Grand Total (Igneous Rock) for 1928.		87	1	86	26	16	69	134
Grand Total of preceding year		64	1	63	48	6	53	55
Difference		+23	...	+23	-22	+10	+46	+79
			STONE (unspecified).					
Bihar and Orissa.	Gaya	3	...	3	...	...	...	...
	Shahabad	2	...	2	1	...	...	...
	Singbhum	6	...	6	...	...	5	5
	Total	11	...	11	1	...	5	5

APPENDIX I—*contd.*Table No. 4—*contd.*Numbers of mines opened, closed and inspected, during the year 1928—*contd.*

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.				INSPECTIONS.	
			Worked under mechanical power.	Not worked by mechanical power.	Opened during the year.	Closed during the year.	Number of mines inspected.	Number of inspections.
STONE (unspecified)—<i>contd.</i>								
Delhi	Delhi	1	...	...	...	...	1	1
Punjab	Jhelum	2	...	2	...	...	1	1
	Bawalpindi	1	...	1	...	...	2	2
	Total	3	...	3	...	...	3	4
United Provinces.	Allahabad	9	...	9	...	...	7	8
	Banda	3	...	3	2	1	5	5
	Jhansi	12	...	12	2	5	5	5
	Saharaupur	2	...	2	...	...	...	...
	Total	26	...	26	4	6	17	18
	Grand Total (Stone unspecified) for 1928.	41	...	40	5	6	26	28
	Grand Total of preceding year.	33	...	33	20	7	8	8
	Difference	+8	...	+7	-15	-1	+18	+20
LATERITE.								
Barma	Toungoo	1	...	1	...	...	...	...
	Tfaton	2	...	2	1	...	1	2
	Total	3	...	3	1	...	1	2
Central Provinces.	Jubbulpore	1	...	1	1	...	...	...
	Grand Total (Laterite) for 1928	4	...	4	2	...	1	2
	Grand Total of preceding year	2	...	2	2	...	1	1
	Difference	+2	...	+2	...	...	...	+1

APPENDIX I—contd.

Table No. 4—contd.

Numbers of mines opened, closed and inspected, during the year 1928—contd.

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.				INSPECTIONS.	
			Worked under me- chanical power.	Not worked by mechanical power.	Opened during the year.	Closed during the year.	Number of mines inspected.	Number of inspec- tions.
			SANDSTONE.					
Bihar and Orissa	Shahabad	2	...	2	...	...	5	7
United Prov- inces.	Allahabad	6	...	6	1	...	...	...
	Banda	2	...	2	...	...	...	...
	Total	8	...	8	1	...	...	...
	Grand Total (Sandstone) for 1928.	10	...	10	1	...	5	7
	Grand Total of preceding year.	6	...	6	1	..	10	10
	Difference	+4	...	+4	...	...	-5	-3
			GRAVEL.					
Bihar and Orissa	Singhbhum . . . . .	..	...	...	...	...	..	..
Bombay	Kaira	1	...	1	...	...	1	1
	Grand Total (Gravel) for 1928	1	...	1	...	...	1	1
	Grand Total of preceding year	1	...	1	...	...	...	..
	Difference . . . . .	..	...	...	...	...	+1	+1

APPENDIX I—*contd.*Table 4—*contd.*Numbers of mines opened, closed and inspected, during the year 1928—*contd.*

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.				INSPECTIONS.	
			Worked under mechanical power.	Not worked by mechanical power.	Opened during the year.	Closed during the year.	Number of mines inspected.	Number of inspections.
MURUM.								
Bihar and Orissa	Singbhum . . . . .	...	...	...	...	...	...	...
Bombay	Bombay Suburban	2	...	2	2	...	2	4
	Kaira . . . . .	...	...	...	...	...	...	...
	Total	2	...	2	2	...	2	4
United Provinces.	Allahabad . . . . .	...	...	...	...	...	...	...
	Grand Total (Murum) for 1928	2	...	2	2	...	2	4
	Grand Total of preceding year	...	...	...	...	...	...	...
	Difference	+2	...	+2	+2	...	+2	+4
FIRE CLAY.								
Bengal	Burdwan	1	...	1	...	...	...	...
Bihar and Orissa.	Bhagalpur	1	...	1	...	...	2	2
	Manbhum	4	...	4	1	1	...	...
	Palaman	1	1	...	...	...	1	1
	Sambalpur	1	...	1	1	...	...	...
Total		7	1	6	2	1	3	3

APPENDIX I—*contd.*Table No. 4—*contd.*Numbers of mines opened, closed and inspected, during the year 1928—*contd.*

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.				INSPECTIONS.	
			Worked under mechanical power.	Not worked by mechanical power.	Opened during the year.	Closed during the year.	Number of mines inspected.	Number of inspections.
Central Provinces.	Jubbulpore	5	1	4	...	1	2	2
	Grand Total (Fire Clay) for 1928	13	2	11	2	2	5	5
	Grand Total of preceding year	13	3	10	3	2	5	5
	Difference . . . . .	...	-1	+1	-1	...	...	...
Bihar and Orissa.	CHINA CLAY.							
	Bhagalpur	3	...	3	2	...	...	...
	Singhbhum	4	2	2	...	...	3	3
	Total	7	2	5	2	...	3	3
Delhi	Delhi . . . . .	...	...	...	...	...	1	1
	Grand Total (China clay) for 1928	7	2	5	2	...	4	4
	Grand Total of preceding year	12	3	9	3	6	4	4
	Difference	-5	-1	-4	-1	-6	...	...
Bengal	Burdwan	1	1	...	...	...	...	...
Central Provinces.	Jubbulpore	1	...	1	..	...	...	...
	Grand Total (Clay) for 1928	2	1	1	...	...	...	...
	Grand Total of preceding year .	1	1	...	...	...	...	...
	Difference	+1	...	+1	...	...	...	...

APPENDIX I—*contd.*Table No. 4—*contd.*Numbers of mines opened, closed and inspected, during the year 1928—*contd.*

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.				INSPECTIONS.	
			Worked under me- chanical power.	Not worked by me- chanical power.	Opened during the year.	Closed during the year.	Number of mines inspected.	Number of inspec- tions.
BARYTES.								
Madras . . .	Kurnool	6	...	6	2	3	3	3
	Total of preceding year	5	...	5	3	...	2	2
	Difference	+1	...	+1	-1	+3	+1	+1
APATITE.								
Bihar and Orissa.	Singhbhum	1	...	1	...	...	...	...
	Total of preceding year	1	...	1	...	...	..	...
	Difference . . . . .	...	...	...	...	...	...	...
ASBESTOS.								
Madras . . .	Caddapah	1	...	1	...	...	...	...
	Total of preceding year	2	...	2	1	...	...	...
	Difference	-1	...	-1	-1	...	...	...
OCHRE.								
Central Pro- vinces.	Chanda	1	..	1	1	...	...	...
	Jubbulpore	1	...	1	1	...	...	...
	Total	2	...	2	2	...	...	...

APPENDIX I—*contd.*Table No. 4—*concl'd.*Numbers of mines opened, closed and inspected, during the year 1928—*concl'd.*

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.				INSPECTIONS.	
			Worked under mechanical power.	Not worked by mechanical power.	Opened during the year.	Closed during the year.	Number of mines inspected	Number of inspections.
United Provinces.	Banda	1	...	1	...	1	...	...
	Grand Total (Ochre) for 1928 .	3	...	3	2	1	...	...
	Grand Total of preceding year	4	...	4	2	4	1	1
	Difference .	-1	...	-1	...	-3	-1	-1
Madras .	Salem	1	...	1	...	...	1	1
	Total of preceding year .	3	...	3	2	2	1	1
	Difference .	-2	...	-2	-2	-2	...	...
Rajputana .	Ajmer-Merwara	2	...	2	2	2	1	1
	Total of preceding year .	...	...	...	...	...	...	...
	Difference .	+2	...	+2	+2	+2	+1	+1
	Grand Total (Metalliferous Mines).	1,393	122	1,270	358	422	439	529
	Grand Total of preceding year.	1,348	97	1,251	413	319	513	604
	Difference .	+45	+25	+19	-55	+103	-74	-75
	Grand Total (All minerals)	1,948	528	1,420	389	502	982	2,410
Grand Total of preceding year.	1,992	522	1,470	445	418	1,096	2,395	
Difference .	-44	+6	-50	-56	+84	-114	+15	

APPENDIX I—contd.

Table No. 5.

The following table shows the fluctuations in the output of the principal minerals raised from mines classed under the Indian Mines Act. The other minerals raised are gems, slate, magnesite, steatite, clay, bauxite, fuller's earth, ochre, barytes, apatite, asbestos, corundum and stone.

Year.	Coal.	Manga- nese ore.	Mica.	Lime- stone.	Salt.	Gold.	Copper ore.	Wolfram ore.	Iron ore.	Chro- mite ore.	Tin ore.	Lead ore.	Silver.
	Tons.	Tons.	Cwts.	Tons.	Tons.	Troyozs.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Troy ozs.
1919	31,759,727	420,184	41,063	140,810	174,974	11,191	82,750	2,905	101,322	14,087	701	24	753
1920	17,082,711	552,630	44,666	161,340	181,092	13,645	28,167	1,733½	148,472	23,123	1,056	128,908	2,570,595
1921	18,358,934	264,254	29,470	284,252	123,084	10,108	32,560	864½	286,190	27,727	1,032	144,089½	3,555,640
1922	18,168,988	392,322	30,080	140,607	187,157	8,388	30,764	942	240,363	10,093	1,080	172,018	4,209,138
1923	18,763,967	640,378	31,605	230,161	113,700	1,510	6,550	872	292,033	26,288	1,021	245,925	4,844,643
1924	20,256,034	669,331	40,529	513,333	159,018	3,046	38	739	430,805	27,850	1,627	310,236	5,287,966
1925	19,969,041	710,347	45,383	614,232	125,366	288	...	772½	529,376	21,236	2,307	321,854	4,931,569
1926	30,093,024	857,069	41,451	827,232	122,801	1,053	9,568	751	600,363	16,455	2,562	362,904	5,103,705
1927	21,108,978	878,521	42,081	1,132,235	145,311	2,395	5,010	530	1,068,281	17,066	2,056	450,777	6,004,588
1928	21,515,798	718,656	44,829	1,404,578	145,543	7	18,055	622	1,376,754	17,167	2,777	443,654	7,404,723

Table No. 6.

The following table shows the amount of coal raised, the average number of persons working daily and the death-rates during the years 1919 to 1928 in respect of coal mines under the Indian Mines Act :—

Year.	Amount of coal raised.	Average number of persons work- ing daily below and above ground.	Number of deaths below and above ground.	Death-rates.	
				Per 1,000,000 tons raised.	Per 1,000 per- sons working daily below and above ground.
1919	Tons. 21,759,727	190,052	266	11.95	1.37
1920	17,082,711	175,943	172	10.07	0.98
1921	18,358,934	190,617	257	13.99	1.35
1922	18,168,988	184,355	209	11.50	1.13
1923	18,763,967	182,601	332	17.69	1.82
1924	20,256,034	187,088	230	11.35	1.23
1925	19,969,041	173,140	186	9.31	1.07
1926	20,093,024	170,628	171	8.51	1.00
1927	21,108,978	165,213	181	8.57	1.10
1928	21,515,798	164,139	218	10.13	1.33

APPENDIX I—*contd.*

Table No. 7.

Aggregate horse power and purpose for use of electric motors installed both on surface and underground at coal mines under the Indian Mines Act.

Coalfield.	Horse power on surface.						Horse power below ground.					Total horse power of motors installed.
	Winding.	Ventilation.	Haulage.	Coal washing or screening.	Miscellaneous.	Total.	Haulage.	Pumping.	Portable machinery.	Miscellaneous.	Total.	
Assam . . . . .	...	...	160	8	20	188	60	...	...	...	60	248
Bokaro	700	75	175	...	739	1,689	20	684	...	30	734	2,423
Central Provinces . . . . .	...	...	...	...	2	2	40	190	60	1	291	293
Giridih . . . . .	...	120	...	110	398	628	382	2,423	64	2	2,871	3,499
Jharia	2,806	605	2,051	856	3,765	10,053	7,144	14,427	3,423	589	25,580	35,663
Karanpura . . . . .	...	...	125	35	144	304	...	215	...	...	215	519
Raniganj	2,806	1,061	531	447	292	5,130	4,701	9,522	2,372	99	16,694	21,833
Total	6,314	1,861	3,042	1,456	5,360	18,033	12,347	27,461	5,919	718	46,445	64,478

Table No. 8.

Number of Mines under the Indian Mines Act, where electric power is used, and the aggregate horse power of electric motors installed.

Province.	Minerals worked.						Total horse power of motors installed.
	Coal.		Silver-Lead.		Sundry Minerals.		
	Number of mines.	Horse power.	Number of mines.	Horse power.	Number of mines.	Horse power.	
Assam	2	248	...	...	...	...	248
Bengal	48	18,512	...	...	1	50	18,512
Bihar and Orissa	60	45,425	...	...	2	363	45,788
Bombay . . . . .	...	...	...	...	1	171	171
Burma . . . . .	...	...	2	3,547	5	1,522	5,129
Central Provinces	1	293	...	...	6	377	670
Madras . . . . .	...	...	...	...	1	224	224
Punjab . . . . .	...	...	...	...	1	475	475
Total	111	64,478	2	3,547	17	3,242	71,267

APPENDIX I—contd.

Table No. 9.

Number and type of coal-cutting machines at work in Coal Mines under the Indian Mines Act.

Maker.	British.	American.	Chain.	Bar.	Percussive.	Power.			Total number of machines.
						Electricity.		Compressed air.	
						A. C.	D. C.		
Goodman . . . . .	...	56	56	...	...	23	28	...	56
Hardiux	5	...	...	...	5	...	...	5	5
Mavor and Coulson	70	...	5	65	...	59	1	10	70
Siskol . . . . .	...	...	...	...	...	...	...	...	...
Sullivan . . . . .	...	15	15	...	...	15	...	...	15
Total	75	71	76	65	5	102	29	15	146

Jharia coalfield 75 machines }
 Raniganj coalfield 67 " } Total number of square feet
 Central Provinces coalfield 4 " } undercut-8,372,689.

Table No. 10.

Number of mechanical ventilators in use at Coal Mines under the Indian Mines Act.

Assam.	Bengal.	Bihar and Orissa.	Central Provinces.	Punjab.	Total.
12	21	32	8	1	74

Table No. 11.

Number of safety lamps in use at Coal Mines under the Indian Mines Act.

Assam.	Baluchistan.	Bengal.	Bihar and Orissa.	Central Provinces.	Punjab.	Total.
1,862	6	8,170	7,756	2	2	17,798

471 were locked by screws, 7,335 by lead rivets, and 9,992 by magnetic means.

Table No. 12.

Statement of explosives used during the year 1928 in mines under the Indian Mines Act.

Name of explosive.	Quantity of explosives used, in lb., in:—								Total.
	Coal mines.	Mica mines.	Manganese mines.	Lead ore mines.	Tin and Wolfram ore mines.	Limestone mines.	Stone mines.	Other mines.	
Dynamite	150,887	89,773	46,035	...	5,421	7,885	32,629	69,755	402,385
Gelignite	99,703	14,175	105,180	151,226	699	6,263	34,132	13,625	425,023
Monobel	50,955	...	...	...	...	...	...	...	50,955
Stonobel	57,490	...	...	...	...	...	...	...	57,490
Bobbinit	22	...	...	...	...	...	...	...	22
Gunpowder	2,155,180	23,173	144,237	...	...	209,650	40,731	138,741	2,711,712
Compressed gunpowder	31,089	...	...	...	...	...	...	...	31,089
Number of detonators used.	1,085,346	891,892	776,417	336,454	71,416	42,519	261,716	853,102	3,818,392

APPENDIX II.
ACCIDENTS IN MINES.

Table No.
Fatal Accidents during the year 1928.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
EXPLOSIONS AND IGNITION OF FIRE-DAMP—(3 deaths).						
1	22nd June, 8 A. M.	Ningah mine, Kalipahari P. O., Bengal.	Lodna Colliery Co. (1920), Ltd.	Rameswar Bauri, (m.), 35, <i>Sotns-cutter.</i>	Coal	Whilst four stone cutters were working in the stone above a coal seam an ignition of gas occurred. All four were burnt, and one of them succumbed to his injuries. Inspection and inquiry made.
2	28th September, 8-30 A. M.	Jamadoba mine, Jeaigora P. O., Bihar and Orissa.	Tata Iron & Steel Co., Ltd.	Tahalu Gopo, (m.), 45; Krishna Mahato, (m.), 34, <i>Coal-cutters.</i>	Coal	At the commencement of their shift four miners carrying open lamps went to the face of a main gallery 5 feet wide, 6 feet high and rising at 1 in 7. An accumulation of fire-damp was ignited and they were all severely burnt. Two of them subsequently died. Fire-damp had not previously been found in the mine. Inspection and inquiry made.
FALLS OF ROOF AND SIDES.						
(a) Falls of roof—(84 deaths).						
3	4th January, 1-15 P. M.	Kendwadih mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Budhna Dosadh, (m.), 16; Gujri Harin, (f.), 25, <i>Coal-carriers.</i>	Coal	The deceased were sitting in a gallery beneath roof coal in which a shot hole was being tamped, when a mass of coal, 10' x 5' x 2', fell on them from a concealed "slip" at a height of 10 feet. They sustained fatal injuries. Inspection and inquiry made.
4	5th January, 11 P. M.	Aldih mine, Sitarampar P. O., Bengal.	Aldih Coal Co., Ltd.	Dayal Kole, (m.), 17, <i>Coal-cutter.</i>	Coal	Whilst a miner was loading his basket with coal in a working gallery, a mass of roof coal, 15' x 4' x 1', fell from a height of 10 feet and killed him instantly. Inspection and inquiry made.

5	5th January, 11-30 P. M.	Kurhbari mine, Giridib P. O., Bihar and Orissa.	East Indian Rail- way.	Kartali Meah, (m.), 42 ; Raghu Hazam, (m.), 42, <i>Coal-cutters</i> ; Diloo Barhi, (m.), 47, <i>Stone-cutter.</i>	Coal	Eight miners were engaged in cutting out a small pillar of coal at the edge of a goaf when a mass of roof stone, 56' x 47' x 15', fell from a height of 14 feet. Three of the men were struck by the falling mass and killed instantly. Inspection and inquiry made.
6	8th January, 2-30 A. M.	Kirkend mine, Kusunda P. O., Bihar and Orissa.	Marine Coal Co., Ld.	Hem Lal Turi, (m.), 35, <i>Coal-cutter.</i>	Coal	Deceased left his appointed working place and went through a fence to rob coal from the side of a pillar. A mass of stone, 2' x 2' x 2', fell on him from a height of 14 feet, killing him instantly. Inspection and inquiry made.
7	12th January, 3 P. M.	Damudarpur mine, Nandi P. O., Bengal.	Bengal Coal Co., Ld.	Bhaloo Singh, (m.), 37, <i>Coal-cutter.</i>	Coal	Two coal-cutters were dressing down top coal in a gallery, after a shot had been fired, when a mass of stone, 6' x 3'-3' x 7', fell on them from a height of 9'-6". One of them was killed instantly and the other was severely injured. Inspection and inquiry made.
8	19th January, 5 P. M.	Dharisajoba mine, Kusunda P. O., Bihar and Orissa.	Dharisajoba Colliery Co.	Sagram Manjhi, (m.), 26, <i>Coal-cutter.</i>	Coal	A miner was killed in a gallery by a mass of roof coal, 6' x 4' x 2', which fell on him from between "slips" at a height of 9 feet. The gallery was fenced. It was presumed that the man had entered it with the object of loading loose coal. Inspection and inquiry made.
9	31st January, 6 P. M.	Chanch mine, Barakar P. O., Bihar and Orissa.	Bengal Coal Co., Ld.	Lakhoo Manjhi, (m.), 28, <i>Coal-cutter.</i>	Coal	In a gallery, 12 feet wide and 7 feet high, a mass of stone, 5' x 6' x 1', fell from the roof. A coal-cutter employed in the gallery was severely injured and died two days later. Inspection and inquiry made.
10	2nd February, 7-45 P. M.	Benahir mine, Jharua P. O., Bihar and Orissa.	Standard Coal Co., Ld.	Monmatha Nath Chakrabarty, (m.), 48, <i>Head Overman.</i>	Coal	Whilst timber was being withdrawn from a goaf in a seam 26 feet thick the roof commenced to "weight" and the workmen retreated. About thirty minutes later when the roof was quiet an overman entered the goaf and was struck on the head by a small piece of stone which fell from the roof. The injury caused death three days later. Inspection and inquiry made.
11	16th February, 5 A. M.	West Gopalchuck mine, Kusunda P. O., Bihar and Orissa.	Gopalchuck Coal Co., Ld.	Kamul Dhobi, (m.), 40, <i>Coal-cutter.</i>	Coal	Whilst loading coal in a depillaring area, deceased was struck on the head by a wedged shaped block of coal, 4'-8" x 0'-1'-6" x 1' 6", which fell from between two slips in the roof, 17 feet above. He was killed instantly. Inspection and inquiry made.

APPENDIX II.—contd.

Fatal Accidents during the year 1928—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
FALLS OF ROOF AND SIDES—contd.						
(a) Falls of roof—(84 deaths)—contd.						
12	17th February, 12-30 P.M.	Chowrasio mine, Dishergarh P. O., Bihar and Orissa.	Equitable Coal Co., Ld.	Mongol Manjhi, (m.), 30, Coal-cutter.	Coal	In a district in which pillars were being extracted a miner passed through a fence and entered a place from which the timber had been withdrawn. Whilst getting coal there he was killed by a large mass of roof coal which fell from a height of 6 feet. Inspection and inquiry made.
13	25th February, 5-30 P.M.	Damudarpur mine, Nandi P. O., Bengal.	Bengal Coal Co., Ld.	Bohari Singh, (m.), 28, Coal-cutter.	Coal	Whilst a miner was loading coal in an underground gallery, he was struck and fatally injured by a mass of stone, 3' x 3' x 3' thick, which fell from a height of 10 feet. Inspection and inquiry made.
14	1st March, 4-30 P.M.	Burra-Golai mine, Margherita P. O., Assam.	Assam Railway and Trading Co., Ld.	Bhabani Kahar, (m.) 24 Labourer.	Coal	A tub-filler was loading coal in a heading, 5' x 5', when about one ton of roof coal fell on him inflicting fatal injuries. Inspection and inquiry made.
15	2nd March, 4-30 A.M.	Katras mine, Katrasgarh P. O. Bihar and Orissa.	Bnrrakur Coal Co., Ld.	Rasik Manjhi, (m.) 23, Coal-cutter.	Coal	Whilst dressing down roof coal in a gallery a miner was killed instantly by a mass of roof coal, weighing about 2½ tons, which fell from a height of 9 feet. He had been ordered not to work there and another working place had been allotted to him. Inspection and inquiry made.
16	4th March, 2 P.M.	Nadanpur mine, Ondal P. O. Bengal.	Murala debi.	Chegar Kole, (m.), 55, Coal-carrier.	Coal	Whilst a gang of miners were cutting coal from the sides of an underground gallery a mass of roof coal and shale, 20' x 16' x 4' thick fell from a height of 11 feet. Deceased, who was carrying coal at that moment, was buried by the fall; two miners escaped with slight injuries. Inspection and inquiry made.

17	23rd March, 6-15 P.M.	Jamadaha mine, Jeaigora P. O., Bihar and Orissa.	Tata Iron & Steel Co., Ld.	Ram Sing Chamar, (m.), 35; Baisaku Poenka, (m.), 30, <i>Coal-cutters</i> ; Maniar Chamar, (m.), 34, <i>Coal-carrier.</i>	Coal	Whilst three miners were at work in a gallery, parallel to and 8 feet from a dyke, a mass of roof coal, 22' x 10' x 22', fell on them from a height of 6½ feet; they were killed instantly. An unexposed slip on one side of the gallery and a strong cleavage plane on the other side caused the fall. When galleries are being driven in close proximity to faults or dykes, every precaution should be taken to keep the roof secure. Inspection and inquiry made.
18	26th March, 1-30 P.M.	Sanctoria mine, Disheergarh P. O., Bengal.	Bengal Coal Co., Ld.	Sasbi Bauri, (m.), 38, <i>Coal-cutter.</i>	Coal	Deceased went inside a fenced goaf, presumably for a natural purpose, and was killed instantly by a fall of roof coal weighing about ½ ton. Inspection and inquiry made.
19	27th March, 3-15 P.M.	Loyabad mine, Bansjora P. O., Bihar and Orissa.	Burrakur Coal Co., Ld.	Sukhu Singh, (m.), 30, <i>Coal-cutter.</i>	Coal	Whilst a miner was drilling a shot hole in the coal floor of a gallery, 12 feet wide, a mass of roof stone, 6' x 4' x 0'-6", fell on him from a height of 9 feet; he was killed instantly. A concealed "slip" in the roof caused the fall. Inspection and inquiry made.
20	31st March, 6-30 A.M.	Ramnagar mine, Kulti P. O., Bengal.	Bengal Iron Co., Ld.	Bhusan Bauri, (m.), 35, <i>Coal-cutter.</i>	Coal	A miner was cutting coal from the side of a pillar when a mass of coal, 7' x 2' 6" x 2' 6", fell from a height of 7 feet, from between two concealed "slips." He was killed instantly. Inspection and inquiry made.
21	3rd April, 6-30 P.M.	Kankaneo mine, Bansjora P. O., Bihar and Orissa.	Eastern Coal Co., Ld.	Goguli Kolline, (f), 25, <i>Labourer.</i>	Coal	Whilst a woman was filling a basket with coal in a gallery, 12 feet high, a mass of coal, 8' x 6' x 3' 6", fell upon her from a concealed "slip" in the roof. She was killed instantly. Inspection and inquiry made.
22	4th April, 12-30 A.M.	Kustore mine, Kusunda P. O., Bihar and Orissa.	Rauegunge Coal Association, Ld.	Saik Miagan, (m.), 30, <i>Coal-carrier.</i>	Coal	Deceased was loading coal under some roof coal which had recently been blasted when a piece of coal, 2' x 2' x 2', fell on him from a height of 10 feet. He sustained fatal injuries and died three hours later. If he had obeyed orders and waited until this coal was dressed down, the accident would not have occurred. Inspection and inquiry made.
23	14th April 2-5 P.M.	Sripore mine, Kalipahari P. O., Bengal.	Lodna Colliery Co., (1920), Ld.	Darhari Moah, (m.), 55, <i>Coal-carrier.</i>	Coal	Whilst working in a dopillaring area a loader was instantly killed by a mass of stone weighing about 2 cwt. which fell from a height of 16 feet. Inspection and inquiry made.
24	21st April, 5-30 A.M.	Knardih mine, Kalipahari P. O., Bengal.	Knardih Coal Co., Ld.	Suklal Bhakta, (m.), 41, <i>Coal-cutter.</i>	Coal	Whilst lying asleep in an underground gallery which had been fenced to prevent access deceased was killed by a mass of roof stone which fell between two "slips" from a height of 11 feet. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents during the year 1928—contd.

Serial Number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
FALLS OF ROOF AND SIDES—contd.						
<i>(a) Falls of roof—(84 deaths)—contd.</i>						
25	24th April, 4 P.M.	Gaslitan mine, Sijua P. O., Bihar and Orissa.	New Manbhoom Coal Co., Ltd.	Iakhia Korani, (f), 20, Coal-carrier.	Coal	A coal-carrier was starting to carry away a basket of coal from a place where a mass of coal 8' x 6' x 2', was being taken down from the roof of a gallery, 7 feet high, when the coal suddenly fell. She was struck and killed instantly by a large lump of coal, 4' x 3' x 2', which rolled a distance of 6 feet. Inspection and inquiry made.
26	25th April, 1-30 A.M.	Seebpore mine, Charanpur P. O., Bengal.	Katras Jherriah Coal Co., Ltd.	Badni Mojlian, (f), 20, Labourer.	Coal	Whilst four women were loading coal underground a mass of roof stone, 18' x 4' x 4', fell from a height of 16 feet. One of them was killed and the others were injured. Had the subordinate staff carried out their duties of supervision properly, this accident would not have occurred. Inspection and inquiry made.
27	25th April, 9-30 A.M.	Bhowra mine, Jealgora P. O., Bihar and Orissa.	Eastern Coal Co., Ltd.	Basdeo Kshar, (m), 32, Machineman.	Coal	Whilst a machineman was taking down the haulage post of a coal cutting machine which had been set into the broken coal on the face of a fault, he was struck on the head and fatally injured by a mass of coal, 2' 6" x 1' 6" x 1' 3", which fell off the fault face from a height of 9 feet. If he had set the haulage post in normal ground the accident would have been avoided. Inspection and inquiry made.
28	1st May, 10 A.M.	Lodna mine, Jharua P. O., Bihar and Orissa.	Lodna Colliery Co., (1920), Ltd.	Degan Bhuuya, (m.), 38, Timberman.	Coal	A timberman was withdrawing props from a depillared area in a seam 7½ feet thick. After knocking out a prop with a hammer he slipped and was caught by a mass of stone, 7' x 2' x 2', which fell from the roof. He was severely injured and died two hours afterwards. The accident would have been avoided if a safety prop-withdrawing appliance had been used. Inspection and inquiry made.

29	3rd May, 6-45 A.M.	Bhuggndih mine, Jharra P. O., Bihar and Orissa.	Bengal Nagpur Coal Co., Ltd.	Hakim Manjhi, (m.), 20, Coal-carrier.	Coal	Whilst a stook of coal was being extracted on the edge of a goaf the roof suddenly came "on weight", causing part of the stook to collapse and mass of roof coal, 6' x 4' x 2', to fall from a height of 9 feet. Two miners who were loading coal near the stook were caught before they could reach a place of safety: one was killed instantly and the other was severely injured. Inspection and inquiry made.
30	7th May, 6-30 P.M.	Toposi mine, Toposi P. O., Bengal.	Bansera Coal Co., Ltd.	Keshi Baurin, (f.), 18, Sarola Baurin, (f.), 15, Labourers.	Coal	Whilst loading coal from a machine cut gallery two women were struck and fatally injured by a mass of roof stone, 11' x 7' x 3' thick, which fell from a height of 7 feet. Inspection and inquiry made.
31	10th May, 11-30 P.M.	Jainti Central mine, Karmatar P. O., Bihar and Orissa.	Jainty Central Colliery, Ltd.	Juman Meah, (m.), 28, Coal-cutter.	Coal	Contrary to orders a coal miner went to cut roof coal in a gallery which was fenced because the roof was unsafe. He removed a prop and a piece of roof stone, 2' 3" x 1' 6" x 7", falling from a height of about 4 feet, struck him on the back. He died within a few days. Inspection and inquiry made.
32	11th May, 0-15 P.M.	Kankaneo mine, Bansjora P. O., Bihar and Orissa.	Eastern Coal Co., Ltd.	Etwari Chamar, (m.), 25, Coal-cutter.	Coal	Deceased left his appointed working place, passed through a fence, and was rubbing coal from the corner of a pillar, when a mass of roof stone, 12' x 5' x 9', fell on him from a height of 11 feet. He was killed instantly. Inspection and inquiry made.
33	15th May, 2-15 P.M.	Loyabad mine, Bansjora P. O., Bihar and Orissa.	Burrakur Coal Co., Ld.	Aunbo Meah, (m.), 32, Coal-cutter.	Coal	Whilst a miner was dressing the side of a gallery, 5 feet wide and 4½ feet high, a mass of coal, 5' x 4' x 9' fell from the roof and he sustained severe injuries from which he died fifteen hours later. Two concealed "slips" in the roof coal transverse to the line of the gallery and a "slip" parallel to the gallery which he exposed by dressing the side were the cause of the fall. Inspection and inquiry made.
34	18th May, 6-30 P.M.	Amlabad mine, Jalgora P. O., Bihar and Orissa.	Eastern Coal Co., Ld.	Jahal Gope, (m.), 32, Coal-cutter.	Coal	Whilst a miner was robbing coal from the corner of a pillar, he was killed instantly by a mass of coal, 4' x 2' 8" x 2' which fell from a height of 7 feet off the face of a small fault in the roof. Inspection and inquiry made.
35	21st May, 8-30 A.M.	Palaesthali mine, Charanpur P. O., Bihar and Orissa.	B. M. Ganeriwala & Co.	Bagal Bauri, (m.), 35, Coal-cutter.	Coal	A miner went into a fenced gallery and was fatally injured by roof stone, 2' x 3' x 4', which fell from a height of 16 feet. He should not have gone through a fence into a dangerous place. Inspection and inquiry made.
36	23rd May, 9 A.M. †	Barmoudia mine, Sitaranpur P. O., Bengal.	New Beerbhoom Coal Co., Ld.	Fagu Manjhi, (m.), 35; Ratan Manjhi, (m.), 30, Coal-cutters.	Coal	The roof of a goaf suddenly came "on weight", and a mass of stone, 15" thick, fell from a height of 5 feet. The fall extended over an adjoining gallery, 30 feet in length and 12 feet in width, where two miners were at work. They were killed instantly. A coal-carrier escaped with slight injuries. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents during the year 1928—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
FALLS OF ROOF AND SIDES—contd.						
(a) Falls of roof—(84 deaths)—contd.						
37	30th May, 1-30 P. M.	Sripur mine, Kalipahari P. O., Bengal.	Lodna Colliery Co. (1920), Ltd.	Dhanu Meah, (m.) 40, <i>Labourer.</i>	Coal	In a district where pillars of coal were being extracted three persons were loading coal when the roof in the goafed area "bumped" and caused a piece of roof coal, 1' x 1'-6" x 3', to fall from a height of 12 feet. One of them was struck on the head and killed instantly. Inspection and inquiry made.
38	30th May, 6-15 P.M.	Bhalgora mine, Jharia P. O., Bihar and Orissa.	Bhalgora Coal Co., Ltd.	Hemlal Bari, (m.) 25, <i>Carpenter.</i>	Coal	After setting a prop in a gallery, 16 feet high, a timberman walked under a small area of bad roof. He was struck by a piece of stone weighing about 5 lb. which fell from the roof, and sustained injuries which caused death about a month later. Inspection and inquiry made.
39	2nd June, 4-30 A.M.	Bhutgoria mine, Jeaigora P. O., Bihar and Orissa.	Aldih Coal Co., Ltd.	Guhi Mahato, (m.), 22, <i>Line-mistry.</i>	Coal	In a seam 8'-3" thick, the upper portion consisting of inferior coal, 18" thick, was left unworked and was supported by timber. Shortly after the withdrawal of timber from a depillared area the roof coal collapsed and caused a mass of roof coal, 30' x 13' x 1'-6", to fall in an adjacent loading level, although twenty props had been left under it for support. Deceased was removing a tramline in the loading level 30 feet from the goaf, when he was caught by the falling roof coal and killed instantly. Inspection and inquiry made.
40	26th June, 5-30 P.M.	South Bulliari mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Gouri Prosad Lal, (m.), 40, <i>Overman</i> ; Chhotu Barhi, (m.), 30, <i>Timberman.</i>	Coal	Whilst the last prop was being withdrawn from a depillared area in a seam 5'-3" thick a mass of roof stone, 8' x 4' x 1'-3", fell without giving any warning. An overman who was supervising the work and a timberman were killed instantly. If a safety prop-withdrawer had been used, the accident would have been avoided. Inspection and inquiry made.

41	6th July, 3-15 P.M.	Kendwadih mine, Nawagarh P. O., Bihar and Orissa.	Kendwadih Co.	Coal	Badri Prasad Singh, (m.), 26, <i>Overman.</i>	Coal	Whilst an overman was testing the roof of a gallery, 20 feet high, one hour after a shot had been fired in the side of a pillar, a piece of stone, 3' x 2' x 7', fell from the roof on to him, and he was fatally injured. If he had exercised greater care in sounding the roof, the accident would have been avoided. Inspection and inquiry made.
42	16th July, 1-45 P.M.	Serampur mine, Girdih P. O., Bihar and Orissa.	East Indian Rail- way.		Badri Dasadh, (m.), 30, <i>Coal-cutter.</i>	Coal	Four miners were working on the upper bench in a seam 22 feet thick. They had left the roof coal unsupported and a mass, 11' x 3' x 1' thick, fell from a height of 4 feet, killing one and seriously injuring another of them. The two others received trifling injuries. Had proper supervision been exercised the accident could have been avoided. Inspection and inquiry made.
43	10th July, 6-45 P.M.	Bawdwin mine, Namtu P. O., Burma.	Burma Corporation Ld.		Udabe Chand, (m.), 33, <i>Miner.</i>	Lead Silver.	In an area previously affected by fire but in which stopping had been resumed, a cross-cut ventilated by compressed air was being advanced beyond the lode into the hanging wall. A post supporting the roof 20 feet from the face suddenly sank 2 feet into the floor and soft ground ran into the cross-cut completely filling 10—15 feet of it and entombing two miners who were working at the face. They were rescued after two and a quarter hours. One man died from heat stroke and shock sixteen hours later. Inspection and inquiry made.
44	23rd July, 10-30 A.M.	Loyabad mine, Bansjora P. O., Bihar and Orissa.	Barrakur Coal Co., Ld.		Gafur Meah, (m.), 23, <i>Carpenter's labourer.</i>	Coal	Decoased was struck and killed instantly by a piece of stone, 8' x 2' 6" x 4", which fell from the roof of a gallery, 26 feet high. Inspection and inquiry made.
45	2nd August, 3-30 P.M.	Basudeopur mine, Kusunda P. O., Bihar and Orissa.	Bansdeopur Coal Co., Ld.		Jharu Chamar, (m.), 29, Mouboadh Chamar, (m.), 50, <i>Coal-cutters.</i>	Coal	In an area of workings in a seam 24 feet thick from which pillars were being extracted two miners were sitting in a working gallery, 16 feet wide and 8 feet high, when a mass of coal 30' x 16' x 8' fell without warning from unexposed "slips" in the roof, and they were killed instantly. Two other miners were caught by the edge of the falling coal and seriously injured. The gallery had been driven parallel to and a few feet away from a dyke and the "slips" in the coal also ran parallel to the dyke. When galleries are being driven adjacent and parallel to faults or dykes, safety timber should always be set whether it appears necessary or not. Inspection and inquiry made.
46	20th August,	Sripur mine, Kalipahari P. O., Bongal.	Lodna Colliery Co., (1920) Ld.		Sukhu Manjhi, (m.), 32, <i>Coal-cutter.</i>	Coal	A miner was cutting floor coal in a gallery, when about 1 cwt. of roof coal fell on him from a height of 8 feet. He sustained injuries which proved fatal. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents during the year 1928—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
FALLS OF ROOF AND SIDES—contd.						
(a) Falls of roof—(84 deaths)—contd.						
47	4th September, 7 A.M.	Barra Dhemio mine, Sitarampur P. O., Bengal.	Barra Dhemio Coal Co., Ltd.	Santoki Rai, (m.), 30, Coal-cutter.	Coal	Whilst engaged in levering down a mass of roof coal in a gallery a miner lost his balance, and, falling under the falling coal, was killed instantly. Inspection and inquiry made.
48	6th September, 4-30 A.M.	Bhutgoria mine, Jealgora P. O., Bihar and Orissa.	Aldih Coal Co., Ltd.	Khani Baurin, (f.), 35, Coal-carrier-	Coal	Whilst a pillar of coal was being extracted in a seam, 6'-3" thick, a coal carrier was struck and fatally injured by a mass of inferior coal, 4' x 1' 6" x 1' 6", which fell from between two concealed "slips" in the roof. She died a few minutes afterwards. Inspection and inquiry made.
49	13th September, 11 P.M.	Ledo Valley mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Murad Makrani, (m.), 40, Sirdar.	Coal	A sirdar was passing through a siding on a haulageroad when he was partially buried by a mass of coal, weighing 1½ tons, which fell from a "slip" in the roof—a height of 5 feet. He died from suffocation. Inspection and inquiry made.
50	14th September, 2-30 A.M.	New Sinidih mine, Katrasgarh P. O., Bihar and Orissa.	New Sinidih Coal Co., Ltd.	Sona Bauri, (m.), 25, Coal-cutter.	Coal	Whilst a miner was at work in a gallery, 7' 6" wide and 4'-6" high, a mass of stone, 21' x 7' 6" x 8", fell from the roof and killed him instantly. Inspection and inquiry made.
51	20th September, 4-30 A.M.	Neamatpur mine, Sundarchak P. O., Bengal.	Equitable Coal Co., Ltd.	Barki Mejhinu, (f.), 22, Coal-carrier.	Coal	Whilst a woman was loading blasted coal she was fatally injured by a piece of coal, 3' x 1' x 1', which fell upon her from a height of 14 feet. Had the overhanging coal been properly dressed down this accident would not have occurred. Inspection and inquiry made.
52	20th September, 3 P.M.	Bansdeopur mine, Kusunda P. O., Bihar and Orissa.	Bansdeopur Coal Co., Ltd.	Gulab Rai, (m.), 36, Coal-cutter.	Coal	In a gallery 22 feet in height a miner, using an iron-shod pole, was, under directions, knocking down some loose overhanging roof coal from the corner of a pillar when a mass of coal, 13' x 22' x 5', fell upon him unexpectedly and killed him instantly. Inspection and inquiry made.

53	21st September, 9 A.M.	Loyabad mine, Bansjora P. O. Bihar and Orissa.	Burrakur Coal Co., Ld.	Jagai Kori, (m.), 35, Trammer.	Coal	Whilst a trolleyman was standing in a working gallery, a mass of coal, 14' x 6' x 2', fell from a concealed 'slip' in the roof, at a height of 12 feet. He was killed instantly. Inspection and inquiry made.
54	27th September, 8-30 A.M.	Sendra mine, Bansjora P. O., Bihar and Orissa.	Sendra Coal Co., Ld.	Mnkunda Turi, (m.), 49, Coal-cutter.	Coal	Whilst a miner was cutting coal from the roof of a gallery, 7'-3" high a mass of coal, 7' x 2'-6" x 2'-6", fell unexpectedly and struck him before he could get clear. He was severely injured and died four hours later. Inspection and inquiry made.
55	7th October, about 5 A.M.	Sendra-Bansjora mine, Bansjora P. O., Bihar and Orissa.	Sendra-Bansjora Colliery Syndicate.	Mongal Singh, (m.), 45, Pump attendant.	Coal	Whilst tending a pump in an underground gallery a pump-attendant was struck by a piece of coal, weighing about 4 lb. which fell from the roof, 20 feet above. He sustained serious injuries and died within an hour. Inspection and inquiry made.
56	10th October, 1-30 A.M.	Jogta mine, Sijua P. O., Bihar and Orissa.	Agabog Bros.	Lachan Bhukta, (m.), 35, Coal-cutter.	Coal	A miner went under dangerous roof coal to load a basket when a mass of roof coal, 4' x 3' x 2', fell from a height of 7 feet and he was killed instantly. He was warned that the roof coal was unsafe when he was set to work. Inspection and inquiry made.
57	11th October, 1-30 P.M.	Bhajibani mine, Parasia P.O., Central Provinces.	Amalgamated Coal- fields, Ld.	Sadashoo Teli, (m.), 35, Coal-cutter.	Coal	In a part of a mine where pillars of coal were being extracted two miners left their working place and were ripping down roof coal near a goaf which was "under weight" when a mass of roof coal and stone, 10' x 3' 8" x 1', fell on them from a height of 7 feet. Deceased received fatal injuries and died shortly afterwards; the other miner was seriously injured. Inspection and inquiry made.
58	14th October, 9-45 A.M.	Sitalpur mine, Dishergarh P.O., Bengal.	Bengal Coal Co., Ld.	Baburam Manjhi, (m.), 25, Trammer.	Coal	Whilst a train of tubs was being hauled out from a loading station near a pillar under extraction a mass of roof, 30' x 10' x 2', fell from a height of 14 feet. One of the trammers received injuries from which he died shortly after. Inspection and inquiry made.
59	26th October, 1 A.M.	Mundulpur mine, Nandi P.O., Bengal.	Mundulpur Coal Co., Ld.	Kalauder Kora, (f.), 32, Loader.	Coal	Whilst loading coal in a working place underground deceased was killed by a mass of roof stone, 9' x 1'-4" x 1', which fell from a height of five feet. Inspection and inquiry made.
60	30th October, 5 A.M.	Sripur mine, Kalipahari P.O., Bengal.	Lodna Colliery Co. (1920), Ld.	Pekhan Hazam, (m.), 32; Mohar Meah, (m.), 30; Janki Meah, (m.), 34; Kuli Meah, (f.), 30; Loaders.	Coal	Pillars of coal were being extracted in a seam 15' 6" thick, and a number of persons were engaged in loading fallen roof coal in a working place 12 feet high, when a mass of roof coal, 3'-8" thick, fell over an area 45 feet long and 15 feet wide. Four of the loaders were killed and one was seriously injured. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents during the year 1928—contd.

Serial number	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mine or worked.	Cause of accident and remarks.
FALLS OF ROOF AND SIDES—contd.						
(a) Falls of roof—(84 deaths)—concltd.						
61	8th November, 3-30 P.M.	Jbaria Kh. mine, Jharin P.O., Bihar and Orissa.	Standard Coal Co., Ld.	Subia Chamarin, (f.), 20, Coal-carrier	Coal	Whilst two women and a man were loading blasted roof coal in a gallery a mass of coal, 5' x 4' x 1'-6" fell from a height of 20 feet. One of the women was killed instantly and the other was seriously injured. Inspection and inquiry made.
62	10th November, 4-30 A.M.	Charanpur mine, Charanpur P.O., Bengal.	Apcar Collieries Ld.	Ramdeo Badhai, (m.), 24, Coal-cutters	Coal	Whilst a miner was engaged in taking down roof coal in a gallery, a mass of roof stone, 4' x 2' x 1'-6", fell on him from a height of 18 feet killing him instantly. Although not authorised to conduct blasting operations he had fired a shot in the roof coal, and the concussion had knocked out props supporting the roof. Inspection and inquiry made.
63	14th November, 4-35 P.M.	Nandang mine, Murgherita P.O., Assam.	Assam Railways and Trading Co., Ld.	Laloo Ahir, (m.) 20, Labourer.	Coal	Two miners were shovelling coal from an "opening" or chamber when the sirdar present heard the roof "weighting". He ordered the men to leave the "opening", but while they were doing so one of them was struck and fatally injured by a piece of coal, 1'-4" x 1' x 8", which fell from a height of 10 feet. Inspection and inquiry made.
64	15th November, 4 A.M.	Amlabad mine, Jealgora P.O., Bihar and Orissa.	Eastern Coal Co., Ld.	Sugia Kol, (f.), 24, Coal-carrier.	Coal	Whilst a gang of miners was cutting roof coal in a gallery a mass of coal, 10' x 10' x 1' fell from a hidden "slip" at a height of 11 feet. Deceased who was passing underneath at the time was crushed to death. Inspection and inquiry made.
65	29th November, 11-30 A.M.	Sripur mine, Kali-paburi P. O., Bengal.	Lodna Colliery Co., (1920), Ltd.	Ram Golam Kuiri, (m.), 39, Coal-cutter, Bhupat Ram Bania, (m.), 35, Labourer.	Coal	Whilst a gang of miners was engaged in extracting a pillar of coal in a seam 16 feet thick a large fall of roof occurred at the edge of the goaf. A number of props set in front of the face were dislodged and in falling they struck and killed two of the men. Inspection and inquiry made.

66	30th November, 2 A.M.	Wagon Mine, Tavoy P. O., Burma.	Consolidated Tin Mines of Burma, Ltd.	Chow Pat, (m.), 60, <i>Miner.</i>	Tin and wolfram	Whilst a miner was working at the face of an adit, 7 feet high, a mass of soft schist weighing about 30 lb. fell out of the roof and struck him on the back causing injuries from which he died two days later. If the roof had been tested at frequent intervals during the working shift the accident would have been avoided. Inspection and inquiry made.
67	30th November, 5-30 P.M.	Benahir mine, Jharia P. O., Bihar and Orissa.	Standard Coal Co., Ltd.	Bholi Show, (m.) 38, <i>Labourer.</i>	Coal	Whilst workmen were erecting a prop in a gallery, 28 feet high, a piece of coal, 1'-8" x 1'-3" x 1', was dislodged from the roof and struck one of them on the back, causing a spinal injury from which he subsequently died. Inspection and inquiry made.
68	4th December, 2-45 A.M.	Bawdin mine, Namtu P. O., Burma.	Burma Corporation, Ltd.	Sai Foo Yiu, (m.) 31, <i>Miner.</i>	Lead Silver.	A miner was about to secure spiling which he had driven over the cap of a square setting, 4'-6" high and 5'-6" wide, when a mass of ore weighing about one ton fell on to the protruding ends and his head was crushed between the rear end of the spiling and the roof. He was killed instantly. Inspection and inquiry made.
69	6th December, 11-30 P.M.	Kargali mine, Bokaro P. O., Bihar and Orissa.	Great Indian Peninsula Rail- way.	Jiban Manjhi, (m.) 30; Singrai Manjhi, (m.) 35; <i>Coal-Cutters.</i>	Coal	Two miners employed in dressing down roof coal in an underground gallery, 5 feet high and 10 feet wide, were killed by an unexpected fall of coal, 18' thick, 10' long and 5' wide. Inspection and inquiry made.
70	17th December, 1 P.M.	Serampur mine, Giridih P. O., Bihar and Orissa.	East Indian Rail- way.	Gunpat Sing, (m.) 27, <i>Coal-cutter.</i>	Coal	A gang of miners was engaged in removing loose coal from the floor of a gallery preparatory to setting up a cog when a 'bump' occurred and a portion of roof coal fell on them. Three men were seriously injured and one of them died shortly after. Inspection and inquiry made.
71	30th December, 4 A.M.	Chota Bhero mine, Sitarampur P. O., Bengal.	Bengal Coal Co., Ltd.	Harihar Sing, (m.) 35, <i>Coal-cutter.</i>	Coal	A miner passed through two fences and was robbing coal from the side of a small pillar at the edge of the goaf, when he was killed by a slab of stone, 6' x 3'-6" x 7", which fell from the roof. Inspection and inquiry made.
72	31st December, about 12 noon	Bhazaband mine, Jharia P. O., Bihar and Orissa.	Borra Coal Co., Ltd.	Shahebal Meah, (m.) 24, <i>Labourer.</i>	Coal	A labourer engaged in removing debris from the floor of a gallery, preparatory to setting a prop, was struck by a mass of roof stone, 5' x 3' x 7", which fell from a height of 6 feet. He sustained serious injuries and died eleven hours later. Inspection and inquiry made.

APPENDIX II—contd.
Fatal Accidents during the year 1928—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
FALLS OF ROOF AND SIDES—contd.						
(b) Falls of sides—(58 deaths).						
73	23rd January, 1 P. M.	Manegaon mine, Bhar eli P. O., Central Provinces.	B. P. Byramji & Co.	Fagu Gond, (m.), 50, Miner.	Manga- nese.	Deceased was employed in digging out "boulder" ore from an open excavation, 10 feet deep. Some 30 cubic feet of ground fell away from the side of the excavation, and he was buried and suffocated. It was presumed that he had been undercutting the side of the excavation. Inspection and inquiry made.
74	24th January, 2-30 P. M.	Benabir mine, Jharla P. O., Bihar and Orissa.	Standard Coal Co., Ld.	Sagar Dasadh, (m.), 22, Coal-cutter.	Coal	Deceased was killed by a mass of several tons of coal falling on him from the side of a pillar of coal, 28 feet in height. Inspection and inquiry made.
75	26th January, 11 A. M.	Mugma mine, Mugma P. O., Bihar and Orissa.	Burn & Co., Ld.	Thanku Roy, (m.), 23, Jungle Roy, (m.), 16.	Fireclay	Whilst two persons were working in a quarry, 21 feet deep, they were buried and suffocated by a mass of earth, 6' x 3' x 2', which fell from the side. Had the sides of the quarry been properly sloped or stepped this accident would not have occurred. Inspection and inquiry made.
76	26th January, 11-45 A. M.	Lodna mine, Baria P. O., Bihar and Orissa.	Lodna Colliery Co. (1920), Ld.	Nesoda Baurin, (f.), 33, Coal-carrier.	Coal	Whilst a party of miners was at work extracting a pillar of coal in a seam 23 feet thick, about 600 tons of coal fell from slips in the side of an adjacent fenced off gallery. In the confusion that followed, deceased ran into the fenced off gallery and was killed instantly by the falling coal. Inspection and inquiry made.
77	6th February, 5-30 P. M.	Chambal mine, Gharibwal P. O., Punjab.	P. W. Dept. (Irrigation Branch) Government of the Punjab.	Jumma son of Raju, (m.), 20, Miner.	Limestone	A miner engaged in digging out boulders of limestone on the side of a hill attempted to dislodge a boulder weighing about half a ton. The boulder rolled over and he was crushed beneath it and killed. Inspection and inquiry made.
78	7th February, 9-30 A. M.	Gua mine, Gua P. O., Bihar and Orissa.	Indian Iron & Steel Co., Ld.	Mukta Ho., (f.), 22, Labourer.	Iron ore	Whilst a woman was loading a basket with earth at the foot of a quarry face sloping at 45° a mass of earth weighing about 6 cwt. fell off a vertical face 4 feet high and 7½ feet above the foot of the slope. The earth rolled down the slope and fell upon her causing severe injuries from which she died ten minutes later. Inspection and inquiry made.

79	9th February, 11 P. M.	Bhutgoria mine, Jhalgora P. O., Bihar and Orissa.	Aldih Coal Co., Ld.	Latu Roy, (m.), 35, Coal-cutter.	Coal	It was presumed that deceased had been lying down in a gallery when a mass of stone, 3' x 1'6" x 1', fell upon him from the side at a height of 7 feet. He was killed on the spot. Inspection and inquiry made.
80	11th February, 10 A. M.	Murwara mine, Katni P. O., Central Provinces.	Cowasji Bejoui Bajan.	Mangal Kore, (m.), 35, Miner.	Limestone	In an open quarry a number of persons were removing earth from the foot of a bench, 5 feet high, when a mass of stone and earth, 11' x 3' x 1'6", fell from the edge of the bench and struck one of them. His injuries caused death within three days. Inspection and inquiry made.
81	3rd March, 2-30 P. M.	Bhalgora mine, Jhalria P. O., Bihar and Orissa.	Bhalgora Coal Co., Ld.	Sakar Sonar, (m.), 33, Trolleyman.	Coal	Deceased was struck by a mass of coal, weighing about 20 tons, which fell from a "slip" in the side of a pillar 22 feet in height. He sustained injuries to which he succumbed three hours later. Inspection and inquiry made.
82	10th March, 2-30 P. M.	South Bulliari mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Bhagia Ghatwari, (f.), 35, Coal-carrier.	Coal	A woman entered a fenced gallery, when a mass of coal, weighing about 2 tons, fell upon her. She died a month later. Inspection and inquiry made.
83	11th March, 11 A. M.	Munzar mine, Munzar P. O., Central Provinces.	Central India Mining Co., Ld.	Umedi Pinjari, (f.), 24, Mine Raja.	Manga- nese.	Whilst a number of persons were at work at the bottom of a quarry, 36 feet deep, some 20 cubic feet of rock fell from the upper edge of the quarry. Most of the falling stone was held by a bench, 18 feet wide, but one piece measuring about a cubic foot rolled over the bench and struck a woman, killing her immediately. Inspection and inquiry made.
84	15th March, 9-30 P. M.	Serampur mine, Giridih P. O., Bihar and Orissa.	East Indian Rail- way.	Nankin Ghatwari, (f.), 40, Coal-Carrier; Mnasu Meah, (m.), 40, Karmu Meah, (m.), 25, Coal-cutters.	Coal	Whilst three coal-cutters and a female carrier were loading coal in a depillaring area the weight of the unsupported roof in the "goaf" caused a large mass of coal, weighing about 5 to 6 tons, to burst from the side of a pillar, and fall to the ground from a height of 15 feet. This mass of coal fell on the three deceased, and they were killed instantly. The other man escaped unhurt. Inspection and inquiry made.
85	18th March, 8-30 A. M.	Thabawloik mine, Mergui P. O., Burma.	Anglo-Burma Tin Co., Ld.	Kassey Ouria, (m.), 20, Labourer.	Tin	A mass of laterised earth and boulder wash 20' x 12' x 4', fell from the side of an alluvial tin working, 12 feet deep, and a miner who was at work 20 feet away was struck and killed instantly by the falling ground. The fall was anticipated and if the manager's instructions had been carried out the accident would have been avoided. Inspection and inquiry made.
86	29th March, 1-30 P. M.	West Gopnlichuck mine, Kusunda P. O., Bihar and Orissa.	Gopalichuck Coal Co., Ld.	Chirantini Bilas- purini, (f.), 23, Labourer.	Coal	Whilst loading coal in an underground working place a woman was struck on the back and leg by a piece of stone band, 1' x 10" x 6", which fell from a height of 6 feet. She was seriously injured and died four days later. Inspection and inquiry made.

APPENDIX II—*contd.*

Fatal Accidents during the year 1928—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
FALLS OF ROOF AND SIDES—<i>contd.</i>						
(b) Falls of sides—(58 deaths)—<i>contd.</i>						
87	30th March, 5 P.M.	Lodna mine, Jharia P. O., Bihar and Orissa.	Lodna Colliery Co., (1920) Ld.	Sukhi Mejhian, (f.), 48, <i>Coal-carrier.</i>	Coal	Whilst a woman was travelling on a haulage incline, a mass of coal weighing about 20 tons, fell from the side of a pillar, and a lump of coal, weighing about 2 cwt., rolled on to her legs. She died from her injuries seven and half hours later. A separate travelling road was provided, and she had been warned not to travel on the haulage road. Inspection and inquiry made.
88	4th April, 7 A.M.	New Khas Jharia mine, Jharia P. O., Bihar and Orissa.	Prabhash Manu- facturing Co., Ld.	Prithi Pal, (m.), 30, <i>Coal-cutter.</i>	Coal	In a gallery 34 feet in height a miner was sitting near the corner of a pillar, when a wedge-shaped piece of coal, 18" x 12" x 15", falling from a height of 28 feet, struck him on the head and inflicted fatal injuries. Inspection and inquiry made.
89	7th April, 10 P.M.	Karikol mine, Tisri P. O., Bihar and Orissa.	J. S. Mull & Co.	Budhan Manjhi, (m.), 16, Arjun Manjhi, (m.), 18, <i>Labourers.</i>	Mica	In an open excavation two labourers were removing debris at the foot of a face, 21 feet high, when a fall of side, 9' x 9' x 3' thick, occurred, burying them and causing death by suffocation. Inspection and inquiry made.
90	26th April, 6 A.M.	Lodna mine, Jharia P. O., Bihar and Orissa.	Lodna Colliery Co. (1920), Ld.	Goya Korain, (f.), 42, <i>Coal-carrier.</i>	Coal	Whilst a coal-loader was filling a basket with coal in a gallery, 11 feet wide and 22 feet high, she was killed by a mass of coal, 14' x 6' x 18", which fell from the side of a pillar. Her husband and son had undercut the side of the pillar and had caused the fall. The husband was severely injured. Inspection and inquiry made.
91	30th April, 12-30 P.M.	Ghowrassie mine, Dishergarh P. O., Bihar and Orissa.	Equitable Coal Co., Ld.	Sura Kora, (m.), 23, <i>Hookman.</i>	Coal	A hookman was riding on a set of loaded tubs which was being drawn up an incline. At the moment that the set was passing, a wedge-shaped mass of stone 2' 6" x 3' x 10' fell from the side of the haulage road from a height of 7 feet striking him and causing injuries which proved fatal. Inspection and inquiry made.

92	9th June, 11 A.M.	Sitalpur mine, Dishergarh P. O., Bengal.	Bengal Coal Co. Ltd.	Pratab Banri, (m.), 50, Coal-cutter.	Coal	Whilst a number of persons were extracting a "stook" of coal it collapsed. A miner was killed instantly. As there were indications that the "stook" was "on weight" the overman should not have allowed miners to work there. Inspection and inquiry made.
93	11th June, 12 noon	Mokpalin mine, Mokpalin P. O., Burma.	Government of Burma, P. W. Department.	Sauk Rai, (m.), 30, Quarry-man.	Stone	Whilst a gang of quarrymen was at work on the top of a stone quarry face 45 feet high, a mass of earth, 30' x 30' x 15', slipped from the face of the overburden, which was 30 feet in their rear, and four of them were swept over the edge and fell with the earth to the bottom of the quarry. One man was killed and three others were seriously injured. Although heavy rain caused the earth to slip the accident would have been avoided if the face of the overburden had been sloped at 45 degrees instead of 60 degrees. Inspection and inquiry made.
94	11th June, 12 noon.	Sitapur mine, Sausar P. O., Central Provinces.	Indian Manganese Co., Ltd.	Santi Goudin, (f.), 16, Labourer.	Manga- nese.	While at work in an open excavation a woman was killed by a mass of earth, weighing about 7 cwt. which fell upon her from the side. Inspection and inquiry made.
95	19th June, 9-30 A.M.	Jamadoba mine, Jesdgora P. O., Bihar and Orissa.	Tata Iron & Steel Co., Ltd.	Ram Kumari Bilaspurin, (f.), 24, Loader.	Coal	Whilst a miner was dressing the side of a level gallery, 12 feet high, he pulled a slab of coal, 6' x 8' x 9', off the side and in falling it struck two props and was broken into pieces. A coal-loader who was sitting down 12 feet behind him was struck and fatally injured by a piece of coal 12' x 12' x 9', and another loader, who was standing near holding a lamp for him, was severely injured. Inspection and inquiry made.
96	19th June, 11-30 P.M.	Lodna mine, Jharria P. O., Bihar and Orissa.	North Burrakur Coal Co., Ltd.	Pati Bauri, (m.), 22, Coal-cutter	Coal	Whilst a miner was robbing coal from the dip side corner of a pillar on a haulage road, he was fatally injured by a mass of coal, 5' x 2' 6" x 2', which he had undercut. He died ten hours later. Inspection and inquiry made.
97	22nd June, 10 A.M.	Damagurria mine, Kulti P. O., Bengal.	Damagurria Coal Co., Ltd.	Jalim Muchi, (m.), 38, Coal-cutter.	Coal	Whilst a coal-cutter was cutting coal from a bench in a quarry, a piece of coal, 3' x 2' x 1', fell from the side at a height of 12 feet. He was struck on the head and died seventeen hours later. Inspection and inquiry made.
98	23rd June, 11-15 A.M.	Damodarpore mine, Nandi P. O., Bengal.	Bengal Coal Co., Ltd.	Mittoo Chamar, (m.), 48, Coal-cutter.	Coal	A miner although instructed to cut from the end, attempted further to undercut some over hanging coal. About 2 tons of coal fell from a height of 11 feet, inflicting on him injuries from which he died shortly after. As the place was known to be dangerous the work should have been done under the direct supervision of the subordinate staff. Inspection and inquiry made.

APPENDIX II—*contd.*

Fatal Accidents during the year 1928—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
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FALLS OF ROOF AND SIDES—*contd.*

(b) Falls of sides—(58 deaths)—*contd.*

99	28th June, 11-15 A. M.	Benahir mine, Jharia P. O., Bihar and Orissa.	Standard Coal Co., Ld.	Jhilam Chamar, (m.), 45, Coal-cutter.	Coal	Whilst a miner was filling a basket with coal in a depillaring area, a mass of coal weighing about 7 cwt. fell off the corner of a stook from a height of 28 feet. He was struck on the head and died twenty hours later. Inspection and inquiry made.
100	10th July, 2-30 P. M.	Kandivli mine, Kandivli P. O., Bombay.	Muganath & Sons	Timawa Hanu- nappa, (f.), 35, Labourer.	Stone	Whilst deceased was lifting a loaded basket onto her head she was fatally injured by a boulder which fell from the side of a cutting 6 feet deep. Inspection and inquiry made.
101	12th July, 6-30 A. M.	Jamadoba mine, Jalgora P. O., Bihar and Orissa.	Tata Iron & Steel Co., Ld.	Brispat Dhobi, (m.), 34, Coal-cutter.	Coal	During depillaring operations in a seam, 12 feet thick, a miner caused a mass of coal, weighing about 5 tons, to fall from the corner of a stook. The falling coal dislodged four props, one of which struck deceased who was standing 13 feet away. He was killed instantly. Inspection and inquiry made.
102	12th July, 1 P. M.	Kantapahari mine, Katrasgarh P. O., Bihar and Orissa.	Angarpathra Colliery Co.	Shukri Chamarin, (f.), 15, Coal-carrier.	Coal	Deceased was passing along a working gallery, 12 feet high, when a mass of coal weighing about 2 tons fell from the side. She was struck by pieces of the coal, and killed instantly. Inspection and inquiry made.
103	13th July, 4-15 P. M.	Tirodi East and West mine, Tirodi P. O., Central Provinces.	Central Provinces Manganese Ore Co., Ld.	Jairam Gond, (m.), 30, Labourer.	Manganese.	While at work in an open excavation deceased was buried by a mass of earth, weighing about 6 tons, which fell from the side of a cutting 12 feet deep. He was suffocated. Inspection and inquiry made.
104	1st August, 6 P. M.	Kusnuda mine, Kusnuda P. O., Bihar and Orissa.	Central Bank of India.	Mahabir Bhuiya, (m.), 22, Coal-cutter.	Coal	A miner went through a fence and was engaged in robbing coal in a disused gallery when a mass of coal, weighing about 20 tons, fell upon him from the side. He was killed instantly. Inspection and inquiry made.
105	1st August, 9-15 P. M.	Charanpur mine, Charanpur P. O., Bengal.	Apcar Collieries, Ld.	Mahadeo Singh, (m.), 26, Coal-cutter.	Coal	After a shot had been fired a miner was dressing down loose coal when a mass weighing about one ton fell on him from a height of 9 feet. He was fatally injured. Inspection and inquiry made.

106	3rd August, 6-30 A. M.	Junnordeo No. 2 mine, Jamai P. O., Central Provinces.	R. S. H. Verma and Munshi Kanhai- yalal, Ld.	Bapoo Bhojar, (m.), 25, Labourer.	Coal.	A fall of side having occurred in an open cutting, 27 feet deep, a gang of workmen was engaged in clearing the debris when another portion of the side collapsed and partially buried two of them. Rescue operations were at once undertaken and one of the men was extricated. Before the other could be released, however, a further fall occurred. Deceased was completely buried and suffocated. The ground which fell measured 18' x 7' x 2'-6". Inspection and inquiry made.
107	15th August, 11-30 A. M.	Gonshadih mine, Kusunda P. O., Bihar and Orissa.	Gonshadih Coal Co.	Haru Turi, (m.), 28, Coal-cutter.	Coal.	Whilst two miners were robbing coal from the side of a pillar a mass of coal, 15' x 10' x 1'-3", fell from a concealed slip running parallel to the side. One of them was killed instantly and the other was seriously injured. Inspection and inquiry made.
108	28th August, 11-30 A. M.	Damagurria mine, Kulti P. O., Bengal.	Damagurria Coal Co., Ld.	Sohan Bhuiya, (m.), 28; Liju Bauri, (m.), 45; Kunja Bauri, (m.), 38; Earth-cutters.	Coal.	Whilst a number of persons were working on the floor of a bench, 12 feet high, in a quarry a mass of earth, 16' x 9' x 1', fell on them. Three of them were killed and two injured. Had the side been properly sloped or stopped back the accident would not have occurred. Inspection and inquiry made.
100	6th September, 9 A. M.	Bhangia Guroate mine, Rohtas P. O., Bihar and Orissa.	Sone Valley Por- tland Cement Co., Ld.	Naim Khan, (m.), 50, Stone-cutter.	Lime- stone.	Whilst engaged in loading pieces of limestone from a prohibited section of a quarry, a workman was fatally injured by a piece of stone, 1'-6" x 9" x 6", which fell from the side at a height of about 100 feet. Inspection and inquiry made.
110	7th September, 4 P. M.	Muanchon mine, Bokpyin P. O., Burma.	Ma Hpon.	Ah Kayaw, (m.), 21, Miner.	Tin.	Whilst two tin miners were at work in a sluicing drain at the foot of an almost vertical face of soft pegmatite 20 feet high, a mass of side weighing about 1½ tons fell on them from a height of 18 feet. One miner was killed instantly and the other was seriously injured. If the side had been securely stopped or sloped the accident would have been avoided. Inspection and inquiry made.
111	9th September, 5-15 P. M.	Wah mine, Wah P. O., Punjab.	Wah Stone and Lime Quarry, Ld.	Ahmad Khan, (m.), 35, Loader.	Lime- stone.	A boulder, weighing about one ton, was dislodged by quarrymen from a point, about 30 feet above the foot of a face sloping at about 40° from horizontal. In rolling down the face it took an unexpected course and struck deceased who had failed to withdraw to a sufficient distance. He sustained fatal injuries and died shortly after. Inspection and inquiry made.
112	11th September, 1-15 P. M.	Khas Jbaria mine, Jbaria P. O., Bihar and Orissa.	Khora Ramji.	Janaki Bhuiya, (m.), 50, Coal-cutter.	Coal.	Deceased was cutting coal from the side of a pillar 20 feet high when a mass of coal weighing about 2 tons fell from the side, causing serious bodily injuries. He died sixteen hours later. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents during the year 1928—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
FALLS OF ROOF AND SIDES—conold.						
Falls of sides—(58 deaths)—conold.						
113	12th September, 2 P.M.	Tauugpila mine, Tavoy P. O., Burma.	Qua Cheng Guan	Bhambahadur, (m.), 45; Dhanbahadur, (m.), 25, <i>Miners.</i>	Tin and wolfram.	Whilst two miners were working under the almost vertical side of a cutting 10 feet deep, which had been formed by ground sluicing, a mass of soft earth, 10' x 8' x 3', fell from the side, killing them instantly. The manager had ordered them to slope the sides. Inspection and inquiry made.
114	23rd September, 5 A.M.	Lodna mine, Jharua P. O., Bihar and Orissa.	Lodna Colliery Co. (1920) Ld.	Rabi Kora, (m.), 38, <i>Coal-cutter.</i>	Coal	Whilst a miner was dressing the side of a pillar after blasting, a mass of coal fell from the side on to the ladder on which he was standing and he was thrown to the floor from a height of 18 feet. He was killed instantly. Inspection and inquiry made.
115	16th October, 5-30 A.M.	South East Baraboni mine, Charanpur P. O., Bengal.	Maharajah of Cos- simbazar.	Ramdhani Mejhian, (f.), 50, <i>Loader.</i>	Coal	Whilst loading blasted roof coal a woman was fatally injured by a mass of coal, 3' x 1' x 1', which fell from a "slip" on the side of a pillar of coal. Inspection and inquiry made.
116	17th October, 5-15 P.M.	Mndidih mine, Sijua P. O., Bihar and Orissa.	Barrakur Coal Co., Ld.	Tipan Roy, (m.), 32, <i>Coal-carrier.</i>	Coal	Deceased left his allotted working place and went into a fenced area to load loose coal. A mass of coal, weighing 1½ tons, fell upon him from the side of a pillar. He was killed instantly. Inspection and inquiry made.
117	19th October, about 10 A.M.	Hermyingyi mine, Hermyingyi P. O., Burma.	Burma Finance and Mining Co., Ld.	Char San, (m.), 38, <i>Miner.</i>	Tin and wolfram.	A miner went into a disused open excavation, 9 feet deep, to steal tin ore and whilst he was undercutting the side—in which a lode had been exposed—a mass of earth weighing about 2 tons, fell and killed him instantly. Inspection and inquiry made.
118	6th November, 3 P.M.	Tikak mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Soonu Gore, (m.), 36, <i>Coal-cutter.</i>	Coal	Two miners were drilling shotholes in an "opening" or chamber, 18' high, when the sirdars present heard sounds of movement, and warned them to leave the "opening". As they were doing so one of them was struck and killed instantly by a mass of coal which fell from the side. Inspection and inquiry made.

	12th November, 8-15 A. M.	Mokpalin mine, Mokpalin P. O., Barma.	Government of Burma, P. W. De- partment.	Ram Baran, (m.), 30, <i>Earth cutter.</i>	Stone	Whilst a cutting, 6' 6" wide and 12' deep, was being made for a tramline a mass of lateritic earth, 10' x 6' x 15', fell from the side and buried one of the labourers. He expired before he could be released. If the sides had been sloped at a safe angle the accident would not have occurred. Inspection and inquiry made.
120	24th November	Benahir mine, Jharia P. O., Bihar and Orissa.	Standard Coal Co., Ld.	Rameswar Chamar, (m.), 45, <i>Coal-cutter.</i>	Coal	Soon after blasting in a gallery 28 feet in height a miner returned to the gallery to load the blasted coal. Whilst so engaged he was struck on the head by a piece of coal which fell from the side at a height of about 14 feet. He died within two hours. Inspection and inquiry made.
121	12th December, 4-10 P. M.	Hurriladh mine, Jeaigora P. O., Bihar and Orissa.	Equitable Coal Co., Ld.	Mungar Bhuiya, (m.), 35, <i>Coal Loader.</i>	Coal	Whilst loading some robbed coal in a disguised gallery deceased was killed by a mass of coal, weighing about 2 tons, which fell from the side of a pillar. Inspection and inquiry made.
122	14th December, 12-15 P. M.	Shivrajpur mine, Shivrajpur P. O., Bombay.	Shivrajpur Syndi- cate, Ld.	Raghu Galla, (m.), 26, <i>Miner.</i>	Manga- nese.	Whilst at work in a stope he was struck and fatally injured by a slab of rock which fell from the hanging wall of the vein ten feet above him.
123	21st December, 5-30 P. M.	South Kujama mine, Jharia P. O., Bihar and Orissa.	Bagdiggi-Kujama Collieries, Ld.	Tilak Bhuiya, (m.), 32, <i>Loader.</i>	Coal	Two loaders went to load coal in a gallery where dressing of side was in progress. A portion of the side, 3' x 5' x 1' 0", falling from a height of 18 feet, killed one of them instantly; the other was slightly injured. Inspection and inquiry made.

**IN SHAFTS (WHILST ASCENDING OR DESCENDING BY
MACHINERY)—1 (Death).**

124	7th May, 4-20 P. M.	Kankanee mine, Bansjora P. O., Bihar and Orissa.	Eastern Coal Co., Ld.	Ojagara Singh, (m.), 35, <i>Labourer.</i>	Coal	Deceased was standing on a scaffold in a shaft, 458 feet deep, and was being lowered by means of a hand winch installed on the surface, when the gearing of the winch came out of mesh, and allowed the scaffold to fall 418 feet to the bottom of the shaft. He was killed instantly. Inspection and inquiry made.
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IN SHAFTS (FALLING DOWN SHAFTS)—(7 Deaths.)

125	21st March, 3-30 P. M.	Serampur mine, Giridih P. O., Bihar and Orissa.	East Indian Rail- way.	Thakur Manjhi, (m.), 25, <i>Labourer.</i>	Coal	A workman was helping to remove an old pipe from a shaft when he slipped into the shaft. He fell upon a bunton fixed at a point in the shaft 60 feet from the surface and sustained injuries which caused death eleven days later. Inspection and inquiry made.
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APPENDIX II—contd.

Fatal Accidents during the year 1928—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
IN SHAFTS (FALLING DOWN SHAFTS)—(7 Deaths.)—contd.						
126	15th April, 6-35 A. M.	Jaraugdih mine, Bokaro P. O., Bihar and Orissa.	Bombay, Baroda and Central India Railway and M. and S. M. Rail- way.	Somra. (m.), 36, <i>Labourer.</i>	Coal	In the course of dismantling girders at the top of a shaft, 230 feet deep, a man fell through an uncovered opening to the shaft bottom and was killed instantly. Inspection and inquiry made.
127	30th June, 12-30 P. M.	Bawdwin mine, Namtu P. O., Burma.	Burma Corporation, Ld.	Pirtan Singh, (m.), 21, <i>Fitters' helper.</i>	Lead Sil- ver.	Whilst a hoisting engine was being repaired, two planks, 8" x 2" x 6", were placed across the top of a winze, 4' x 4', to support the cage. After completing the repairs the cage was raised 2'-10" and a labourer, who went to withdraw the planks, slipped into the winze and fell to the bottom, a distance of 406 feet. He was killed instantly. Inspection and inquiry made.
128	14th July, 9 A. M.	Bawzaing mine, Heho P. O., Burma.	Shan States Silver Lead Corporation, Ld.	Maung Nyein, (m.), 20, <i>Miner.</i>	Lead Sil- ver.	At the commencement of a shift six miners were ordered to return to the surface because the air in their working place was foul. One miner disobeyed and went into other parts of the mine in search of work. He fell 70 feet down a vertical winze and was killed. Inspection and inquiry made.
129	19th July, 4-30 A.M.	Huntodih mine, Mohuda P. O., Bihar and Orissa.	Huntodih Coal Co., Ld.	Ram Dutt Gope, (m.), 45, <i>Shaft Sinker.</i>	Coal	Preparatory to descending a sinker was about to step on to the trolley covering the shaft when he slipped and fell through a narrow space between the end of the trolley and the edge of the shaft. He fell 150 feet to the bottom of the shaft and sustained injuries from which he died one and half hours later. It is probable that the trolley was pushed too far over the shaft. If a stop had been provided or a clamp placed across the trolley rails to prevent the trolley being pushed too far the accident might have been avoided. Inspection and inquiry made.

130	3rd October, 10 A.M.	Kargali mine, Bokaro P. O., Bihar and Orissa.	Great Indian Pen- insula Railway	Kartick Sing. (m.), 35, <i>Labourer.</i>	Coal	The opening of a valve in a steam range caused one of the pipes in the range to burst, and the man who opened the valve was severely scalded. The burst took place near the top of a shaft in which nine men were working on a brick- ing scaffold hanging in the shaft. Hearing the noise of the steam escaping at the surface, and being alarmed by the sudden failure of the electric light, they scrambled into a pump chamber in the side of the shaft, and in doing so one of them fell through a hole in the scaffold to the seam inset, 35 feet below. He was seriously injured and died six days later. Inspection and inquiry made.
131	12th November, 10 A.M.	Mosaboni mine, Mosaboni P. O., Bihar and Orissa.	Indian Copper Cor- poration, Ld.	Harold Sharpley, (m.), 48, <i>Mine Superin- tendent.</i>	Copper	Whilst stepping out of the bucket at the top of a shaft deceased missed his footing and fell to the bottom of the shaft, 57 feet below. He was killed instantly. Inspection and inquiry made.

IN SHAFTS (THINGS FALLING DOWN SHAFT)—(4 deaths)

132	18th April, 11 A.M.	Pretoria mine, Charanpur P. O., Bengal.	Seebpore Coal Co., Ld.	Hemna Darabi, (m.), 30, <i>Onsetter.</i>	Coal	Whilst an onsetter was taking a tub off a cage at the bottom of a shaft, 425 feet deep, he was fatally injured by a small piece of coal which fell from a tub which had just been raised to the surface in the other cage. Inspection and inquiry made.
133	24th June, 4-30 A.M.	Jharia Khas mine, Jharia P. O., Bihar and Orissa.	Standard Coal Co., Ld.	Misrihal Dhanuk, (m.), 32, <i>Assistant On- setter.</i>	Coal	Due to a mistake in signalling a cage was drawn up a shaft before the empty tub was pulled clear. When the cage had ascended about 30 feet the tub fell from the cage on to the protective roofing. The roofing collapsed, and deceased, who was standing beneath, was killed instantly. Inspection and inquiry made.
134	17th July, 2 A.M.	Poriapur mine, Churulia P. O., Bihar and Orissa.	Poriapur Collieries, Ld.	Somra Manjhi, (m.), 21, <i>Shaft Sinker.</i>	Coal	A shaft sinker engaged in drilling a hole at the bottom of a sinking shaft, 298 feet deep, was struck on the head and killed instantly by a piece of stone which fell from the side of the shaft. Inspection and inquiry made.
135	7th November, 2 A.M.	New Satgram mine, Joba P. O., Bengal.	New Satgram Coal Co., Ld.	Kali Manjhi, (m.), 23, <i>Sinker.</i>	Coal	A sinker was struck on the head and fatally injured by a small piece of stone which fell down a shaft 305 feet deep. The exact cause of the occurrence could not be ascertained. Inspection and inquiry made.

IN SHAFTS (MISCELLANEOUS)—(4 deaths)

136	21st May, 9-30 P.M.	Bejjih mine, Sunderchuck P. O., Bengal.	Equitable Coal Co., Ld.	Birajo Kolu, (f.), 20, <i>Loader.</i>	Coal	Whilst attempting to cross the bottom of a shaft deceased was caught by the descending cage and killed instantly. Had she used the bye-pass road, the accident would not have occurred. Inspection and inquiry made.
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APPENDIX II—contd.

Fatal Accidents during the year 1928—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
IN SHAFTS (MISCELLANEOUS)—(4 deaths)—contd.						
137	18th September, 4 P.M.	Central Kujama mine, Jheria P. O., Bihar and Orissa.	Central Kujama Coal Conceru.	Sindhu Bala, (f.), 30, Coal carrier.	Coal	Whilst repairs to a tramline on a shaft landing were being executed deceased, after descouping the shaft, opened the cage gate and stepped out on to the landing. She fell through a hole between the rails into the sump below and was drowned. Inspection and inquiry made.
138	21st October, 2 A.M.	Dishergarh mine, Dishergarh P. O., Bengal.	Equitable Coal Co., Ld	Chutu Moah, (m.), 25, Barki Manjhi, (m.), 36, Sinkers.	Coal	Whilst a gang of seven sinkers was at work at the bottom of a shaft 60 feet deep a bucket which was being lowered became detached from the rope and fell to the bottom. One of the men was killed and another was fatally injured. Had the bucket been properly attached to the hook by the Hookman this accident would not have occurred. Inspection and inquiry made.
SUFFOCATION BY GASES—(1 death).						
139	1st October 11 A.M.	Borjan and Kongon mine, Kongon P. O., Assam.	Nazira Coal Co., Ld.	Md. Habibur Roh- man Choudhuri, (m.), 23, Timekeeper.	Coal	In spite of warning a timekeeper entered an underground gallery which contained foul gas. He was overcome by the gas and expired before he could be rescued. Inspection and inquiry made.
BY EXPLOSIVES—(17 deaths).						
140	10th January, 2-30 P.M.	Jeetpur mine, Jeetpora P. O., Bihar and Orissa.	Bengal Iron Co., Ld.	Latua Mahatin, (f.), 24, Coal carrier. Dinu Bauri, (m.), 20, Explosive- carrier.	Coal	Whilst an explosive-carrier named Dinu was pouring gun- powder back into a cartridge after fitting a fuse, some of the fine powder was wafted into the flame of an oil lamp which was close by him. The gunpowder in the cartridge and about 5 lb. of gunpowder contained in a tin, which he had left open, became ignited. Dinu and four people who were sleeping nearby were severely burnt and two of them subsequently died.

141	3rd March, 5 P.M.	Haripur mine, Chora P. O., Bengal.	Sircar & Dutt	Sonatan Bhurmij, (m.), 29, Coal cutter.	Coal	If the oil lamp had been kept further away from the gunpowder the accident would not have occurred. Inspection and inquiry made.
142	2nd April, 5-15 P.M.	Wah mine, Wah P. O., Punjab.	Punjab Portland Cement Co., Ltd.	Faiz Alam, (m.), 28, Driller.	Limestone	Deceased after having lighted a round of five shots of gunpowder was retiring to a place of safety and had reached a distance of 390 feet from the place of firing when the shots exploded and he was struck on the head and fatally injured by a small piece of stone weighing about 4 lb. Inspection and inquiry made.
143	4th April, 11 P.M.	Kendwadib mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Juma Singh, (m.), 22, Explosive carrier. Ahamed, (m.), 18, Labourer.	Coal	Five shot holes were about to be charged in the face of a gallery, and a shot-firer's assistant was taking the previously prepared charges—each consisting of 2/3 lb. of gunpowder—from his explosive box when a youth sitting nearby ignited a piece of discarded fuse, 4' long, and threw it away. The burning fuse fell on the gunpowder and ignited it. Both the youth and the shot-firer's assistant were fatally burnt and another man was burnt severely. Inspection and inquiry made.
144	24th April, 11-20 A.M.	Jamadoba mine, Jealgora P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ltd.	Gulai Hazam, (m.), 33, Coal-cutter.	Coal	Whilst a miner and his mate were charging a shot hole, some loose gunpowder was drawn out of the hole with the tamping rod and fell on to an open light standing beneath the hole. About two seers of gunpowder, which was in an open canister two feet from the lamp, became ignited and they were severely burnt. One of them died eleven days later. If the canister had been closed and put in a safe place after the charge was taken out, the accident would have been avoided. Inspection and inquiry made.
145	21st May, 2 P.M.	Aldih mine, Sitarampur P. O., Bengal.	Aldih Coal Co., Ltd.	Nazir Meah, (m.), 17, Shot-firer's Assis- tant.	Coal	In underground workings a shot-firer was inserting fuses into gunpowder cartridges, and was sitting with his back to the gunpowder box, beside which his assistant was seated. By some means the gunpowder in the box became ignited. The shot-firer received slight burns, whilst his assistant was so severely burnt that he died shortly afterwards. Inspection and inquiry made.
146	10th August, 11-30 A.M.	Damagurria mine, Kulti P. O., Bengal.	Damagurria Coal Co., Ltd.	Tatku Painka, (m.), 30, Coal-cutter.	Coal	Whilst pointing out to a shot-firer the position of a shot hole in a quarry a miner threw down a lighted match and ignited gunpowder cartridges which the shot-firer had placed ready for charging. He sustained burns which caused death two days later. Inspection and inquiry made.

APPENDIX II—*contd.*

Fatal Accidents during the year 1928—*contd.*

Serial Number.	Date and hour of accident	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
BY EXPLOSIVES—<i>contd.</i>						
147	4th September, 1-30 P. M.	Bararee mine, Jalgora P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Mukbulan, (J.), 22, Labourer.	Coal	A steam heated building used for drying country gunpowder, but containing at the time 60 lb. of country gunpowder, 12 lb. of compressed gunpowder and 7 lb. of dynamite was entirely demolished by an explosion caused by spontaneous ignition of the dynamite. One man working at a distance of 300 feet was fatally injured and two others passing within a distance of 70 feet were seriously injured by fragments of flying masonry. Dynamite or other explosives containing nitroglycerine should never be heated or placed in a heated building as heating even at low temperatures causes chemical decomposition which results in spontaneous ignition. Inspection and inquiry made.
148	20th October, 2 A. M.	Argada mine, Sirka P. O., Bihar and Orissa.	Bengal Nagpur Railway Co., Ltd.	Ramowar, (m.), 27, Shotfirer's Assis- tant.	Coal	After igniting a number of shots of country gunpowder in a quarry, the shotfirer and his assistant were retiring when one of the shots exploded prematurely and the assistant at a distance of 178 feet from the place was struck on the head and fatally injured by a piece of coal projected by the shot. If a longer fuse had been used the accident would not have occurred. Inspection and inquiry made.
149	21st October, 7-55 P. M.	Lawksawk mine, Bawzaing P. O., Burma	Sao Sao Soik.	Hari Parshad, (m.), 30, Miner.	Lead Sil- ver.	In order to make a hitch for a post in the foot-wall of a stope two miners drilled two shot holes 18' deep and charged them with dynamite. Although only one detonation was heard when the shots were fired they assumed that the two shots had exploded simultaneously and whilst they were dressing the sides of the hitch the misfired charge exploded killing one miner and seriously injuring the other. Before resuming work they should have ascertained by a careful examination that both shots had exploded. Inspeo- tion and inquiry made.

150	17th November, 12 noon.	Kustore mine, Kusunda P. O., Bihar and Orissa.	Rancegunge Coal Association, Ld.	Kali Singh, (m.), 25, <i>Shot-firer.</i>	Coal	Soon after one of four gunpowder shots had failed to explode the shot-firer returned to the gallery, and when he was within a few feet of the face the fourth shot exploded and killed him. The accident would not have occurred if the regulations for shot-firing had been observed by the deceased. Inspection and inquiry made.
151	25th November, 11-30 A.M.	Sukri mine, Junnordeo P. O., Central Provinces.	Rai Sabib H. Verma & Munshi Kanhaiyalal, Ld.	Girdhar, (m.), 30, <i>Shot-firer and Cartridge maker.</i> Chhoto Khan, (m.), 40, <i>Coal-cutter.</i>	Coal	Deceased was preparing cartridges from loose gunpowder outside the door of a magazine. Another person was nearby. By some means which could not be definitely ascertained the gunpowder became ignited, with the result that both men were severely burned and died a few hours later. Inspection and inquiry made.
152	11th December, 12 noon.	MacLellan Ajita mine, Manaharpur P. O., Bihar and Orissa.	Bengal Iron Co., Ld.	Bodhan, (m.), 31, <i>Miner.</i>	Iron Ore	A miner was struck on the head and fatally injured by a piece of stone projected a distance of 350 feet by blasting operations in open workings. Inspection and inquiry made.
153	29th December, 5-40 A.M.	Bokaro mine, Bokaro P. O., Bihar and Orissa.	East Indian and Bengal Nagpur Railways.	Baldeo Teli, (m.), 30, <i>Labourer.</i>	Coal	Deceased had returned to the site of blasting operations in order to collect the firing cable leads. Whilst doing so his foot is said to have become entangled in the detonator (low tension) lead of a dynamite charge which had misfired. The charge exploded and he was fatally injured. Inspection and inquiry made.

IRRUPTIONS OF WATER—(7 deaths).

154	20th December, 6 A.M.	Bhaskajuri mine, Asansol P. O., Bengal.	Burrakur Coal Co., Ld.	Matla Manjhi, (m.), 40, Kalu Meah, (m.), 42, <i>Coal-cutters ;</i> Mudur Bux, (m.), 22, <i>Pump-man ;</i> Babulal Bauri, (m.), 27, Pannu Bauri, (m.), 40, Rakhi Baurin, (f.), 22, Mohi Baurin, (f.), 30, <i>Bailers.</i>	Coal	Water impounded in the workings of a lower seam forced out the filling in a shaft communicating with an upper seam. The workings of the upper seam were inundated and seven persons were drowned. Inspection and inquiry made.
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APPENDIX II—*contd.*

Fatal Accidents during the year 1928—*contd.*

Serial number	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
HAULAGE—(29 deaths).						
155	9th February, 11 P.M.	Loyabad mine, Bansjora P. O., Bihar and Orissa.	Burrakur Coal Co., Ld.	Gouri Singh, (m.), 35, Hookman.	Coal	Deceased rode on a set of full tubs from his place of work to a haulage landing, and whilst he was attempting to uncouple the haulage rope from the set, his foot was grazed by the wheels of the first tub. His injuries were slight but he developed tetanus and died one month later. He was not authorised to ride on the tubs and he was not working at the place of accident. Inspection and inquiry made.
156	23rd February, 9-30 A.M.	Loyabad mine, Bansjora P. O., Bihar and Orissa.	Burrakur Coal Co., Ld.	Jumbi Chamarin, (f.), 30, Loader.	Coal	After descending a shaft a woman was walking along the shaft landing when she became confused and stepped in front of three loaded tubs which were gravitating down an inclination of 1 in 50. She received injuries to the foot, and, pneumonia supervening, died three weeks later. Inspection and inquiry made.
157	25th February, 10-15 P.M.	Jharia Khas mine, Jharia P. O., Bihar and Orissa.	Standard Coal Co., Ld.	Mnni Tanti, (m.), 45, Trolleyman.	Coal	Whilst passing over a crossing a train of 6 loaded tubs, which was gravitating down a road dipping at about 1 in 60, collided with an empty tub which was standing near the crossing. Deceased was standing behind the empty tub and when the collision occurred he was severely injured and died fourteen days later. The accident would have been avoided if deceased had not pushed the empty tub too near to the crossing. Inspection and inquiry made.
158	9th March, 5 P.M.	Bhaskajuri mine, Asansol P. O., Bengal.	Burrakur Coal Co., Ld.	Phankhira Bauri, (m.), 30, Trammer.	Coal	Whilst a trammer was sitting by the side of a tramline one of his toes was run over and slightly injured by an empty tub. He died seven days later from tetanus. Inspection and inquiry made.
159	26th March, 4-10 P.M.	Choitodih mine, Katrasgarh P. O., Bihar and Orissa.	Burrakur Coal Co., Ld.	Dukhi Mahato, (m.), 27, Trolleyman.	Coal	Whilst a train consisting of 4 tubs of stone and 3 empty tubs was being lowered down a haulage incline, dipping at 1 in 4, a coupling broke and the 4 tubs of stone ran wild. Deceased was struck by the stone which was thrown out of

160	7th April, 5-45 P.M.	Thummarguddi mine, Kanivihalli P. O., Madras.	Lalan & Co.	Udagai Earramma, (f.), 25 Loader.	Manga- nese.	the tubs when they overturned 170 feet lower down the incline, and he received injuries from which he died three hours later. The opening out of a badly welded draw-bar link caused the accident. Inspection and inquiry made.
161	20th April, 5 P.M.	Lakurka mine, Katrasgarh P. O., Bihar and Orissa.	Lakurka Coal Co., Ld.	Lalia Gepe, (m.), 25, Tramper.	Coal	The rope on a self-acting incline broke and the tubs ran wild. A workman who was walking down the incline at the time was struck by the loaded tub and fatally injured. Inspection and inquiry made.
162	21st April, 11-30 P.M.	Aldih mine, Sitarampur P. O., Bengal.	Aldih Coal Co., Ld.	Kali Singh, (m.), 35, Tramper.	Coal	A train of seven loaded tubs was being hauled up a grade of 1 in 9 when, owing to the failure of a coupling, six of the tubs ran again. A tramper, who had probably been riding on the train, was seriously injured and died nine days later. After the enquiry the designs of the couplings and the drag were improved. Inspection and inquiry made.
163	25th April, 5-30 P.M.	Junnoordeo (No. 2) mine, Junnoordeo P. O., Central Provinces.	Rai Sahib H. Vorma and Munshi Kashaynal, Ld.	Ramju Gond, (m.), 50, Tramper.	Coal	Whilst a train of eight loaded tubs was being hauled up a slope of 1 in 7, the three front tubs became derailed. A trolleyman who was riding on the front of the train was seriously injured and subsequently died. Inspection and inquiry made.
164	24th May, 5-30 P.M.	Khas Sitalpur Mine, Ukhra P. O., Bengal.	Khas Sitalpur Colliery, Co.	Munshi Gope, (m.), 40, Oiler.	Coal	Whilst a train of eight loaded tubs was being guided round a curve a coupling link broke and four tubs ran wild. Deceased was fatally injured and another man was slightly injured. Inspection and inquiry made.
165	30th May, 10 A.M.	Kendwadih mine, Kusanda P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Bhuniad Rant, (m.), 60, Greaser.	Coal	Whilst a workman was oiling the return pulley of a surface endless rope haulage his clothing became entangled and his leg was crushed between the rope and the wheel and had to be amputated. He died two days later. Although it was not prohibited he should not have oiled the wheel whilst it was in motion. Inspection and inquiry made.
						Whilst an empty tub was being pushed to the top of an endless rope haulage road, it got out of hand and ran away. After it had run uncontrolled for 400 feet down a gradient of 1 in 10, it struck deceased who was oiling the haulage rollers, and he received injuries from which he died three hours later. If the stop-block which was provided at the top of the incline had been closed, the accident would have been avoided. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents during the year 1928—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
HAULAGE—contd.						
166	12th June, 1 P.M.	Barkui mine, Parasia P. O., Central Provinces.	Pench Valley Coal Co., Ltd.	Jhela Maharain, (f.), 16, <i>Labourer.</i>	Coal	Two loaded tubs were being trammed down an underground road on a gradient of 1 in 30. In attempting to reach a muthole a woman crossed the line and was run over by the tubs. She was fatally injured. Inspection and inquiry made.
167	20th June, 10 A.M.	Khewra mine, Khewra P. O., Punjab.	Government of India.	Sakhi, s/o Kalu, (m.), 55, <i>Pointsman.</i>	Salt	A pointsman sat on the handle of a switch-lever whilst a train of wagons was being pushed by a locomotive along an underground haulage road. When the locomotive passed over the points the handle of the lever was jerked upwards and he was thrown against the rear wheels of the locomotive and fatally injured. He had worked as a pointsman for some years and ought to have known better than to place himself in so dangerous a position. Inspection and inquiry made.
168	7th July, 1 P.M.	Malkera mine, Katrasgarh P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ltd.	Patla Dhobi, (m.), 26, <i>Haulage attendant.</i>	Coal	Whilst a train of three loaded tubs was being hauled from a level line on to a haulage road dipping at 1 in 5, the haulage rope, 5/8" in diameter, broke and a haulage attendant was crushed and fatally injured by the runaway tubs. As the train was about to be lowered down the haulage road a drag had not been attached in rear. Inspection and inquiry made.
169	12th July, 12 Noon.	Datla mine, Junnordeo P. O., Central Provinces.	Amalgamated Coal- fields, Ltd.	Pannwa Mahara, (m.), 23, <i>Labourer.</i>	Coal	Whilst a train of seven tubs was being lowered down a haulage plane the two leading tubs became uncoupled and ran wild. Deceased, who was travelling on the haulage incline, was struck by the run away tubs and fatally injured. Inspection and inquiry made.
170	2 nd July, 5-30 A.M.	Gaslitan mine, Sijua P. O., Bihar and Orissa.	New Maubhoom Coal Co., Ltd.	Gupan Chamar, (m.), 45, <i>Trolleyman.</i>	Coal	Whilst lowering four loaded tubs down a gradient of 1 in 50, deceased was overtaken by another loaded tub, running wild on the same tramway. In attempting to jump clear, he sustained a slight injury to his left foot. On the sixth day after the accident he developed tetanus, and he died on the following day. Inspection and inquiry made.

171	2nd August, 9 P.M.	Kondwadih mine, Jeaigora P. O., Bihar and Orissa.	Harriladih Coal Co., Ld.	Motia Domo, (m.), 25, Trammer.	Coal	Whilst a train of 8 loaded tubs was being hauled up a gradient of 1 in 10, the haulage rope broke and the train ran back 20 feet before being derailed by the back-stay. A trammer, who was riding on the rear of the first tub, was killed. He was not authorised to ride on the train. Inspection and inquiry made.
172	15th August, 7 P.M.	Barkui mine, Parasin P. O., Central Provinces.	Penoh Valley Coal Co., Ld.	Baloo Mohra, (m.), 50, Labourer.	Coal	Whilst a train of six empty tubs was being lowered down a haulage plane the leading tub became uncoupled and ran wild. Deceased who had been working on the track was overtaken by the run away tub and crushed between it and the corner of a pillar. He died shortly afterwards. Inspection and inquiry made.
173	17th August, 9 P.M.	Mahakali mine, Chanda P. O., Central Provinces.	Hajeobhoy Laljee & Co.	Sudania Mahar, (m.), 40, Labourer.	Coal	Deceased attempted to cross in front of two loaded tubs which were gravitating along an underground tramway on a gradient of 1 in 100. He fell down, was run over and killed instantly. Inspection and inquiry made.
174	28th August, 11 P.M.	Sitalpur mine, Dishergarh P. O., Bengal.	Bengal Coal Co., Ld.	Mukhi Mojhian, (f.), 27, Coal-carrier.	Coal	Whilst a train of three loaded tubs was being hauled up a gradient of 1 in 5, the rear tub became uncoupled and ran back. It struck and fatally injured a woman who was sitting by the side of the road. Inspection and inquiry made.
175	20th August, 7-30 P.M.	Chota Dhemu mine, Sitarampur P. O., Bengal.	Bengal Coal Co., Ld.	Dhanmad Rohidas, (f.), 35, Coal-carrier.	Coal	Owing to the falling-off of a coupling three empty tubs ran amain down a haulage road. A woman had contrary to orders, gone down this road instead of using the proper travelling road. She was struck by the leading tub and sustained fatal injuries. Inspection and inquiry made.
176	31st August, 4-30 A.M.	Lodna (Nos 4 and 5 Pits) mine, Jharua P. O., Bihar and Orissa.	Lodna Colliery Co., (1920) Ld.	Khandu Bauri, (m.), 38, Coal-cutter.	Coal	Whilst sitting on an underground tramline, a miner was struck by a loaded tub which was being pushed along by a trolley man. He sustained serious injuries, and died three days later. Inspection and inquiry made.
177	12th September, 11-30 A.M.	Loyabad mine, Bansjora P. O., Bihar and Orissa.	Burrakur Coal Co., Ld.	Sabdar Ali, (m.), 32, Labourer.	Coal	Whilst a labourer was sitting on a tramline and helping to repair an electric cable, two loaded tubs which had run wild knocked him down. He was seriously injured and died two days later. Inspection and inquiry made.
178	6th October, about 8 P.M.	Loyabad mine, Bansjora P. O., Bihar and Orissa.	Burrakur Coal Co., Ld.	Janki Mahato, (m.), 30, Hookman.	Coal	Whilst a train of five loaded tubs was being raised up an underground incline on a gradient of 1 in 3, a coupling broke and four tubs ran wild. Deceased was struck by the tubs and seriously injured. He died three days later. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents during the year 1928—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of persons killed	Name of mine al worked.	Cause of accident and remarks.
HAULAGE—contd.						
179	11th October, 9 A.M.	Lodna mine, Jharia P. O., Bihar and Orissa.	North Burrakur Coal Co., Ld.	Bhajahari Pramanik, (m.), 40, <i>Line Mistry.</i>	Coal	Whilst a miner was lowering an empty tub down a haulage road dipping at 1 in 8, it got out of hand and ran wild. A line mistry who was repairing the track was struck and fatally injured by the runaway tub. Inspection and inquiry made.
180	12th October, 11 P.M.	Kurhurbari mine, Giridia P. O., Bihar and Orissa.	East Indian Rail- way.	Jitni Kolino, (f.), 20, Meghni Kolino, (f.), 23; <i>Coal-carr. ers.</i>	Coal	A train of 12 loaded tubs was being raised up a haulage incline, when the drawbar of the first tub failed and 11 tubs ran wild. A miner and three women who were standing on the haulage road were struck by the tubs and seriously injured. Two of the women subsequently died. Inspection and inquiry made.
181	15th October, 6-30 A.M.	Bararee mine, Jealgora P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Ram Protap Pauday, (m.), 45, <i>Coal-loader.</i>	Coal	Whilst deceased was pushing an empty tub on an under-ground haulage road a loaded tub being pushed in the opposite direction by a trolleyman collided with it and caused an injury to his foot. The wound was almost healed when tetanus developed and caused death after twenty-two days. Inspection and inquiry made.
182	5th December, 7 P.M.	Banksimula mine, Charanpur P. O., Bengal.	Bengal Coal Co., Ld.	Nilmony Kolc, (f.), 30, <i>Coal-carrier.</i>	Coal	A woman was pushing an empty tub along a level tram line when a loaded tub ran wild. She tried to get into a refuge hole, but was knocked down and fatally injured. Inspection and inquiry made.

UNDERGROUND MACHINERY—(2 deaths).

183	10th November, 2 P.M.	Dhemo Main mine, Sitarampur P. O., Bengal.	Dhemo Main Collieries, Ld.	Ariwell Madrassi, (m.), 27, <i>Machineman.</i>	Coal	Whilst a bar coal-cutting machine was "sumping in" at the side of a gallery the side stay fell out of position and caused the machine to swing round. The bar knocked out the anchor post and the latter struck one of the crew on the head, fatally injuring him. Inspection and inquiry made.
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84	15th December,	Dhemo Main mine, Sitarampur P. O., Bengal.	Dhemo Main Collieries Ltd.	Babulal Gowala, (m.), 35 Head-fitter.	Coal	Whilst supervising the erection and testing of a three-throw r.m. pump underground, a head-fitter attempted to mount the pump seating when the pump was in motion. He slipped and his clothes becoming entangled in the machinery, sustained injuries from which he died almost immediately. Inspection and inquiry made.
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SUNDRIES UNDERGROUND—(12 deaths).

185	17th February, 5-30 A.M.	Katras mine, Katrasgarh P. O., Bihar and Orissa.	Burrakur Coal Co., Ltd.	Gopi Napit, (m.), 20, Coal-carrier.	Coal	A miner was attempting to straighten the blunt end of a pick when he fell forward, and the sharp end of the pick pierced his abdomen. He died within twenty minutes. Inspection and inquiry made.
186	28th February, 5 P.M.	Jamadoba mine, Jealgora P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ltd.	Rengta Manjhi, (m.), 50, Coal-cutter.	Coal	A sirdar was in the act of erecting a prop, when a portion of the roof broke away and knocked out the prop. A miner who was standing close by moved quickly to avoid the falling prop, and in doing so slipped and fell to the ground. He sustained a severe injury to the spine, and died within a few days. Inspection and inquiry made.
187	18th March, 12-30 A.M.	Bararee mine, Jealgora P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Moher Mahato, (m.), 30, Coal-carrier.	Coal	A coal-carrier commencing to load a self-tipping tub let his basket fall into the tub. On climbing into the tub to retrieve the basket the tub overturned and fell on him killing him instantly. It is probable that one of the keys fitted to the tub to prevent accidental tipping was not in position. Inspection and inquiry made.
188	1st April, 5 A.M.	Loyabad mine, Banajora P. O., Bihar and Orissa.	Burrakur Coal Co., Ltd.	Teekmoni Baurin, (f.), 20, Coal-carrier.	Coal	In a level gallery in a seam 27 feet thick floor coal was left over half the width of the gallery to form a carrying road from floor coal workings up to a loading line in the top of the seam. Some miners robbed coal and undercut the pathway and whilst deceased was carrying a basket of coal up to the loading line, a section of the pathway subsided with her and she was killed instantly. Inspection and inquiry made.
189	6th April, 1-30 P.M.	West Gopalichuk mine, Kuannda P. O., Bihar and Orissa.	Gopalichuk Coal Co., Ltd.	Jitan Dhobi, (m.), 40, Coal-cutter.	Coal	A sirdar was testing some roof coal in a gallery, 22 feet high, when about 5 cwt. of the coal fell and knocked out three props. In falling one of the props struck a miner on the head and killed him instantly. Inspection and inquiry made.
190	31st May, 1-30 P.M.	Newton Chikli mine, Parasia P. O., Central Provinces.	Newton Chikli Collieries, Ltd.	Bishni Kachhan, (f.), 23, Labourer.	Coal	Whilst carrying on her head a large lump of coal in an underground gallery a woman slipped and fell to the ground. She received injuries to the head and died within a few days. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents during the year 1928—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of persons killed.	Name of mineral worked.	Cause of accident and remarks.
191	16th June.	Chowrassic mine, Dishergarh P. O., Bihar and Orissa.	Equitable Coal Co., Ld.	Dalu Bol, (m.), 28, <i>Line-mistry.</i>	Coal	Owing to the collapse of a portion of the arching near the top of a highly inclined haulage slope an inrush of mud and water took place. A line-mistry was washed away and carried into waterlogged workings. His body was found six months later. Inspection and inquiry made.
192	7th July, 8-20 A.M.	Katras mine, Katrasgarh P. O., Bihar and Orissa.	Burrakur Coal Co., Ld.	Baudhu Belda, (m.), 42, <i>Labourer.</i>	Coal	Whilst a labourer was loading a basket with debris in an incline cutting, 20 feet deep, he was struck on the head and fatally injured by a piece of stone weighing about 2 lb which is assumed to have fallen from a stone wall surrounding the incline. He died nine hours later. Inspection and inquiry made.
193	17th August, 2-30 A.M.	Lodna mine, Jharis P. O., Bihar and Orissa.	Lodna Colliery Co. (1920) Ld.	Sukdeo Singh, (m.), 34, <i>Coal-cutter.</i>	Coal	Whilst a miner was standing on a ladder dressing roof coal in a gallery, 13 feet high, he overbalanced and fell from a height of 7 feet on to a large piece of coal lying on the floor. He received injuries from which he died fifteen minutes later. Inspection and inquiry made.
194	6th October, 11-30 A.M.	Lodna mine, Jharis P. O., Bihar and Orissa.	Lodna Colliery Co. (1920) Ld.	Janki Kahar, (m.), 35, <i>Coal cutter</i>	Coal	A prop, 26 feet long, got out of control whilst it was being set in a depillaring area, and in falling it struck and dislodged another prop of the same length. The second prop fell on a miner and killed him instantly. All the miners had been removed from the place during the operation but deceased returned before he had received permission to do so. Inspection and inquiry made.
195	18th October, 12-30 A.M.	Jamadoba mine, Jealgora P. O., Bihar and Orissa.	Tata Iron & Steel Co., Ld.	Padma Mall, (f), 38, <i>Coal-carrier.</i>	Coal	Whilst a woman was emptying a basket of coal into a mine car she slipped and fell on the edge of the car. She sustained internal injuries and died a few minutes later. Inspection and inquiry made.

SUNDRIES UNDERGROUND—(12 deaths).

196	9th November, 1-30 P.M.	Bhulanbaroo mine, Pathardih P. O., Bihar and Orissa.	Bhulanbaroo Coal Co., Ltd.	Sukhoor Chamar, (m.), 28, Coal-cutter.	Coal	A miner standing on a ladder was levering down by means of a crowbar roof coal in a gallery, 18 feet high, when he lost his hold on the ladder and fell to the ground. He sustained serious injuries to his knee and, the wound becoming septic, he died fifty-four days later. Inspection and inquiry made.
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BY SURFACE MACHINERY—(2 deaths).

197	25th February, 10 A.M.	Haripur mine, Chora P. O., Bengal.	Baraboni Coal Con- cern, Ltd.	Bhital Mahato, (m.), 45, Labourer.	Coal	During a temporary stoppage of the operation of hauling a boiler by means of a hand-winch, one of the workmen sat on the handle of the winch. The boiler rolled back unexpectedly and caused the handle to whirl round. The man was struck by the moving handle and sustained fractures of the skull and arm. He succumbed to his injuries a fortnight later. Had the pawl fitted to the winch been set in position, the accident would in all probability, have been avoided. Inspection and inquiry made.
198	29th December, 11-50 A.M.	Borjan and Kongon mine, Kongon P. O., Assam.	Nazira Coal Co., Ltd.	Ramjee, (m.), 21, Labourer.	Coal	As a carrier on an aerial ropeway entered a junction station, it fell from the rope and struck an attendant who was at work in the station. He was seriously injured, and died fourteen days later. Inspection and inquiry made.

ON SURFACE RAILWAYS AND TRAMWAYS BELONGING TO THE MINE—(5 deaths).

199	4th May, 12-30 P.M.	Sripore mine, Kalipahari P. O., Bengal.	Lodna Colliery Co. (1920) Ltd.	Etwarri Kabar, (m.), 36, Trolleyman.	Coal	After coupling two hand-shunted railway wagons, a trolleyman was emerging from between the wagons, when his head was crushed between the buffers, and he was killed instantly. Inspection and inquiry made.
200	18th June, 4 P.M.	Jharis Khas mine, Jharis P. O., Bihar and Orissa.	Standard Coal Co., Ltd.	Sabarot Dosadh, (m.), 35, Shunter.	Coal	A railway wagon was moved forward two yards from stationary wagons standing on a colliery siding graded at 1 in 150, and whilst the brake was being applied to hold the wagon in position a shunter crossed the line. The wagon ran back crushing him between the buffers of the moving wagon and the stationary wagons. Inspection and inquiry made.
201	26th June, 9-30 A.M.	Taungzun mine, Taungzun P. O., Burma.	Osman Mustikhan & Co.	O. Shwo, (m.), 28, Trammer.	Stone	Whilst a trammer was moving an empty tipping tub in the siding of a stone crushing plant, he was crushed between the side of the tub and the side of a loaded tub which was standing on the adjacent line near the end of the siding. He died the following day. If he had exercised reasonable care the accident would not have occurred. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents during the year 1928—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name sex, age and occupation of persons killed.	Name of mineral worked.	Cause of accident and remarks.
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ON SURFACE RAILWAYS AND TRAMWAYS BELONGING TO THE MINE—(5 deaths)—contd.

202	21st August, 9 P.M.	Methani mine, Sitarampur P. O., Bengal.	Aldih Coal Co., Ltd.	Ram Sunder Singh, (m.), 30, Depot peon.	Coal	Whilst a peon was superintending the hand-shunting of a wagon on a railway siding another wagon gravitated slightly towards the first wagon. He was crushed between the buffers of the two wagons and sustained injuries so severe that he died on the day following. Inspection and inquiry made.
203	7th December, 1 P.M.	Benahir mine, Jharia P. O., Bihar and Orissa.	Standard Coal Co., Ltd.	Rohoman Meah, (m.), 25, Wagon trimmer.	Coal	Deceased was standing on the top of a loaded wagon when another wagon which was being hand-shunted bumped into it and caused him to fall to the ground. He sustained fatal injuries. Inspection and inquiry made.

BY ELECTRICITY—(2 deaths).

204	30th April, 6 P.M.	Katras mine, Katrasgarh P. O., Bihar and Orissa.	Burrakur Coal Co., Ltd.	Rohan Dosadh, (m.), 16, Engine Haulage attendant.	Coal	With the object of getting a bird's nest deceased climbed a tower carrying a 6 600 volt transmission line. He came into contact with one of the conductors and received a shock of approximately 3,800 volts to earth. He fell to the ground and was found dead at the base of the tower. Inspection and inquiry made.
205	6th September, 6-30 P.M.	Kymore mine, Kymore P. O., Central Provinces.	Central Provinces Portland Cement Co., Ltd.	Ragbirba, (m.), 23, Labourer.	Li m e - stone.	Deceased accidentally touched a transmission line post which was electrically charged due to the contact of an earthing ring fitted on it with a line conductor. He received a fatal shock. The system was 3 phase, 550 volts, insulated neutral. The post was connected to an earthplate which had a high resistance of 19 ohms.

MISCELLANEOUS ON SURFACE—(21 deaths).

206	11th January, 11 A.M.	Chickla-Sitasaongi mine, Dengri P. O., Central Provinces.	Central Provinces Manganese Ore Co., Ltd.	Kanni Goni, (m.), 34, Miner.	Manga- nese.	Whilst a mixer was barring down rock from the side of an open working he overbalanced and fell from a height of 15 feet. He sustained serious injuries and died seven days later. Inspection and inquiry made.
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207	6th February, 7-15 A.M.	Sania mine, Pandavapur P. O., Bengal.	Sania Collieries, Ld.	Rasana Dhangur, (f.), 25, Coal-carrier.	Coal	A woman was assisting her brother to carry a plank, 13' long x 10' x 2" thick, when she fell with the plank on top of her. She sustained a spinal injury and died fifteen minutes later. Inspection and inquiry made.
208	16th February, 11 A.M.	Dhemo Main mine, Sitarampur P. O., Bengal.	Dhemo Main Col- lieries, Ld.	Chitnu Bhuiyan, (f.), 40, Coal-carrier.	Coal	Whilst loading coal on the surface a woman was fatally injured by the collapse of a retaining wall. Inspection and inquiry made.
209	22nd February, 12 noon.	Kongon mine, Kongon P. O., Assam.	Nazira Coal Co., Ld.	Udsibahadur Thapa, (m.), 26, Labourer.	Coal	A man employed for cutting grass for ponies was doing so at a point 90 feet above which an aerial ropeway was operating. A piece of timber, 8" x 8" x 6" falling from one of the buckets, struck and killed him. Inspection and inquiry made.
210	26th February, 10-30 A.M.	Pyu mine, Pyu P. O., Burma.	Ibrahim (Contractor.)	Mg Kan Hla, (m.), 34, Quarryman.	Stone	Whilst a quarryman was using a steel bar to remove stone from the face of a stone quarry, he slipped and fell from a height of 50 feet to the floor of the quarry. He sustained injuries from which he died a few minutes afterwards. A safety rope was provided. Inspection and inquiry made.
211	5th March, 3 P.M.	Tajuwala mine, Dhak P. O., Panjab.	Northern India Coal Co.	Sultan Bux, (m.), 42, Trammer.	Coal	In stepping aside to avoid wagons moving on a surface tram line a trammer fell over the edge of a shelf of rock carrying the tram line along the side of a hill. He sustained injuries which caused death seventeen days later. Inspection and inquiry made.
212	9th April, 5 A.M.	Mudidih mine, Sijua P. O., Bihar and Orissa.	Burrakur Coal Co., Ld.	Juman Khan, (m.), 3, Tro leyman; Dukhi Mia's daughter, (f.), 1½; Not known (bog- ger), (f.), 25; Not known (bog- ger), (f.), 1½; Parmeshwar Rajoor, (m.), 3½; Mangri Rajoorin, (f.), 6; Not employed.	Coal	Owing to an unexpected collapse of underground workings a surface subsidence took place, causing three blocks of miners' dwellings to be wrecked. A large number of persons were lying asleep in and about the dwellings at the time and of these persons six were killed, five were severely injured and thirty-five were slightly injured. Inspection and inquiry made.

APPENDIX II—contd.
Fatal Accidents during the year 1928—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of persons killed.	Name of mineral worked.	Cause of accident and remarks.
213	11th April, 5-30 P.M.	Parbelia mine, Dishergarh P. O., Bihar and Orissa.	Bengal Coal Co Ld.	Ramprasad Nunia, (m.), 14, Labourer.	Coal	Whilst deceased was loading earth in a cutting for a surface tramway a mass of earth fell from the top of the cutting and rolled on to him, inflicting injuries from which he died thirty-six hours later. Inspection and inquiry made.
214	17th April, 9-30 A.M.	Dhori mine, Bokaro P. O., Bihar and Orissa.	Bokaro and Ram- gur, Ld.	Shikari, (m.), 16, Labourer.	Coal	Whilst engaged in cutting clay for use in building coke ovens from a face 9 feet high in an open excavation a labourer was struck and fatally injured by a mass of clay, weighing about a ton, which fell from the face. Inspection and inquiry made.
215	4th May, 7-20 A.M.	Man-Mak-Lang mine, Namtu P. O., Burma.	Burma Corporation, Ld.	Ai Thu, (m.), 28, Miner.	Iron Ore.	After a round of shots had been fired in a quarry a miner was walking back to his working place along a ledge 2 feet wide, when he slipped and fell 85 feet to the bottom of the quarry. He was killed instantly. If he had complied with instructions and taken refuse in the appointed place whilst the shots were being fired he would not have been killed. Inspection and inquiry made.
216	27th May, 10 A.M.	Mayangon mine, Mayangon P. O., Burma.	Ibrahim (Contractor).	Nathu, (m.), 35, Quarryman.	Stone.	Whilst a quarryman was using a crowbar on the face of a stone quarry he overbalanced and fell to the floor of the quarry from a height of 60 feet. He died a few minutes afterwards. If he had been securely attached to the safety rope which was provided the accident would have been avoided. Inspection and inquiry made.
217	8th August, 10-30 A.M.	Bararee mine, Jealgora P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Phnti Toli, (f.), 31, Labourer.	Coal	A woman who had quarrelled with and ran away from her husband climbed into a cistern to hide. The cistern was situated at the top of a shaft and to it was connected the exhaust pipe of an under-ground pump. When the pump was started she was severely scalded by exhaust steam; she died subsequently. Inspection and inquiry made.

MISCELLANEOUS ON SURFACE—(21 deaths).

218	4th September, 3 P.M.	Thabawleik mine, Margui P. O., Burma.	Anglo Burma Tin Co., Ltd.	Biswanath Garkha, (m.), 27, Miner.	Tin	A tree, 60 feet high, and 2' 6" in diameter, which had been rendered unstable by mining operations, fell over and crushed a dead tree, 1' in diameter, which was lying across a tin sluicing drain. Part of the dead tree fell into the sluicing drain killing a miner whilst he was at work. If the tree had been felled the accident would not have occurred. Inspection and inquiry made.
219	4th October, 2 P.M.	Kargali mine, Bokaro P. O., Bihar and Orissa.	Great Indian Peninsula Railway.	Chulaban, (m.), 45, Mason.	Coal	Whilst engaged in building a wall in a miner's dwelling deceased leaned against the wall and caused it to collapse. He fell to the ground, 5 feet below and sustained internal injuries which resulted in his death on the following day. Inspection and inquiry made.
220	7th December, 12 A.M.	Chowrassie mine, Dishergarh P. O., Bihar and Orissa.	Equitable Coal Co., Ltd.	Lokhu Kumer, (m.), 30, Blacksmith.	Coal	Whilst at work a blacksmith lost consciousness and fell into the fire. He was seriously burned, but had almost recovered when he contracted dysentery and died six weeks after the accident. Inspection and inquiry made.
221	20th December, 4 P.M.	Thabawleik mine, Margui P. O., Burma.	Thabawleik Tin Dredging, Ltd.	Victor H. Howman, (m.) 31, Engineer.	Tin	Whilst an Engineer in charge of a tin dredge was standing 500 feet in front of the dredge and 6 feet from the headline, giving instructions for clearing the headline off a tree stump, 1 foot high, against which it was caught, the headline slipped off the tree stump and struck him on the neck. He was severely injured and died twenty minutes later. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents during the year 1928—contd.

Serial number.	Date and hour of accident	Name and situation of mine.	Name of owner.	Name, sex age and occupation of persons killed.	Name of mineral worked.	Reason for exclusion.	Cause of accident and remarks.
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FIGURES NOT INCLUDED IN THE STATISTICS—(27 deaths).

1	20th January 3-45 P.M.	Sunko-pore mine, Ukhra P. O., Bengal.	Burn & Co., Ltd.	Mrit'vanjoy Roy, (m.), 25, Wagon shunter.	Coal	Not a mining accident	Deceased and three other men were pushing a loaded wagon down a gradient of 1 in 101, when he suddenly collapsed and died fifteen minutes later. Death was due to heart failure. Inspection and inquiry made.
2	8th February, 10th P.M.	Lekh-pani mine, Margheria P. O., Assam.	Assam Railways and Tramway Co., Ltd.	Kazim-un Lama (m.), 46, Labourer.	Coal	Not a mining accident.	During a storm, a branch of a tree fell on a hut in which a man was sleeping. The hut collapsed upon him, killing him instantly. Inspection and inquiry made.
3	11th February, 6 A.M.	Nincha mine, Sarsool P. O., Bengal.	Haraboni Coal Concern, Ltd.	Shohagi Moj- hian, (f.), 42, Coal-carrier.	Coal	Not a mining accident.	Deceased was found drowned in a disused and water-logged incline-tunnel. She had gone through the fence for the purpose of washing herself. Inspection and inquiry made.
4	19th March, 11-25 A.M.	Serampur mine, Giridih P. O., Bihar and Orissa.	East Indian Rail- way.	Meghan Dosadh, (m.), 28, Labourer	Coal	Not a mining accident.	Deceased had quarrelled with his father over money matters. Whilst walking by the side of a railway he suddenly thrust his head beneath the slowly moving wheels of a goods van attached to a train of wagons. He was killed instantly. Inspection and inquiry made.
5	21st March, 5-30 P.M.	Jotejanaki Khas mine, Tosai P. O., Bengal.	Banerjee Santan.	Jungu Baurin, (f.) 14.	Coal	Not em- ployed.	A girl aged six, carrying an infant, was crossing a Railway line when a wagon began to move. She dropped the infant and it fell on the line and was run over. The brake of the wagon was said to have been defective. Inspection and inquiry made.
6	5th April,	Gopinathpur mine, Mugma P. O., Bihar and Orissa.	East Bengal Coal Co.	Unknown, (m.), 11.	Coal	Not em- ployed.	An unknown boy, suffering from severe bodily injuries which subsequently proved fatal was found in an underground gallery at a point 68 feet from the foot of an inclined cutting, 70 feet deep. It was assumed that he had jumped into the cutting from the surface. Inspection and inquiry made.
7	19th April, 1-30 P.M.	Jhurbari mine, Giridih P. O., Bihar and Orissa.	East Indian Rail- way.	Unknown, Mohammedan (m.), 40.	Coal	Not em- ployed	A beggar was run over and fatally injured in attempting to cross a colliery railway line in front of a locomotive. Inspection and inquiry made.

8	21st April, 2 P.M.	Borjan mine, Kongon P. O., Assam.	Nazira Coal Co., Ld.	Hasti, (m.), 13	Coal	Not employed.	A boy was sitting on the frame of the brake wheel of a self acting incline. When the rope was set in motion, his leg or his loincloth was caught between the rope and the wheel, and before the brake could be applied he had sustained injuries which afterwards proved fatal. Inspection and inquiry made.
9	24th April 1 P.M.	Jukehi mine, Katni P. O., Central Provinces	Nasarwanji Dubash.	M. Ghoomna Bhoomiya, (m), 14.	Lime- stone.	Not employed.	This accident occurred in an open excavation, about 25 feet deep, the side of which was sloped at an angle of about 35 degrees from vertical. The side was stepped, but a rib of ground, 4 feet wide had been left to support the delivery pipe of a pump. A portion of this rib, 9' 4' x 2' fell and fatally injured a boy who had brought food for one of the workers and had been drinking water from the pump standage at the bottom of the quarry. Inspection and inquiry made.
10	25th May, 9 A.M.	Jamrapani mine, Tirody P. O., Central Provin- ces.	Tirody Vangaueso Ore Co., Ld.	Dukaloo, (m.), 7.	Manga- nese.	Not em- ployed	With the object of obtaining water to drink deceased went through the fencing of a discontinued quarry fell over the edge into water, 10 feet deep, and was drowned. Inspection and inquiry made.
11	27th June, 5 A.M.	Borjan mine, Kongon P. O., Assam.	Nazira Coal Co., Ld.	Gulsa Pathan, (m). 35. Coal-cutter.	Coal	Not a mining acci- dent.	As the result of a storm a tree fell on a dwelling in which several persons were sleeping. One of them was struck and fatally injured. Inspection and inquiry made.
12	28th June, 7-30 A.M.	Island mine, Mergui P. O., Burma.	Mergui Tin Dredg- ing Co., Ld.	Mea Paw. (f.), 51.	Tin	Not em- ployed.	A woman went to steal tin ore from a part of a mine where operations had been temporarily suspended and whilst she was undercutting the side of a sluicing drain, 6 feet deep, a mass of earth 6' x 4' 6" x 1' 6" fell from the side and killed her instantly. Inspection and inquiry made.
13	19th July, 12-15 P.M.	Bansdeopur Mine, Kusumia P. O., Bihar and Orissa.	Bansdeopur Coal Co., Ld.	Tulia Ghatwarin, (f.), 18	Coal	Not em- ployed	With the object of calling her father to the surface a child, aged about 3 years entered a mine by way of a haulage incline and as she was being led to his working place by a female coal-carrier she was killed by a mass of coal, 40' x 10' x 3', which fell from the side of a pillar. An intrusive band composed of soft clay and coal dust varying in thickness from 3 to 12 inches was the immediate cause of the fall. Inspection and inquiry made.
14	1st August 10-30 A.M.	Toyahad mine, Bansjora P. O., Bihar and Orissa.	Bansrakur Coal Co., Ld.	Maharaja Bhuiya, (m.), 4.	Coal	Not em- ployed.	A child playing by the side of a tramline was struck and fatally injured by a tub which was being pushed along the tram line. The mother had disregarded the manager's order prohibiting the presence of children. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents during the year 1928—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of persons killed.	Name of mineral worked.	Reason for exclusion.	Cause of accident and remarks.
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FIGURES NOT INCLUDED THE STATISTICS—(27 deaths)—contd.

15	4th September, about 2 P.M.	Loyabad mine, Bansjora P. O., Bihar and Orissa.	Burrakur Coal Co., Ld	Chotko Manjhi, (m.), 35, Coal-cutter	Coal	An accident under the Electricity Act.	With the object of getting a bird's nest deceased climbed a lattice post carrying a 6,600 volt transmission line conveying power to a colliery distant from the place of accident. He came in contact with a live conductor and, receiving an electric shock at approximately 3,800 volts, fell to the ground 32 feet below. He was fatally injured by the fall. Inspection and inquiry made.
16	6th September, 8-45 A.M.	Bararae mine, Jealgora P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Saroda Dass, (m.), 45, Bhusan Bauri, (m.), 26, Boiler riveters; Bhatu Mahoto, (m.), 50, Labourer.	Coal	An accident under the Boilers Act.	Whilst three workmen were engaged on minor repairs inside a Lancashire boiler another workman commenced to pack the gland on the feed water valve and in doing so accidentally opened the valve. Hot water entered the boiler, and three men were so severely scalded that they succumbed to their injuries a few days later. If the feed water pipe had been disconnected in accordance with the Indian Boiler Regulations the accident would not have occurred. Inspection and inquiry made.
17	6th September, 5-45 P.M.	Jamuria mine, Charanpur P. O., Bengal.	Equitable Coal Co., Ld.	Unknown, (f.), 35.	Coal	Not employed	An unknown person was found drowned in a boiler feed tank. Inspection and inquiry made.
16	11th September, 3 A.M.	Loyabad mine, Bansjora P. O., Bihar and Orissa	Burrakur Coal Co., Ld.	Somai Mochi, (m.), 20, Shale picker.	Coal	An accident under the Indian Railways Act.	After a train of loaded wagons had been drawn out of the colliery siding the mutilated body of a shale picker employed on a screening plant 190 feet distant was found on the line. The accident occurred during the hours of darkness and as no one witnessed it the attending circumstances are not known. Inspection and inquiry made.
19	11th September, 4 P.M.	Shivrajpur mine, Shivrajpur P. O., Bombay.	Shivrajpur Syndicate, Ld.	Ramehand Churnilal, (m.), 22, Miner.	Manganese.	Not a mining accident.	Whilst bathing in a flooded excavation, 20 feet deep, deceased was drowned. Inspection and inquiry made.

20	10th October, 4 P.M.	North Kujama mine, Jharia P. O., Bihar and Orissa.	Ganji Dossa & Sons.	Rama Bhuiya, (m.), 13.	Coal	Not employed.	In attempting to jump on the first of three runaway tubs on a surface tram line a boy fell and was run over. He sustained injuries to which he succumbed five days later. Inspection and inquiry made.
21	17th October, 4 P.M.	Lower and Upper Jharia mine, Jharia P. O., Bihar and Orissa.	Khimji Dossa & Sons.	Nuailal Bhuiya, (m.), 7.	Coal	Not employed.	A number of children were presumed to have been playing with a tipping tub, when it overturned and fell on one of them killing him instantly. Inspection and inquiry made.
22	28th October, 8-45 A.M.	Argada mine, Sirka P. O., Bihar and Orissa.	Bengal-Nagpur Railway Co., Ltd.	Not known, (f)	Coal	Not employed	After the cessation of work at the end of the week a number of village women came to the quarry to get for their own purposes white clay which forms a layer in the overburden. In scooping out the clay they undercut the side and caused a portion of the overburden, 6' x 6' x 2' 6", to fall on them. One woman was suffocated and another was seriously injured. Inspection and inquiry made.
23	5th December, 12 noon.	Naung-tha-Khaw mine, Nawtu P. O., Burma.	Burma Corporation, Ltd.	Fuchit Kore, (m.), 50, Cart driver.	Iron Ore	Not a mining accident.	A cartman was carting ore from the mine to the loading siding. When some three miles distant from the mine his bullocks got out of hand and he fell off the cart and was run over by one of the wheels. He was killed instantly. Inspection and inquiry made.
24	8th December, 9 A.M.	Madhabpur mine, Raniganj P. O., Bengal.	Chandanmull Indrakumar.	Honsuraj Mabata (m.), 35, Hapta Mahata, (m.), 23, Gun-powder makers.	Coal	An accident under the Explosives Act.	Two men were engaged in manufacturing gunpowder outside a small factory magazine. After completing the mixing of some saltpetre and charcoal over a fire, they replaced in the magazine which contained six seers of powder a sack which they had been using when the powder exploded and both men were fatally burnt. It was thought that the sack had become ignited near the fire and was smouldering when returned to the magazine. Inspection and inquiry made.

Table

Statement of fatal and serious accidents in and about Mines

Province.	District and Mineral field.	FATAL							
		Number of separate fatal accidents.	Number of deaths.						
			Under-ground.		Open workings.		Surface.		Total.
			Males.	Females.	Males.	Females.	Males.	Females.	
Assam	Makum Coalfield	4	4	...	...	...	...	...	4
	Nazira ..	3	1	...	...	...	2	...	3
Bengal (and part of Bihar and Orissa).	Raniganj Coalfield	57	46	13	5	...	6	2	72
Bihar and Orissa	Jharia Coalfield	95	79	18	...	...	5	6	108
	Bokaro ..	6	4	...	1	...	2	...	7
	Karanpura ..	1	...	...	1	...	...	...	1
	Giridih ..	6	8	3	...	...	...	...	11
	Jainty ..	1	1	...	...	...	...	...	1
Central Provinces	Pench Valley Coalfield	8	4	2	1	...	2	...	9
	Chanda ..	1	1	...	...	...	...	...	1
Punjab	Salt Range Coalfield	1	...	...	...	...	1	...	1
Total (Coal)		183	148	36	8	...	18	8	218

DIX II.

No. 2.

regulated by the Indian Mines Act, 1928.

ACCIDENTS.				SERIOUS ACCIDENTS.											
Death rate per 1000 persons employed.				Number of separate serious accidents.	Number of persons seriously injured.						Total.	Serious injury rate per 1000 persons employed.			
Underground.	Open workings.	Surface.	Underground, Open workings and surface.		Underground.		Open workings.		Surface.			Underground	Open workings.	Surface.	Underground, open workings and surface.
					Males.	Females.	Males.	Females.	Males.	Females.					
AL															
2.14	...	...	1.12	61	44	1	...	...	18	2	63	24.05	...	19.27	17.69
2.60	...	7.72	4.66	2	...	...	...	...	2	...	2	..	...	7.72	3.11
1.74	3.23	0.49	1.39	74	50	14	1	...	12	3	80	1.69	0.65	0.93	1.55
2.07	..	0.46	1.51	215	144	16	1	...	57	1	219	3.41	0.90	2.41	3.04
5.60	0.06	0.76	0.44	24	6	...	11	3	5	...	25	8.40	1.12	1.90	1.58
...	0.81	...	0.35	...	...	...	...	...	..	...	...	...	...	...	...
1.67	...	...	1.28	30	18	8	...	...	3	1	30	3.96	...	2.19	3.49
3.68	...	...	2.42	...	...	...	...	...	...	...	...	...	...	...	...
1.77	11.63	1.26	1.78	24	15	4	...	...	7	..	26	5.02	...	4.40	5.14
0.73	...	...	0.54	5	3	...	...	...	2	...	5	2.18	...	4.07	2.66
...	...	3.32	1.31	4	3	...	...	...	2	...	5	6.79	...	6.64	6.53
1.89	0.46	0.52	1.33	439	283	43	13	3	106	7	455	3.36	0.92	2.28	2.77

Table

Statement of fatal and serious accidents in and about Mines

Province.	District and Mineral field.	FATAL							
		Number of separate fatal accidents.	Number of death.						Total.
			Under-ground.		Open workings.		Surface.		
Males.	Females.	Males.	Females.	Males.	Females.				
IRON									
Bihar and Orisa . . .	Singhbhum District . .	2	..	...	1	1	...	...	2
Burma	Shan States	1	...	...	...	...	1	...	1
	Total (Iron Ore)	3	...	...	1	1	1	...	3
MANGA									
Bombay . . . . .	.....	1	1	...	...	...	...	...	1
Central Provinces . . . . .	.....	5	...	...	3	2	...	...	5
Madras . . . . .	.....	1	...	...	...	1	...	...	1
	Total (Manganese Ore)	7	1	...	3	3	...	...	7
LEAD									
Burma	Shan States	5	5	...	...	...	...	..	5
TIN AND									
Burma	Tavoy and Mergui Districts.	7	1	...	6	...	1	...	8
COPPER									
Bihar & Orissa	Singhbhum District . .	1	1	...	...	...	...	...	1
	Total (Copper Ore).	1	1	...	...	...	...	...	1

DIX II—contd

No. 2—contd.

regulated by the India Mines Act, 1928.

ACCIDENTS.				SERIOUS ACCIDENTS.											
Death rate per 1000 person employed.				Number of separate serious accidents.	Number of persons seriously injured.						Total.	Serious injury rate per 1000 persons employed.			
Underground	Open workings.	Surface.	Underground open workings and surface.		Underground.		Open workings.		Surface.			Underground.	Open workings.	Surface.	Underground, open workings and surface.
					Males.	Females.	Males.	Females.	Males.	Females.					
ORE															
...	0.43	...	0.28	5	...	...	1	...	4	...	5	...	0.21	1.65	0.71
...	...	2.02	1.07	3	...	...	1	...	2	...	3	...	3.11	4.03	3.22
...	0.40	0.33	0.37	8	...	...	2	...	6	...	8	...	0.40	1.99	0.98
NESE ORE															
22.23	...	...	0.33	22	2	...	11	2	4	3	22	44.44	5.53	10.48	7.23
...	0.27	...	0.21	43	8	1	18	2	19	5	43	7.99	0.82	6.05	2.05
...	0.69	...	0.56	1	...	...	...	...	1	...	1	...	...	2.86	0.56
0.64	0.26	...	0.24	66	10	1	24	4	24	8	71	9.21	1.21	6.19	2.40
ORE															
1.10	...	...	0.93	77	71	...	1	...	9	...	81	15.69	16.66	11.28	13.04
WOLFRAM ORE															
1.60	0.98	1.09	1.05	8	3	...	5	...	2	...	10	5.08	0.81	2.16	1.31
ORE															
9.17	...	...	1.60	2	2	...	...	...	...	...	2	18.35	...	...	3.20
9.17	...	...	1.52	2	2	...	...	...	...	...	2	18.35	...	...	3.04

Table

Statement of fatal and serious accidents in and about Mines

Province.	District and Mineral field.	FATAL							
		Number of separate fatal accidents.	Number of deaths.						TOTAL.
			Under-ground.		Open workings.		Surface.		
			Males.	Females.	Males.	Females.	Males.	Females.	
Burma	Katha District . . . . .	...	...	...	...	...	...	...	GE
Bihar & Orissa . . . . .	.....	1	...	...	2	...	...	...	MI
	Total (Mica)	1	...	...	2	...	...	...	2
Bihar and Orissa	Monghyr District	...	...	...	...	...	...	...	SLA
	Total (Slate)	...	...	...	...	...	...	...	...
Punjab	Salt Range	1	1	...	...	...	...	...	SA
Bihar and Orissa . . . . .	.....	1	...	...	1	...	...	...	LIME
Burma . . . . .	.....	...	...	...	...	...	...	...	...
Central Provinces	.....	2	...	...	1	...	1	...	2
Punjab . . . . .	.....	3	...	...	2	...	1	...	3
	Total (Limestone)	6	...	...	4	...	2	...	6

DIX II—*contd.*No. 2—*contd.*regulated by the Indian Mines Act, 1928—*contd.*

ACCIDENTS				SERIOUS ACCIDENTS.											
Death rate per 1,000 persons employed.				Number of separate serious accidents.	Number of persons seriously injured.						TOTAL.	Serious injury rate per 1,000 persons employed.			
Underground.	Open workings.	Surface.	Underground, open workings, and surface.		Underground.		Open workings.		Surface.			Underground.	Open workings.	Surface.	Underground, open workings and surface.
					Males.	Females.	Males.	Females.	Males.	Females.					
MS															
...	...	...	...	1	...	...	...	...	1	...	1	...	...	5.05	1.97
CA															
...	0.99	...	0.15	8	7	1	...	...	...	...	8	0.79	...	...	0.60
...	0.59	...	0.11	8	7	1	...	...	...	...	6	0.64	...	...	0.44
TE															
...	...	...	...	1	...	...	1	...	...	...	1	...	5.15	...	5.00
...	...	...	...	1	...	...	1	...	...	...	1	...	2.06	...	1.86
LT															
1.08	...	...	0.65	7	6	...	...	...	1	...	7	6.18	...	1.85	4.58
STONE															
...	0.9	...	0.64	3	...	...	...	...	3	...	3	...	...	6.68	1.91
...	...	...	...	2	...	...	3	...	...	...	3	...	9.17	...	8.38
...	0.20	0.92	0.34	3	...	...	...	...	2	1	3	...	...	2.77	0.50
...	3.10	0.77	1.55	3	...	...	3	...	...	...	3	...	4.64	...	1.55
...	0.58	0.70	0.61	11	...	...	6	...	5	1	12	...	0.86	2.10	1.22

Table

Statement of fatal and serious accidents in and about Mines

Province.	District and Mineral field.	Number of separate fatal accidents.	FATAL						
			Number of deaths.						
			Under-ground.		Open workings.		Surface.		Total.
			Males.	Females.	Males.	Females.	Males.	Females.	
IGNEOUS									
Bengal . . . . .	.....	...	...	...	...	...	...	...
Bihar and Orissa . . . . .	.....	...	...	...	...	...	...	...
Bombay . . . . .	.....	1	...	...	...	1	...	1
Burma . . . . .	.....	5	...	...	4	...	1	5
	Total (Igneous Rock)	6	...	...	4	1	1	6
STONE (UN									
United Provinces . . . . .	.....	...	...	...	...	...	...	...
	Total (Stone unspcified). . . . .	...	...	...	...	...	...	...
MU									
Bombay . . . . .	.....	...	...	...	...	...	...	...
FIRE									
Bihar and Orissa . . . . .	.....	1	...	...	2	...	...	2
	Total (Fire Clay)	1	...	...	2	...	...	2
	Grand Total (All minerals).	221	157	36	30	5	23	259	

DIX II—*contd.*No. —*contd.*regulated by the Indian Mines Act, 1928—*contd.*

ACCIDENTS.					SERIOUS ACCIDENTS.											
Death rate per 1,000 persons employed.				Number of separate serious accidents.	Number of persons seriously injured.							Serious injury rate per 1,000 persons employed.				
Underground.	Open workings.	Surface.	Underground, open workings and surface.		Underground.		Open workings.		Surface.		Total.	Underground.	Open workings.	Surface.	Underground, open workings and surface.	
					Males.	Females.	Males.	Females.	Males.	Females.						
ROCK					2	...	...	...	...	2	...	2	...	...	2.69	1.67
...	...	...	...	1	...	...	...	...	...	1	...	1	...	...	1.32	0.41
...	1.53	...	1.27	...	...	...	...	...	...	...	...	...	...	...	...	...
...	1.78	2.78	1.92	19	...	...	12	...	8	...	20	...	5.35	22.22	7.68	...
...	0.98	0.50	0.85	22	...	...	12	...	11	...	23	...	2.36	5.52	3.25	...
SPECIFIED)					1	...	...	1	...	...	1	...	0.66	...	0.64	...
...	...	...	...	1	...	...	1	...	...	...	1	...	0.21	...	0.18	...
RUM					2	...	...	...	1	1	...	2	...	0.74	11.76	1.39
CLAY					1	...	...	...	...	1	...	1	...	...	5.46	1.94
...	6.08	...	3.58	1	...	...	...	...	1	...	1	...	...	...	3.83	0.78
...	1.97	...	1.56	1	...	...	...	...	1	...	1	...	...	...	...	...
1.64	0.44	0.44	0.97	654	382	45	65	8	167	16	683	3.62	0.92	2.60	2.55	...

APPENDIX II—concl'd.

Table No. 3.

Statement of fatal accidents in Mines regulated by the Indian Mines Act, during the year 1928, classified according to cause of accident.

Mineral worked.	Number of separate fatal accidents.	Number of persons killed.											Death rate per 1,000 persons employed				
		Explosions and ignitions of fire-damp	Falls of roof.	Falls of side.	In shafts.	Suffocation by gases.	By explosives.	Eruptions of water.	Healage.	Miscellaneous underground.	Surface.	By electricity.	Total deaths.	Underground.	Open workings.	On surface.	Underground, open workings and surface.
Coal	183	3	81	36	13	1	14	7	27	14	21	1	218	1.69	0.46	0.52	1.33
Iron Ore	3	..	..	1	..	..	1	..	..	..	1	..	3	..	0.40	0.33	0.37
Manganese Ore.	7	..	..	5	..	..	..	..	1	..	1	..	7	0.84	0.26	..	0.24
Lead Ore	5	..	2	..	2	..	1	..	..	..	..	..	5	1.10	..	..	0.93
Tin and Wolfram Ore.	7	..	1	5	..	..	..	..	..	..	2	..	8	1.69	0.98	1.09	1.05
Copper Ore	1	..	..	..	1	..	..	..	..	..	..	..	1	9.17	..	..	1.52
Mica	1	..	..	2	..	..	..	..	..	..	..	..	2	..	0.59	..	0.11
Salt	1	..	..	..	..	..	..	..	1	..	..	..	1	1.03	..	..	0.65
Limestone	6	..	..	4	..	..	1	..	..	..	..	1	6	..	0.58	0.70	0.61
Igneous Rock	6	..	..	3	..	..	..	..	..	..	3	..	6	..	0.98	0.50	0.85
Fireclay	1	..	..	2	..	..	..	..	..	..	..	..	2	..	1.97	..	1.56
Total 1928	221	3	84	58	16	1	17	7	29	14	28	2	259	1.64	0.44	0.44	0.97
Total of preceding year.	209	1	63	59	10	9	27	..	24	23	29	2	247	1.46	0.57	0.41	0.92
Difference	+12	+2	+21	-1	+6	-8	-10	+7	+5	-9	-1	..	+12	+0.18	-0.13	+0.3	+0.5

APPENDIX III.

Statement of prosecutions under the Indian Mines Act, and Indian Penal Code, during the year 1928.

Province.	District.	Number of prosecutions.	Number of persons prosecuted.	Number of persons convicted.	Number of Regulations and rules and Sections of the Act contravened.	REMARKS.
Bengal	Bankura	1	1	1	Regulations 38 and 40 of the Indian Coal Mines Regulations, 1926.	
	Burdwan	3	7	3	Regulations 3(2) and (3) of the Indian Coal Mines Regulations, 1926.	One of the accused was acquitted, one died and the case against two was withdrawn.
	Do.	1	4	2	Regulation 76 of the Indian Coal Mines Regulations, 1926.	Two of the accused were acquitted.
	Do.	1	2	2	Regulation 76(1) of the Indian Coal Mines Regulations 1926.	
	Do.	1	2	2	Regulations 101, 108 and 118 of the Indian Coal Mines Regulations, 1926.	
	Do.	1	1	...	Regulation 103 of the Indian Coal Mines Regulations, 1926.	The case has not been finally disposed of as the accused has not yet been traced.
	Do.	1	2	2	Regulations 58 c, 67 and 141 of the Indian Coal Mines Regulations, 1926.	
	Do.	1	2	2	Regulations 15(4), 137 and 141 of the Indian Coal Mines Regulations, 1926.	
	Do.	1	2	2	Regulation 141 of the Indian Coal Mines Regulations, 1926.	
	Do.	2	2	2	Regulations 127 (a) and (e) of the Indian Coal Mines Regulations, 1926.	
Do.	1	2	2	Sections 28 and 35(d) of the Indian Coal Mines Act and Regulation 149 of the Indian Coal Mines Regulations, 1926.		

APPENDIX III—*contd.*

Statement of prosecutions under the Indian Mines Act, and Indian Penal Code, during the year 1928—*contd.*

Province.	District.	Number of prosecutions.	Number of persons prosecuted.	Number of persons convicted.	Number of Regulations and rules and Sections of the Act contravened.	REMARKS.
Bengal— <i>contd.</i>	Burdwan . . .	1	1	...	Regulation 127(a) of the Indian Coal Mines Regulations, 1926 and Section 40 of the Indian Mines Act, 1923.	Case dropped as accused could not be traced.
	Do.	1	1	1	Regulation 146 of the Indian Coal Mines Regulations, 1926.	
	Do.	1	2	1	Section 19(2) of the Indian Mines Act, 1923 and Regulations 15 and 138 of the Indian Coal Mines Regulations, 1926.	Case against one of the accused was dropped.
	Do.	1	2	2	Regulations 67 and 69 of the Indian Coal Mines Regulations, 1926 and Special Rule 41.	
	Hazaribagh . . .	3	5	3	Regulations 3 (1) and (2) of the Indian Metalliferous Mines Regulations, 1926.	Case against two of the accused was dropped.
	Do.	1	2	2	Rule 15 made under Section 30 of the Indian Mines Act, 1923.	
Bihar and Orissa.	Manbhum	1	2	2	Rules 12, 14 and 14 (a) of the Rules made by the Bihar and Orissa Government in Notification No. 2698-VIIM-2-Com. dated 8th September 1924 read with Notification No. 533-VIIM-17-Com. dated 2nd October 1926.	
	Do.	1	1	1	Regulation 76 of Indian Coal Mines Regulations, 1926.	
	Do.	1	1	1	Regulations 23 and 137 of the Indian Coal Mines Regulations, 1926.	

APPENDIX III—*contd.*

Statement of prosecutions under the Indian Mines Act, and Indian Penal Code, during the year 1928—*contd.*

Province.	District.	Number of prosecutions.	Number of persons prosecuted.	Number of persons convicted.	Number of Regulations and rules and Sections of the Act contravened.	REMARKS.
Bihar and Orissa— <i>contd.</i>	Manbhum . . .	5	7	4	Regulations 3 (2) and (3) of the Indian Coal Mines Regulations, 1926.	One of the accused was acquitted and cases against the other two were dropped one having absconded.
	Do. . . .	1	2	2	Regulations 67 and 139 of the Indian Coal Mines Regulations, 1926.	
	Do. . . .	1	4	4	Sections 23 and 35 (d) of the Indian Mines Act, 1923.	
	Do. . . .	1	2	2	Section 23 of the Indian Mines Act, 1923.	
	Do. . . .	1	1	1	Regulations 84 and 148 of the Indian Coal Mines Regulations, 1926.	
	Do. . . .	1	1	1	Regulations 58 (h) and 141 of the Indian Coal Mines Regulations, 1926 and Rule 17 made under Section 30 of the Indian Mines Act, 1923.	
	Do. . . .	1	1	1	Regulation 117 of the Indian Coal Mines Regulations, 1926.	
	Do. . . .	1	1	1	Regulations 38 and 40 of the Indian Metalliferous Mines Regulations, 1926.	
	Do. . . .	1	1	1	Rule 18 of Bihar and Orissa Government Notification No. 2608-VIIM-2-Com., dated 8th September 1924.	
	Do. . . .	1	2	1	Regulations 139 and 146 read with Sections 16 and 39 of the Indian Mines Act, 1923.	One of the accused was acquitted.
	Do. . . .	1	1	...	Regulation 146 of the Indian Coal Mines Regulations, 1926.	The accused was acquitted.

APPENDIX III—*contd.*

Statement of prosecutions under the Indian Mines Act, and Indian Penal Code, during the year 1928—*contd.*

Province.	District.	Number of prosecutions	Number of persons prosecuted.	Number of persons convicted.	Number of Regulations and rules and Sections of the Act contravened.	REMARKS.
Bihar and Orissa— <i>concl.</i>	Manbhum . . .	1	2	2	Regulation 69 of the Indian Coal Mines Regulations, 1926.	
	Do.	3	10	7	Regulations 82 and 84 of the Indian Coal Mines Regulations, 1926.	One of the accused was acquitted and the case against two was dropped.
	Do.	2	2	2	Section 15 of the Indian Mines Act, 1923.	
	Do.	1	1	...	Regulation 3 (1) of the Indian Metalliferous Mines Regulations, 1926.	Case was withdrawn.
	Do.	1	1	1	Regulation 170 of the Indian Boilers Act, 1923.	
	Do.	1	2	2	Section 26 of the Indian Mines Act, 1923.	
	Santhal Parganas	1	3	2	Regulations 15, 25 and 67 of the Indian Coal Mines Regulations, 1926.	One of the accused was acquitted.
	Do.	1	1	...	Regulation 3 (1) of the Indian Metalliferous Mines Regulations, 1926.	Case withdrawn.
	Do.	1	1	...	Sections 39 and 40 (1) of the Indian Mines Act, 1923 read with Regulations 13, 146 and 147 of the Indian Coal Mines Regulations, 1926.	Case dropped as the accused died.
	Shahabad . . .	2	3	2	Regulation 3 (1) of the Indian Metalliferous Mines Regulations, 1926.	Case against one of the accused was dropped.
	Singhbhum . . .	1	2	1	Regulation 43 (1) of the Indian Metalliferous Mines Regulations, 1926 and Rules 9 and 19 made under Sections 29 and 30 respectively of the Indian Mines Act, 1923.	One of the accused was acquitted.

APPENDIX III—*concl'd.*

Statement of prosecutions under the Indian Mines Act, and Indian Penal Code, during the year 1928—*concl'd.*

Province.	District.	Number of prosecutions.	Number of persons prosecuted.	Number of persons convicted.	Number of Regulations and rules and Sections of the Act contravened.	REMARKS.
Bombay . .	North Kanara . .	1	1	...	Regulation 3 (1) of the Indian Metalliferous Mines Regulations, 1926.	Case dropped
Burma . .	Mergui . .	3	3	...	Regulation 3 (1) of the Indian Metalliferous Mines Regulations 1926.	Cases dropped as the accused could not be traced.
	Tavoy . .	1	1	...	Regulation 3 (1) of the Indian Metalliferous Mines Regulations, 1926.	Case dropped.
	Thaton . .	1	1	1	Regulation 82 of the Indian Metalliferous Mines Regulations, 1926.	Case was withdrawn.
Central Provinces.	Chhindwara . .	2	2	2	Section 26 of the Indian Mines Act, 1923.	
	Do.	1	2	2	Regulations 67 and 69 of the Indian Coal Mines Regulations, 1926.	
	Nagpur . .	2	2	..	Regulation 3 (1) of the Indian Metalliferous Mines Regulations, 1926.	Cases dropped.
Madras . .	Nellore . .	6	7	6	Regulation 3 (1) of the Indian Metalliferous Mines Regulations, 1926.	One of the accused was acquitted.
Rajputana . .	Ajmer-Merwara . .	1	1	1	Regulation 3 (1) of the Indian Metalliferous Mines Regulations, 1926.	
United Provinces.	Banda . .	1	1	1	Regulation 3 (1) of the Indian Metalliferous Mines Regulations, 1926.	
	Hamirpur . .	14	14	13	Regulation 3 (1) of the Indian Metalliferous Mines Regulations, 1926.	One of the accused died.
TOTAL . .		88	130	96		

APPENDIX IV.

Miscellaneous.

Statement No. 1.

LIST OF INSPECTION CIRCLE.

No. 1 Circle.	No. 2 Circle.
1. All mines in Baluchistan.	1. All mines in Assam.
2. All mines in Bihar and Orissa except mines in the district of the Santhal Parganas and such mines in the district of Manbhum as lie east of a line drawn from mile 175 on the Bengal Nagpur Railway to mile 169 on the Grand Trunk Road and continued in a straight line across the district.	2. All mines in Bengal.
3. All mines in the North-West Frontier Province.	3. Such mines in Bihar and Orissa as lie in the District of the Santhal Parganas and in the District of Manbhum east of a line drawn from mile 175 on the Bengal Nagpur Railway to mile 169 on the Grand Trunk Road and continued in a straight line across the district.
4. All mines in the Punjab.	4. All mines in Bombay.
5. All mines in Rajputana.	5. All mines in Burma.
6. All mines in the United Provinces.	6. All mines in the Central Provinces.
	7. All mines in Madras.

Statement No. 2.

Names of persons to whom first and second class certificates of competency to manage a coal mine were granted during the year 1928.

Certificates granted to holders of English certificates of competency.

(a) FIRST CLASS.

Name.	Number of Indian certificate.	Date of Indian certificate.	Number of English certificate.	Date of English certificate.
Beard, Arthur Andrew	337	31st January 1928	1338	4th February 1926.
Thomas, James	338	Ditto	2109	5th August 1927.
Mitter, Amor Narain	339	16th February 1928	2142	Ditto.
Burn, James Herbert	340	12th March 1928	784	11th August 1920.
Baillie, James Howieson	341	21st May 1928	2035	17th February 1927.
Cammack, Francis John	342	Ditto	2124	5th August 1927.
Baron, David William	343	Ditto	2012	17th February 1927.
Gow, Angus Gordon	344	29th November 1928	1503	7th February 1924.
(b) SECOND CLASS.				
Knight, George Vivian	28	29th November 1928	2200	8th August 1924.

APPENDIX IV—*contd.*Miscellaneous—*contd.*Statement No. 2—*contd.*

Names of persons to whom first and second class certificates of competency to manage a coal mine were granted during the year 1928—*contd.*

INDIA N CERTIFICATES.

(a) FIRST CLASS.

Name.	No. of certificate.	Date of certificate.	REMARKS.
Mullick, Surendra Nath	200	21st May 1928 .	

(b) SECOND CLASS.

Name.	No. of certificate.	Date of certificate.	REMARKS.
Bhattacharya, Prafulla Chandra	433	21st May 1928.	
Bhattacharya, Sudha Krishna	434	Ditto.	
Mukherjee, Ardhendu Sekhar	435	Ditto.	
Mitra, Durga Prasanna	436	Ditto.	
Ghosh, Nisanshu Sekhar	437	Ditto.	
Ghosh, Prafulla Kumar	438	Ditto.	

APPENDIX IV—*contd.*Miscellaneous—*contd.*Statement No. 2—*concl.*

Names of persons to whom colliery surveyors' certificates of competency were granted during the year 1928.

Name.	No. of certificate.	Date of certificate.	REMARKS.
Burman, Kartic Chandra	27	19th February 1929.	
Roy, Siva Sankar	28	Ditto.	
Sarkar, Nripendra Nath	29	Ditto.	
Paul, Murari Dhar	30	Ditto.	
Datta, Anilendra Nath	31	Ditto.	
Bapat, Ananta Krishnashastri	32	Ditto.	
Dutt, Dakshina Ranjan	33	Ditto.	
Dutt, Sudhansu Kumar	34	Ditto.	
Bhattacharjee, Nalini Kanta	35	Ditto.	
Chakravarty, Kalijoy	36	Ditto.	
Banerjee, Dayamay	37	Ditto.	
Ghose, Ahi Bhusan	38	Ditto.	
Das, Aswini Kumar	39	Ditto.	
Sircar, Radha Raman	40	Ditto.	
Dey, Chinta Haran	41	Ditto.	
Mitra, Sreekantha	42	Ditto.	
Mukherjee, Nriitya Gopal	43	Ditto.	

APPENDIX IV—*contd.*Miscellaneous—*contd.*

Statement No. 3.

GOVERNMENT OF INDIA,

FOREIGN AND POLITICAL DEPARTMENT.

NOTIFICATION.

Dated Simla, the 16th May 1923.

No. 787-1429-I.—In exercise of the powers conferred by the Indian (Foreign Jurisdiction) Order in Council, 1902, and of all other powers enabling him in that behalf, the Governor-General in Council is pleased to direct that the following further amendments shall be made in the First Schedule to the notification of the Government of India in the Foreign Department No. 3510-I, B., dated the 3rd November 1913, applying certain enactments to Berar, namely :—

(a) Entry No. 84, relating to the Indian Mines Act, 1901 (VIII of 1901), and entry No. 90, relating to the Central Provinces Boiler Inspection Act, 1907 (II of 1907), shall be omitted.

(b) After entry No. 137 the following entries shall be inserted, namely :—

No. 138	.	.	.	The Indian Mines Act, 1923 (IV of 1923)	In clause (i) of Section 30, for the words "His Majesty" the words "The Government" shall be substituted.
No. 139	.	.	.	The Indian Boilers Act, 1923 (V of 1923).	
No. 140	.	.	.	The Workmen's Compensation Act, 1923 (VIII of 1923).	
No. 141	.	.	.	The Indian Finance Act, 1923	Only Section 6 and Schedule III are hereby applied.

J. P. THOMPSON,

Political Secretary to the Government of India.

APPENDIX IV—contd.

Miscellaneous—contd.

Statement No. 4.

GOVERNMENT OF INDIA,

DEPARTMENT OF INDUSTRIES AND LABOUR.

NOTIFICATION.

*Dated Delhi, the 23rd December 1926
as amended on 23rd November 1927
and 1st March 1928.*

No. M.-1051.—In exercise of the powers conferred by sub-section (1) of section 46 of the Indian Mines Act, 1923 (IV of 1923), and in supersession of the notifications by the Government of India in the Department of Industries and Labour, No. M.-1051, dated the 26th July 1924, No. M.-1051, dated the 25th July 1925, and No. M.-1051, dated the 7th November 1925, the Governor-General in Council is pleased to exempt the mines, groups of mines, classes of mines and parts of mines specified in the first column of the annexed schedule from the operation of such provisions of the said Act as are specified in the corresponding entry in the second column thereof.

Schedule.

- | | |
|---|------|
| 1. Mines of kankar, marum, laterite, gravel, sand, clay (not including kaolin, china clay or white clay), fireclay, ochre, stone, earth, fuller's earth, bauxite, slate and lime-stone : | All. |
| Provided that the depth of the excavation measured from the level of the adjacent ground nowhere exceeds 20 feet and that not more than 50 persons are employed at any one time in or about the mine : Provided further that this exemption shall not apply to— | |
| (a) Slate mines in the Province of the Punjab and in the Monghyr district of the province of Bihar and Orissa. | |
| (b) Limestone mines in the districts of Shahabad and Jubbulpore. | |
| (c) The Danapahari fireclay mine situate in Boujumerri village in the Asausol subdivision of the Burdwan district. | |
| 2. Borings and oil wells | All. |
| 3. Mines of parts of mines in which excavation is being carried out for prospecting purposes only and not for the purpose of obtaining minerals for use or sale. | All. |
| 3A. Iron ore mines worked without mechanical power, the whole of the ore from which is supplied locally to village smelters and blacksmiths. | All. |
| Provided that— | |
| (i) not more than 20 persons are employed in or about such excavation ; | |
| (ii) no part of the excavation extends beneath the superjacent ground ; and | |
| (iii) the depth of the excavation measured from the level of the adjacent ground nowhere exceeds 20 feet or, in the case of an excavation for coal, 50 feet. | |
| 4. The following mines in the North-West Frontier Province, namely :— | |
| (i) Salt mines in the Kohat district | All. |
| (ii) Carbonaceous clay pits in the Hazara district | All. |

APPENDIX IV—*contd.*Miscellaneous—*contd.*Statement No. 4—*contd.*

GOVERNMENT OF INDIA,

DEPARTMENT OF INDUSTRIES AND LABOUR.

NOTIFICATION—*contd.*

5. The following mines in the Province of Burma, namely :—
- | | |
|--|---|
| (i) Steatite mines in the Kyaukpyn, Chin Hills and Minbu districts and the Pokokku Hill Tracts, and native precious stone mines in the Katha district. | All. |
| (ii) All mines in the Federated Shan States and such mines in the Tavoy and Mergui districts as are worked under the tribute system. | The provisions contained in sections 23 and 28. |
| (iii) The ore-dressing plant of the Burma Corporation, Ltd., at Namtu, Northern Shan States. | All. |
6. The following mines in the Provinces of Bihar and Orissa, namely :—
- | | |
|--|------|
| (i) The coke factory of the Burrakur Coal Co., Ltd., at Loyabad in the Manbhum district. | All. |
| (ii) The coke factory of the Barari Coke Co., Ltd., at Kendwadih in the Manbhum district. | All. |
| (iii) The coke factory of the Eastern Coal Co., Ltd., at Bhowra in the Manbhum district. | All. |
| (iv) The coke factory of the Lodna Colliery Co., Ltd., at Lodna in the Manbhum district. | All. |
| (v) The coke factory of the East Indian Railway Company at Giridih in the Hazaribagh district. | All. |
| (vi) Open excavations for coal in the Rajmahal coalfields in the district of the Santhal Parganas, provided that not more than 20 persons are employed in or about the mine at any one time. | All. |
7. The following mines in the United Provinces :—
- | | |
|---|------|
| (i) Stone quarry hill Tendua Nos. 37-1, 38-1, 38-4, 38-3, 29-3, and 33-1 at village Bargoh in the Mirzapore district. | All. |
| (ii) Stone quarry hill Darhia Nos. 343-3, 30, 181 and 182 at village Baragaun in the Mirzapore district. | All. |
8. The following mines in the Presidency of Bombay :—
- | | |
|--|------|
| (i) Kharkhada stone quarry in the Kaira district | All. |
|--|------|

A. C. MOWATERS,

Secretary to the Government of India.

APPENDIX IV—*contd.*

Miscellaneous—*contd.*

Statement No. 5.

NOTIFICATION.

Dated Lahore, the 27th March 1928.

No. 10742-Rev.—Ind.—In exercise of the powers conferred by section 18 of the Indian Mines Act, 1923, the Governor in Council is pleased to declare that the provisions of the said section shall apply to all coal mines and to mines other than coal mines in the Punjab at which more than 20 persons are employed.

APPENDIX IV—*contd.*Miscellaneous—*contd.*

Statement No. 6.

GOVERNMENT OF INDIA,
FOREIGN AND POLITICAL DEPARTMENT.

NOTIFICATION.

Dated Simla, the 2nd May 1928.

No. 257-I.—In exercise of the powers conferred by the Indian (Foreign Jurisdiction) Order in Council, 1902, and of all other powers enabling him in that behalf, the Governor-General in Council is pleased to direct that the following further amendment shall be made in the First Schedule to the notification of the Government of India in the Foreign Department, No. 3510-L. B., dated the 3rd November 1913, applying certain enactments to Berar, namely:—

In entry No. 138 relating to the Indian Mines Act, 1923 (IV of 1923), the modification set forth in the 2nd column shall be numbered (1) and after that modification as so numbered the following modification shall be inserted, namely:—

(2) After section 31, the following section shall be inserted, namely:—

“31-A. Notwithstanding anything contained in this Act, the Governor-General in Council may, by notification in the *Gazette of India*, apply to Berar any regulations under section 29 of the Indian Mines Act, 1923, for the time being in force in British India, subject to any amendments to which such regulations are for the time being subject in British India, and with such modifications or restrictions as may be specified in the notifications, and any regulations so applied shall have effect in Berar as if made under this Act.”

C. C. WATSON,

Political Secretary to the Government of India.

APPENDIX IV—*contd.*Miscellaneous—*concl.*

Statement No. 7.

GOVERNMENT OF INDIA.
FOREIGN AND POLITICAL DEPARTMENT.

NOTIFICATION.

Dated Simla, the 22nd August 1928.

No. 489-I.—In exercise of the powers conferred by section 31-A of the Indian Mines Act, 1923 (IV of 1923), as applied to Berar, the Governor-General in Council is pleased to apply to Berar the Indian Coal Mines Regulations, 1926, with the following modifications namely :—

- (1) The references to enactments in Regulations 2 (a), 10, 97 and 105 shall be read as referring to the enactments as applied to Berar.
- (2) In Regulation 26, the proviso shall be omitted.
- (3) In sub-regulation (2) of Regulation 30, for the words 'British India' the word 'Berar' shall be substituted.
- (4) In sub-regulation (4) of Regulation 31, for the words 'uniform throughout British India' the words 'the same as in British India' shall be substituted.
- (5) In sub-regulation (5) of Regulation 31, the words and figures, 'and, except as regards examinations held before the 1st day of March 1927', shall be omitted.
- (6) In sub-regulation (2) of Regulation 48, for the word and figures 'October 1927' the word and figures 'October 1929' shall be substituted.
- (7) In sub-regulation (6) of Regulation 50, the words and figures 'on or after the 1st day of January 1927' shall be omitted.
- (8) In Regulation 52, after the figures '1901' the words 'as in force in British India or under that Act as applied to Berar' shall be inserted.
- (9) In Regulation 58 the words and figures "The provisions of this clause shall not come into force until the last day of October 1927" shall be omitted.
- (10) In sub-regulation (1) of Regulation 71, the words and figures 'with effect from the 1st day of January 1927' shall be omitted.
- (11) In regulation 136, for the words and figures 'the 1st day of July 1927' the words and figures 'the 22nd day of August 1929' shall be substituted.

B. J. GLANCY,

(Offg.) Political Secretary to the Government of India.

APPENDIX IV—*contd.*

Statement No. 8.

ACT No. XIII OF 1928.

[PASSED BY THE INDIAN LEGISLATURE.]

(Received the assent of the Governor General on the 20th September 1928.)

An Act further to amend the Indian Mines Act, 1923, for certain purposes.

WHEREAS it is expedient further to amend the Indian Mines Act, 1923, for certain purposes; It is hereby enacted as follows:—

1. *Short title and commencement.*—(1) This Act may be called the Indian Mines (Amendment) Act, 1928.

(2) This section and section 7 shall come into force at once, and the remaining provisions of this Act shall come into force on the 7th day of April 1930.

2. *Amendment of section 23, Act IV of 1923.*—In section 23 of the Indian Mines Act, 1923 (hereinafter referred to as the said Act),—

(a) after clause (c) the following clause shall be inserted, namely:—

“(d) for more than twelve hours in any consecutive period of twenty-four hours”; and

(b) the section as so amended shall be numbered as sub-section (1), and the following sub-section shall be added, namely:—

“(2) No person shall employ or permit to be employed in a mine any person whom he knows or has reason to believe to have already been employed in any other mine during the preceding twelve hours.”

3. *Insertion of new sections 23A and 23B in Act IV of 1923.*—After section 23 of the said Act the following sections shall be inserted, namely:—

“23A. *Limitation of working hours.*—Work shall not be carried on in any mine for a period exceeding twelve hours in any consecutive period of twenty-four hours except by a system of shifts so arranged that not more than one shift of persons employed in work of the same kind shall be at work in the mine at the same time.

23B. *Notices regarding hours of work.*—(1) The manager of every mine shall cause to be posted outside the office of the mine a notice in the prescribed form stating the time of the commencement and of the end of the work at the mine and, if it is proposed to work by a system of shifts, the time of the commencement and of the end of work for each shift. A copy of each such notice shall be sent to the Chief Inspector, if he so requires.

(2) In the case of a mine at which mining operations commence after the 14th day of April 1930, the notice referred to in sub-section (1) shall be posted not less than seven days before the commencement of work.

(3) Where it is proposed to make any alteration in the time fixed for the commencement or for the end of work in the mine generally or for any shift, an amended notice in the prescribed form shall be posted outside the office of the mine not less than seven days before the change is made, and a copy of such notice shall be sent to the Chief Inspector not less than seven days before such change, if he so requires or if the original notice was sent to him.”

4. *Amendment of sections 24 and 25, Act IV of 1923.*—In sections 24 and 25 of the said Act, after the word and figures “section 23” the words, figures and letter “or section 23A” shall be inserted.

APPENDIX IV—*contd.*Statement No. 8—*contd.*ACT No. XIII OF 1928—*contd.*

5. *Amendment of section 28, Act IV of 1923.*—(1) Section 28 of the said Act shall be re-numbered as sub-section (1) of section 28, and to that sub-section after the word "employments" the following shall be added, namely:—

"and, where work is carried on by a system of shifts, of the shift in which each such person works."

(2) To the same section the following sub-section shall be added, namely:—

"(2) No person shall be employed in a mine until the particulars required by sub-section (1) have been recorded in the register in respect of such person, and no person shall be employed except during the hours of work specified for him in the register."

6. *Amendment of section 30, Act IV of 1923.*—In section 30 of the said Act, after clause (e) the following clause shall be inserted, namely:—

"(c) for prescribing the forms of notices required under section 23B, and for requiring such notices to be posted also in specified vernaculars,"

7. *Amendment of section 31, Act IV of 1923.*—In section 31 of the said Act,—

(a) in sub-section (3), the words "or rule", in both places, where they occur, the words "in the case of a regulation", and the words "and in the case of a rule to every Mining Board constituted in the province" shall be omitted; and

(b) after sub-section (3) the following sub-section shall be inserted, namely:—

"(3A) No rule shall be made unless the draft thereof has been referred to every Mining Board constituted in the province for which it is proposed to make the rule, and unless each such Board has had a reasonable opportunity of reporting as to the expediency of making the same and as to the suitability of its provisions."

APPENDIX IV—*contd.*

Statement No. 9.

THE INDIAN MINES ACT, 1923.

Bye-laws Applying to Coal Mines

DEFINITIONS.

Bye-law 1.—In these bye-laws :—

- (a) " The Act " means the Indian Mines Act, 1923 ;
- (b) " Regulation " means any regulation for the time being in force under section 29 of the Act ;
- (c) " Rule " means any rule for the time being in force under section 30 of the Act ;
- (d) " Persons " means any persons employed in or about a mine ;
- (e) " Manager " means the persons referred to as " manager " in section 15 of the Act ;
- (f) " Under-manager " means a person appointed to assist the manager in the control, management and direction of the mine, and who takes rank immediately after the manager ; and
- (g) " Official " or " officer " means any person employed in or about a mine, other than the manager or under-manager, to whom the manager or under-manager may entrust any duties of control, management or superintendence.

GENERAL.

(a) *Miscellaneous.*

Bye-law 2.—Subject to any directions that may be given by any official of the mine, no person shall, except for some justifiable purpose, go into any part of the mine other than that part in which he works, or travel to or from his work by any road other than the proper travelling road.

Bye-law 3.—No unauthorised person shall work or interfere with any signalling apparatus in or about the mine.

Bye-law 4.—No person shall attempt to go on or across the exposed space of the shaft bottom, except for the purpose of working in the shaft bottom, and no person shall be allowed to work in such space unless the cages have been stopped and adequate precautions have been taken for the protection of persons so employed.

Bye-law 5.—Every workman receiving in or about the mine any personal injury shall, as soon as possible, report the same to one of the officials, and if required by the official shall forthwith proceed to the appointed place for first-aid treatment.

Bye-law 6.—Every official of the mine shall carry out the duties assigned to him by the manager, and shall carry out and enforce those provisions of the Act and of the regulations, rules and bye-laws made thereunder which relate to the matters in respect of which such duties have been so assigned.

Bye-law 7.—Every person appointed by the manager to be an official of the mine, shall to the best of his power see that the persons under his charge understand and attend to their respective duties.

Bye-law 8.—No person shall throw any stone or other missile with intent to cause injury or fight or behave in a violent manner, in or about a mine.

Bye-law 9.—No person who has been appointed by the manager in writing for a specific duty shall, without permission from an official to whom he is subordinate, perform either during his period of work or between successive periods of work any duties other than those for which he has been appointed in such position of trust.

Bye-law 10.—No person shall light a fire in any underground part of a mine except for a special purpose in accordance with orders issued by the manager.

APPENDIX IV—*contd.*Statement No. 9—*contd.*THE INDIAN MINES ACT, 1923.—*contd.*Bye-laws Applying to Coal Mines—*contd.*GENERAL—*contd.*(a) *Miscellaneous.*—*contd.*

Bye-law 11.—No unauthorised person shall travel on the haulage road when the rope is in motion.

Bye-law 12.—No person when taking a tub by hand down an incline of which the gradient exceeds 1 in 20 shall go in front of the tub; and in every case where the conditions are such that a person cannot control the tub by hand from behind he shall not take the tub down unless some contrivance is provided to enable him to control the tub.

Bye-law 13.—No person shall clean or lubricate any exposed and dangerous part of machinery in motion.

Bye-law 14.—No unauthorised person shall enter a winding or haulage engine room, or in any way interfere with the engine.

(b) *Explosives and Short-firing.*

Bye-law 15.—All persons using or conveying explosives shall observe the provisions of the regulations and bye-laws relating to explosives.

Bye-law 16.—In any underground working place or sinking shaft only those holes which are to be fired in the next round shall be charged.

Bye-law 17.—When a shot has misfired the person who lighted the shot, or, if present, the official of the mine superior to him shall be responsible for seeing that the place is fenced as required by Regulation 118.

Bye-law 18.—Where by reason of a misfire having occurred it is necessary to bore a new hole for the purpose of blasting out the undischarged explosive the shot-firer or the person who charged the hole in which the misfire occurred shall supervise the placing of the new hole.

Bye-law 19.—When a misfire charge of explosive has been blasted out the person who fired the shot or a competent person appointed by the overman, under-manager or manager for the purpose shall see that a careful search is made in the debris for unexploded cartridges and detonators, in accordance with Regulation 120.

(c) *Safety Lamps.*

Bye-law 20.—Every safety lamp for use in the mine shall be provided by the owner, and shall be of a type approved in Great Britain or by the Chief Inspector.

Bye-law 21.—Where the use of safety lamps has been ordered by the manager no lamp or light other than a locked safety lamp shall be used.

Bye-law 22.—No person shall brush or waft out gas.

Bye-law 23.—Should any person find himself in the presence of inflammable gas, he shall not throw away his lamp or attempt to blow it out, but shall shelter it, hold the lamp near the floor, avoid jerking it, and take it steadily into fresh air. If the gas fires in the lamp where he cannot take it into fresh air, he shall smother out the light or extinguish it in water.

Bye-law 24.—No person shall when trying or examining for the presence of gas with a safety lamp, raise the lamp higher than may be necessary to allow the presence of gas to be detected.

Bye-law 25.—Every person using a safety lamp shall take proper care of it and shall not place it within reach of the swing of any tool. If the lamp becomes damaged he shall at once extinguish the flame, and at the first opportunity shall report the damage to the overman or sirdar.

Bye-law 26.—The competent person or persons appointed by the manager shall maintain the register of safety lamps required by Regulation 126.

Bye-law 27.—The competent person appointed by the manager under Regulation 127 (a) shall not issue any safety lamp until he has examined it and found it to be in safe working order and securely locked.

APPENDIX IV—*contd.*Statement No. 9—*contd.*THE INDIAN MINES ACT, 1923—*contd.*Bye-laws Applying to Coal Mines—*contd.*

MANAGERS.

Bye-law 28.—The manager shall see that a copy of these bye-laws and copies of the prescribed abstracts of the Act, Regulations and Rules, in English and such vernaculars as may be prescribed, are kept posted up at or near the mine.

Bye-law 29.—The manager shall see that every notice required by the Regulations or Rules to be posted up is posted up in some conspicuous place where it may be conveniently read or seen by the persons affected. Such notice shall be constructed of durable material and so often as it becomes defaced, obliterated or destroyed, shall be renewed with all reasonable despatch.

Bye-law 30.—The manager or under-manager shall countersign each report of inspection required to be made by the Act or by any regulation, rule or bye-law made under the Act, and shall date his countersignature.

Bye-law 31.—The manager shall arrange that some person in authority shall be constantly present in every underground mine during the whole of the time that persons are employed in mining, carrying or tramping coal in such mine.

UNDER-MANAGERS.

Bye-law 32.—The under-manager shall have charge, under the manager, of such underground and surface works as may, from time to time, be placed under his supervision by the manager.

Bye-law 33.—The under-manager shall see that the persons appointed to carry out the requirements of the Act or of any regulations, rules or bye-laws framed thereunder regularly and efficiently discharge their duties.

Bye-law 34.—During the absence of the manager the under-manager shall (so far as the Act or any regulations or rules framed thereunder may permit) have the same responsibility, discharge the same duties, and be subject to the same liabilities as the manager, but not so as to affect the personal responsibility of the manager.

COLLIERY SURVEYERS.

Bye-law 35.—The colliery surveyor shall make such accurate surveys and levellings as the manager may direct or as may be required by the Act or by regulations or rules framed under the Act and shall accurately plot them on the plans with reasonable despatch.

Bye-law 36.—The colliery surveyor shall call the attention of the manager to any contravention of the Act or of the regulations or rules framed under the Act, as regards plans and sections—

OVERMEN AND OTHER COMPETENT PERSONS.

Bye-law 37.—The overman, sirdar or other competent person appointed under Regulation 70 shall have responsible charge and control of the part of the mine assigned to him by the manager or under-manager.

Bye-law 38.—The overman, sirdar or other competent person shall in the district of the mine assigned to him make the inspections and reports required by Regulation 70, and shall to the best of his power see that the workmen under his charge understand and carry out their respective duties under the Act, and the regulations, rules and bye-laws made thereunder, and any directions with a view to safety which may be given to them.

Bye-law 39.—The overman, sirdar or other competent person appointed for the purpose, shall see that sufficient supplies of timber, appliances and other necessaries, required for the safe working of the mine, are kept in convenient places at the mine, and shall report any deficiency therein to his superior officer

APPENDIX IV—*contd.*Statement No. 9—*contd.*THE INDIAN MINES ACT, 1923—*contd.***Bye-laws Applying to Coal Mines—*contd.***

Bye-law 40.—The overman, sirdar or other competent person appointed for the purpose, shall see that all stoppings brattices, doors, air-crossings, fences and other appliances and necessaries are maintained in good condition.

Bye-law 41.—The overman, sirdar or other competent person appointed for the purpose shall take care that any dangerous operation is carried out with due precaution, and shall, if necessary, cause the place where such work is going on to be fenced. He shall further cause the entrance to any place which is dangerous or not in actual use or in course of working and extension to be properly fenced across the whole width.

Bye-law 42.—The overman, sirdar or other competent person appointed for the purpose, shall see that the roofs and sides of all travelling roads and working places in his district are made and kept secure.

Bye-law 43.—The overman, sirdar or other competent person appointed for the purpose, shall see that the man-holes on the engine-planes are kept clear and in good condition.

Bye-law 44.—The overman, sirdar or other competent person appointed for the purpose shall without delay, personally inspect any part of his district reported to him to be unsafe or in any way requiring his attention, and shall cause any defect or danger to be remedied without delay and if the danger cannot be remedied forthwith shall stop all work, cause the place to be fenced off and report the matter to a superior official.

Bye-law 45.—If the overman, sirdar or other competent person finds any dangerous accumulation of gas, he shall carry out the provisions of Regulation 72 and shall at once report the fact to the manager or under-manager or, in their absence to the officer in charge of the mine, and shall not remove such accumulation until he has received instructions in that behalf from one or other of these persons.

Bye-law 46.—The overman, sirdar or other competent person appointed for the purpose, shall see that drags or back-stays are provided and regularly used behind tubs ascending inclines, and that a sufficient supply of suitable sprags is provided where tubs are loaded on a gradient or lowered down a gradient by hand.

Bye-law 47.—The overman, sirdar or other competent person appointed for the purpose, shall point out their working place to the work-people under his charge, or cause the same to be indicated to them, and, if he finds any person in a place other than the one assigned to him, may order such person out of the mine and shall forthwith report the matter to the manager or under-manager.

Bye-law 48.—The overman, sirdar or other competent person appointed for the purpose, shall not leave the mine until he has finished the inspection or inspections required by Regulation 70, and any other duties he is required by any regulation, rule or bye-law to perform or until relieved by a duly appointed substitute.

Bye-law 49.—The overman, sirdar or other competent person appointed for the purpose, shall see that the provisions of the regulations and bye-laws with respect to the use of explosives are strictly observed in the district under his charge and that a sufficient supply of clay or other suitable stemming material is provided at places convenient to the shot-firers.

Bye-law 50.—At the close of each day's work the overman, sirdar or other competent person appointed for the purpose, shall ordinarily not permit any person to remain in that portion of the mine of which he is in charge; but, should it be necessary for any such person to be detained there, he shall arrange that he is placed in charge of a competent person, and shall cause all unnecessary lights to be extinguished.

Bye-law 51.—If the mine is worked by a succession of shifts the overman or sirdar shall not leave the mine without conferring with the official succeeding him, and shall give him such information as may be necessary for the safety of his district and of the persons employed therein.

Bye-law 52.—If any case of damage to a safety lamp in his district is reported to the overman or sirdar or comes to his notice, he shall ascertain and record in his report the cause and nature of the damage.

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Bye-law 53.—When brattice or air pipes are required by the manager or under-manager to be used for the ventilation of the working places the overman or sirdar shall see that they are kept sufficiently advanced to ensure that an adequate amount of air reaches the working places.

Bye-law 54.—If the overman, sirdar or other competent person finds any of the ropes, chains, signals, brakes, jig wheels and posts, or other apparatus in actual use in his district to be in an unsafe condition, he shall stop the use of the same.

Bye-law 55.—The overman, sirdar or other competent person shall have power to send out of the mine any work-persons under his charge infringing or attempting to infringe any provision of the Act or regulations, rules or bye-laws made thereunder or failing to carry out any direction given him with regard to safety, and shall report in writing any such infringement or attempted infringement or failure to the manager or under-manager at the end of his shift.

Bye-law 56.—The overman, sirdar or other competent person shall on receipt of notice of an accident to any person in his district proceed at once to the place of accident, inspect the place, supervise the rescue operations and report or send notice of the accident to the manager.

TIMBERMEN.

Bye-law 57.—All timbermen shall promptly carry out the orders of the overman, sirdar or other competent person with respect to the provision, preparation and erection of timber.

Bye-law 58.—The head timberman shall at once report to the overman, sirdar or other competent person, any shortage of timber in any place where such is required.

MECHANICAL ENGINEER OR ENGINE-WRIGHTS.

Bye-law 59.—The mechanical engineer or engine-wright or some other competent person appointed for the purpose shall have charge of the whole of the machinery and plant, both on surface and underground.

Bye-law 60.—The mechanical engineer or engine-wright, or some other competent person appointed for the purpose, shall make the inspections; carry out the operations and record the reports required by regulations 58(*l*) and 68, and bye-laws 62 and 64, and shall sign each report.

Bye-law 61.—The mechanical engineer or engine-wright, or some other competent person appointed for the purpose shall see that all fittings and mechanical appliances required by the Act or by any regulation or bye-law made under the Act, and all machinery and haulage apparatus are properly fixed and maintained in safe working order, and shall once at least in every 24 hours make a thorough inspection of the same and record the result thereof in a book to be kept for the purpose.

Bye-law 62.—The mechanical engineer or engine-wright, or some other competent person appointed for the purpose shall see that all dangerous and exposed parts of the machinery and all dangerous places on the surface, as also the heads of working, ventilating or pumping shafts are properly and securely fenced.

Bye-law 63.—The mechanical engineer or engine-wright, or some other competent person appointed for the purpose shall see that the fittings on every boiler are properly fixed, and maintained in proper repair and in safe working order, as required by the Indian Boiler Regulations.

Bye-law 64.—The mechanical engineer or engine-wright, or some other competent person appointed for the purpose, shall, at least once in every month, examine the state of all coupling chains and drawbars in actual use, and shall record the result of his inspection in a book to be kept for the purpose.

APPENDIX IV—*contd.*Statement No. 9—*contd.*THE INDIAN MINES ACT, 1923—*contd.*Bye-laws Applying to Coal Mines—*contd.*

ELECTRICIANS.

Bye-law 65.—The electrician shall, so far as it lies within his power and authority, be responsible for the installation and maintenance of the electrical plant and apparatus at the mine in accordance with the requirements of the electrical rules.

Bye-law 66.—The electrician shall take immediate steps to remedy any defect or derangement of any electrical apparatus, which causes or is likely to cause danger, or any infringement of the electrical rules.

Bye-law 67.—The electrician shall make arrangements for the instruction in their duties, and in so much of the electrical rules as may be applicable to them, of all persons having to work, use, clean, instal or otherwise handle electrical plant or apparatus at the mine.

WINDING ENGINEEMEN.

Bye-law 68.—Before commencing work the winding engineman shall examine the engines and all appliances in his charge, and shall satisfy himself that they are in proper working order.

Bye-law 69.—In any mine, where the winding apparatus is not provided with some automatic contrivance to prevent overwinding, the winding engineman shall not—if any persons are being raised or lowered in a shaft—wind up the cage, skip, bucket or tub at a speed exceeding three miles an hour after it has passed the point referred to in Regulation 65.

Bye-law 70.—The winding engineman shall not allow any unauthorised person to enter the engine-house or in any way to interfere with the engine.

Bye-law 71.—The winding engineman shall thoroughly acquaint himself with, and carefully attend to, the signals in use, and shall on no account start his engine until he has received the proper signal. If the signal is indistinct, he shall not start his engine until it has been repeated and he clearly understands it.

Bye-law 72.—The winding engineman shall not leave the handles or brake whilst the engine is in motion, or while persons are suspended by the rope attached to the engine, or while persons are working in any part of the shaft.

Bye-law 73.—If the cage or bucket has been standing for two hours or longer, the winding engineman shall, on receiving a signal from the banksman, run it up and down the shaft once, before allowing any person to ride therein.

Bye-law 74.—The winding engineman shall report immediately to the mechanical engineer or engine-wright or other official of the colliery to whom he is subordinate, any defect which he has noticed in the engine, brake, indicator, drum, ropes or other appliances under his charge.

BANKSMEN AND ONSETTERS.

Bye-law 75.—Subject to the orders of a superior official, the banksman and the onsetter shall have full control of the pit-head and pit-bottom, respectively, and shall report to such official any person who, without authority, gives a signal or disobeys instructions.

Bye-law 76.—The banksman and the onsetter shall thoroughly acquaint themselves with, and carefully attend to, the prescribed code of shaft signals, and shall properly transmit the signals by the apparatus provided.

Bye-law 77.—The banksman and the onsetter shall not allow more than the authorised number of persons to ascend or descend at any one time.

Bye-law 78.—The banksman and the onsetter shall not, unless specially authorised by the manager in that behalf, ordinarily allow any person, when ascending or descending the shaft, to take with him any tools or other bulky materials, save when such person is engaged in repairing the shaft.

APPENDIX IV—*contd.*Statement No. 9—*contd.*THE INDIAN MINES ACT, 1923—*contd.*Bye-laws Applying to Coal Mines—*contd.*

Provided that, by general order of the manager, the banksman and the onsetter may permit tools to be so carried.

Bye-law 79.—During their periods of duty the banksman and the onsetter shall not leave their respective posts at the pit-head or pit-bottom.

Bye-law 80.—The banksman shall on the termination or suspension of operations, take care that the top of the shaft is securely covered or fenced.

Bye-law 81.—The banksman shall keep the pit-head or banking stage and the cage free from loose materials likely to fall into the shaft.

Bye-law 82.—When persons are about to ride in the cage the banksman or onsetter, as the case may be, shall see that the cage gates on both sides of the cage are in position and closed, before signalling for the cage to be lowered or raised.

Bye-law 83.—Except as provided in bye-law 78 the banksman or onsetter shall not allow any minerals, tubs, tools or materials to be wound in any cage or bucket whilst persons are being raised or lowered in the shaft.

HAULAGE ATTENDANTS.

Bye-law 84.—Every engineman, brakesman and signaller shall thoroughly acquaint himself with, and carefully attend to, the prescribed code of signals.

Bye-law 85.—The person in charge of any tub or set of tubs, which it is intended to send up any underground engine-plane or incline on which drags are required to be used, shall securely fix the drag, or cause it to be so fixed, before such tub or set of tubs is set in motion.

Bye-law 86.—The person in charge at the top of any self-acting incline or engine-plane shall see that the stop-blocks are blocking the way before allowing any tub to be brought on to the top landing, and shall cause the tubs to be securely coupled up to each other, and to the rope or chain, before the stop-block is opened; and, should any safety appliance be provided, he shall cause the same to be properly and securely fixed and brought into use on each occasion.

Bye-law 87.—The person who is responsible for the attachment to the hauling rope of any tub or set of tubs at any stopping place on any underground haulage plane or self-acting incline shall see that no person remains in a position of danger at or near such stopping place during any period in which a tub or tubs may be raised or lowered on the haulage plane.

Bye-law 88.—Before a train of wagons is set in motion the person in charge shall see that the safety catches of all side-tipping wagons are properly secured.

PERSONS EMPLOYED IN MACHINE COAL CUTTING.

Bye-law 89.—No coal cutting machine shall be fitted or otherwise moved with the cutting tool in motion, except in the actual process of cutting. If the cutting tool cannot be locked out of gear securely, it should be removed.

Bye-law 90.—No person shall make any repairs or adjustments to a coal cutting machine or shall put in or take out a pick until he has made such arrangements as will prevent the mechanism being inadvertently put into motion while such operation is being performed.

Bye-law 91.—No person shall open or replace the cover of any electrical part of a coal cutting machine, except under the supervision and in the presence of a person competent for the purpose appointed in writing by the manager. Before any such cover is opened the said competent person shall ensure that current is cut off at the gate-end or other convenient switch out by therefrom, by turning the switch into the off position and keeping it there so long as the

APPENDIX IV—*contd.*

Statement No. 9—*contd.*

THE INDIAN MINES ACT, 1923—*contd.*

Bye-laws Applying to Coal Mines—*contd.*

cover remains open; and the trailing cable shall be disconnected from the machine and from the gate-end box before the work is begun, and shall remain disconnected until the work has been satisfactorily completed.

Bye-law 92.—Where a machine is required to work on a gradient exceeding 1 in 5 an effective contrivance to prevent the machine running back shall be provided.

COLLIERY LOCOMOTIVE DRIVERS AND SHUNTERS.

Bye-law 93.—The locomotive driver shall sound the whistle when the locomotive is approaching a level crossing or any place where any person is at work or where the driver's sight is intercepted.

Bye-law 94.—When wagons are being pushed in front of the locomotive the shunter shall accompany the leading wagon.

REGISTER CLERKS.

Bye-law 95.—Persons appointed to keep registers required by or under the Indian Mines Act or the regulations, rules and bye-laws made thereunder shall regularly make the necessary entries.

ADDITIONAL BYE-LAWS FOR SINKING SHAFTS.

SIGNALS.

Bye-law 96.—The code of signals shall be—

	Raps.
Stop when running	1
Lower	2
Stretch up	1
Raise after bucket has been steadied	1
Stretch up when men are riding	3

Any other signals shall be in addition to and shall not interfere with the foregoing:

Provided that the Chief Inspector by order in writing may, at his discretion, permit the use of a different code of signals.

MANAGER.

Bye-law 97.—Every cradle or platform on which men work in the shaft shall be so constructed as to minimise the risk of a person falling from it.

CHARGE MAN.

Bye-law 98.—The chargeman in each shift shall have entire charge of the shaft-bottom.

Bye-law 99.—After each round of shots has been fired the chargeman shall carefully examine the sides of the shaft and remove all loose pieces. If no shots have been fired, he shall make an examination at least once during his shift.

APPENDIX IV—*concl'd.*Statement No. 9—*concl'd.*THE INDIAN MINES ACT, 1923—*concl'd.*Bye-laws Applying to Coal Mines—*concl'd.*

Bye-law 100.—The chargeman shall see that each bucket is safely loaded and steadied, that it is not loaded above the top and that nothing is adhering to the outside of such bucket when it is set in motion from the bottom of the shaft.

Bye-law 101.—The chargeman shall see that all tools and other bulky gear are securely tied to the bow-chains or rope, when such tools of gear project beyond the rim of the bucket, and shall not permit the bucket to be set in motion until this has been done.

Bye-law 102.—After any cessation of work in the shaft caused by the withdrawal of the workmen for shot-firing or other purposes the chargeman, accompanied, if necessary, by not more than three other persons, shall descend and examine the shaft. If inflammable gas has been found or is likely to be found in the shaft the examination shall be made with a locked safety lamp of an approved type. No other person shall be allowed to descend the shaft until after the examination has been made and the shaft has been found to be safe in all respects.

WINDING ENGINEERMAN.

Bye-law 103.—The winding engineman shall allow the rope to steady before the bucket or load leaves the top or bottom of the shaft, and shall not lower the descending bucket past a point 18 feet from the shaft bottom until he receives a signal to do so from the banksman; and shall stop the ascending bucket when it has been raised 4 feet from the shaft bottom to allow the bucket to be steadied.

BANKSMAN.

Bye-law 104.—The banksman shall tie and carefully secure in the bucket all sinking tools, timber or other bulky gear which may project beyond the rim thereof, and, when bricks or other loose materials are sent down the pit, shall not permit them to be loaded beyond the level of the top of the bucket.

Bye-law 105.—The banksman shall, when landing the bucket or materials, take care that the shaft-top is securely covered or fenced.