

Department of Mines, India

REPORT
OF THE
CHIEF INSPECTOR OF MINES IN INDIA

Under the Indian Mines Act (VIII of 1901)

FOR THE
YEAR ENDING 31st DECEMBER

1915

BY

G. F. ADAMS, M. Inst. C. E.
Chief Inspector of Mines in India



CALCUTTA
SUPERINTENDENT GOVERNMENT PRINTING, INDIA
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CONTENTS.

INTRODUCTION—	Page-
Relates to administration of the Act	1
Other mining statistical publications	1
Scheme of report	1
SECTION I.—PERSONS EMPLOYED—	
Average figures of labour	1
Decrease compared with preceding year	1
Labour supply in Bengal unusually plentiful	1
" at outlying coal mines would have been welcomed	1
" question at Assam mines difficult one	2
" Chinese, in Assam mines unsatisfactory	2
" foreign, imported for manganese mines in the Central Provinces	2
" district officers report favourably on condition	2
" necessitated for speeding up of wolfram industry	2
" include Chinese, Tamils, Telegus, Malayas, Garhwalis, Burmans, Karens and aborigines	2
from Chota Nagpur	2
" aborigines from Chota Nagpur good workmen	2
" Chinese, main standby of the mine manager	2
" Burman, attendance dependent on season	2
Lower Burma Chamber of Mines reconstituted	2
SECTION II.—OUTPUT OF MINERALS—	
Coal output, increase on previous year	2
" " of large firms and best seams increased	2
" " of small owners and inferior coals decreased	2
" " total increase almost entirely accounted for in the Raniganj coalfield	2
" " in the Jharid coalfield was stationary	2
" " increase kept pace with demand	2
Year 1915 was distinctly the year of the best seams and large owners	2
Coal used in India carried by rail	2
" percentage of, raised in Bengal and Bihar and Orissa	3
" output, decrease in Baluchistan	3
" " increase in the Central Provinces, the Panjab, Assam, and North-West Frontier	3
Province	3
" " per person in India	3
" " " " " " England	3
Mica output, decrease in	3
" " compared with previous year	3
" condition of trade in	3
" trade, effect of war on	3
" chief demand for good clear and part-stained block mica for aeroplane magnets	3
" trade in Madras, depressed	3
Manganese output, decrease in	3
" " compared with preceding year	3
" industry very depressed during first half-year	3
" condition of trade	3
" strong demand in the United Kingdom, France and America during second half-year	3
" prices advanced enormously	3
" ocean freights, increase in	3
Gems output, decrease in	3
" " compared with previous year	3
" condition of trade in	3
" European markets remained in state of collapse	3
" Indian markets kept up a steady demand	3
" prices for rubies and sapphires inclined to rise	3
" " spinels fell off	3
Gold output, increase in	3
" " compared with previous year	3
Silver reported from a gold mine	3
" figured for first time in these records	3

	PAGE.
SECTION III.—ACCIDENTS—<i>contd.</i>	
Surface—<i>contd.</i>	
Accident at the Burelia Coal Company, Limited's Burelia coal mine	10
" " " Hon'ble Maharaja Sir M. C. Nandi's Begunia Khas coal mine	10
" " " Tata Iron and Steel Company, Limited's Bhetaland coal mine	11
" " " R. A. Mucadam & Sons' Chanda coal mine	11
SECTION IV.—PROSECUTIONS AND ADDITIONS TO THE ACT—	
Prosecutions under Indian Mines Act—	
The Central Kurkend Coal Company, Limited's Central coal mine	12
Daroga Lal's Belanjabad coal mine	13
Nagendra Nath Mandal's Patiana coal mine	13
H. V. Low & Co.'s Butaria coal mine	13
The Lakshmiganj Coal Company, Limited's Lakshmiganj coal mine	13
Atma Singh & Co.'s Khales coal mine	13
S. N. Laik's Niamatpur coal mine	13
The Nudkhurki Coal Co.'s Nudkhurki coal mine	13
" Isabella Coal Co.'s Isabella coal mine	13
Hem Chandra Dutt's old Bamondiha coal mine	13
Kiron Chandra Dey's Trans-Barakar coal mine	13
The Central Kenda Coal Co.'s Central Kenda coal mine	14
K. M. Selected Coal Co.'s Kusunda coal mine	14
The Poniati Coal Concern's Faridpur coal mine	14
" Marleon Coal Co.'s Marleon coal mine	14
Talabar Mahaton's Karichotan mica mine	14
The Central Tentulia Coal Co.'s Central Tentulia coal mine	14
Brojo Bhusan Trigunait's Rambanali coal mine	14
Pramatho Nath Chowdhury's Lakshmi coal mine	14-15
The Brindabanpur Coal Co.'s Brindabanpur coal mine	14
" Dhansar Coal Co.'s Dhansar coal mine	15
Note Behari Naug's Chandore coal mine	15
The Thakar Coal Co.'s Sitla coal mine	15
Indur Subbarama Reddie and Co.'s Jogipalli mica mine	15
Prosecutions under Special Rules—	
The Penoh Valley Coal Company, Limited's Barkui coal mine	15
" Barakar Coal Company, Limited's Loyabad coal mine	15
" Reliance Coal Company, Limited's Charanpur coal mine	15
" Tata Iron and Steel Company, Limited's Choitodih-Malkera coal mine	15
" Bengal Coal Company, Limited's Sodapur coal mine	15
" New Beerbhun Coal Company, Limited's Berrea coal mine	15
Permits cancelled	16
Authorizations cancelled	16
SECTION V.—GENERAL REMARKS—	
Health and Sanitation—	
Cholera in the Bengal, Bihar and Orissa coalfields	16
Small-pox in the Bengal, Bihar and Orissa coalfields	16
Cholera outbreak in Jharia Bazar, report on	16
" " at a colliery village in Giridih	16
Jharia Board of Health—	
Number of Meetings	16
Change among non-official members	16
Appointment of Chief Sanitary Officer	16
Subjects considered by the Board	16
Asansol Board of Health—	
Formation of	16
Number of Meetings	16
Constitution of Board	16
Appointment of Chief Sanitary Officer considered	16
Malaria outside coalfields in Bengal, Bihar and Orissa	16
Rainfall at Jharia, Giridih and Raniganj	16
Mining Education—	
Mining sub-committee of the Board of Visitors of Sibpur College dissolved	16
Mining Educational Advisory Board dissolved	16
Formation of Mining Education Advisory Board	17
Composition of new board	17

	PAGE.
SECTION V.—GENERAL REMARKS—<i>cont'd.</i>	
Mining Education—<i>cont'd.</i>	
Mining education in the coalfields brought directly under Principal, Civil Engineering College, Sibpur	17
Report of Professor of Mining at Sibpur College	17
Mr. E. H. Robertson resumed duties as Professor of Mining	17
Report on lectures in the coalfields	17
Mining and Geological Institute of India—	
Membership	18
Number of meetings held	18
Library removed to Sitarampur and Jharis	18
Award of Government prize	18
Medals offered	18
Association of Colliery Managers in India—	
Membership	18
Number of meetings held	18
Board of Examiners for Coal Mine Managers' certificates—	
Change among non-official members	18
Retirement of Mr. E. J. Browne	18
Appointment of Mr. T. H. Ward	18
Re-election of Mr. S. Heslop	18
Number of meetings held	18
Result of Examination	18
Certificates granted	18
Examiners	18
Mining Boards in Bengal and Bihar—	
Bengal Mining Board—	
Number of meetings held	18
Subjects considered	18
Non-official members	19
Bihar and Orissa Mining Board—	
Number of meetings held	19
Subjects considered	19
Non-official members	19
Land Acquisition (Mines) Act, 1885—	
Work performed on account of	19
Official duties	19
APPENDIX I.—STATISTICS OF MINES AND MINERALS—	
Table No. 1.—Number of mines and workers and output of minerals	21
„ „ 2.—Number of mines opened and closed	35
„ „ 3.—Fluctuations of outputs	36
„ „ 4.—Coal raised and death-rates	36
APPENDIX II.—ACCIDENTS IN MINES—	
Table No. 1.—List of fatal accidents	37
„ „ 2.—Fatal and serious accidents	61
„ „ 3.—Fatal accidents and deaths classified according to age and sex	65
„ „ 4.—Fatal accidents classified according to cause	66
APPENDIX III.—PROSECUTIONS UNDER THE MINES ACT	
	67
APPENDIX IV.—MISCELLANEOUS—	
Statement No. 1.—List of inspection circles	69
„ „ 2.—List of certificate holders	69
„ „ 3.—List of mining universities	71
„ „ 4.—Sibpur mining classes	72
„ „ 5.—Mining instruction in Bengal and Bihar and Orissa	75
„ „ 6.—Amendment of rule 28 issued with Notification No. 2968—82, dated 21st April 1906	77
„ „ 7.—Particulars to be furnished under Section 4, Land Acquisition (Mines) Act, 1885	78

FROM

G. F. ADAMS, Esq., M.Inst.C.E.,

Chief Inspector of Mines in India,

TO

THE SECRETARY TO THE GOVERNMENT OF INDIA,
DEPARTMENT OF COMMERCE AND INDUSTRY.

Dated Dhanbad, 2nd June 1916.

SIR,

I HAVE the honour to submit the report upon the inspection of mines in British India for the year ending 31st December 1915.

EXPLANATORY INTRODUCTION.

It is necessary to explain that this is a report relating entirely to the administration of the Indian Mines Act, 1901, and is not a complete statistical review of Indian Mining and analogous industries. It should be remembered in reading the statistics that there must be a considerable output from quarries which are under 20 feet deep; and owing to the exclusion of such places from the scope of the Mines Act, these figures should not be regarded as a complete index to the production of the mineral wealth of the country.

Figures of production of all minerals raised in British India and the Native States, whether from workings under the Act or not, are published annually in the Records of the Geological Survey of India, whilst every five years a Quinquennial Review of the Mineral Production of India is issued by the same Department. The latest review published is that for the years 1909-1913 (Records, Geological Survey of India, Volume XLVI). Figures for Mysore, where most of the Indian gold is raised, are given in the report of the Chief Inspector of that Native State, and mineral statistics may also be found in the administrative reports of the various Presidencies, Provinces and States of India.

This report is divided into five sections, *viz.* :—

- Section I.—Persons employed.
- „ II.—Output of mineral.
- „ III.—Accidents.
- „ IV.—Prosecutions and additions to the Act.
- „ V.—General remarks.

Section I.—Persons employed.

During the year 1915 the average number of persons working in and about the mines regulated by the Indian Mines Act was 180,088; of whom 118,017 worked underground and 62,071 on the surface. One hundred and twelve thousand, seven hundred and eighty-seven were adult males, 62,096 were adult females and 5,205 were children under 12 years of age. This is a decrease of 5,123 workers or 2·77 per cent.

Those employed in coal mines numbered 145,537, which is an increase of 7,686 over those employed in 1914.

In the Raniganj coalfield (Burdwan district) the supply of labour was reported to be unusually plentiful, owing chiefly to a bad harvest in the previous year. In the neighbouring district of Bankura the scarcity amounted to a famine and labour flocked to the coal mines in large numbers. There are, however, in this coalfield outlying mines, where more labour would have been welcomed.

In the Jharia coalfield also the year was considered to be a good one generally.

The labour question continues to be a very difficult one in the Assam (Lakhimpur) coal mines. As has been previously stated, in addition to Indian coolies, Nepalese, Mekranis and Chinese have all been tried. Of the former 832 and of the two latter 130 and 68, respectively, were recruited during the year. The Chinese have proved unsatisfactory and it is not proposed to recruit any more of them.

Foreign labour had to be imported for the working of manganese mines in certain districts in the Central Provinces. In some cases it was recruited from the United Provinces. The district officers report favourably on the conditions of these workpeople.

The speeding up of the wolfram industry towards the end of the year necessitated the importation of coolies from all possible sources of supply. The various classes of labour now include Chinese, Tamils, Telugus, Malays, Garhwalis, Burmans, Karens and aboriginal tribes from Chota-Nagpur. The latter, most of whom have worked in the mica mines in their own neighbourhood, have turned out to be very good workmen. The Chinese however are the main standby of the mine manager. The attendance of the Burmans is dependent on the season. They go to the mines after the harvest and after planting. Wages range from Rs. 30 to Rs. 65 per mensem. The Chinaman works hard but he objects to interference. He will not obey his mine manager even in matters which affect his own safety. He persists in his own way and is independent, because he can always secure employment elsewhere at as remunerative rates as he has been receiving. The Lower Burma Chamber of Mines, which was formed in 1913, was reconstituted towards the end of the year under report and a strong committee was formed. This new body contains all the most important mine owners, and it is to be hoped that its formation will lead to improved conditions all round.

Section II.—Output of Mineral.

COAL.

In the report for 1914 it was stated that the increase was the smallest since 1910. In 1915 there was a distinct advance. The total output of coal was 16,352,480 tons, an increase of 624,849 or 3·97 over the output of 1914. This is the first year in which the sixteenth million has been reached.

Upon an analysis of the figures, I find that, as far as the coalfields of Bengal and of Bihar and Orissa are concerned, the year was remarkably one of large increases and decreases. The outputs of the larger firms and of those working the best seams increased. Those of the smaller owners and of those working the inferior coals decreased. In Bengal (Raniganj coalfield), where the total increase is almost entirely accounted for, the increases were over eight, and the decreases over three hundred thousand tons, resulting in a nett increase of over half a million. In Jharia, the figures are still more emphatic. The total output of the field was stationary, but the increases and decreases, which practically balanced one another, were each over a million tons.

Nineteen hundred and fifteen, therefore, was distinctly the year of the best seams and of the large owner, and the increase of output kept pace with the demand. Reduction in finance facilities, the closing down of much internal industry, and the restriction of commerce forced a good deal of extra coal on the market early in the year and brought down prices. This reacted on the industry generally throughout the year and affected specially the small owner and those working inferior coals.

More and more coal had to go by rail as the year went on, until, at its close, practically all that was used in India, excluding small quantities destined for a few towns in the far southern corners, was so carried.

Of the total output 15,686,816 tons, or 95.93 per cent. were raised in Bengal and in Bihar and Orissa, the percentage of the previous five years being 95.54. In the other provinces, there was again a decrease in Baluchistan, amounting to 9.59 per cent. and there were increases in the Central Provinces of 3.42 per cent., in the Panjab of 6.64 per cent., in Assam of 2.06 per cent. and in the North-West Frontier Province (output negligible) of 36.17 per cent.

The output per person employed during the year was (a) below ground 171 tons, and (b) above and below ground 112 tons. The figures for the five years preceding were (a) 177 and (b) 114. Taking each group of coalfields separately these figures were as follows:—

Bengal and Bihar (a) 174 and 181, (b) 114 and 115; the Central Provinces (a) 116 and 124, (b) 79 and 87; Assam (a) 162 and 201, (b) 108 and 129; Baluchistan (a) 74 and 73, (b) 45 and 48; and the Panjab and North-West (a) 68 and 55, (b) 45 and 35.

The output in England in 1914 was 290 tons per person employed below ground and 234 tons per person employed above and below ground. These are pre-war figures.

MICA.

There was again a decrease in the output, which amounted to 24,063 cwts., a decrease of 36.99 per cent. on the output of 1914, which was 38,189 cwts. This is the smallest output since 1910.

The war has had a great effect on the mica trade, partly owing to the restrictions placed by Government on its export to various countries. These restrictions and the loss of the German market had an adverse effect on the sale of all grades of splittings. The chief demand was for good clear and part-stained block mica, for use, among other things, for the magnetos of aeroplanes. The trade in Madras mica was especially depressed.

MANGANESE.

The output was 378,172 tons. This is a decrease, as compared with that of 1914 of 177,500 tons, or 31.94 per cent. This is the smallest output since 1909. The industry was very depressed during the first half of the year. In August a strong demand arose in the United Kingdom, France and America, but owing to shortage of tonnage, especially towards the end of the year, this could not be fully met. Prices advanced enormously—17½d. per unit was reached—but these followed the abnormal increase in ocean freights, insurance and other charges incidental to shipping, and the result to the exporter was no better than in normal times with normal freights.

GEMS.

There was a decrease in the output, which was 251,449 carats. In 1914 304,042 carats were raised. This is a decrease of 17.30 per cent.

As may be expected, the European markets remained in a state of collapse, but in India a steady demand kept on during the whole twelve months, with prices rather inclined to rise than to fall and well above those of 1914, both for rubies and sapphires. Spinel was an unimportant item and prices for them fell off in a very marked way. The royalty payments from the native mine owners averaged nearly double those paid during the first few months after the war, so they recovered their position to a great extent.

GOLD.

The output was 24,320 ounces, compared with 19,873 ounces in 1914. This is an increase of 22.38 per cent. An output of 512 ounces of silver is also reported from a gold mine. This is the first time silver has figured in these records.

COPPER ORE.

The output was 8,010 tons compared with 4,400 in 1914. This is an increase of 82.05 per cent.

WOLFRAM.

There was an increase in the output which was 39,432 cwts., compared with 31,526 cwts. in 1914. This is an increase of 25·08 per cent. During the greater part of the year the industry languished, but towards the close strenuous efforts were successfully made to stimulate the production.

OTHER MINERALS.

There were increases in bauxite, clay, fuller's earth, salt, magnesite and galena and decreases in iron, chromite, tin, steatite, samarskite, slate and limestone. The limestone trade has suffered owing to building operations being reduced.

Section III.—Accidents.

During the year 1915, at mines regulated by the Indian Mines Act, 1901, there were 163 fatal accidents, being an increase of 11 on the number in 1914 and an increase of 28 on the average number in the previous five years. The increase is chiefly made up of accidents from falls of roof and accidents on the surface, of the latter of which there were 37 as compared with 17 in 1914. There were increases in all the four sub-heads into which surface accidents are classified.

The principal fields in which accidents occur are (1) the Bengal and Bihar and Orissa coalfields, (2) the Assam (Lakhimpur) coalfield, (3) the Baluchistan coalfield, (4) the mica fields, (5) the manganese fields and (6), during recent years, the wolfram field. In looking over the fatal accidents both for 1915 and for the previous five years I find that there has been a gradual increase of accidents in No. 1 field. In No. 2 field, there was a decline during the first half of the period and a steady increase during the second half. The exact converse has been the case in No. 3 field, while the numbers have remained more or less stationary in Nos. 4 and 5 fields. The rate for wolfram (No. 6) is high, and varies considerably.

The Indian Mines Act was passed in 1901, but some two or three years elapsed before the reporting of accidents and the returns of labour approached to a fair degree of accuracy, and I consider that the end of the year 1915 may well be taken as the end of the first decade, as far as these matters are concerned. On plate A will be seen the death-rates per thousand persons employed for the ten years ending with 1915 both in all coal mines, and in the three fields I have indicated, respectively, and on plate B the same arrangement is shown for mines other than coal. It will be seen that coal mining in Assam and Baluchistan is a very much more hazardous occupation than in Bengal and in Bihar and Orissa. This is chiefly due to the naturally dangerous condition of the first mentioned mines. In connection with the diagram relating to the coalfields of Bengal and of Bihar and Orissa, it should be noted that during the ten years under review, the character of the mines has undergone a great change. There are many more deep shafts, mines have been extended greatly in area underground, and there is far more machinery in use.

The 163 accidents in the year under report involved the loss of 188 lives. This is a decrease of 3, as compared with the number of deaths in 1914.

With the exception of one accident, which was due to a sudden collapse of the workings, and caused death to ten persons sleeping in their huts on the surface, there was no accident causing loss of life on a large scale. In one case three persons and in fourteen cases two persons were killed.

Of these 163 accidents I regard (a) 73 as being due to misadventure, (b) 59 to the fault of the deceased, (c) 8 to the fault of fellow workmen, (d) 7 to the fault of subordinate officials and (e) 16 to the fault of the management.

As in 1914 there was only one fatality from explosion of fire-damp. In three other cases, explosions were reported, by which persons were slightly burnt.

There was also an ignition of gas at a coal mine in Bengal which was not reported, owing to the fact that the management did not consider an ignition an explosion. Upon reference to you, you were pleased to state that the intention of the rule is that all explosions should be reported, that I should continue to regard explosions as including the ignition of gas and that I should accordingly require notices of such minor explosions to be sent to me in accordance with the rule.

There were 85 accidents from falls of roof and side. Fifty-two of them occurred in the coalfields of Bengal and of Bihar and Orissa. Of these 29 were owing to the fault of deceased, generally in attempting to rob coal away from his proper working place and in 20 cases a fence was deliberately crossed. It is worth noticing, comparing this class of accident in the Raniganj and Jharia fields that whereas the falls of roof were 14 and 11 respectively, these figures were 6 and 18, in the case of falls of side. This is to be attributed to the facts that in the Jharia field the seams are as a rule thicker, and the coal softer than in the lower field.

The number of accidents under the heading "In shafts" was slightly below the average of the previous five years, which is satisfactory, considering that every year sees more shafts brought into use. In the report for 1913 the necessity of providing fence gates on cages was urged upon managers. Their use, or the use of chains or similar contrivances, has increased greatly, but is not yet universal. One fatality at least, in the year under report, would have been avoided, had the cage been so fitted. Considering the class of workpersons that ride in shafts in India, failure to provide such contrivances is to neglect a simple, but, as has been proved, very necessary precaution. In England they are now compulsory.

The number of haulage accidents was also slightly below the average of the previous five years, and here again it should be remarked that more systems are constantly being installed, while old ones are being extended. Haulage accidents come under the preventable class to a large extent. Owing to the now practically universal custom of having selfacting runaway points or switches near the tops of haulage inclines, accidents owing to tubs running wild from the surface, which formerly figured largely in these reports, have lessened and in the year under report they were *nil*. It is to be hoped that they may be looked upon from now on as old history. With properly constructed switches, kept in proper repair, and, what is very important, free from obstruction, they should not occur.

The provision of couplings of a good type, their periodical annealing, and the provision of draw bars made of best iron, and, in steep inclines, of safety ropes or chains, stretched over the whole length of the set of tubs, and the keeping of engine planes in good order are the main preventatives of haulage accidents. Whatever their initial cause, the effect, as far as the person killed or injured is concerned, is generally the same. He is run over by a tub, or tubs. Under the special rules for coal mines, it is unlawful to travel on an engine plane, when the rope is in motion. But on planes which are actuated by a main rope only, it is impossible for anyone to tell, if he is inbye of the rope, whether the latter is in motion or not, and signals from the incline top to warn persons underground that the rope is working are necessary, in order that the above special rule can be properly observed. Much may also be done by the erection of gates, or movable barriers at the junctions of important levels with the engine plane. But the best remedy of all is the provision of travelling roads, independent altogether of the engine planes. The system on which the majority of Indian coal mines are laid out lends itself peculiarly to the arrangement of such travelling roads without much trouble or expense.

The death-rate per thousand persons employed was 1.04, while that of the preceding five years was 1.15. At coal mines only these figures were 1.14 and 1.32 and at mines other than coal 0.64 and 0.70. At coal mines in England during the ten years ending with and including 1914, the death-rate per thousand persons employed varied from 1.08 (lowest) to 1.69 (highest).

The death-rate per million tons raised at coal mines only was 10·15 while that of the preceding five years was 11·57. At coal mines in England during the ten years ending with and including 1914, the death-rate per million tons raised varied from 4·31 (lowest) to 6·37 (highest).

Of the 188 persons killed 155 were males and 33 were females.

The deaths occurring in each class of mine were as follows:—One hundred and sixty-six in coal mines, 6 in wolfram mines, 6 in mica mines, 5 in gold mines, 2 in manganese mines, 2 in copper mines and 1 in tin mines.

One person lost his life by explosion of firedamp, 51 by falls of roof, 42 by falls of side, 17 in shafts, 7 by explosives, 3 by falling into water, 17 by haulage, 13 by other accidents underground and 37 on the surface.

A list of these persons appear in Appendix II, Table I. In addition to them there were 25 others, causing the death of 27 persons. These also appear in Appendix II, Table I, but are listed separately, a reason being given in each case for their exclusion from the statistical tables. They include 5 children, under 12 years of age, drowned on the surface. During the last ten years 46 children have been so drowned. Of this number 17 have been drowned in colliery boiler feed water tanks. These are small cisterns with bricked walls. As a rule they have been more or less fenced of recent years, but the children get through the fences, which are often found down or in a dilapidated condition. All such tanks should have the walls carried 3' 6" above the level of the ground, and no ashes or debris should be allowed to accumulate round the walls.

In the Bengal and Bihar mines, where most of the statistical accidents occur, there were 129 deaths compared with 119 in 1914.

Each accident is briefly described in Appendix II, Table I, but the following are reported on at greater length. The numbers refer to the numbers in the appendix.

EXPLOSIONS OF FIRE-DAMP.

No. 1.—Bengal Coal Company Limited's Sodepur coal mine.

This explosion occurred in a gallery in the Dishargarh seam. A miner entered the gallery on a Monday morning, with a naked light and ignited an accumulation of gas. An explosion resulted and he was burnt so severely that he died in ten hours. There had been a night sirdar on duty and it was undoubtedly owing to his neglect that the explosion occurred. If he had inspected this gallery, as he should have done, he could not have failed to detect the gas. He and two other men were prosecuted by the management for breaches of the special rules, as detailed in Section IV of this report.

Equitable Coal Company, Limited's Dishargarh coal mine.

The circumstances attending this explosion, by which three men were burnt, though fortunately without fatal results, are of a somewhat unusual character. It is illustrated by plan A. Gas accumulated in a goaf and overflowed into a rise gallery, where it was ignited by a naked light.

The seam is the Dishargarh seam and in this part of the mine it attains a thickness of 14' 6". The dip is 1 in 5·5.

The chief work done recently in the vicinity was the goafing of some of the pillars, as shown on the plan.

The explosion was initiated in the gallery, marked K. No work had been done in this gallery for two years, until three days before the explosion, when it was decided to restart it. On the third day, at about 1 P.M., after three men had been at work for five hours, engaged in dressing the sides and roof, preparatory to driving the gallery forward, they were all suddenly burnt. They would not admit that any of their lights ignited the gas, and stated that a blue flame appeared and travelled down the dip road towards the goaf.

Fortunately no one was working in the goaf at the moment. All the workpeople, about 30 in number, had shortly before proceeded to the point, marked M, to get tubs. A subordinate official, who was with them, stated that he heard a report and saw a blue flame, swaying backwards and forwards near the roof of the goaf. This end of the goaf marked the limit of the explosion in his direction.

No evidence of force was discernible and, although the mine, in the vicinity of the explosion, was dry and fairly dusty, there was no evidence of coal dust having played any part in the explosion. Had it been otherwise, a serious catastrophe might have occurred, as the mine is one of the most extensive in India.

The source of the gas was not difficult to trace. It was found subsequently in considerable quantities in the goaf at the point N and there is no doubt that, shortly before the explosion, gas drifted through the extension of the goaf which was being formed by the extraction of the pillar J, and ascended to the gallery K, where it met the naked lights of the injured persons.

There was no definite coursing of the air current in these particular galleries. As will be seen, the main intake was close at hand, and if the air had been coursed, its natural direction, in accordance with the general scheme of ventilation in the mine, would have been along No. 82 level to K and then past J and along the goaf edge. As, however, the air was stagnant, the gas gradually flowed out of the goaf and ascended to K.

The goaf shown cross-hatched on the plan had been formed, not by the extraction of pillars, but by breasting into the solid rib of coal. In the course of the inquiry, it transpired that when the galleries had been driven along this rib, some nine years previous, gas had been given off, and brattices or curtains had to be put up to carry the ventilation into these galleries.

As a rule, in mines where gas occurs only occasionally and in small quantities, it is not expected that it will be found when pillar extraction or goafing is in progress, for the enclosing galleries, as time goes on, drain the pillars effectually. In this case however, where solid coal, in which gas had been found at the time of the first driving, was being breasted, the occurrence of gas was not unlikely, and the fact that this portion of the mine was being worked with naked lights—except for inspection with a safety lamp by officials—while at the same time no definite scheme for coursing the ventilation round these particular galleries had been arranged, is regrettable. The agent admitted that he remembered that gas had been found in the first driving about 1906. He forgot to inform the manager, who was appointed only in the early part of 1914. The latter therefore remained in ignorance of any possible danger, with the result that he did not anticipate any trouble with gas and made no provision for coursing the air.

The mine is dependent for ventilation on the heat of exhaust steam in the upcast shaft, and the current produced satisfies requirements. The main intake passes only four pillars away from the scene of the explosion and the air could easily have been directed to these galleries.

In mines such as this, where gas is found from time to time, even in such small quantities as not to compel the statutory observance of the rules relating to working with safety lamps only, it is of the greatest importance that the air should be coursed round every point in the working portion of the mine.

The coursing of the air, however, would not have affected the quantity of gas in the old goaf. When collapse of the roof occurs in a goaf, the air is sometimes compressed to a high pressure and projected considerable distances. The fact therefore that a goaf can be filled with gas in this manner brings into prominence a possible danger that should cause goaves to be looked upon as suspected areas in all seams that are liable to give off gas.

Once the timber is withdrawn, a goaf becomes a prohibited area and its condition, as far as the presence of gas is concerned, can only be ascertained, by testing for it at the edges. Such tests should invariably be made. This is distinctly a lesson to be learnt from this accident.

FALLS OF ROOF.

No. 11. Hariladh Coal Company, Limited's Akhalpur coal mine.

This accident is illustrated by plan B. A fall of roof occurred at a junction of four galleries, two of which were 23 feet wide, the other two being 14 feet and 12 feet wide, respectively. The extent of the fall was 29 feet by 20 feet by 4' 6" (thick). The roof was entirely unsupported. A man happened to be under it and he was killed instantly.

This roof was not a good roof. It will be seen from the section on the plan that overlying the coal is a bed of weak shale. It is because this shale cannot be relied on that 2 or 3 feet of roof coal is left under it, the latter being a stronger stratum than the shale. The best of coal roofs, however, owing to the joints and slips that run through them, cannot be relied upon in such wide places as this was. These galleries should certainly have been supported.

No. 18.—Raniganj Coal Association, Limited's North Kustore coal mine.

This accident is illustrated by plan C. Some coolies were extracting a pillar by the process of undercutting it and leaving roof coal to be supported temporarily on props. These props would afterwards have been withdrawn and the roof coal allowed to fall.

It will be seen from the plan what a large area of roof coal was thus supported. The number of the props was sixteen. No diagonal sprags were used.

An area 28 feet by 14 feet by 0 feet to 4 feet (thick), suddenly collapsed, swaying out seven of the props. One miner was killed and a sirdar was severely injured. It is fortunate that the loss of life was not greater. The area which collapsed had loose ends on the north and south, and the fall disclosed a smooth joint or slip on the west side.

The area of roof coal was not only insufficiently supported vertically by the sixteen props, but it was entirely unsupported horizontally by sprags. Owing to the absence of such support the roof collapsed, swaying out such props as were under it.

This system of working is an unsafe one. Accidents have occurred from the same cause at this and neighbouring mines owned by this Company. In 1908 two similar accidents caused the loss of 15 lives. Both then and in 1911, the management stated they intended to alter the system. They have since this accident again given an undertaking to work in a safer manner, and it is to be hoped that the undertaking will be observed faithfully, and that such accidents will be avoided in future.

FALLS OF SIDE.

No. 58.—New Beerbhoom Coal Company, Limited's Chinchuria coal mine.

The under-manager of this mine, when making his morning round, noticed that the corner of a coal pillar was dangerous. He gave orders to the assistant that no work was to be done there. He permitted work to be done on the opposite side of the pillar and a chalk mark was placed on the pillar to show how far the miners could advance on their day's work. In the course of the day, a miner, against the advice of his companions, went round to the dangerous corner and began to work at it, with the result that two tons of coal suddenly fell upon him and killed him outright.

By general and by special rule it is enacted that any place which is not in actual use, or course of working and extension, shall be fenced off. This rule, generally speaking, has to be interpreted in a fair spirit, but any place which is not in actual course of working, because to work it would be dangerous, should invariably be fenced under these rules. There is no guarantee whatever that a miner will realise the importance of a chalk mark, whereas to cross a fence is an offence punishable under the special rules, and the existence of such fence should therefore act as a much greater deterrent.

IN SHAFTS.

No. 93.—Damuda Coal Company, Limited's Lutchipur coal mine.

An onsetter had loaded a cage at the shaft bottom and was tying a metal token to the tub, when a piece of coal fell from the surface, a distance of 376 feet, on to his head.

Investigation of this accident disclosed the fact that the lateral distance between the edge of the protection board at the shaft bottom and the cage was ten inches. This is too great a distance, and where such is adopted an accident may happen at any time. With properly tightened guides, there is no reason why the distance should exceed six inches.

No. 96.—East Indian Coal Company, Limited's South Bulliari coal mine.

This accident occurred in a shaft, 600 feet deep and recently sunk. At the bottom was a large electric sinking pump. This was raised up and down the shaft by a rope, attached to a steam winch on the surface, which passed round a pulley at the pit top, round another pulley at the pump and was then attached to the headgear on the surface.

The delivery column consisted of steel pipes, 6 inches in diameter. These rested on the pump and, when the latter was raised or lowered, the column was raised or lowered with it, short distance pieces being kept at the surface to make the necessary adjustments.

Some of the pipes had screwed flanges and others lap-welded flanges. There were twelve bolts to each joint. Half way up the pit each half of the column was screwed into a T piece, thus :—

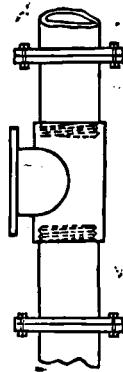
On the occasion of the accident, it became necessary to lower the pump and column down into the sump. In order to do this it was necessary to pass them between the buntons supporting the cage platform at the coal seam inset. This the men in charge failed to do with the result that a portion of the pump frame came down on a buntan, the pump heeled over, causing a pipe, 18 feet long, 6 feet above the pump, to buckle.

The engineer of the mine inspected the whole of the column and came to the conclusion that this was the only damage and he made arrangements to change the buckled pipe. He suspended the whole column from the head gear by means of a pulley block, and proceeded to change the pipe. Just as the operation was on the point of being completed, by raising the pump to the column, the latter parted at the T piece mentioned above, and the lower half of the column fell to the bottom of the shaft, 40 feet below. There were seven men engaged at the work of changing the pipe. They all fell or jumped into the water in the pit bottom. Six were rescued, two of them being injured. The seventh man was killed, and his body was not recovered for some weeks.

It was found that the threads of the screwed joint in the lower portion of the T piece had stripped. It is possible that when the pipe buckled, the T piece was strained, or it may have been the weak link in the chain for some time.

There were circumstances connected with this accident which made it difficult to do the work at the time in any other way, but to suspend a column of 6 inch pipes 600 feet long, especially when there are screw flanges and T pieces, must involve risk, and the column should be attached and supported at or near the bottom end, whenever possible. A similarly caused accident occurred in 1913 when two lives were lost. Arrangements have since been made at South Bulliari to obviate the necessity of suspending the column from the top.

The tendency of Indian mining to-day is all in the direction of deeper and heavily watered shafts, necessitating pumps, delivery columns, etc., of a more massive character. Arrangements to cope with break downs in such cases cannot, as a rule, be improvised, the way to deal with them in a safe and proper manner must be anticipated, and the necessary tackle provided.



HAULAGE.

No. 122.—Equitable Coal Company, Limited's Dishargarh coal mine.

This accident resulted in the death of a tub rider, owing to a set of loaded tubs being derailed on its way up an incline. In jumping off he slipped and fell between the tubs.

The duty of a tub rider, usually, is to attach and detach ropes, and to signal for the set to be stopped, should it be derailed or anything untoward occur. It is a dangerous occupation, and many such men have lost their lives all over the world. In England their employment is now prohibited, if the speed of set exceeds 3 miles per hour. Since the accident, riders have been dispensed with at this mine and apparatus for rerailing tubs automatically has been installed.

BY SURFACE MACHINERY.

Nos. 138 and 139.—Ghusik and Muslia Collieries, Limited's Ghusik coal mine and the Sijua Coal Company, Limited's Sijua coal mine.

In the first of these occurrences twelve men were lowering a Lancashire boiler down the slope of a railway embankment, by means of a hand winch. The men were suddenly overpowered, the handles of the winch commenced to revolve at great speed, and one man was struck by one of them and killed.

It was discovered on inquiry that the winch was not provided with a brake strap, and that the safety pawl on the ratchet could only come into action automatically, when a load was being raised and not when it was being lowered. The only way to bring the pawl into action was to do so by hand. Immediately after the accident this was done, with the result that the winch was destroyed.

In the second occurrence a boiler was being raised up the slope of an embankment by means of a hand winch, when the foundation bolts of the winch broke. The winch overturned and the eight men at the handles were hurled to the ground, one of them being killed. It transpired that although the bed-plate of the winch was provided with eight bolt holes, only four bolts were used. The force of which can be applied by eight men is too much for a hand winch of this description.

Accidents arising out of the use of hand winches have been reported upon before. They are generally the result of attempting to do work with gear insufficiently strong for the purpose.

No. 140.—Burelia Coal Company, Limited's Burelia coal mine.

A man was struck and killed by a belt pulley forming part of a screening plant. The pulley was 4 feet in diameter and travelled at 212 revolutions per minute.

Up to the day before the accident this pulley was 6' 6" from the ground. On that day however the ground was raised, making the distance only 4' 7½". This entirely altered the situation as regards bringing the pulley under the heading of dangerous machinery, which is required to be fenced.

A permanent fence was being put together at the time of the accident, but the erection of a temporary fence, until the permanent one was ready, would have saved this man's life. A temporary fence was fixed immediately after the accident. Inspectors are sometimes informed, when drawing attention to dangerous unfenced machinery, that arrangements are being made to erect fencing. No making of arrangements will prevent an accident, and if permanent fences are not ready temporary ones should be put up.

MISCELLANEOUS ON SURFACE.

No. 155.—The Hon'ble Maharaja Sir Manindra Chandra Nandi's Begunia Khas coal mine.

In this case a store-keeper babu and a store coolie were burnt to death by a fire in an oil godown. Two women were slightly burnt at the same time.

Since the accident the godown has been fitted with two doors. The adoption of this plan generally may prevent fatalities from the same cause in future. With only one door there is practically no chance of escape in the event of a fire in a building containing such inflammable material as is stored in an oil godown, and as such godown is an appurtenance of practically every coal mine, the matter has been considered one to which attention should be drawn.

No. 159.—Tata Iron and Steel Company, Limited's Bhelatand coal mine.

The boiler in which this accident took place is one of a pair of connected Lancashire boilers. The arrangement of the pipe connections is shown on plan D. The colliery enginewright instructed three coolies to clean out one of the boilers, which was empty, the other one being under steam. He secured the stop valve by means of a chain and padlock, took away the key of the blow off cock and placed it in the colliery workshop. Some three hours later one of these coolies, Dhuma Singh, told the fireman of the live boiler that he wished to draw off some water, which was lying in the front end of the empty boiler. The fireman replied that it was none of his business and that Dhuma Singh should go to the enginewright. As far, however, as can be gathered, Dhuma Singh then proceeded to open the blow off cock of the empty boiler, by means of the key of the blow off cock of the live boiler. This key was in the boiler house. Shortly afterwards the fireman opened the latter blow off cock, with the result that steam poured through into the empty boiler. All three coolies were scalded, and Dhuma Singh succumbed to his injuries.

The keys used for operating the two blow off cocks, one for each, were identical. They were of the simple pattern used for water mains and on railway carriages.

In the special rules for coal mines it is laid down that "when a boiler connected with one or more boilers has to be entered by any one for cleaning or any other purpose, the mechanical engineer, or other competent person, shall shut down and secure the steam valve, blow off cock and feed water opening by a lock or by such other means or appliance as will effectually isolate the boiler, and shall prevent steam or water entering it through any inlet until such time as the manhole covers have been refitted." It is not much use isolating a boiler and taking away the key, when a duplicate key is left in the boiler house.

The usual practice is to have the blow off pipes entirely separated or to arrange for each pipe to discharge into a common drain. In some installations, where the blow off pipes are connected, Hopkinson's isolation valves, permitting passage of steam outwards only, are fitted. These isolation valves were fitted on the steam valves of these boilers, as shown on the plan, but not on the blow off cocks.

No. 161.—R. A. Mucadam & Sons' Chanda coal mine.

This accident, which is illustrated by plan E, was the most serious accident in the year from the point of view of numbers killed and injured. These numbers were 10 and 6 respectively.

A large number of persons were lying asleep at night in a coolie barrack, which, it may be seen from the plan, was situated partially above the underground workings. At half past three in the morning, a considerable portion of these workings collapsed suddenly. The collapse extended to the surface, which subsided to a depth varying from one to seventy feet, over an area measuring 145 feet by 85 feet, and the western portion of the barrack was wrecked, the occupants being engulfed in the debris and subsided earth. Rescue operations were undertaken at once and within an hour all survivors had been extricated. One man actually rolled down the slope of the cavity into the mine workings, a fall of not less than 70 feet, and, on recovering his senses some hours later, walked out by the haulage incline. Seven bodies were recovered, and, as those of the other three had not been found after fifteen hours had elapsed, the Inspector of Mines, No. 1 Circle, advised the owner to discontinue the search, which was being attended with no small risks.

The seam in question is considered to be No. 12 seam and to be here 50 feet thick. The coal is hard and jointing is not pronounced. The seam dips at the unusually high angle of 1 in 1.8. The workings extend over an area measuring 250 feet from dip to rise and 600 feet along the strike. The coal pillars are stated to have averaged 30 feet square and the galleries 12 feet in width. The height of the galleries varied from 10 feet at the face to a maximum of 40 feet in the upper workings. The roof is sandstone and is considered to be sound. No falls of roof had occurred previously and props were only used occasionally. The manager, and a few persons employed in laying rails, had been underground in the main dip gallery, west of the collapse, on the previous morning, and they stated that they noticed nothing wrong. The Inspector of Mines, No. 1 Circle, had been underground $5\frac{1}{2}$ months previously in connection with proposals for working under a railway line, and noticed no active sign of instability in the mine. After the accident he made underground inspections of the mine on two occasions, and except for two fractured pillars, hatched black on the plan, found the whole of the remaining portion of the mine to be intact. An examination of the cavity on the surface showed that the east and west sides of it coincided with dip joints, coated with mud carried by percolating water.

It is impossible now to ascertain the dimensions of the pillars which collapsed, but presuming that they averaged 30 feet square, with 12 feet galleries, the amount of coal left in the pillars was 51 per cent. This proportion is in accordance with the usual practice in the Jharia coalfield, and under normal circumstances it would probably have been ample at the moderate depth attained. The circumstances were however abnormal in the following respects:—(1) The pillars were unusually tall; (2) the dip was high; and (3) water was percolating in small quantities through joints extending to the surface. Owing to the steep dip, the weight of the overlying strata would not operate vertically, but at an angle approximating more to a right angle to the dip. As the pillars were vertical, the weight would tend to overturn them. They might have resisted this movement if the lateral support of the overburden had not been weakened by the existence of pronounced joints in the overburden, the sides of which were lubricated by mud carried by water percolating from the surface, as referred to in the preceding paragraph.

The general scheme of operations was in accordance with local practice. Similar and more extensive collapses took place at two adjacent collieries in 1912, but premonitory symptoms were detected by the officials and due precautions taken. In the present instance so far as the evidence goes there were no warning symptoms. There probably were such symptoms, but, as no one had passed through the affected area for at least thirty-nine hours before the collapse, they were not detected. Work on these highly inclined seams has attained importance only within the last few years. The stresses involved are difficult to calculate and there is not much accumulated experience to guide operators.

Considering all the facts, I do not think that anyone is to blame in this case.

Section IV.—Prosecutions and additions to the Act.

PROSECUTIONS.

Judgment was given in the following prosecutions during the year. Unless otherwise stated 'rule' means a rule under Notification No. 864-68-20, dated the 10th March 1904, being rules for the working of coal mines.

The owners and manager of the Central Kurkend Coal Company, Limited's Central Kurkend coal mine were proceeded against under rule 2 (g), rule 7 and rule 8, read with section 22 (3) (e), for failing to maintain a written daily record of the condition of the machinery, failing to keep unused galleries fenced, and failure to provide proper means of communicating distinct and definite signals on a haulage road. The manager pleaded guilty to the first charge, the second charge was not pressed, and the manager was held to be guilty on the last

charge. He was fined Rs. 75 : in default seven days' simple imprisonment. The case against the owners was withdrawn.

The owner of Daroga Lal's Belanjabad coal mine was prosecuted under rule 12, read with section 22 (2) (b), for not furnishing a plan of the mine, after abandonment. He pleaded guilty and was fined Rs. 50 : in default fourteen days' simple imprisonment.

An accident occurred on the 9th November 1914 at Nagendra Nath Mandal's Patiana coal mine, the working of which had been discontinued. A boy fell down a trial shaft and was drowned. The owner was prosecuted under rule 19 and under rule 8 of Notification No. 11793-103, dated the 30th December 1908, read with sections 22 (1) (e) and 22 (2) (b), for not properly fencing the shaft and for not notifying the occurrence of the accident. He pleaded that the mine was not being worked at the time and that he had given notice to the Police. He was fined Rs. 250 : in default rigorous imprisonment for three months and simple imprisonment for one month, to run consecutively.

Arising out of a fatal accident which occurred on the 7th November 1914 at the Butaria coal mine of Messrs. H. V. Low and Company, whereby a man was killed by a fall of earth from the side of a shaft, the manager was prosecuted under rule 24, read with section 22 (1) (e), for failing to securely case, line, or otherwise make secure the shaft. He pleaded guilty and was fined Rs. 20 : in default two weeks' rigorous imprisonment.

The Lakshmiganj Coal Company, Limited, was prosecuted under rule 2 of Notification No. 11793-103, dated the 30th December 1908, read with section 22 (3) (e), for not reporting the discontinuance of the working of their Lakshmiganj coal mine. The company was fined Rs. 40, the owners to undergo simple imprisonment for one month, in default.

The owner of Atma Singh and Company's Khalsa coal mine was prosecuted under rule 12, read with section 22 (2) (b), for failing to submit a copy of the plan of the workings, after the abandonment of the mine. The plan was submitted before the case was heard. He was fined Rs. 50 : in default fourteen days' simple imprisonment.

The owner of S. N. Laik's Niamatpur coal mine was prosecuted under section 13, read with section 22 (3) (e) for not appointing a qualified manager. The manager's permit had been cancelled by the Chief Inspector of Mines in India, but the mine was discovered at work six weeks afterwards, with the same manager. He was fined Rs. 150 : in default rigorous imprisonment for two months.

The agent of the Nudkhurki Coal Company's Nudkhurki coal mine was prosecuted under rule 1 of Notification No. 11793-103, dated the 30th December 1908, read with section 22 (2) (c) for submitting an annual return which was not, to the best of his knowledge or belief, true. He was fined Rs. 50 : in default seven days' simple imprisonment.

In his capacity as agent of the Isabella Coal Company's Isabella coal mine, the same person was proceeded against under the same rule and section, with reference to this mine. He pleaded guilty and was fined Rs. 20 : in default four days' simple imprisonment.

The owner of Hem Chandra Dutt's Old Bamondiha coal mine was prosecuted under rule 19, read with section 22 (3) (e), for not fencing the tops of two abandoned shafts. He pleaded that he was under the impression that the fencing should be done by the owner of the surface. It was held that the owner of the underground rights is clearly responsible under the law if the provisions of the Indian Mines Act are not followed. He was fined Rs. 20 : in default simple imprisonment for two weeks.

The owner of Kiron Chandra Dey's Trans-Barakar coal mine was prosecuted under rule 2 of Notification No. 11793-103, dated the 30th December 1908, read with section 22 (3) (e), for not reporting the discontinuance of the working of the mine. It was held that the case failed as being time barred under section 24. It was argued for the prosecution that this was a continuing offence, but the plea was not upheld.

The owner of the Central Kenda Coal Company's Central Kenda coal mine was prosecuted under rule 1 (b) read with section 22 (3) (e), for not maintaining proper arrangements for persons to ascend and descend at the second outlet of the mine. The owner had been addressed on the subject previously by the Inspector of Mines, No. 3 Circle, but although several reminders were sent, no notice was taken of the communication and three months afterwards matters were found to be in the same condition. He pleaded guilty and was fined Rs. 40: in default rigorous imprisonment for one month.

The owners of the K. M. Selected Coal Company's Kusunda coal mine were prosecuted under rule 45 of Notification No. 2968-82, dated the 21st April 1906, and section 13 (1), read with section 22 (3) (e), for working the mine without a properly qualified manager. There had been a recent change of Receivers, and the case was not pressed. They were fined Rs. 25.

The manager of the Poniati Coal Concern's Faridpur coal mine was prosecuted under rules 2 (g) and 4 (b), read with section 22 (2) (e), for failing to keep proper report books on the state of the machinery and the underground workings. An inspection disclosed the fact that in one case a daily report book had not been entered up for a fortnight but that the signature of the person reporting had been entered up for ten days in advance. In another case complete weekly reports had been made for two weeks in advance. He was fined Rs. 50: in default simple imprisonment for one month.

The owners of the Marleon Coal Company's Marleon coal mine were prosecuted under rule 19, read with section 22 (3) (e), for not fencing several inclines at the mine. At the time of hearing it was reported that the Company was no longer in existence and could not be traced. The proceedings were dropped.

The owner of Babu Talabar Mahaton's Karichotan and other mica mines was prosecuted under rule 1 of Notification No. 11793-103, dated the 30th December 1908, read with rule 22 (2) (c), for furnishing an incorrect annual return. He pleaded that the incorrectness was due to faulty arithmetic. This was accepted by the Court and he was fined one rupee.

Three owners and the manager of the Central Tentulia Coal Company's Central Tentulia coal mine were prosecuted under rules 3, 9 and 19, read with section 22 (3) (e), for not keeping the roof of the mine secure, for not keeping a plan showing the workings up to a date not more than six months previously, and for not fencing the top of a shaft, of a quarry and of an incline. The leading owner was fined Rs. 105, the other two owners were fined Rs. 25 each. The manager was fined Rs. 110. The leading owner was also prosecuted under section 15 (2), read with section 22 (3) (a), for not obeying an order made by the Inspector of Mines, No. 1 Circle, under section 15 (2), prohibiting the employment of women and children in the mine on account of its dangerous condition. He pleaded that he did not understand the purport of the order. In view of the fact that he had been fined under other counts, he was fined one rupee.

The owner of Babu Brojo Bhusan Trigunait's Ramkanali coal mine was prosecuted under rules 3, 7 and 19, read with section 22 (3) (e), for not keeping the roof of the mine secure, for not fencing unused galleries and for not fencing the top of an incline. He was fined Rs. 100.

The owner of Babu Pramotho Nath Chowdhury's Lakshmi coal mine was prosecuted under rule 19, read with section 22 (3) (e), and under rule 2 of Notification No. 11793-103, dated the 30th December 1908, read with section 22 (3) (b), for failing to fence the tops of three inclines and for failing to give notice of the discontinuance of the working of the mine. He was fined Rs. 55.

The part owner of the Brindabanpur Coal Company's Brindabanpur coal mine was prosecuted under section 13 (1), read with section 22 (3) (e), for not appointing a qualified manager. He had previously been warned. He was fined Rs. 75: in default fourteen days' simple imprisonment.

The following were prosecuted under rule 1 of Notification No. 11793—103, dated the 30th December 1908, read with section 22(2) (b), for not submitting an annual return within the prescribed date:—

- (1) The owner of the Dhansar Coal Company's Dhansar coal mine. Fined Rs. 45.
- (2) The owner of Babu Note Bihari Naug's Chandore coal mine. Fined Rs. 40.
- (3) The owner of the Thakar Coal Company's Sitla coal mine. Fined Rs. 40: in default simple imprisonment for two weeks.
- (4) The owner of Babu Pramatho Nath Chowdhury's Lakshmi coal mine. Fined Rs. 15.
- (5) The owners of Messrs. Indur Subbarama Reddi and Company's Jogipalli mica mine. After consultation with the Collector of Nellore district, the case was withdrawn.

Information was received regarding the following judgments in prosecutions initiated by managers against employes for breaches of the special rules, made under section 21 of the Act.

A miner at the Pench Valley Coal Company, Limited's Barkui coal mine was prosecuted under rule 6, read with section 22(1)(e), for crossing a fence. The case arose out of a fatal accident by fall of roof which proved fatal to a companion who accompanied him. He was fined Rs. 20: in default two weeks' imprisonment.

Seven miners at the Barakar Coal Company, Limited's Loyabad coal mine under rules 5, 7 and 21, read with section 22(3)(e), for doing an act likely to endanger his own safety, or of the safety of any other person, or of the mine in which he is employed, for crossing a fence, and for cutting coal from a pillar without being authorized. Two absconded, the remainder were fined Rs. 5 each: in default simple imprisonment for one week. Another miner at this mine was prosecuted on the same counts as the above. He absconded.

A miner at the Reliance Coal Company, Limited's Charanpur coal mine was prosecuted under rule 15, read with section 22(3)(e), for working in a place other than the one in which he had been ordered to work. The case arose out of a fatal accident by fall of roof by which another miner, who accompanied him, was killed. He absconded.

A surveyor at the Tata Iron and Steel Company, Limited's Choitodih-Malkera coal mine was prosecuted under rule 34, read with section 22(3)(e), for failing to make an accurate plan of the underground workings and to make an accurate survey, as directed by the manager. He was fined Rs. 50.

A sirdar at the Bengal Coal Company, Limited's Sodepur coal mine was prosecuted under rules 31 and 37, read with section 22(1)(e), for not complying with lawful orders issued by the manager or other official empowered to issue the same, and for not making a proper inspection of his district. He was sentenced to three months' rigorous imprisonment. Another sirdar was prosecuted under rule 37 read with section 22(3)(e), for not taking proper precautions to keep work persons at the station appointed until he had finished his inspection of the workings. He was fined Rs. 2: in default 14 days' simple imprisonment. These cases arose out of a fatal accident by explosion of gas, as described in part II of this report. The first accused was the night sirdar and should have detected the gas.

A sirdar at the Bengal Coal Company, Limited's Sodepur coal mine was prosecuted under rules 3 and 37, read with section 22(3)(e), for not obeying lawful commands and failing to make a proper inspection of his district. He was absent from work without leave. He was fined Rs. 5: in default simple imprisonment for one month.

A dust carrier at the New Beerbhūm Coal Company, Limited's Borrea coal mine was prosecuted under rules 7 and 15, read with section 22(3)(e), for crossing a fence and for working in a place other than the one in which he was ordered to work. The case arose out of an accident by fall of roof which

proved fatal to another miner who accompanied him. He absconded and has not been traced.

Three permits granted to managers of small mines and two authorizations to manage more than one mine were cancelled during the year, on account of mismanagement, disclosed by inspection.

ADDITIONS TO THE ACT.

During the year special rules under section 21 of the Act were established at 318 coal mines, making a total of 385, and at 21 manganese mines.

Section V.—General Remarks.

HEALTH AND SANITATION.

In the report for 1914 it was stated that the year passed without any serious outbreak of cholera. The situation in the year under report, however, was not so satisfactory. In (a) the Bengal coalfields there were at least 551 cases and 274 deaths, and in (b) the Bihar and Orissa coalfields 734 cases and 415 deaths. These figures for smallpox were (a) 279 and 35 and (b) 2,154 and 334.

An outbreak of cholera which occurred in Jharia Bazar during the month of March, and which caused 34 deaths, was reported upon by the Deputy Sanitary Commissioner, Chota Nagpur Circle. He considered that the infection was first conveyed from an outside area, that there was no evidence that the outbreak was spread by infected water, but that the distribution of cases pointed to the infection having been conveyed from house to house by contact with infected patients and by flies, with which he found the bazar teeming.

An outbreak of cholera at a colliery village at Giridih resulted in 39 deaths. The disease was conveyed by infected persons from the Jharia coalfield.

The Jharia Board of Health held fifteen meetings during the year. There was one change among the non-official members of the Board, Mr. W. S. Elphinstone replacing Dr. F. Simpson, who went on active service. The most important step taken was the appointment of a Chief Sanitary Officer, Dr. G. W. Thompson, M.B., D.Ph., who took up his duties on the 10th June 1915. Among many other subjects that have claimed the Board's attention have been the notification and suppression of epidemics, improvement and conservation of water supply, the improvement and sanitation of markets and destruction of condemned food stuffs, and the housing of colliery labour.

The Asansol Board, which was formed at the close of 1914, held its first meeting on the 27th March 1915. The official members were the District Magistrate, the Sub-divisional Officer, the Civil Surgeon and the Inspector of Mines, No. 2 Circle, and the non-official members were Messrs. F. J. Agabeg, Mr. T. Samson, Dr. W. P. O'Connor, and Babu Nibaran Chandra Sircar. Five meetings were held during the year and much preliminary work was done. It was decided to appoint a Chief Sanitary Officer.

Outside the coalfields of Bengal and of Bihar and Orissa, except for malaria in certain camps, the general health of miners in British India was good.

The rainfall in the Jharia coalfield was 38·83 inches; in the Giridih coalfield it was 33·68 inches; and in the Raniganj coalfield it was 39·43 inches. These figures for 1914 were 44·33, 42·55 and 46·06 inches, respectively.

MINING EDUCATION.

During the year under report, the important step was taken of dissolving both the Mining Sub-committee of the Board of Visitors of Sibpur College and the Mining Educational Advisory Board, and forming an entirely new Board, under the title of the Mining Education Advisory Board, to advise the Govern-

ments of Bengal and of Bihar and Orissa on all questions concerning mining education in these provinces both at Sibpur college and in the coalfields. Its composition was as follows: The Chief Inspector of Mines in India (Chairman); the two senior Inspectors of Mines; the Superintendent of Industries, Bengal; the Director of Industries, Bihar and Orissa, when such officer is appointed, and pending his appointment Mr. F. Walford, Principal of the Bihar School of Engineering and Inspector of Technical Schools; four representatives of the Indian mining community, including the Chairman of the Indian Mining Association; the Principal, Civil Engineering College, Sibpur (Secretary *ex-officio*); and the Professor of Mining, Civil Engineering College, Sibpur (Assistant Secretary *ex-officio*).

Of the four non-official members, three were nominated by the Indian Mining Association, and one by the Indian Mining Federation, which is the principal association of Indian colliery owners. The members in 1915 were Messrs. E. W. Bowrey (Chairman, Indian Mining Association), G. Miller, A. S. Thomson and Babu Narendra Nath Mukerji.

By this change mining education in the coalfields was brought directly under the Principal of the Civil Engineering College, Sibpur.

The new Board held one meeting at the close of the year. Three meetings were held by the old Board.

The Professor of Mining at Sibpur College reported that at the end of the session 1914-15, three students were granted diplomas, and three were passed from the junior to the senior course. Thirteen new students entered upon the junior mining course, and of these twelve sat for the annual examination at the end of the session 1915-16, five being promoted to the senior course. Five students sat for the diploma, all being successful.

The preliminary course mentioned in the last report as having just been sanctioned, has proved very successful in attracting students to the mechanical, electrical and mining branches of the college. Twenty-five sat for examination in March, and of these 17 passed, 12 of them joining the junior mining course. Probably about twenty new students in all will join the junior mining course for the session 1916-17. In the present session's preliminary course there are 40 students.

The mining camp in November and December was pitched at Bhaga in the Jharia coalfield. It was attended by 17 students from the college. The special class in mine surveying, in connection with this camp, was continued, the majority of the students being young men in the coalfields, who left their work temporarily to undergo this course. The number that can be admitted to this class is strictly limited to the amount of accommodation in camp and to the time available for teaching at the disposal of the staff. The class last year was 10, of which one was from the college and 9 were from the coalfields.

Mr. H. C. Read officiated as Professor of Mining until the 5th August. Mr. E. H. Robertson resumed duty, on return from furlough, on the 1st November.

Lectures in the coalfields were again given at five centres during the session 1914-15. The average number of attendances was 18.10. An average number of over 90 students therefore received instruction each week.

The sessional examination was held simultaneously at the various centres on the 7th June 1915, the examiner being Mr. H. C. Read, officiating Professor of Mining at Sibpur College. Thirty-four candidates presented themselves for examination of whom 18 were successful in passing. The highest marks were obtained by Babu Sibnarayan Pal (Raniganj centre). The examiner reported as follows:—"On consulting last year's report I am of opinion that the improvement shown has not been generally continued. The tendency apparent last year to rely on book knowledge has been substituted by the memorising of the synopsis, as is evidenced in their answers, which, in some cases, were entirely confined to this method. The lack of primary education was again painfully evident. The absence, too, of close study and technical knowledge by the examinees, who should have known better, is remarkable. A general improvement has been shown in sketching."

In addition to the English lectures, Babu Hemanta Kumar Sen was again appointed to deliver lectures in Bengali at six selected centres. A course of five lectures at each centre was given.

MINING AND GEOLOGICAL INSTITUTE OF INDIA.

The total membership of the Institute at the end of the year, including subscribers, was 276. In addition to the Annual Meeting, three ordinary general meetings were held during the year for the reading and discussion of papers and an excursion was made to Bhulanbarari and the neighbouring areas in the Jharia coalfield. The library has been removed to the coalfields and divided into two sections, one at Sitarampur and the other at Jharia. The Government prize for the best paper during the year was divided equally between Mr. R. H. Husband for his paper on "Practical notes on the various systems of underground haulage applicable to Indian mines" and Mr. R. S. Davies for his paper on "Hydraulic packing at Ballarpur colliery." Three medals—a gold, a silver and a bronze—are offered this year for the best papers read before the Institute on specified subjects.

ASSOCIATION OF COLLIERY MANAGERS IN INDIA.

The membership at the end of the year was 168, which is an increase of 6 on that of 1914. I have been informed by the Secretary that fifteen meetings of the Committee have been held during the year, at which various matters pertaining to the interests of managers have been discussed. General meetings have also been held and visits have been made to collieries and works.

BOARD OF EXAMINERS FOR COAL MINE MANAGERS' CERTIFICATES.

During the year, a change occurred among the non-official members of the Board, through the resignation, on retiring from India, of Mr. R. J. Browne. Mr. Browne was a member of the Board for over four years. He was one of the local examiners at the first examination held by the Board and undertook the duty subsequently, on more than one occasion. His services throughout were of the greatest value. He was succeeded by Mr. T. H. Ward. The tenure of office of Mr. S. Heslop expired during the year. He was re-elected for a further term of office. The Board, therefore, at the end of the year consisted of the Chief Inspector of Mines in India (*ex-officio* President) and Messrs. S. Heslop and T. H. Ward.

Five meetings were held during the year. There were fifteen first class and two second class applicants for Indian certificates of competency in lieu of English certificates. They were all granted certificates.

One first class certificate of service was granted during the year.

At the examination for colliery managers' certificates of competency held at Dhanbad in the East Indian Railway Institute on the 17th, 18th and 19th March 1915, thirty-nine candidates sat for first class and fifty-six for second class certificates. Certificates of competency were granted to five first class and eight second class candidates. The examiners were Messrs. J. S. Kean, W. J. Greener and R. R. Simpson, Inspector of Mines in India, No. 1 Circle (official examiner and secretary).

MINING BOARDS IN BENGAL AND BIHAR.

The Bengal Mining Board held four meetings during the year when the following subjects were considered:—

(1) Amendment of the Indian Mines Act, 1901; (2) amendment of rule 28 of rules regarding managers and their certificates; (3) amendment in Part IV of the rules issued by the Government of Bihar and Orissa under section 11 of the Bengal Mining Settlements Act, 1912; and (4) method of assessment under the Bengal Mining Settlements Act, 1912.

The non-official members were Messrs. W. Graham and Glen George.

The Bihar and Orissa Mining Board held three meetings during the year when the following subjects were considered:—

(1) Draft rules framed under section 11(2)(c) of the Bengal Mining Settlements Act II, 1912; (2) amendment of rule 28 of rules regarding mine managers and their certificates; (3) cancellation by District Officers of licenses held by proprietors and managers for using explosives; (4) the amendment of the Indian Mines Act; (5) the consideration of rule 19 of Notification No. 864-68—20, dated the 10th March 1904; and (6) the question of the legal advice available for the guidance of the Chief Inspector of Mines.

The non-official members were Messrs. T. H. Ward and R. G. M. Bathgate.

LAND ACQUISITION (MINES) ACT, 1885.

The work in connection with this Act continues to form a large proportion of the work of the Department of Mines. The number of original cases disposed of altogether at the end of 1915 stood at 264. In the majority of cases in which the mine has been worked contrary to the conditions laid down in the Local Government's declaration, specifications of protective works were drawn up. These works often involve the mine owner concerned in considerable expenditure. Very much of this could be obviated if those in supreme control of collieries would insist on all pillars and galleries under acquired land being measured up every six months and a plan being laid before them. The mere fact that such an order was extant would act as a considerable deterrent. Some firms have adopted the practice. At some mines the boundary of the acquired land is marked on the roof underground by a broad line. This at any rate takes away from the subordinate staff the opportunity for excuse on the ground that they did not know the position of the boundary underground.

OFFICIAL DUTIES IN 1914.

Mr. G. F. Adams was Chief Inspector of Mines in India.

Mr. R. R. Simpson was Inspector of Mines, No. 1 Circle. He was granted privilege leave from the 24th to the 31st October.

Mr. G. C. Leach was Inspector of Mines, Nos. 2 and 3 Circles.

Mr. C. J. E. David, Inspector of Mines in India, who was granted six months' combined leave from 5th October 1914, resigned his appointment in this Department, with effect from the 4th April 1915, the date on which the combined leave granted to him expired.

Mr. J. J. Turnbull, Junior Inspector of Mines, worked under the Inspector of Mines, Nos. 2 and 3 Circles. He was granted privilege leave from the 18th August to the 10th October.

Mr. J. Coggin Brown, Assistant Superintendent, Geological Survey of India, was appointed to be an Inspector of Mines in Burma, with effect from the 19th November 1915.

I have the honour to be,

SIR,

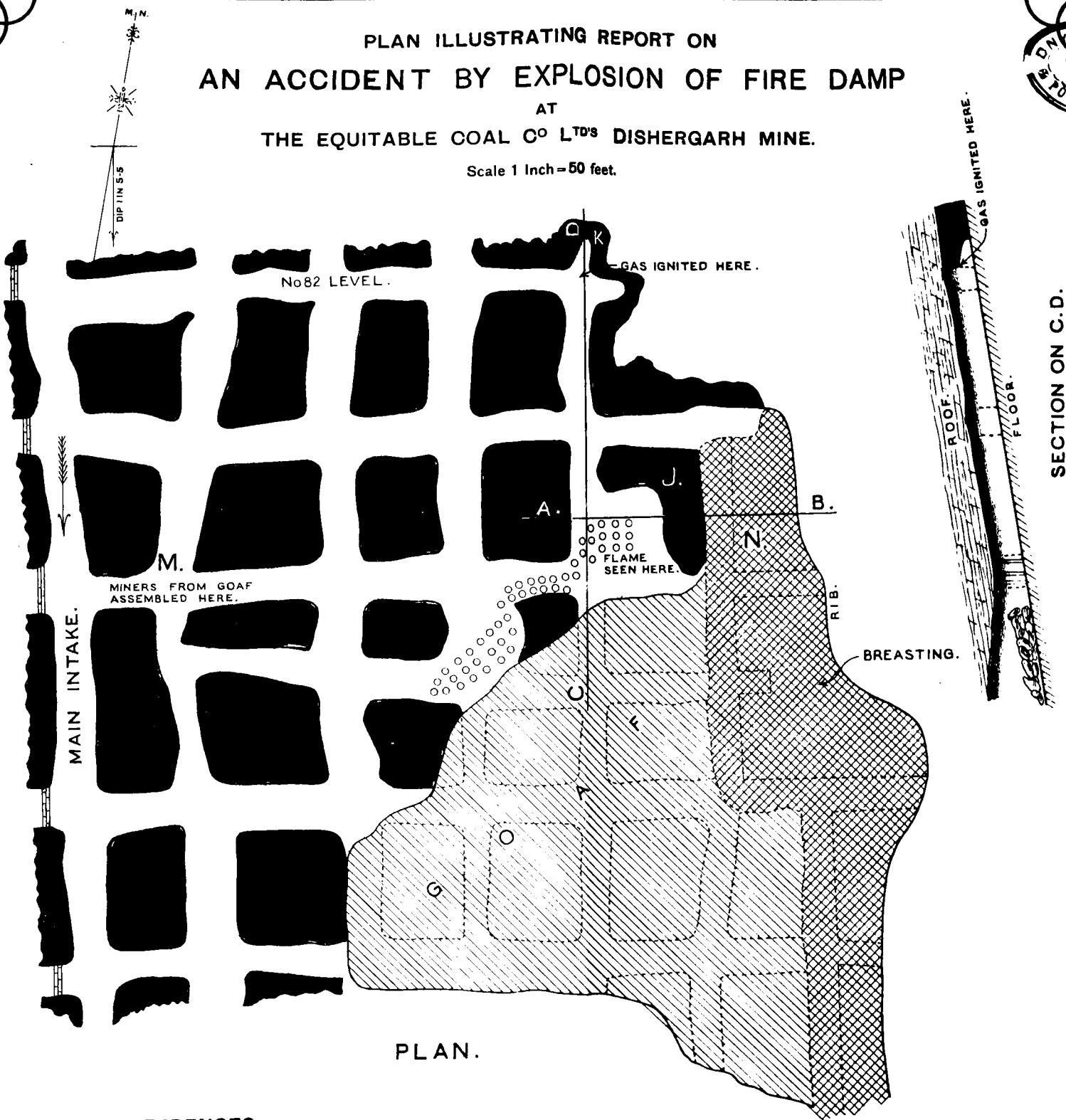
Your most obedient servant,

G. F. ADAMS,

Chief Inspector of Mines in India.






PLAN ILLUSTRATING REPORT ON AN ACCIDENT BY EXPLOSION OF FIRE DAMP AT THE EQUITABLE COAL CO L^{TD}'S DISHERGARH MINE.

Scale 1 Inch = 50 feet.



PLAN.

REFERENCES:

- Pillars of coal. 
- Stoppings. 
- Props. 
- Goaf formed from pillars. 
- Goaf formed by breasting in solid coal. 



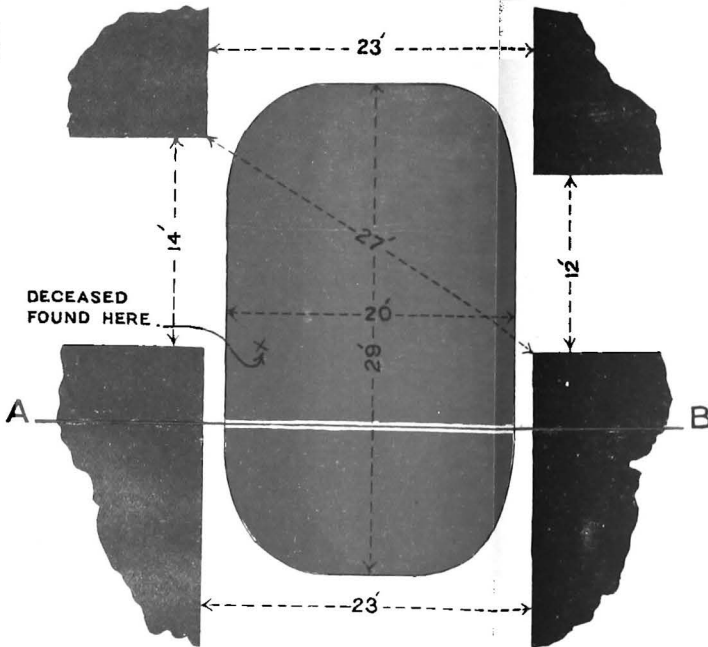
SECTION ON A.B.



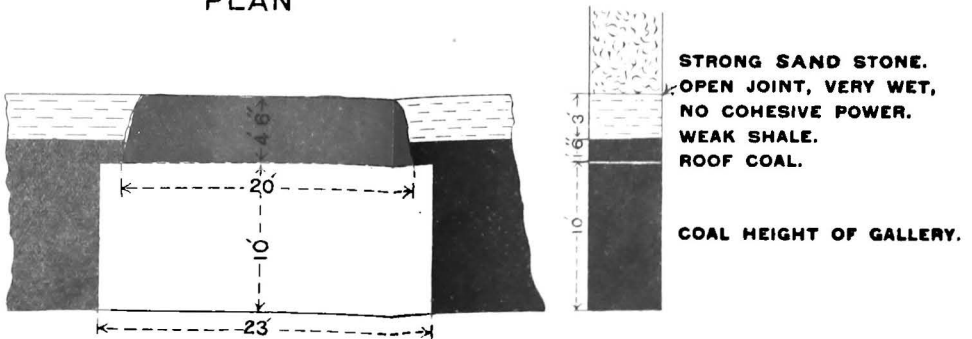
SECTION ON C.D.

PLAN ILLUSTRATING REPORT ON
 FATAL ACCIDENT BY FALL OF ROOF
 AT
 HARILADIH COAL OF LIP'S AKHALPUR MINE.

Scale 1 Inch = 10 feet.



PLAN



SECTION ON A B. SECTION OF STRATA.

REFERENCES

- Pillars of coal.....■
- Roof which fell.....■

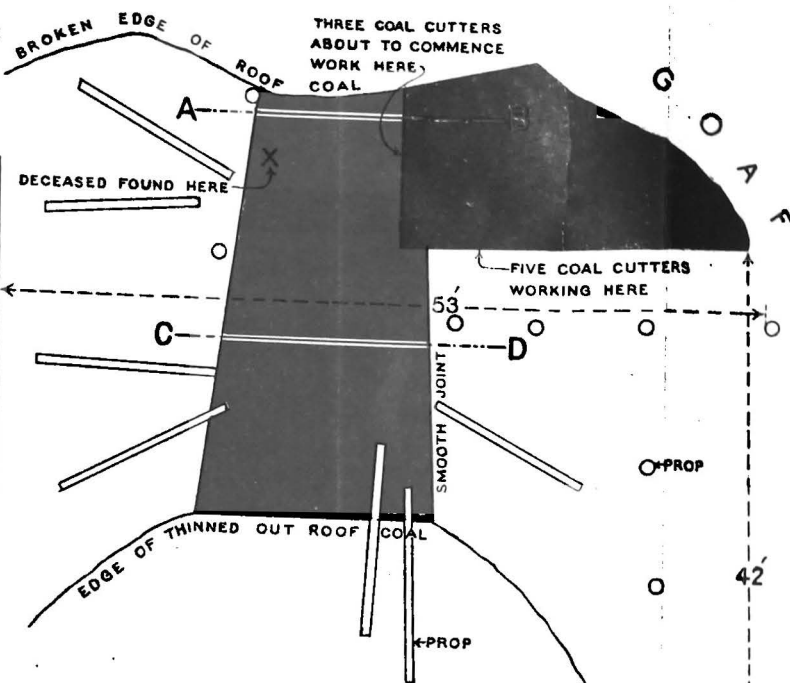
PLAN ILLUSTRATING REPORT ON
FATAL ACCIDENT BY FALL OF ROOF COAL

AT

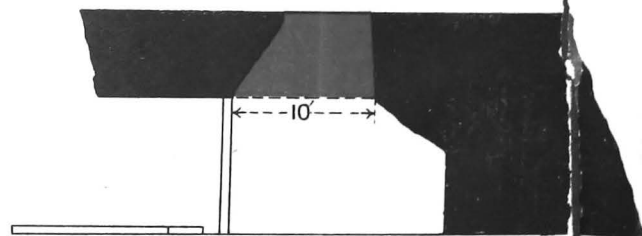
THE RANIGANJ COAL ASSOCIATION LTD'S KUSTORE MINE

Scale 1 Inch = 10 feet.

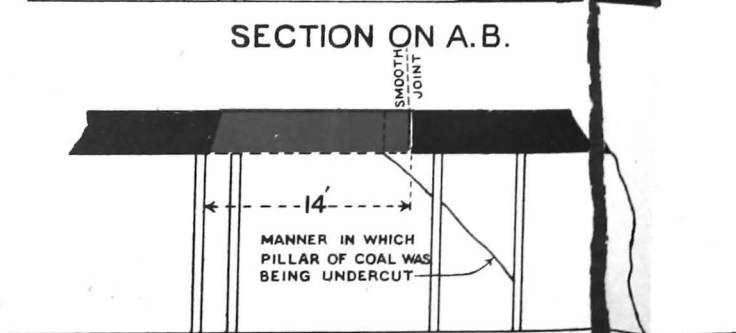
NOT
FALLEN



PLAN



SECTION ON A.B.

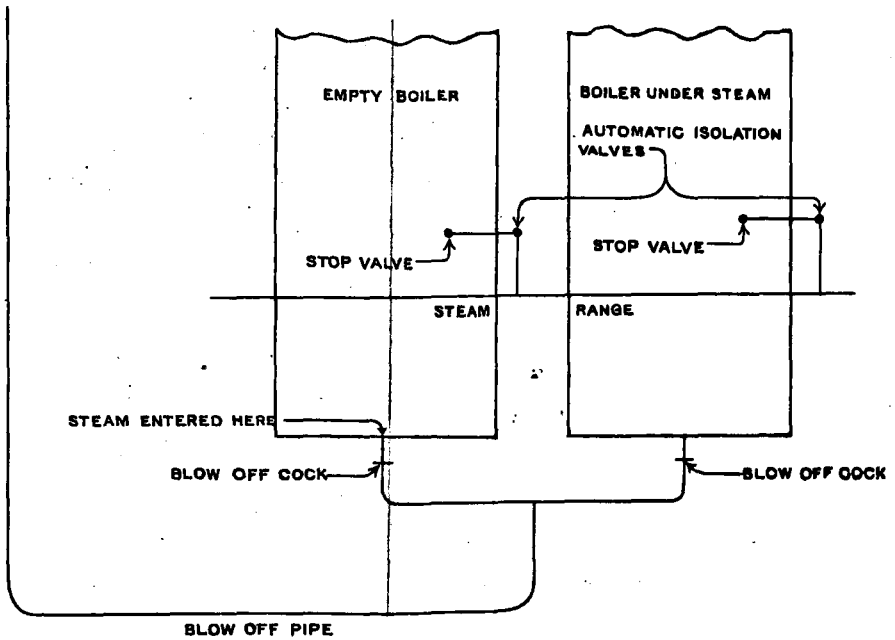


SECTION ON C.D.

REFERENCES.

- Props
- Roof coal which fell
- Pillars of coal
- Smooth joint

PLAN ILLUSTRATING REPORT ON
FATAL ACCIDENT BY AN INRUSH OF STEAM
AT
THE TATA IRON & STEEL COMPANY LTD'S BHELATAND MINE.

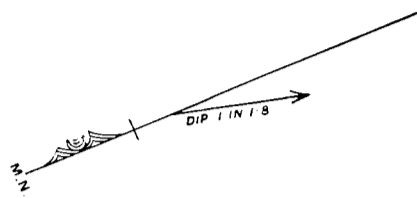
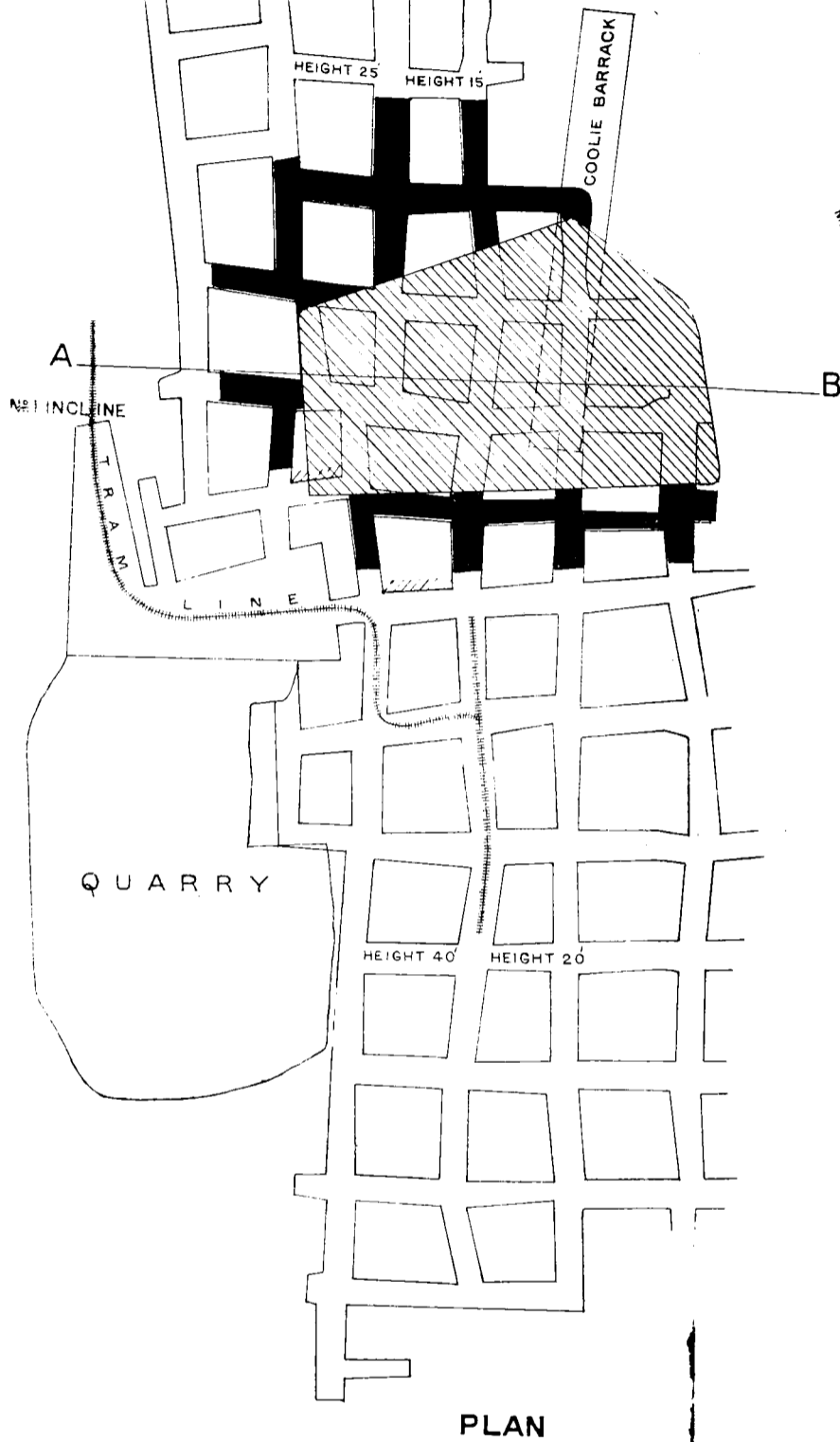


PLAN ILLUSTRATING REPORT ON FATAL ACCIDENT BY SURFACE SUBSIDENCE

AT

MESSRS. R. A. MUCADUM & SONS' CHANDA MINE.

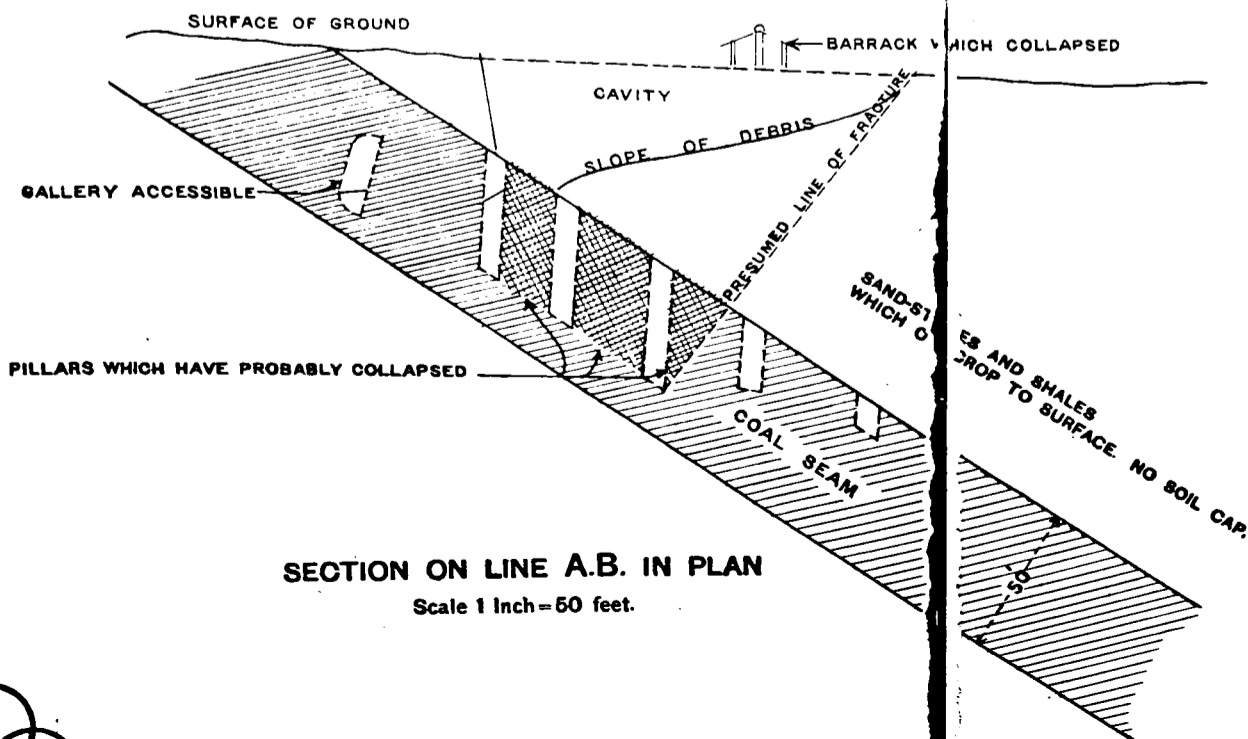
Scale 1 Inch = 50 feet.



REFERENCES:

- Pillars and galleries shown thus
- Area of surface subsidence shown thus
- Underground area filled with debris shown thus
- Pillars partially collapsed shown thus

PLAN

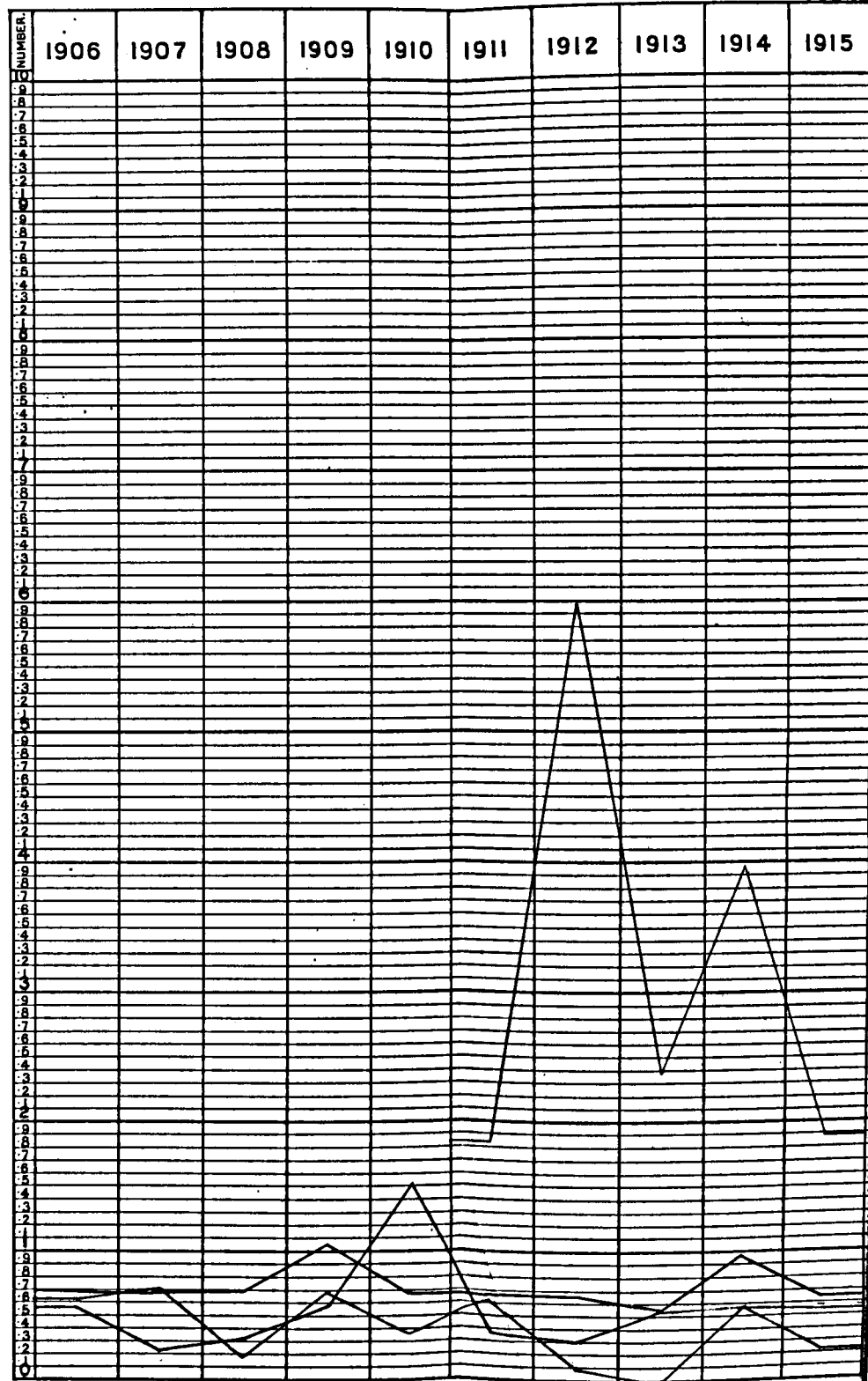
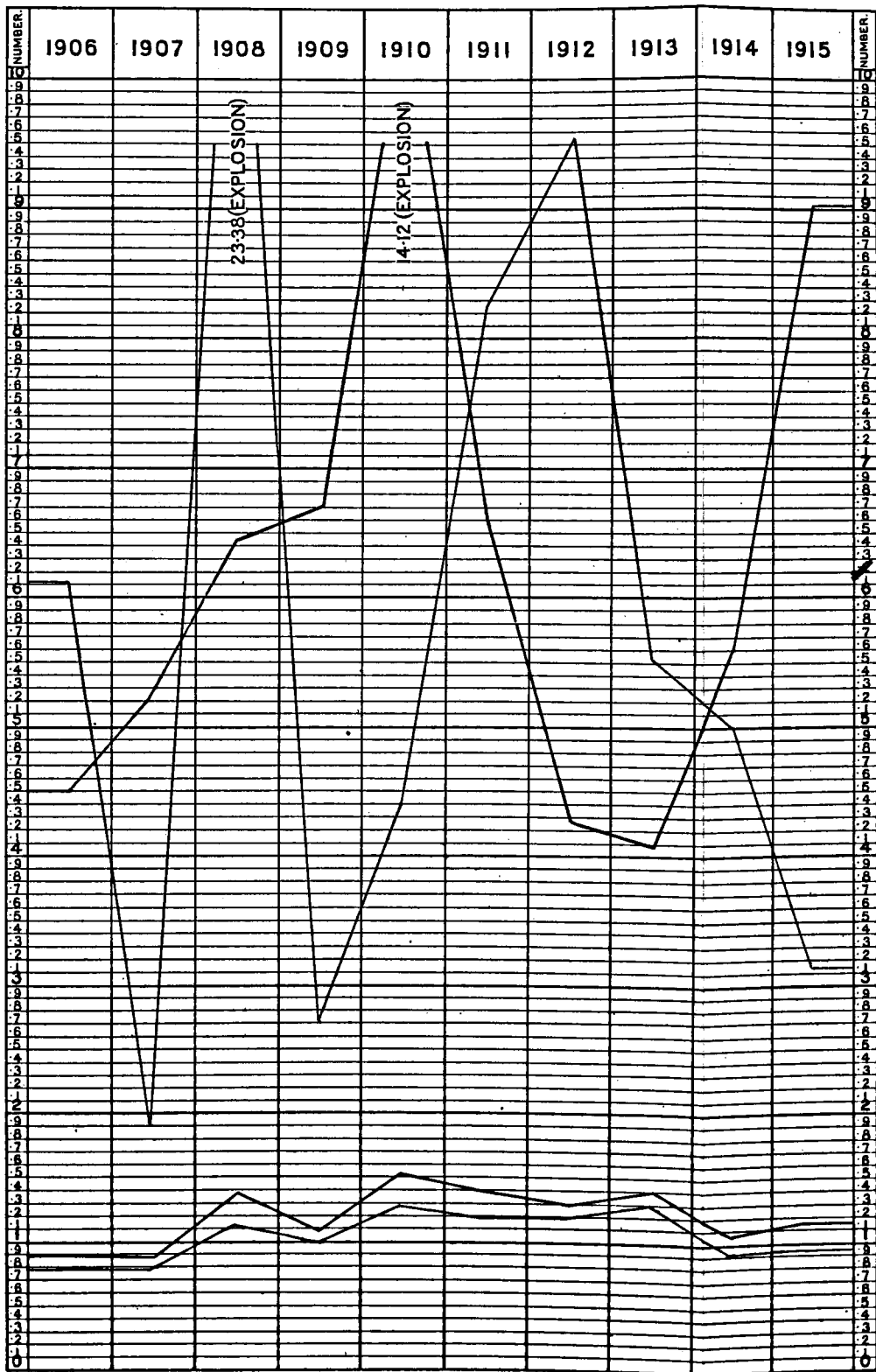


SECTION ON LINE A.B. IN PLAN

Scale 1 Inch = 50 feet.

SHOWING DEATH-RATES PER THOUSAND EMPLOYED
IN COAL MINES

SHOWING DEATH-RATES PER THOUSAND EMPLOYED
IN MINES OTHER THAN COAL MINES



REFERENCES:

REFERENCES:

All coal mines _____
 Mines in Bengal and in Bihar and Orissa _____
 Mines in Assam (Lakhimpur) _____
 Mines in Baluchistan _____

All mines other than coal mines _____
 Mica mines _____
 Manganese mines _____
 Wolfram mines _____

APPENDIX I—contd.

STATISTICS OF MINES AND MINERALS—contd.

Table No. 1—contd.

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1915—contd.

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.		NUMBER OF MINES INSPECTED DURING THE YEAR.		TOTAL OUTPUT.	AVERAGE NUMBER OF PERSONS EMPLOYED DAILY IN AND ABOUT THE MINES.								
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		BELOW GROUND.				ABOVE GROUND.				Grand total below and above ground.
								Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
Bihar and Orissa	Bokaro-Ranigarh Hazaribagh { Giridih Jharia Manbhum { Jharia Raniganj Palamau, Daltonganj Sambalpur, Hingir-Rampur Sonthal Parganas. { Jainty Raniganj	5	...	5	...	...	Tons. 4,333	36	43	2	81	17	12	2	31	112
		8	5	3	8	13	872,647	4,616	1,707	...	6,323	1,940	708	34	2,682	9,005
		7	3	4	1	1	63,579	768	828	40	1,636	238	83	4	375	2,011
		257	153	104	174	370	9,077,221	27,840	20,821	414	49,075	17,394	8,523	1,354	27,271	76,346
		71	7	64	43	65	507,077	2,265	1,203	3	3,471	987	510	38	1,535	5,006
		1	1	...	...	...	85,735	283	181	83	547	234	42	32	308	855
		1	1	...	1	2	58,825	306	125	...	431	134	29	4	217	648
		2	1	1	2	4	39,830	109	95	...	204	466	401	35	902	1,106
		2	...	2	2	2	2,059	14	9	...	23	6	2	...	8	31
			TOTAL	354	171	183	231	457	10,711,356	36,237	25,012	542	61,791	21,516	10,310	1,503	33,329	95,120
Burma	Bhamo	1	...	1	...	...	25	8	...	...	8	8	...	...	8	16
Central Provinces	Chanda, Ballarpur	3	2	1	2	3	94,880	514	33	4	551	203	72	7	282	833
	Chhindwara, Pench Valley	8	7	1	8	19	103,152	539	250	29	818	178	90	32	300	1,118
	Narsinghpur, Mohpani	1	1	...	...	...	55,086	534	270	...	804	363	53	...	416	1,220
	Yeotmal	1	...	1	...	...	...	5	...	...	5	8	...	...	8	13
	TOTAL	13	10	3	10	22	253,118	1,592	553	33	2,178	752	215	39	1,006	3,184

North-West Frontier Province.	Hazara	1	...	1	...	...	60	9	...	...	9	...	...	...	...	9
Panjab	Jhelum	5	...	5	4	4	51,613	657	...	13	670	339	...	13	352	1,022
	Mianwali	1	...	1	...	...	2,029	53	...	3	56	10	1	2	13	69
	Shahpur	2	...	2	...	...	4,269	117	...	...	117	65	...	...	65	182
	TOTAL	8	...	8	4	4	57,911	827	...	16	843	414	1	15	430	1,273
	GRAND TOTAL (COAL) FOR 1915.	583	334	249	429	884	16,352,480	59,111	35,596	806	95,513	32,195	15,614	2,015	50,024	145,537
	" " OF PRECEDING YEAR.	610	326	284	423	845	15,727,631	55,302	32,292	605	88,199	31,770	15,863	1,999	49,652	137,851
	DIFFERENCE	-27	+8	-35	+6	+39	+624,849	+3,809	+3,304	+201	+7,314	+425	-69	+16	+372	+7,686
Bihar and Orissa						B.-MICA.										
							Cwts.									
	Gaya	30	...	30	7	7	4,310	480	268	71	819	135	188	144	467	1,286
	Hamaribagh	248	...	248	27	28	13,986	1,981	1,029	286	3,206	1,219	1,115	474	2,808	6,104
	Monghyr	10	...	10	...	...	593	93	38	3	134	32	27	12	71	205
	TOTAL	288	...	288	34	35	19,299	2,554	1,335	360	4,240	1,386	1,330	630	3,446	7,595
Madras	Nellore	68	13	55	...	...	3,870	1,178	821	114	2,113	276	247	275	798	2,911
	TOTAL	68	13	55	...	...	3,870	1,178	821	114	2,113	276	247	275	798	2,911

APPENDIX I—contd.

STATISTICS OF MINES AND MINERALS—contd.

Table No. 1—contd.

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1915—contd.

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.		NUMBER OF MINES INSPECTED DURING THE YEAR.		TOTAL OUTPUT.	AVERAGE NUMBER OF PERSONS EMPLOYED DAILY IN AND ABOUT THE MINES.								Grand total below and above ground.
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		BELOW GROUND.				ABOVE GROUND.				
								Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
Rajputana	Ajmer	5	...	5	...	...	703	79	15	...	94	73	24	...	97	191
	Merwara	4	...	4	...	...	191	44	8	...	62	12	12	...	24	76
	Nasirabad	1	...	1	...	...	...	10	...	...	10	4	4	...	8	18
	TOTAL	10	...	10	...	...	894	133	23	...	156	89	40	...	129	285
	GRAND TOTAL (MICA) FOR 1915.	366	13	353	34	35	24,063	3,865	2,179	474	6,516	1,751	1,617	905	4,273	10,791
	" " OF PRECEDING YEAR.	582	15	567	93	96	38,189	6,376	3,847	693	10,916	2,405	2,312	1,352	6,069	16,985
	DIFFERENCE	-216	-2	-214	-59	-61	-14,126	-2,511	-1,668	-219	-4,398	-654	-695	-447	-1,796	-6,194
Bombay	Panch Mahals	2	2	...	...	...	26,915	490	243	77	810	123	30	7	160	970
Central Provinces	Balaghat	15	...	15	13	13	146,956	1,389	1,094	30	2,563	467	354	39	860	3,423
	Bhandara	8	...	8	5	6	68,822	391	391	16	798	310	207	56	573	1,371
	Chhindwara	2	1	1	2	2	46,941	406	431	26	363	32	16	3	101	964
	Jabalpur	1	...	1	...	...	...	5	12	...	17	2	5	2	9	26
	Nagpur	21	1	20	9	9	88,250	1,226	1,067	16	2,309	401	256	55	712	3,021
TOTAL	47	2	45	29	30	350,969	3,417	2,995	138	6,550	1,262	838	155	2,255	8,805	

Madras	Viragapatam	1	...	1	...	...	288	7	8	...	15	...	...	...	...	15
	GRAND TOTAL (MANGANESE) FOR 1915.	50	4	46	29	30	378,172	3,914	3,246	215	7,375	1,385	868	162	2,415	9,790	
	" " OF PRECEDING YEAR.	56	5	51	31	33	555,672	5,557	4,574	240	10,371	1,603	932	155	2,690	13,061	
	DIFFERENCE	-6	-1	-5	-2	-3	-177,500	-1,643	-1,328	-25	-2,996	-218	-64	+7	-275	-3,271	
							D.—LIMESTONE.										
							Tons.										
Central Provinces	Jabalpur, Katni	25	4	21	...	...	63,079	517	911	25	1,453	129	228	37	394	1,847
Panjab	Hoshiarpur	1	...	1	...	...	1,100	20	...	...	20	40	...	-	40	60
	GRAND TOTAL (LIMESTONE) FOR 1915.	26	4	22	...	...	64,179	537	911	25	1,473	169	228	37	434	1,907
	" " OF PRECEDING YEAR.	26	3	23	26	27	146,505	1,240	1,816	111	3,167	283	354	80	717	3,884	
	DIFFERENCE . . . . .	...	+1	-1	-26	-27	-82,326	-703	-905	-86	-1,694	-114	-126	-43	-283	-1,977
							E.—SALT.										
							Tons.										
Panjab	Jhelum	2	...	2	2	4	138,280	403	332	35	770	38	...	...	38	808
	Mianwali	1	...	1	1	2	1,439	60	...	17	77	...	...	...	...	77
	Shahpur	1	...	1	1	1	5,051	15	13	5	33	...	...	...	...	33
	GRAND TOTAL (SALT) FOR 1915.	4	...	4	4	7	144,770	478	345	57	880	38	...	...	38	918
	" " OF PRECEDING YEAR.	4	...	4	1	2	135,518	498	359	76	923	39	...	...	39	962
	DIFFERENCE . . . . .	...	...	...	+3	+5	+9,252	-10	-14	-19	-43	-1	...	...	-1	-44

APPENDIX I—contd.

STATISTICS OF MINES AND MINERALS—contd.

Table No. 1—contd.

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1915—contd.

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.		NUMBER OF MINES INSPECTED DURING THE YEAR.		TOTAL OUTPUT.	AVERAGE NUMBER OF PERSONS EMPLOYED DAILY IN AND ABOUT THE MINES.								
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		BELOW GROUND.				ABOVE GROUND.				Grand total below and above ground.
								Adult males.	Adult females.	Children (under 13).	Total below ground.	Adult males.	Adult females.	Children (under 13).	Total above ground.	
Burma	Mogok	...	...	...	...	...	F.—GEMS. (a)—Rubies. Carats. 167,904									
	Mogok	3	3	...	...	...	(b) Sapphires. 39,718	551	...	...	551	421	...	...	421	972
	Mogok	...	...	...	...	...	(c) Spinels. 43,827									
	TOTAL	...	...	...	...	...	251,449	551	...	...	551	421	...	...	421	972
	GRAND TOTAL (Gems) FOR 1915.	3	3	...	...	...	251,449	551	...	...	551	421	...	...	421	972
	" " OF PRECEDING YEAR.	8	8	...	...	...	304,042	857	...	...	857	872	...	...	872	1,729
	DIFFERENCE	-5	-5	...	...	...	-52,593	-306	...	...	-306	-451	...	...	-451	-757
Bihar and Orissa	Monghyr	4	...	4	3	3	G.—SLATE. Tons. 2,700	113	54	54	221	61	...	...	61	282
	Gurdaspur Gurgaon Kangra	1 5 5	...	1 5 5	...	...	13 1,995 5,902	...	...	...	...	1 17 147	...	...	1 19 175	1 213 355

	TOTAL	11	...	11	...	...	7,910	278	40	56	374	165	12	18	195	569
	GRAND TOTAL (SILVER) FOR 1915.	15	...	15	3	3	10,610	391	94	110	595	226	12	18	256	851
	" " OF PRECEDING YEAR.	15	...	15	3	3	12,430	425	56	118	599	261	41	40	342	941
	DIFFERENCE . . .	...	-	...	...	...	-1,820	-34	+38	-8	-4	-35	-29	-23	-86	-90
	H.—GOLD.															
Bihar and Orissa	Singhbhum	1	-	1	...	...	Ozs. 450	78	-82	...	110	18	8	2	28	138
Madras	Anantapur	4	4	...	3	5	23,870	897	...	...	897	815	173	140	1,128	2,025
	GRAND TOTAL (GOLD) FOR 1915.	5	4	1	3	5	24,320	975	32	...	1,007	833	181	142	1,156	2,183
	" " OF PRECEDING YEAR.	3	3	...	...	...	19,873	606	...	...	606	1,013	250	169	1,432	2,038
	DIFFERENCE . . .	+2	+1	+1	+3	+5	+4,447	+369	+32	...	+401	-180	-69	-27	-276	+135
	I.—IRON.															
Bihar and Orissa	Puri	1	1	...	...	...	Tons. 53	...	...	...	...	44	...	26	70	70
	Singhbhum	1	1	...	...	...	123,764	434	257	37	728	94	18	1	113	841
	TOTAL	2	2	...	...	...	123,817	434	257	37	728	138	18	27	183	911
Central Provinces	Chanda	1	-	1	...	...	2,800	11	9	...	20	23	17	1	40	60
	GRAND TOTAL (IRON) FOR 1915.	3	2	1	...	...	126,617	445	266	37	748	160	35	28	223	971
	" " OF PRECEDING YEAR.	4	1	3	...	...	167,600	652	346	58	1,056	97	25	10	132	1,188
	DIFFERENCE . . .	-1	+1	-2	...	...	-40,983	-207	-80	-21	-308	+63	+10	+18	+91	-217

APPENDIX I—contd.

STATISTICS OF MINES AND MINERALS—contd.

Table No. 1—contd.

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1915—contd.

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.		NUMBER OF MINES INSPECTED DURING THE YEAR.		TOTAL OUTPUT.	AVERAGE NUMBER OF PERSONS EMPLOYED DAILY IN AND ABOUT THE MINES.									
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		BELOW GROUND.				ABOVE GROUND.				Grand total below and above ground.	
								Adult males.	Adult females.	Children (under 13).	Total below ground.	Adult males.	Adult females.	Children (under 13).	Total above ground.		
Burma	Tavoy	38	1	37	...	...	39,432	1,740	1	...	1,741	1,336	110	...	1,446	3,187
	J.—WOLFRAM.																
							Cwts.										
		GRAND TOTAL (WOLFRAM) FOR 1915.	38	1	37	39,432	1,740	1	...	1,741	1,336	110	...	1,446	3,187
	" " OF PRECEDING YEAR.	43	1	42	18	22	31,526	1,825	32	...	1,857	1,069	90	16	1,175	3,032	
	DIFFERENCE	-5	...	-5	-18	-22	+7,906	-85	-31	...	-116	+267	+20	-16	+271	+155	
Madras	K.—MAGNESITE.																
							Tons.										
	Salem	2	...	2	...	...	7,450	198	169	133	500	74	...	28	102	602
	TOTAL OF PRECEDING YEAR .	2	...	2	...	...	399	12	...	21	33	37	...	10	47	80
	DIFFERENCE . . . .	...	...	...	...	...	+7,051	+186	+169	+112	+467	+37	...	+18	+55	+522

		L.-CHROMITE.														
								Cwts.								
Baluchistan	Quetta-Pishin	1	1	...	...	...	980	4	...	...	4	4	...	...	4	8
	Zhob	5	...	5	...	...	28,320	50	...	...	50	27	...	...	27	77
GRAND TOTAL (CHROMITE) FOR 1915.		6	1	5	...	...	29,300	54	...	...	54	31	...	...	31	85
TOTAL OF PRECEDING YEAR		10	1	9	...	...	60,120	39	...	...	39	31	...	...	31	70
DIFFERENCE		-4	...	-4	...	...	-30,820	+15	...	...	+15	...	...	...	...	+15
		M.-COPPER ORE.														
								Tons:								
Bihar and Orissa	Singhbhum	1	1	...	1	5	8,010	445	...	...	445	843	136	...	979	1,424
	Kathe	1	...	1	...	...	...	18	...	...	18	7	...	...	7	25
Burma	Kyaukse	1	...	1	...	...	...	43	...	...	43	38	...	...	38	81
	Lower Chindwin	2	...	2	...	...	...	208	...	...	208	87	21	...	108	316
	TOTAL	4	...	4	...	...	...	269	...	...	269	132	21	...	153	422
GRAND TOTAL (COPPER) FOR 1915.		5	1	4	1	5	8,010	714	...	...	714	975	157	...	1,132	1,646
TOTAL OF PRECEDING YEAR		1	1	...	1	5	4,400	402	...	...	402	841	564	60	1,465	1,867
DIFFERENCE		+4	...	+4	...	...	+3,610	+312	...	...	+312	+134	-407	-60	-333	-21
		N.-BAUXITE.														
								Cwts.								
Central Provinces	Jabalpur	1	...	1	...	...	17,520	20	18	...	38	3	...	...	3	41
	TOTAL OF PRECEDING YEAR	1	...	1	...	...	9,280	16	13	...	28	5	...	...	5	33
DIFFERENCE		...	...	...	...	...	+8,240	+4	+6	...	+10	-2	...	...	-2	+8

APPENDIX I—contd.

STATISTICS OF MINES AND MINERALS—concl'd.

Table No. 1—concl'd.

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1915—concl'd.

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.		NUMBER OF MINES INSPECTED DURING THE YEAR.		TOTAL OUTPUT.	AVERAGE NUMBER OF PERSONS EMPLOYED DAILY IN AND ABOUT THE MINES.									
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		BELOW GROUND.				ABOVE GROUND.				Grand total below and above ground.	
								Adult males.	Adult females.	Children (under 15).	Total below ground.	Adult males.	Adult females.	Children (under 15).	Total above ground.		
Madras	Nellore	...	...	...	...	...	T.—SAMARSKITE. lbs. 2	...	...	...	...	...	...	...	...	...	...
	TOTAL OF PRECEDING YEAR	...	...	...	...	...	Cwts. lbs. 43 0	...	...	...	...	...	...	...	...	...	...
	DIFFERENCE	...	...	...	...	...	Cwts. lbs. —42 110	...	...	...	...	...	...	...	...	...	...
Central Provinces	Jabalpur	1	...	1	...	...	Tons. 139	...	...	...	...	...	...	...	...	...	...
	TOTAL OF PRECEDING YEAR	1	...	1	1	1	109	...	...	...	...	...	...	...	...	...	...
	DIFFERENCE	...	...	...	—1	—1	+30	...	...	...	...	...	...	...	...	...	...

GRAND TOTAL (ALL MINERALS) 1915.	1,121	368	753	503	969	Tons. 17,124,855 Cwts. 110,784 lbs. 84 Carats. 251,449 Troy ounces. 24,832	73,119	43,033	1,865	118,017	39,668	19,063	3,340	62,071	180,088
GRAND TOTAL OF PRECEDING YEAR.	1,387	369	1,018	603	1,040	Tons. 16,903,215 Cwts. 151,897 lbs. 16 Carats. 304,042 Troy ounces. 19,873	74,500	43,638	1,933	120,071	40,674	20,541	3,925	65,140	185,211
DIFFERENCE	-266	-1	-265	-100	-71	Tons. +221,640 Cwts. -41,163 lbs. +68 Carats. -62,593 Troy ounces. +4,959	-1,381	-605	-63	-2,054	-1,006	-1,478	-585	-3,069	-5,123

* Won from Sankara mica mine in Madras.
 † Labour figures included with those for Jaisalpur Khamtone.

APPENDIX I—contd.

Table No. 2.
Number of mines opened and closed during the year ending 31st
December 1915.

Province.	District.	Number of mines opened.	Number of mines closed.	
A.—COAL.				
BALUCHISTAN	Quetta-Fishin	2	1	
	Sibi-Khost	2	1	
TOTAL		4	2	
BENGAL	Bankura . . . . .	...	1
	Burdwan-Raniganj	12	17	
TOTAL		12	18	
BIHAR AND ORISSA	Hazaribagh {	Bokaro-Ramgarh	5	2
		Giridih	1
	Manbhum {	Jharis	1	2
		Raniganj	11	22
	Sonthal Parganas, Raniganj	1	10	
TOTAL		18	38	
BURMA	Bhamo	1	1	
CENTRAL PROVINCES	Chanda	1	...	
	Chhindwara	1	1	
	Yeotmal	1	...	
TOTAL		3	1	
PANJAB	Mianwali	1	1	
TOTAL (COAL)		39	61	
B.—MICA.				
BIHAR AND ORISSA	Gaya	6	7	
	Hazaribagh	88	49	
	Monghyr	1	2	
TOTAL		95	58	
MADRAS	Nellore	19	13	

APPENDIX I—*contd.*Table No. 2—*concl'd.*

Number of mines opened and closed during the year ending 31st
December 1915—*concl'd.*

Province.	District.	Number of mines opened.	Number of mines closed.
RAJPUTANA	Ajmer . . . . .	...	2
	Nasirabad	1	...
	TOTAL	1	2
TOTAL (MICA)		115	78
CENTRAL PROVINCES	C.—MANGANESE.		
	Balaghat	2	...
	Bhandara	1	...
	Nagpur	10	...
TOTAL (MANGANESE)		13	...
CENTRAL PROVINCES	D.—LIMESTONE.		
	Jabalpur	3	5
PANJAB	E.—SLATE.		
	Gurgaon	1	1
MADRAS	F.—GOLD.		
	Anantapur . . . . .	...	1
CENTRAL PROVINCES	G.—IRON.		
	Chanda . . . . .	...	1
BURMA	H.—WOLFRAM.		
	Tavoy	11	1
BURMA	I.—COPPER.		
	Kathe	1	...
	Kyaukse	1	...
	Lower Chindwin	1	..
TOTAL (COPPER)		3	...
CENTRAL PROVINCES	J.—BAUXITE.		
	Jabalpur . . . . .	...	1
BIHAR AND ORISSA	K.—CLAY.		
	Manbhurn	2	...
CENTRAL PROVINCES	L.—GALENA.		
	Drug	1	1
BIHAR AND ORISSA	M.—TIN.		
	Hazaribagh . . . . .	...	1
GRAND TOTAL (ALL MINES)		188	146

APPENDIX I—*concl'd.*

Table No. 3.

The following table shows the fluctuations in the output of the principal minerals raised from mines classed under the Indian Mines Act, 1901. The other minerals raised are gems, slate, iron ore, magnesite, chromite, tin, steatite, clay, galena, samarskite, bauxite, fuller's earth and silver.

YEAR.	Coal.	Manganese.	Mica.	Limestone.	Salt.	Wolfram.	Gold.	Copper.
	Tons.	Tons.	Cwts.	Tons.	Tons.	Cwts.	Troy ozs.	Tons.
1906 . . .	9,112,663	436,442	50,438	48,836	118,023	...	...	...
1907 . . .	10,526,468	642,082	44,919	73,222	101,708	...	4,017	...
1908 . . .	12,149,020	494,942	46,208	101,569	93,779	...	7,242	10
1909 . . .	11,294,227	357,205	32,011	56,502	126,987	144	5,615	7
1910 . . .	11,387,716	468,669	21,375	81,258	119,867	18	3,269	864
1911 . . .	12,048,726	441,426	31,686	92,692	124,603	8,394	8,277	2,079
1912 . . .	14,044,368	423,464	41,660	91,784	131,233	25,401	7,269	8,984
1913 . . .	15,486,318	637,391	43,650	71,259	133,540	27,520	11,019	3,639
1914 . . .	15,727,631	555,672	38,189	146,505	135,518	31,526	19,873	4,400
1915 . . .	16,352,480	373,172	24,063	64,179	144,770	39,432	24,320	3,010

Table No. 4.

The following table shows the amount of coal raised, the average number of persons working daily and the death-rates during the years 1906 to 1915 in respect of coal mines under the Indian Mines Act, 1901 :—

YEAR.	Amount of coal raised.	Average number of persons working daily below and above ground.	Number of deaths below and above ground.	DEATH-RATES.	
				Per 1,000,000 tons raised.	Per 1,000 persons working daily below and above ground.
1906 . . .	9,112,663	90,159	80	8.78	.89
1907 . . .	10,526,468	102,689	89	8.45	.86
1908 . . .	12,149,020	120,107	164	13.49	1.36
1909 . . .	11,294,227	109,291	119	10.53	1.08
1910 . . .	11,387,716	105,285	160	14.05	1.52
1911 . . .	12,048,726	106,598	148	12.28	1.38
1912 . . .	14,044,368	131,392	157	11.17	1.29
1913 . . .	15,486,318	133,042	185	11.95	1.39
1914 . . .	15,727,631	137,851	145	9.22	1.05
1915 . . .	16,352,480	145,537	166	10.15	1.14

APPENDIX II.
ACCIDENTS IN MINES.

Table No. 1.

List of Fatal Accidents in mines regulated by the Indian Mines Act, 1901, during the year 1915.

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 OF FIRE DAMP—(1 death).						
1	8th November, 7-15 A.M.	Sodepur Mine, Sitarampur P. O., Bengal.	Bengal Coal Co., Ltd.	Roghu Manjhi, (m.), 24, <i>Miner.</i>	Coal	Deceased entered a gallery in the early morning with a naked light and ignited an accumulation of gas. An explosion followed and he was burned so severely that he died ten hours later. The night sirdar had failed to detect the gas and it is surmised that he did not inspect the gallery. The night sirdar and two other men were prosecuted for a breach of special rules. Inspection and inquiry made. <i>See Report, page 6.</i>
FALLS OF ROOF AND SIDES—(93 deaths).						
(a) Falls of roof—(51 deaths).						
2	11th January, 9 P.M.	Mohpani Mine, Mohpani P. O., Central Provinces.	Great Indian Peninsula Railway.	Harku Katia, (f.), 35, <i>Coal carrier.</i>	Coal	A fall of roof stone occurred in the working place where deceased was carrying coal. She sustained an injury to her thigh and died nine days afterwards.
3	13th January, 10 A.M.	West Ledo Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Pancham Chamar, (m.), 28, <i>Rail mistri.</i>	Coal	Whilst a coal cutter was cutting roof coal to make height on a pony haulage road, a mass of about 2 tons of coal fell from concealed 'slips.' Deceased and another man were passing at the time. The former was killed and the latter sustained a fracture of the thigh. Inquiry made.
4	18th January, 3 P.M.	No. 4 Khoet Mine, Khoet P. O., Baluchistan.	North-Western Railway	Ali Mahomed, (m.), 25, <i>Carpenter.</i>	Coal	Deceased was fixing a setting near the face of a gallery when a piece of shale, measuring 30' x 8' x 11' thick, fell upon his back from the seam overhead, a height of 7' 6". He received injuries to his spine, from the effects of which he died nearly three months later. Inspection and inquiry made.
5	20th January, 1 A.M.	West Ledo Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Dimbeswar Kalita, (m.), 26, <i>Coal shoveller.</i>	Coal	Whilst shovelling coal in a 'chamber,' measuring 18' x 27' x 12' high, deceased was killed by the fall of about 3 tons of coal from the roof. Inquiry made.
6	29th January, 11-30 P.M.	Sanctoria Mine, Disbargarh P. O., Bengal.	Bengal Coal Co., Ltd.	Sriminato Bauri, (m.), 38, <i>Miner.</i>	Coal	Deceased, during the legitimate absence of the sirdar, commenced to rob the top of a main road pillar. Whilst so engaged a mass of roof stone, measuring 8' x 3' x 2' 3", fell upon him and caused injuries from which he died within half an hour. Inquiry made.
7	30th January, 3 P.M.	Sinidih Mine, Katraagarh P. O., Bihar and Orissa.	New Simdih Coal Co., Ltd.	Noyan Bauri, (m.), 40, <i>Coal cutter.</i>	Coal	Whilst cutting stone from the floor on a main haulage road deceased was killed by a fall of roof stone, measuring 27' x 18' x 3' to 10' thick. Inspection and inquiry made.

APPENDIX II—*contd.*

Fatal Accidents, 1915—*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>						
(a) Falls of roof—<i>contd.</i>						
8	5th February, 4 A.M.	Sijua Mine, Sijua P. O., Bihar and Orissa.	Sijua Coal Co., Ltd.	Behari Mahato, (m.), 24, <i>Miner.</i>	Coal	Deceased passed through a fence in a pillar cutting district and whilst cutting coal from an abandoned 'stook' was killed by the fall of roof stone 6" thick and 30' x 25' in area. Inspection and inquiry made.
9	5th February, 8-30 A.M.	Nuni Mine, Asansol P. O., Bengal.	Baraboni Coal Concern, Ltd.	Singrai Manjhi, (m.), 22, <i>Miner.</i>	Coal	Deceased was working in a gallery of a pillar cutting district. Whilst so engaged, a mass of stone fell from the roof in front of him owing to a prop having been accidentally knocked out by falling coal. A corner of the stone fell upon him and injured him so severely that he died shortly afterwards. Inspection and inquiry made.
10	9th February, 7 P.M.	Dhobidih Mine, Giridih P. O., Bihar and Orissa.	Bengal Giridih Coal Co., Ltd.	Rupu Meah, (m.), 14, <i>Miner.</i>	Coal	Deceased and a companion were sitting in their working gallery sharpening their tools preparatory to commencing work, when a mass of roof stone, measuring 5' 6" x 3' 6" x 1' 3", tapering to feather edges, fell from a height of 3' 3" upon them. Deceased was killed instantly and his companion was slightly injured. Inspection and inquiry made.
11	20th February, 3-45 A.M.	Akhalpur Mine, Nandi P. O., Bengal.	Hariladih Coal Co., Ltd.	Chaltar Manjhi, (m.), 30, <i>Miner.</i>	Coal	Deceased was sleeping at the point of junction of four galleries when a mass of stone and coal, measuring 29' x 20' x 4' 6", fell upon him from a height of 10 feet. He was killed outright. Inspection and inquiry made. <i>See Report, page 8.</i>
12	26th February, 12-30 P.M.	Kustore Mine, Kustore P. O., Bihar and Orissa.	Raniganj Coal Association, Ltd.	Sedhu Manjhi, (m.), 36, <i>Miner.</i>	Coal	Deceased, in the legitimate absence of the sirdar, left his working place to cut coal in an adjacent gallery. Whilst so engaged, a mass of roof coal, measuring 25' x 8' x 1' 4", fell upon him from a height of 9' 6". He was killed outright. Inspection and inquiry made.
13	27th February, 7-30 P.M.	Kessabganj Mine, Kalipahari P. O., Bengal.	Gunpat Ram Marwari	Chandmani Manjhian, (f.), 18, Mani Manjhian, (f.), 14, <i>Kamins.</i>	Coal	The two deceased were loading coal in a gallery. Whilst so engaged, a mass of roof coal and shale, measuring 12' x 9' x 6", fell upon them. They were killed outright. The roof at this place had been cut improperly and without orders by the miners by whom these women were employed, and who absconded after the accident. Inspection and inquiry made.
14	28th February, 9 P.M.	Tirap Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Wang Kwa Fo, (m.), 25, <i>Coal filler.</i>	Coal	Whilst deceased was loading coal into a basket in a 'chamber' measuring 10' x 10' x 8' high, about half a ton of coal fell from the roof upon him. He sustained a fracture of the thigh and died from internal bleeding in hospital a few hours later. Inquiry made.
15	6th March, Midnight.	Baraboni Mine, Asansol P. O., Bengal.	Baraboni Coal Concern, Ltd.	Dhasu Roy, (m.), 30, <i>Miner.</i>	Coal	Deceased went behind a fence into an unused gallery to rob a pillar. Whilst so engaged, a mass of roof and side coal, about 15 tons in weight, fell upon him. He died two hours later from injuries received. Inspection and inquiry made.

16	19th March, 11 A.M.	Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Mongru Oraon, (m.), 22, <i>Coal cutter</i> ; Somaru Gore, (m.), 40, <i>'Opening' man.</i>	Coal	Whilst a gang of coal cutters were at work in a new 'opening', measuring 20' x 12' x 3' 6" high, a mass of coal fell from concealed 'slips' in the roof. Mongru was killed on the spot and Somaru succumbed to his injuries twelve days later. Inquiry made.
17	22nd March, 9 A.M.	Barkui Mine, Pench P. O., Central Provinces.	Pench Valley Coal Co., Ltd.	Prayag Lodh, (m.), 28, <i>Miner.</i>	Coal	Deceased entered a fenced place near the goaf edge and commenced to extract coal from a thin seam lying above the working seam. A fall of stone occurred striking him on the head and killing him. Another workman, who was with him, was prosecuted under special rule 6 and fined Rs. 20 or two weeks' imprisonment.
18	24th March, 8 A.M.	North Kustore Mine, Kustore P. O., Bihar and Orissa.	Raniganj Coal Association, Ltd.	Santi Korin, (f.), 18, <i>Coal carrier.</i>	Coal	Whilst five coal cutters were extracting a pillar of coal in a pillar cutting district, a mass of roof coal, weighing about 35 tons and measuring 28' x 14' x 1' 8" to 4' 0" thick, fell from the roof swaying out seven props beneath it. Deceased was killed on the spot and a sirdar was severely injured by the falling coal. Inspection and inquiry made. <i>See Report, page 8.</i>
19	29th March, 9 A.M.	Basundni Mine, Jawaja P. O., Rajputana.	Rajputana Mica and Minerals Co., Ltd.	Natha, (m.), 29, <i>Miner.</i>	Mica	Deceased was working against orders in an abandoned working extracting mica from a supporting pillar, when about 2 tons of roof stone fell upon him causing instant death.
20	5th April, 2-30 P.M.	Bhowra Mine, Jamadoba P. O., Bihar and Orissa.	Eastern Coal Co., Ltd.	Dukhu Rajwar, (m.), 40, <i>Coal cutter.</i>	Coal	Whilst deceased was standing on a barrel and cutting down roof coal he was struck by a mass of coal, weighing about 25 cwts., which fell unexpectedly from between two smooth 'joints'. He succumbed two days later presumably from internal injuries. Inspection and inquiry made.
21	12th April, 2 P.M.	Mucheridih Mine, Mohoda P. O., Bihar and Orissa.	Mucheridih Coal Co., Ltd.	Robi Mahato, (m.), 14, <i>Dust loading coolie.</i>	Coal	Deceased passed through a fence and whilst loading dust coal lying on the floor in old workings he was struck down by a fall of roof stone, 1' 3" thick, over an area 6' x 10'. He was killed on the spot. Inspection and inquiry made.
22	18th April, 9 A.M.	Nodiha Mine, Dishargarh P. O., Bengal.	Nodiha Coal Co., Ltd.	Somi Manjhian, (f.), 17, <i>Coal carrier.</i>	Coal	A piece of roof stone, measuring 5' 8" x 3' x 5½" maximum thickness, fell from a height of 7 feet in a working gallery and killed deceased outright as she was walking beneath it. The gallery had been examined two hours before by a sirdar who had declared it safe. Inspection and inquiry made.
23	18th April, 11 A.M.	Dandot Mine, Dandot P. O., Panjab.	Thakur Dass Ramji Dass	Akbar, (m.), 16, <i>Stone coolie.</i>	Coal	Whilst employed with two other miners in stowing away rubbish in a gallery, a piece of shale, measuring 3' x 2' x 1' 6", fell from between two 'chocks' burying deceased and killing him.
24	19th April, Noon.	Rakha Hills Mine, Rakha Mines P. O., Bihar and Orissa.	Cape Copper Co., Ltd.	Basa, (m.), 28, <i>Coolie.</i>	Copper	Deceased was found immediately beneath the junction of the vertical portion of a shaft with the inclined portion. An irregularly shaped piece of rock, measuring about 2' 6" x 2' x 4" thick, had fallen on him from a height of 15 feet, from the angle between two portions of the shaft, fracturing his skull and killing him.
25	28th May, 4 A.M.	Kendwadih Mine, Jamadoba P. O., Bihar and Orissa.	Hariladh Coal Co. Ltd.	Jhunu Bilaspuri, (m.), 42, <i>Coal cutter.</i>	Coal	Whilst the sirdar and some stone cutters were preparing deceased's working place in a pillar cutting district, he and his two wives went through a fence into an unused gallery. They were lying asleep when a stone, about 1' 3" square and 3" thick, fell from the roof 7 feet above. Deceased sustained a rupture of the liver and died within an hour. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1915—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—contd.						
26	12th June, 9 A.M.	Kurkend Mine, Kurkend P. O., Bihar and Orissa.	Sudamdih Coal Co., Ltd.	Pitamb Singh, (m.), 37, Coal cutter.	Coal	Deceased was at work cutting floor coal on an upper bench 9 feet high in a pillaring area in a seam 20 feet thick. The roof was carried on props set on the floor coal. Another miner was cutting coal on a lower bench close by, and this man undermined a prop which fell out, causing a fall of roof coal and stone 2' 3" thick over an area 12' x 5' 6". Deceased received injuries to which he succumbed an hour and a half later. Inspection and inquiry made.
27	7th July, 4-30 A.M.	Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Kubir Mogor, (m.), 28, Coal loader.	Coal	Whilst a gang of eight men, in charge of a sirdar, were at work in a 'chamber', measuring 60' x 30' x 30' high, the roof began to 'weight.' Whilst the men were running out a mass of 30 tons of coal fell from the roof. Deceased was struck down and killed on the spot. His body was recovered about an hour later. Inquiry made.
28	23rd July, 4 A.M.	Sijua Mine, Sijua P. O., Bihar and Orissa.	Sijua Coal Co., Ltd.	Maiku Manjhan, (f.), 30, Coal carrier.	Coal	Deceased worked as a coal carrier for her husband, who was employed in cutting roof coal, three feet thick, in a gallery seven feet high. While she was filling a basket a mass of coal fell prematurely from the roof at a point where her husband had first been cutting. She was knocked down and sustained injuries to which she succumbed shortly afterwards. The fallen coal weighed about two tons and the cavity from which it fell measured 5' x 3' 6" x 3'. Inspection and inquiry made.
29	23rd July, Midnight.	Charanpur Mine, Charanpur P. O., Bengal.	Reliance Coal Co., Ltd.	Ratni Passi, (m.), 38, Miner.	Coal	Deceased and another miner, in collusion with the day and night sirdar of the district, entered a fenced area, drilled, charged and blasted two shots in a pillar when some roof coal fell from a height of nine feet and killed deceased outright. The other miner was prosecuted for a breach of special rules but absconded. Inspection and inquiry made.
30	7th August, 8-30 A.M.	Lutchipur Mine, Sitaranpur P. O., Bengal.	Damuda Coal Co., Ltd.	Suku Manjhi, (m.), 28; Ramji Manjhi, (m.), 60, Miners.	Coal	The two deceased deliberately entered a fenced goaf to get some fallen coal when about five tons of roof fell upon them from a height of 10 feet and killed them outright. Inspection and inquiry made.
31	9th August, 10-30 A.M.	Nardang Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Ram Gholam Ahir, (m.), 32, Coal shoveller.	Coal	Deceased was loading coal on a road where a new 'chamber' was being commenced, when about a ton of coal fell from a 'slip' in the roof about 5 feet above. Four props had been set under the 'slip', but the coal fell between two of the props. Whilst rescue operations were in progress a further fall of coal took place. When extricated deceased was found to be dead. Inquiry made.

32	31st August, 10 A.M.	New East Ledo Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Paltu, (m.), 36, <i>Coal shoveller.</i>	Coal	Deceased was shovelling coal at a point where two cross roads 6' wide × 5' high joined and where a new 'chamber' was being commenced. Whilst so employed a slab of coal, weighing about 12 cwt., fell from the roof without warning and rolled upon him. He sustained injuries to which he succumbed whilst being carried from the mine. Inquiry made.
33	31st August, Midnight.	Tirap Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Pin-Tin-Yan, (m.), 30, <i>Coal filler.</i>	Coal	Whilst deceased and four other Chinese coolies were at work in a 'chamber', 50' × 30' × 15' high, a lump of coal, weighing about 80 lbs., fell from the roof. Deceased's skull was fractured and death was instantaneous. Inquiry made.
34	5th September, 5 A.M.	Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Tikalal Nepali, (m.), 21, <i>Tyammer</i> ; Kabutri Ghatwal, (f.), 23, <i>Incline attendant.</i>	Coal	A party of six persons had completed their shift and had started to walk out of the mine. Whilst they were passing the bottom of a self-acting incline, which carries the coal down on to a haulage road, a mass of coal, weighing about 40 tons, fell from the roof. The two deceased were killed and two others injured. The road was 8 feet wide and 3 feet 6 inches high, and the cavity from which the coal fell was 16' × 8' × 2' 6". Inquiry made.
35	10th September, 9 P.M.	Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Ananda Gore, (m.), 36, <i>'Opening' man.</i>	Coal	Whilst deceased was breaking a lump of coal at the lower end of a 'chamber', 30 feet square and 19 feet high, about 4 tons of clay fell from the roof near the top of the 'chamber' and rolling down the steep slope of the seam, fell upon and buried him. He sustained injuries to which he succumbed the same day. Inquiry made.
36	17th September, 7-16 A.M.	Borra Mine, Sitaranpur P. O., Bengal.	New Beerbhun Coal Co., Ltd.	Kangal Kora, (m.), 40, <i>Miner.</i>	Coal	Deceased, together with another miner and two women broke down a fence and entered a goaf, from which timber had been drawn the evening before, to gather some loose coal. They had loaded two baskets when roof coal fell over an area of 750 square feet from a height of 8' 6". The roof coal was 5 feet thick. Deceased was killed outright. The other miner was prosecuted for a breach of special rules but absconded. Inspection and inquiry made.
37	20th September, 1 P.M.	Radhaballabpur Mine, Sandih P. O., Bengal.	J. Boisogomoff & Co.	Chand Behari Bauri, (m.), 30, <i>Miner.</i>	Coal	Deceased entered a fenced gallery without authority and commenced to cut coal when roof coal, measuring 32' × 10' × 3' 8" thick, fell from a height of 5' 6" and killed him outright. Inspection and inquiry made.
38	2nd October, 9-15 A.M.	Viceroy Mine, Charanpur P. O., Bengal.	Minto Coal Co., Ltd.	Gonesh Manjhi, (m.), 25, <i>Miner</i> ; Kuchari Manjhan, (f.), 25, <i>Miner's kamin.</i>	Coal	The two deceased, in the illegal absence of the sirdar, began to cut coal from a pillar under extraction. Whilst so doing, a piece of roof stone, measuring 19' × 2' 9" × 1' 8" thick, fell from a height of 4 feet upon them and killed them instantly. Inspection and inquiry made.
39	7th October, 10 A.M.	Budrachak Mine, Sijua P. O., Bihar and Orissa.	Budrachak Coal Mining Co., Ltd.	Sankumari Bilaspuri, (f.), 20, <i>Coal carrier.</i>	Coal	Deceased is said to have gone through a fence into an unused gallery for a necessary purpose. While she was there a wedge-shaped mass of stone, measuring 19' long × 3' 6" wide and 2' to 0" thick, fell from between pronounced 'joints' in the roof knocking out three props. She was struck by the falling stone and succumbed to her injuries within a few hours. Inspection and inquiry made.
40	1st November, 11-15 A.M.	West Ledo Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Gopal, (m.), 30, <i>Coal loader.</i>	Coal	Whilst some coolies were at work in a 'chamber,' measuring 30' × 24' × 14' high, a mass of coal, weighing about 10 tons, fell from the roof without warning. Deceased was killed and three other persons were injured. Inquiry made.
41	23rd November, 5-30 P.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway	Khan Daman, (m.), 25, <i>Carpenter's coolie.</i>	Coal	Deceased was assisting to set a prop between two broken ones when the roof broke off below the line of props and fell upon him. He was taken out with difficulty and was believed to have escaped serious injury. He died suddenly and unexpectedly four days later.

APPENDIX II—*contd.*

Fatal Accidents, 1915—*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—<i>concl'd.</i>						
42	30th November, 11 P.M.	Sanctoria Mine, Dishargarh P. O., Bengal.	Bengal Coal Co., Ld.	Kisto Bouri, (m.), 50, <i>Sirdar.</i>	Coal	Deceased, who was the sirdar of the district, entered an old fenced goaf which was 'weighting' when a piece of roof coal and stone, measuring 16' x 10' x 1' 6" thick, fell from a height of 16 feet upon him and killed him outright. Inspection and inquiry made.
43	4th December, 9-30 A.M.	Bhuggutdih Mine, Jharia P. O., Bihar and Orissa.	Bengal Nagpur Coal Co., Ld.	Ganga Ghatwal, (m.), 35, Jilal Ghatwal, (m.), 38, Babu Morral, (m.), 30, <i>Coal cutters.</i>	Coal	The deceased left their working place and passing through a fence, entered a goaf and began to pick up fallen coal. They were killed on the spot by a fall of roof coal, 3 feet in thickness, from a height of 12 feet, over an area measuring 30' x 20'. Inspection and inquiry made.
44	14th December, 11 A.M.	Baraboni Mine, Asansol P. O., Bengal.	Baraboni Coal Concern, Ld.	Ranjit Manjhi, (m.), 35, <i>Miner.</i>	Coal	Whilst deceased was cutting roof coal in a gallery, 30 feet wide, a piece of coal, measuring 7' x 4' x 2' 6" thick, fell from a height of 8 feet and killed him outright. The roof was much affected by 'slips.' Inspection and inquiry made.
45	18th December, 10-30 A.M.	Banatakola Mine, Jharia P. O., Bihar and Orissa.	New Beerbhun Coal Co., Ld.	Sumai Manjhi, (m.), 35, <i>Coal cutter.</i>	Coal	Deceased, whilst working in a gallery, 7' 6" in height, was killed by a mass of coal, measuring 7' x 5' x 1' 6" to 0" thick, which fell from 'slips' in the roof. Inspection and inquiry made.
(b) Falls of side—(42 deaths).						
46	16th January, 2 A.M.	Kurkend Mine, Kurkend P. O., Bihar and Orissa.	Marine Coal Co., Ld.	Telu Meah, (m.), 45, <i>Coal cutter.</i>	Coal	Under the personal direction of an overman and a sirdar a mass of overhanging coal was dislodged from the side of a pillar in a pillar cutting district by two coal cutters, using a crowbar. The rest of the coal cutters and carriers had been previously sent out to a safe distance, about 50 feet away. A mass of about 5 cwts. of coal was brought down which in falling struck and knocked out a prop, 16 feet long, which in its turn struck and knocked out another prop, 18 feet long. The second prop struck deceased on the head and inflicted injuries, to which he succumbed three days later. The fact that deceased had approached was unknown to the officials present. Inspection and inquiry made.
47	2nd February, Noon.	Jamadoba Mine, Jamadoba P. O., Bihar and Orissa.	Indian Collieries Syndicate, Ld.	Sanku Manjhi, (m.), 35, <i>Coal cutter.</i>	Coal	Deceased worked in a pillar cutting area and was killed on the spot by a fall from the coal face of about 5 cwts. of coal. Inspection and inquiry made.
48	17th February, 4 P.M.	Abrakhi Mine, Rejanli P. O., Bihar and Orissa.	Raja J. P. N. Singh	Tilak Singh Ghatwar, (m.), 35, <i>Miner.</i>	Mica	Whilst deceased was digging in the corner of an open excavation some earth fell on his back. He died a few hours afterwards from the injuries received.

49	14th March, 4 A.M.	Bhowra Mine, Jamadoba P. O., Bihar and Orissa.	Eastern Coal Co., Ltd.	Mukteswar Mahato, (<i>m.</i>), 23, <i>Coal cutter.</i>	Coal	Deceased broke down a fence and entered old workings. Whilst he was illegally cutting coal from the corner of a pillar, he was killed on the spot by the fall of a mass of coal, measuring 5' x 3' x 1' 9" and weighing about a ton. Inspection and inquiry made.
50	22nd March, 11 A.M.	Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Lalmoni Alik, (<i>m.</i>), 25, <i>Earth cutter.</i>	Coal	Some coolies in charge of a colliery sirdar were engaged in levelling a site for a coolie barrack on the side of a hill. Without orders they undercut to a depth of 1' 6", a face, 14 feet high, composed of soil and boulders. Whilst deceased was using a pick in the undercut, a fall of soil and boulders took place and he was struck by a boulder and killed. Rescue operations were in progress when a further fall of about 4 tons of soil and boulders took place and caused serious injuries to two other persons. Inquiry made.
51	28th March, 5-40 A.M.	Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Amdu alias Tagnig Bhutia, (<i>m.</i>), 27, Tamba Bhutia, (<i>m.</i>), 35, <i>'Opening' men.</i>	Coal	Whilst some miners were at work in a 'chamber,' 80' x 30' x 12' high, the roof began to 'weight.' The sirdar in charge ordered all persons to leave the 'opening,' all obeyed him except the two deceased. They refused to come out and said that the place was safe. Shortly after a mass of about 4 tons of coal fell from the side. Amdu was killed on the spot and Tamba received injuries to which he succumbed the same day. Inquiry made.
52	22nd April, 10 P.M.	Khas Jharis Mine, Jharis P. O., Bihar and Orissa.	Khas Jharis Colliery Co., Ltd.	Bansi Bhuita, (<i>m.</i>), 28, Bhagiu Turi, (<i>m.</i>), 40, <i>Coal cutters.</i>	Coal	The two deceased worked in a pillar cutting district. During the absence of the sirdar they left their working place, broke down a fence and began to cut coal from the corner of a pillar, 14 feet high. They were killed on the spot by the fall of a mass of coal, measuring 9' x 8' x 3' 6", from a height of 5 feet. The fallen coal weighed about 5 tons. Inspection and inquiry made.
53	28th April, 1 P.M.	Kendwadih Mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Balkishan Dosadh, (<i>m.</i>), 35, <i>Coal cutter.</i>	Coal	Whilst work was going on in a pillar cutting district in a coal seam, 18 feet in thickness, the goaf began to 'weight.' In accordance with the manager's standing orders, the sirdar stopped the work and ordered all persons to go out to the loading station whilst he remained near the goaf, to watch developments. Deceased and another coal cutter were employed in splitting a pillar at a distance of about 100 feet from the edge of the goaf. Thinking themselves in a place of safety they did not obey the sirdar's orders at once but sat down to smoke near their working place. A slab of coal, measuring 3' x 2' x 2', fell from the side of the pillar from a height of 7 feet and killed deceased on the spot. Inspection and inquiry made.
54	19th May, 2 A.M.	Haripur Mine, Chora P. O., Bengal.	Bholanath Chatterji	Kalip Bauri, (<i>m.</i>), 32, <i>Miner.</i>	Coal	Deceased, in the absence of and against the orders of the sirdar, went behind a fence to rob a pillar. Whilst so engaged about a ton of side coal fell upon him and inflicted injuries from which he died six hours later. Inspection and inquiry made.
55	26th May, 6 A.M.	Bansdeopur Mine, Kusunda P. O., Bihar and Orissa.	Bansdeopur Coal Co.	Dhuluwa Chamar, (<i>m.</i>), 14, <i>Coal carrier.</i>	Coal	Whilst the extraction of a pillar of coal, 16 feet high, was going on, a mass of coal, weighing about 2 cwts., fell from the face at a height of 7 feet. Deceased was struck on the head and killed on the spot. Another man sustained a fracture of the leg. Inspection and inquiry made.
56	31st May, 12-30 P.M.	Hermyingyi Mine, Tavoy P. O., Burma.	Hermyingyi Mining Co., Ltd.	Maung Oh, (<i>m.</i>), 42, <i>Miner.</i>	Wolfram	Whilst engaged in opening up the mouth of an old tunnel, a fall of about 8 tons of soft earth and large stones took place from a height of 15 feet above where deceased was working, striking him and breaking his neck. The slope of the ground was about 80° with the horizontal, there was no higher ground above. He had been warned to put in timber which at the time of accident was lying ready jointed to be erected. The weather was dry at the time but had rained during the night. Three other men were working at the same time. An official of the Company had visited and warned the men three days previously.

APPENDIX II—*contd.*

Fatal Accidents, 1915—*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 side—<i>contd.</i>						
57	31st May, 3 P.M.	Aldih Mine, Sitarampur P. O., Bengal.	Aldih Coal Co., Ld.	Dharam Manjhi, (m.), 23, <i>Miner.</i>	Coal	Deceased went behind a fence to rob a pillar. Whilst so engaged, a mass of coal, weighing about a ton, fell upon his head and killed him instantly. Inspection and inquiry made.
58	5th June, 3-30 P.M.	Chinchuria Mine, Asansol P. O., Bengal.	New Beerbhun Coal Co., Ld.	Moti Kamar, (m.), 25, <i>Miner.</i>	Coal	Deceased, in the absence of the sirdar, began to cut the side of a pillar. He had been previously warned not to do so. Whilst so engaged, a mass of coal of about 2 tons in weight, fell from a 'slip' upon him. He was killed outright. Inspection and inquiry made. <i>See Report, page 8.</i>
59	11th June, 10-45 A.M.	West Ledo Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Dudhi Gurung Nepali, (m.), 32, <i>Contractor sirdar.</i>	Coal	Whilst a gang of Nepalese in charge of a Bengali sirdar was at work in a 'chamber,' the roof gave signs of 'weighting.' The Bengali sirdar in charge gave orders for every one to leave the 'chamber.' This order was obeyed by all except deceased who was a Nepalese contracting sirdar, who declared that nothing was wrong and that he understood the work thoroughly. About five minutes later half a ton of coal fell from the side and struck him. He sustained a severe fracture of the leg and died in hospital the same day. Inquiry made.
60	11th June, Between 3 & 4 P.M.	Karharia Mine, Jhnmri-Tilaya P. O., Bihar and Orissa.	Johur Mull and Sundar Mull.	Bishun Teli, (m.), 35, <i>Labourer.</i>	Mica	While deceased was sitting at the mouth of an old gallery a portion of the side of the gallery fell upon him injuring his spinal cord. He died seven weeks later.
61	23rd June, 10 A.M.	Namdang Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Gono Lodh, (m.), 35, <i>Coal loader.</i>	Coal	Deceased was one of a gang of timber men and coolies who were engaged in repairing a level road. Whilst he was loading fallen coal into a basket a fall of side took place, knocking out three timber settings. He was completely buried in small coal and died from suffocation. The body was recovered about an hour later. Inquiry made.
62	8th July, 6-30 A.M.	Dishargarh Mine, Dishargarh P. O., Bengal.	Equitable Coal Co., Ld.	Nanku Passi, (m.), 35, <i>Miner.</i>	Coal	Deceased deliberately broke down a fence, entered a place where overhanging side coal had been declared unsafe and commenced to cut coal. The overhanging coal, measuring 6' 6" x 4' 6" x 2' 3" thick, fell from a smooth roof parting and a 'joint' from a height of 10 feet and crushed deceased so severely that he died five hours later. The sirdar had left the place only a few minutes before. Inspection and inquiry made.
63	12th July, 11 A.M.	Rampur Mine, Jharsaguda P. O., Bihar and Orissa.	Hingir-Rampur Coal Co., Ld.	Panika, (m.), 34, <i>Coal cutter.</i>	Coal	While deceased was standing by the side of a shot firer who was tamping a shot hole they heard a noise near a pillar further down in the direction of the dip. The shot firer ran up and deceased ran down the gallery when a block of coal, measuring 8' x 5' x 3', fell from a 'cleat' and crushed deceased. The portion that came away had been undercut for 2 feet and was supported by three sprags.

64	27th July, 2 P.M.	Kanbank Mine, Tavoy P. O., Burma.	Radcliffe and Co., Ld.	Hu Kit, (m.), 24, Kum Hung, (m.), 22, Coolies.	Wolfram	The two deceased were killed by a fall of earth in an open cutting which was being sluiced by monitors.
65	31st July, 4 A.M.	Kurkend Mine, Kurkend P. O., Bihar and Orissa.	Marine Coal Co., Ld.	Kasim Ali Meah, (m.), 35, Coal cutter.	Coal	Whilst coal cutters were engaged in extracting a pillar of coal in a pillar cutting district, a mass of coal, measuring 12' x 5' x 2' 3" thick and weighing about 5 tons, fell suddenly from a smooth 'joint.' Deceased was killed on the spot and another was injured. Inspection and inquiry made.
66	31st July, 2 P.M.	Kanbank Mine, Tavoy P. O., Burma.	Radcliffe and Co., Ld.	Chong Hee, (m.), 20, Coolie.	Wolfram	A fall of earth occurred. Deceased, who ran back into the danger zone for his coat, was caught by the fall and killed. The other coolies got clear.
67	8th August, 4-30 P.M.	Sendra Mine, Bansjora P. O., Bihar and Orissa.	Sendra Coal Co., Ld.	Bhukan Turi, (m.), 36, Coal cutter.	Coal	Deceased went through a fence and whilst cutting coal illegally from the side of a pillar, was killed on the spot by the fall of a mass of about 15 tons of coal from the side. Inspection and inquiry made.
68	13th August, 5 P.M.	North Kustore Mine, Kustore P. O., Bihar and Orissa.	Raniganj Coal Association, Ld.	Muktakeshi Ghatwarin, (f.), 42, Coal carrier.	Coal	Whilst a miner was cutting at a bench of floor coal 6 ft. high in a gallery originally 8 ft. high he brought down from the side, at a height of 5 ft., a wedge-shaped mass of coal and stone, measuring 4' x 2' x 1' 6". Deceased, who was loading coal into a basket, was struck and received injuries from which she died eight hours later. Inspection and inquiry made.
69	31st August, 3-30 P.M.	Kurkend Mine, Kurkend P. O., Bihar and Orissa.	Sudamdih Coal Co., Ld.	Sanjaria Passi, (f.), 30, Coal carrier.	Coal	Whilst a coal cutter was dressing down overhanging coal from the side of a pillar, 17 ft. high, a mass of coal, measuring 4' x 3' 6" x 3' 6" and weighing about 3 tons, fell without warning from the side, at a height of about 3 ft. Deceased, who was standing about 15 ft. distant, was knocked down and killed instantly. Two props were also knocked out. Inspection and inquiry made.
70	28th August, 1 P.M.	Sowardih Mine, Bhujudih P. O., Bihar and Orissa.	Sowardih Coal Co.	Lurgu Chamar, (m.), 40, Coal cutter Sovia Chamarin, (f.), 26, Coal carrier.	Coal	The two deceased went through a fence which fences a pathway leading through a quarry to underground workings where they were regularly employed. Whilst they were illegally cutting coal from the face of the quarry and loading it into baskets, they were caught by a fall of a mass of stone, measuring 20' x 4' x 3' thick, which they had undermined. Sovia was killed on the spot and Lurgu died the same day as the result of his injuries. Inspection and inquiry made.
71	7th September, 2-3 A.M.	Tirap Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Chin Yan Chan, (m.), 30, Coal filler.	Coal	Whilst deceased was at work in a small 'chamber,' about 8 feet high, a lump of clay, weighing about 60 lbs., rolled down a steep slope on to him from an abandoned 'chamber' above. He sustained injuries to which he succumbed twenty minutes later. Inquiry made.
72	9th September, 10 P.M.	Kurkend Mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Udua Turi, (m.), 20, Coal carrier.	Coal	Deceased was employed in carrying coal for a miner, who was cutting floor coal in a gallery 10 feet high, driven through a pillar in a pillar cutting area. During the temporary absence of the sirdar he took the miner's pick and began to cut coal from the side. About a ton of coal fell on him from the side at a height of 4 feet. His chest and ribs were crushed and he died about half an hour later. Inspection and inquiry made.
73	10th September, 9 A.M.	Jamadoba Mine, Jamadoba P. O., Bihar and Orissa.	Indian Collieries Syndicate, Ld.	Jahu Mahato, (f.), 18, Coal carrier.	Coal	Deceased, whilst carrying coal in a pillar cutting district, was struck by a mass of about 10 cwt. of coal, which fell from the corner of a pillar, 10 feet high. She sustained injuries to which she succumbed a few hours later. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1915—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.						
(b) Falls of Side—conold.						
74	4th October, 5-30 A.M.	Kankani Mine, Bansjora P. O., Bihar and Orissa.	Eastern Coal Co., Ltd.	Mohan Bhuia, (m.), 25, <i>Coal cutter.</i>	Coal	Whilst deceased was robbing coal from the side of a pillar, in a gallery, 22 feet wide and 11 feet high, he was killed on the spot by a fall of a mass of coal, weighing about 30 cwts. The sirdar was prosecuted for a breach of special rules and fined Rs. 5. Inspection and inquiry made.
75	14th October, Midnight.	Sijua Mine, Sijua P. O., Bihar and Orissa.	Sijua Coal Co., Ltd.	Bhudhain Bhuiani, (f.), 18, <i>Carrier.</i>	Coal	Deceased was lying asleep in a gallery when a piece of coal, measuring 5' 6" × 4' × 1' 8", tapering to feather edges, fell from the side upon her. She was killed instantly. Inspection and inquiry made.
76	30th October, 8-30 A.M.	Bhulanbarari Mine, Jamadoba P. O., Bihar and Orissa.	Bhulanbarari Coal Co., Ltd.	Ram Singar Singh, (m.), 35, <i>Munshi.</i>	Coal	Deceased was killed on the spot by a fall of about 10 cwts. of coal from the corner of a pillar of coal. Inspection and inquiry made.
77	1st November, 2 A.M.	South Baraboni Mine, Charanpur P. O., Bengal.	South Baraboni Coal Co.	Bhikar Manjhi, (m.), 55, <i>Miner.</i>	Coal	Deceased entered some old fenced workings without authority and commenced to cut coal from a pillar. He was injured by a fall of overhanging coal and died about an hour later. Inspection and inquiry made.
78	5th November, 6-30 P.M.	Titilmuri Mine, Sijua P. O., Bihar and Orissa.	Titilmuri Collieries, Ltd.	Jugal Bauri, (m.), 32, <i>Coal cutter.</i>	Coal	Deceased and four other miners were employed in cutting floor coal in a level gallery, 21 feet in height. Whilst he was robbing coal from the corner of a pillar, a wedge-shaped mass of coal, measuring 3' × 9' × 14' and weighing about 5 tons, fell from the corner from a height of 7 feet. He was killed on the spot. Inspection and inquiry made.
79	8th November, 10 A.M.	Barari Mine, Jamadoba P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Beni Kahar, (m.), 30, <i>Surface trolley man.</i>	Coal	Deceased and three other trolley men, all of whom worked on the surface, removed the fencing from the entrance to an incline, entered the mine and breaking down a fence underground entered an unused gallery 20 feet high and 12 feet wide, where they began to rob coal from the side. Whilst so engaged a mass of about 2 tons of coal fell from the side at a height of 10 feet. Deceased sustained injuries to which he succumbed the following day. The other men absconded shortly after the accident. Inspection and inquiry made.
80	10th November, 12-30 P.M.	Bansjora Mine, Bansjora P. O., Bihar and Orissa.	Bansjora Coal Co., Ltd.	Dassu Turi, (m.), 20, <i>Coal cutter.</i>	Coal	Deceased and another coal cutter were commencing the driving of a split gallery, 11 feet wide and 7 feet high, through a pillar, 31 feet square and 17 feet in height, when a wedge-shaped mass of coal, 8' wide × 5' 0" thick × 10' 0" high, fell from the side of the pillar over the roof of the split gallery. Deceased was killed on the spot. Inspection and inquiry made.

81	12th November, 11 A.M.	Namdang Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Pancham Passi, (m.), 28, <i>Coal shoveller.</i>	Coal	Whilst some coolies were loading coal in a 'chamber', measuring 60' x 36' x 16' high, a mass of coal, about 300 lbs. in weight, fell from the side, at a height of 8 feet. Deceased was killed on the spot and another man sustained severe injuries which disabled him for six weeks. Inquiry made.
82	17th December, 0-30 A.M.	Khoist Mine, Khoist P. O., Baluchistan.	North-Western Railway	Mahomed Sharif, (m.), 30, <i>Mine carpenter.</i>	Coal	Whilst deceased was making a foot-hole for a new prop to be put alongside a broken one, in the line of coal face timbering, part of the seam came away from a hidden 'back' and fell upon him and killed him. The coal seam at this place was abnormally thick owing to a local doubling of the lower coal.
83	31st December, 10 A.M.	Aldih Mine, Sitarampur P. O., Bengal.	Aldih Coal Co., Ltd.	Dhuli Manjhian, (f.), 28, <i>Dust woman.</i>	Coal	Deceased was loading dust, whilst pillar robbing was in progress in a fenced gallery, when a slab of side coal, measuring 2' x 2' x 9' high, fell upon her and killed her outright. Inspection and inquiry made.

IN SHAFTS.

Whilst ascending or descending by machinery—(3 deaths).						
84	19th May, 8 P.M.	Benashir Mine, Jharia P. O., Bihar and Orissa.	Standard Coal Co., Ltd.	Pokla Bilaspuri, (m.), 42, <i>Coal cutter.</i>	Coal	Whilst five persons were ascending in a cage from the bottom of a shaft, 243 feet deep, an empty tub fell from the descending cage and struck the ascending cage. Deceased was killed, one other person was severely injured and three other persons were thrown out, falling a distance of about 10 feet. The frame and roof of the cage were badly damaged and the roofing at the shaft bottom was demolished. The bankman, who, against standing orders, placed the empty tub in the cage and neglected to place the top bar in position, absconded immediately after the accident. He had held the post for two years. The cage was not fitted with safety gates or chains. Inspection and inquiry made.
85	4th August, 9-15 A.M.	Saltore Mine, Dishargarh P. O., Bengal.	Saltore Coal Co., Ltd.	Sukhi Manjhian, (f.), 18, <i>Miner's kamin.</i>	Coal	Deceased, whilst being raised to the surface, attempted to step out of the cage on to a shaft bottom in mistake for the surface flat sheets. She fell to the bottom of the shaft, a depth of 97 feet, and was killed instantly. The cage was not fitted with safety gates or chains. Inspection and inquiry made.
86	4th September, 3 P.M.	Ramagiri Mine, Morrison P. O., Madras.	Anantapur Gold Fields, Ltd.	Kaja Meah, (m.), 24, <i>Pump driver.</i>	Gold	Whilst deceased was riding in a bucket the crosshead, working on rope guides, stuck 20 feet above the bucket and then fell. He fell to the bottom of the shaft having probably jumped off as the crosshead was too high to strike him. Riding in buckets is not allowed.
Falling into the shaft from the surface—(3 deaths).						
87	15th March, 3 P.M.	East Kurkend Mine, Kirkend P. O., Bihar and Orissa.	Marine Coal Co., Ltd.	Dogor Khan, (m.), 24, <i>Labourer.</i>	Coal	Deceased was one of a gang of men employed in erecting a steel head-gear. Whilst engaged in covering the top of the shaft with beams, he overbalanced and fell to the bottom of the shaft, 250 feet below. He was killed on the spot. Inspection and inquiry made.
88	5th May, 10 P.M.	Panchgatchia Mine, Sitarampur P. O., Bengal.	Lutchipur Coal Co., Ltd.	Gopi Meah, (m.), 45, <i>Bankman.</i>	Coal	Deceased failed to notice that the automatic gate, protecting one side of the shaft, had not fallen into position after the cage had left the surface. He pushed a tub, presumably in a moment of carelessness, into the unprotected shaft and, in so doing, was carried down with it. He was killed instantly. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1915—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—contd.						
Falling into the shaft from the surface—concl'd.						
89	18th June, 4 A.M.	East Kurkend Mine, Kurkend P. O., Bihar and Orissa.	Marine Coal Co., Ltd.	Etwari Chamar, (m.), 40, <i>Trolleyman.</i>	Coal	Deceased and another man walked through the cage at the surface pushing out a loaded tub in front of them. As they emerged at the opposite side the cage went up about 7 feet. Deceased lost his balance and fell backwards to the bottom of the shaft, 175 feet below. It is probable that the steam valve of the winding engine was not completely closed and that as soon as the tub left the cage, the decrease in the weight on the rope was sufficient to permit the steam to move the engine and raise the cage. Inspection and inquiry made.
Falling from part of the way down—(3 deaths).						
90	3rd February, 10-15 A.M.	Angarpatra Mine, Katrasgarh P. O., Bihar and Orissa.	Union Coal Co., Ltd.	Manthu Meah, (m.), 35, <i>Contractor.</i>	Coal	Whilst placing in position a plank between the cage and a temporary inset in a shaft, deceased overbalanced and fell to the bottom of the shaft, 40 feet below. He was killed on the spot. Inspection and inquiry made.
91	6th July, 9-30 P.M.	Sudamdih Mine, Bhujudih P. O., Bihar and Orissa.	Empire Coal Co., Ltd.	Jugal Bauri, (m.), 22, <i>Pump minder.</i>	Coal	Deceased was employed in attendance on a pump, resting on girders, at an inset, 90 feet above the bottom of a sinking shaft, 275 feet deep. By some means unknown he slipped from the pump platform and fell to the bottom of the shaft. He was killed on the spot. Inspection and inquiry made.
92	3rd October, 9-30 P.M.	Jibutil Mine, Morrison P. O., Madras.	Jibutil (Anantapur) Gold Mines, Ltd.	Kollapurigadu, (m.), 25, <i>Stuff coolie.</i>	Gold	Deceased was climbing up a shaft by the ladder way and apparently climbed through the timbers, dividing the skip way from the ladder way, in order to place a bundle of cloth in a recess to the west of the shaft, a few feet from the surface. In doing this he fell to the bottom of the shaft, a depth of a thousand feet, where his body was found.
Things falling from the surface—(1 death).						
93	23rd January, 1 P.M.	Lutchipur Mine, Sitarampur P. O., Bengal.	Damduda Coal Co., Ltd.	Bhusan Bauri, (m.), 26, <i>Onsetter.</i>	Coal	Deceased, an onsetter, had loaded a cage with a full tub and was tying a tub tally to it. Whilst so engaged, a piece of coal fell from the surface, a distance of 376 feet, on to the top of his head. He received injuries from which he died fifteen hours later without recovering consciousness. Inspection and inquiry made. <i>See Report, page 9.</i>

Things falling from part of the way down—(4 deaths).						
94	3rd February, Noon.	West Gopalichak Mine, Kurkend P. O., Bihar and Orissa.	Gopalichak Coal Co., Ltd.	Ram Manjhi, (m.), 30, <i>Sinker.</i>	Coal	Whilst at work in the bottom of a sinking shaft, 320 feet deep, deceased was struck on the head by something falling from above and he fell into water. The body was recovered half an hour later. The wound on the head was sufficient to cause death. Inspection and inquiry made.
95	1st October, 5-30 P.M.	Sudamdih Mine, Bhujudih P. O., Bihar and Orissa.	Empire Coal Co., Ltd.	Ghulam Mahomed, (m.), 32, <i>Fitter's labourer.</i>	Coal	A duplex pump was suspended in a sinking shaft, at a depth of 240 feet, and it became necessary to raise it to about 4 feet from out of accumulated water. The level of the water was being maintained by a pulsometer pump, suspended at the same point. As the clearance between the pump was small, the deceased and three other men stood on the pump to fend it off from the pulsometer pump and from the walls of the shaft. As the pump was being raised deceased was struck on the head by some unknown object falling from above and he fell into the water. His body was recovered two days later. Inspection and inquiry made.
96	14th November, 3-30 P.M.	Bullari Mine, Kutore P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Lab Singh, (m.), 35, <i>Fitter's labourer.</i>	Coal	A pump and a range of wrought steel pipes, 6" in diameter and 600' in length, with screwed joints, were suspended in a shaft. The pump and pipes were being lowered, when the pump fouled a bunt, with the result that one of the pipes immediately above the pump buckled and had to be taken out. Whilst the pipe was being replaced, the suspended range of pipes parted in the middle at a joint and a length of 300 feet of the pipes fell to the bottom of the shaft, 40 feet below. Of the seven persons engaged in fitting the new pipe, one was killed and two were injured. Inspection and inquiry made. <i>See Report, page 9.</i>
97	31st December, 4-30 P.M.	Dishargarh Mine, Dishargarh P. O., Bengal.	Equitable Coal Co., Ltd.	Boal Bauri, (m.), 30, <i>Onsetter.</i>	Coal	A piece of wood, measuring 8" x 4½" x 4½", fell from behind a receiving skid at the top of a shaft, 437 feet deep, and struck deceased on the head, killing him outright. Inspection and inquiry made.
Miscellaneous—(3 deaths).						
98	16th February, 4 A.M.	Lakorka Mine, Katrasgarh P. O., Bihar and Orissa.	Lakorka Coal Co., Ltd.	Bhim Singh, (m.), 25, <i>Pump khalasi.</i>	Coal	Deceased was found lying dead in a tub at the bottom of a shaft, 180 ft. in depth. There was no evidence to show how he met his death. Inspection and inquiry made.
99	9th November, 11-30 A.M.	Loyabad Mine, Bansjora P. O., Bihar and Orissa.	Barakar Coal Co., Ltd.	Mata Phal Ahir, (m.), 23, <i>Line mistri.</i>	Coal	Deceased attempted to bring up a rail, 9' 6" long, in a cage at a winding shaft, by holding it vertically at one end of the cage. When the cage reached the surface, the end of the rail struck the beam to which the keps were attached. The rail slid along the floor of the cage and deceased was forced out of the cage and killed by falling to the bottom of the shaft, 286 feet below. Inspection and inquiry made.
100	3rd December, 9 A.M.	Madhubpur Mine, Raniganj P. O., Bengal.	Imperial Coal Co., Ltd.	Borada Baurin, (f.), 36, <i>Slack carrier.</i>	Coal	Deceased and another woman attempted, without permission, to push a tub of slack through a cage which had not settled on the keps. They followed the tub on to the cage and their additional weight was sufficient to turn the engine round and to cause the cage to descend. One woman jumped back to bank and the other, in attempting to do so, was caught between the top of the cage and the bank and crushed so severely that she died shortly afterwards. The shaft was not used for raising coal. Inspection and inquiry made.

APPENDIX II—*contd.*Fatal Accidents, 1915—*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.
EXPLOSIVES—(7 deaths).						
101	27th January, 3 P.M.	South Jibutil Mine, Morrison P. O., Madras.	Jibutil Gold Mines, Ld.	Moideen Cutti, (m.), 22, <i>Hand jumper coolie.</i>	Gold	Deceased was drilling in a socket of an old shot hole when an explosion of dynamite occurred. He died of the wounds received, on the following day. In all probability he removed a plug which is placed in an old socket hole to avoid this class of accident. Other coolies admitted they were warned not to go there. Inquiry held.
102	15th February, 2-30 P.M.	Katras Mine, Katrasgarh P. O., Bihar and Orissa.	Nowagarh Coal Co., Ld.	Mohabir Singh, (m.), 28, Bhatu Gope, (m.), 40, <i>Stone cutters.</i>	Coal	The two deceased were working in a sinking shaft in which some shots had previously been fired. Whilst so engaged, an unexploded charge went off and killed Mohabir outright. Bhatu died on the following day consequent upon injuries he had received. Inspection and inquiry made.
103	28th March, 6-15 A.M.	Ramagiri Mine, Morrison P. O., Madras.	North Anantapur Gold Mines, Ld.	Syed Ali Cutti, (m.), 24, <i>Blaster.</i>	Gold	Deceased, after lighting some fuses in the bottom of a well, 30 ft. deep, was being hoisted to the surface in a bucket. He had with him a jumper drill which caught in a collar. While he was liberating the bucket the charges commenced to explode and this caused him to fall to the bottom and he was killed by the explosion of the remaining charges.
104	6th July, 11 P.M.	Sibpur Mine, Charanpur P. O., Bengal.	Minto Coal Co., Ld.	Maharaj Din Passi, (m.), 30, <i>Miner.</i>	Coal	Deceased entered a fenced gallery, drilled a hole and fired a shot. His body was found beneath a piece of coal, measuring 4' x 2' x 1/6", which had fallen from a 'slip' from a height of 12' 9". He either had gone to see the effect of the shot before the place had settled or he was dressing some side coal. The sirdar was in the mine and heard the shot. Inspection and inquiry made.
105	15th July, 12-10 P.M.	Sabetaung Mine, Sabetaung P. O., Burma.	Jamal Bros. & Co., Ld.	Maung Cho Myain, (m.), 19, <i>Coolie.</i>	Copper	As deceased was lying in his hut he was struck by a piece of stone which was hurled from a shot hole 800 ft. away and entered through the roof of the hut. He died from shock.
106	27th November, 4 P.M.	K. 32 Mine, Kodarma P. O., Bihar and Orissa.	Hoare, Miller & Co.	Bhatua Turi, (m.), 12, <i>Coolie.</i>	Mica	Deceased and a companion were dressing the entrance of an inclined shaft with a hammer and chisel, when an explosion occurred. The chisel appears to have come in contact with an unexploded cartridge of dynamite, the result of a misfire some years before. He died five hours later from shock. Inspection and inquiry made.
IRRUPTIONS OF WATER OR FALLING INTO WATER—(3 deaths).						
107	26th July, 8 A.M.	Lutchipur Mine, Sitarampur P. O., Bengal.	Damuda Coal Co., Ld.	Kesori Gowala, (m.), 30, Chandu Bauri, (m.), 32, <i>Pumpmen.</i>	Coal	The two deceased, while attending to a pump at the bottom of a shaft, 155 feet deep, were overcome by black damp and fell into water, 4' 9" deep, and were drowned. Inspection and inquiry made.

108	19th September, 9 A.M.	Kutehidhana Mine, Ramakona P. O., Central Provinces.	Indian Manganese Co.	Maltu, (f.), 14, Coolie.	Manganese	Deceased went to bathe in a flooded portion of an open working and, stepping out of her depth, was drowned before aid could be rendered. Since the accident this place has been more securely fenced.
HAULAGE—(17 deaths).						
109	16th January, 1-15 P.M.	Sitalpur Mine, Dishargarh P. O., Bengal.	Bengal Coal Co., Ltd.	Domor Gope, (m.), 40, Miner.	Coal	Deceased and another person were riding on a set of fifteen empty tubs, against orders. The set descended a road dipping 1 in 5½ and was derailed at some "points." The leading three tubs were overturned with the result that deceased was killed outright. Inspection and inquiry made.
110	31st January, 1 A.M.	Lutchipur Mine, Sitarampur P. O., Bengal.	Damuda Coal Co., Ltd.	Ramnath Singh, (m.), 29, Sirdar.	Coal	Deceased was a sirdar, employed in the night shift of a pillaring district. Presumably feeling tired, he laid down on a couple of sleepers between the rails of a tramping level. Whilst in this position, he was run into by a loaded tub and received an injury to the spine. He died forty-six hours later in consequence. Inspection and inquiry made.
111	18th February, 10-30 A.M.	Namdang Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Rajuba Bhumij, (m.), 24, Incline attendant.	Coal	Whilst deceased was re-railing an empty tub on a haulage incline, the pin of the D link fell out and the loaded tub ran wild down the incline. He was struck by the tub and received injuries from which he died an hour later. Inspection and inquiry made.
112	27th March, 7 A.M.	Sudamdih Mine, Bhujudih P. O., Bihar and Orissa.	Empire Coal Co., Ltd.	Sarada Baurin, (f.), 32, Coal carrier.	Coal	Owing to the fracture of a coupling chain on a haulage slope, two loaded tubs ran wild on a grade of 1 in 13. Deceased, who was stacking coal on a level gallery, was struck by coal thrown from the tubs when they overturned. She was killed on the spot. Inspection and inquiry made.
113	15th April, 7 A.M.	Sodepur Mine, Sitarampur P. O., Bengal.	Bengal Coal Co., Ltd.	Mangal Manjhi, (m.), 16, Miner.	Coal	Deceased was making an attempt to take an empty tub down a recognised haulage road, dipping 1 in 5, when it overpowered him. He was knocked down and killed outright. Inspection and inquiry made.
114	20th June, 4 P.M.	Kuldiha Mine, Giridih P. O., Bihar and Orissa.	Bengal Coal Co., Ltd.	Anadi Chamar, (m.), 40, Pump khalasi.	Coal	Some empty tubs were being propelled along a haulage level. Owing to the grade the progress of the tub along the level, near the brow, could only be effected by drawing back repeatedly the tub attached to the rope, the full length of its coupling chain, and then returning it with a bump against the leading tub. One of these bumps caused a coupling hook to be detached and five tubs broke and ran wild. They became derailed at the bottom of a jig knocking out three props, behind which deceased and two others were taking refuge. The props struck all three persons and inflicted serious injuries. Deceased died five hours later. Inspection and inquiry made.
116	16th July, 4-30 P.M.	Dandot Mine, Dandot P. O., Panjab.	Thakur Dass Ramji Dass	Kirpa Ram, (m.), 52, Chowkidar.	Coal	Deceased, while crossing the tub line, against orders, was knocked down by a set of six loaded tubs and killed instantly.
116	24th July, 10 A.M.	Dumarkunda Mine, Barakar P. O., Bihar and Orissa.	Bengal Coal Co., Ltd.	Kokar Bauri, (m.), 17, Miner.	Coal	A tub of earth was being unloaded in a haulage road, when the coupling attaching it to the set became unhooked. The tub ran to a junction where it became derailed and struck deceased, killing him instantly. It was surmised that the tub broke away while overturning it, to facilitate unloading. Inspection and inquiry made.
117	6th August, 11-30 P.M.	Banakuri Mine, Toposi P. O., Bengal.	Banakuri Coal Co., Ltd.	Dhangji Manjhan, (f.), 36, Kasira.	Coal	Deceased was crushed between a coal pillar and a tub, which had run away in a haulage road, owing to a coupling having been detached. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1915—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—concl'd.						
118	10th September, 1-30 P.M.	Mohpani Mine, Mohpani P. O., Central Provinces.	Great Indian Peninsula Railway Co.	Manghia Gaudni, (f.), 16, Coal carrier.	Coal	The fourth tub of a set of ten tubs of earth became derailed, a coupling chain became detached and three tubs ran wild and ran over deceased who was 42 feet away. The man in charge should have seen that all persons were safe before signalling for the set to come down.
119	14th September, 9 A.M.	West Ledo Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Gunri, (f.), 22, Labourer.	Coal	Deceased was one of a gang of four women and one man, in charge of an experienced man, who were employed in cleaning the water channel on a haulage road. A train of loaded tubs passed them and deceased appears to have lost her head and to have jumped in front of the train. She was killed on the spot. The road was wide at the place of accident and there were convenient refuge holes close at hand. Inquiry made.
120	1st October, 5-30 P.M.	Dishargarh Mine, Dishargarh P. O., Bengal.	Equitable Coal Co., Ltd.	Bushi Baurin, (f.), 13, Dust kamn. Sasi Baurin, (f.), 10, Not employed.	Coal	A set of nine loaded tubs was being drawn out of a level when, owing to the draw-bar of the third tub breaking, the last six tubs ran wild. The two deceased, who were following the set, were crushed against a pillar by two of the tubs and received injuries from which they died. Inspection and inquiry made.
121	26th October, 8-30 P.M.	Dishargarh Mine, Dishargarh P. O., Bengal.	Equitable Coal Co., Ltd.	Jhari Meah, (m.), 50, Door minder.	Coal	Deceased, who was in charge of a ventilation door in a main haulage road, was knocked down by a set of empty tubs. He died of shock three and a half hours later. Inspection and inquiry made.
122	6th November, 8 A.M.	Dishargarh Mine, Dishargarh P. O., Bengal.	Equitable Coal Co., Ltd.	Beju Bouri, (m.), 32, Tram rider.	Coal	A set of seven loaded tubs was being raised in an incline, when the two leading tubs became derailed. Deceased was riding on the first tub and in jumping off he slipped and fell between the derailed tubs. He died of his injuries sixteen days later. Inspection and inquiry made. See Report, page 10.
123	1st December, 9-30 A.M.	Jharia Khas Mine, Jharia P. O., Bihar and Orissa.	Standard Coal Co., Ltd.	Jhogru Koiri, (m.), 28, Labourer.	Coal	Whilst deceased was working with a carpenter on a haulage slope, four tubs became uncoupled and broke away from a set of seven empty tubs which was being lowered down the slope. Deceased was struck by the tubs and died two days later without recovering consciousness. Inspection and inquiry made.
124	12th December, 5 P.M.	Banderchus Mine, Domchanch P. O., Bihar and Orissa.	F. F. Chrestien and Co., Ltd.	Sukra Musohar, (m.), 12, Tool carrier.	Mica	Deceased was crushed between a moving tub and the side wall of a haulage adit and was killed outright. Inspection and inquiry made.
SUNDRIES UNDERGROUND—(13 deaths).						
125	6th January, 3-30 P.M.	Namdang Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Kanai Napat, (m.), 28, Coal shoveller.	Coal	Whilst deceased was shovelling coal from a heap of loose coal in a 'chamber', a lump of coal rolled down from the heap and struck him, inflicting injuries from which he died within a few hours. Inspection and inquiry made.

126	2nd April, 12-30 A.M.	Titilmuri Mine, Sijua P. O., Bihar and Orissa.	Titilmuri Collieries, Ltd.	Chilangi Boy, (m.), 30, <i>Coal cutter.</i>	Coal	Deceased was at work in the face of a narrow gallery, 155 feet long \times 3' 6" high \times 3' wide, driven to the full rise, on a slope of 1 in 2, for the purpose of making a connection with an adjacent mine. When connection was effected by means of a blow from a pick, a rush of air and a small quantity of water came through the hole and blew out their candles. Deceased apparently became alarmed and ran down the steep slope. His body was found later at the lower end of the gallery. The medical evidence was that death was probably due to heart failure caused by exhaustion. His two mates remained where they were, and after enlarging the hole with the pick, got out through the connection. Inspection and inquiry made.
127	10th April, 11-30 A.M.	Tirody Mine, Balasghat P. O., Central Provinces.	Rao Sahib W. Laxminarayan.	Sudu Purdan, (m.), 65, <i>Coolie.</i>	Manganese	Deceased and some other coolies were ordered by the mate in charge to stop work whilst another coolie rolled a tree down the steps where they were working. For some unknown reason; deceased returned and was struck by the tree. He died the following day.
128	12th April, Noon.	Shekpur Mine, Charanpur P. O., Bengal.	Minto Coal Co., Ltd.	Basini Bauri, (f.), 13, <i>Mason's kamis.</i>	Coal	Deceased, who had been alarmed by some shouting, ran out of a gallery and tripped over some bricks at the entrance. She fell under an approaching loaded tub, the front wheels of which ran over her left leg and caused a compound fracture. She died four days later from heart failure consequent upon shock. Inspection and inquiry made.
129	27th April, 9 A.M.	Loyabadi Mine, Bangjora P. O., Bihar and Orissa.	Barakar Coal Co., Ltd.	Bhudan Manjhi, (m.), 32, <i>Coal cutter.</i>	Coal	Whilst deceased was walking out of the mine, up a slope of 1 in 5, he was attacked by illness, probably epilepsy. He fell backwards and his head struck a sharp ledge on the edge of a coal pillar. The base of his skull was fractured and he died on the spot. Inspection and inquiry made.
130	29th May, 2 P.M.	Namdang Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Radha Bhumi, (f.), 30, <i>Tub pusher.</i>	Coal	Deceased was employed in carrying a safety lamp for two tub pushers on a tram road. Whilst she was walking behind a tub, which was being pushed out, she was crushed against the side of the road by a following tub which had got out of control, owing to the breaking of a wooden sprag. She sustained injuries to which she succumbed five weeks later. Inquiry made.
131	25th July, 10 A.M.	Dandot Mine, Dandot P. O., Panjab.	Thakur Dass Ramji Dass	Kalu, (m.), 14, <i>Stone coolie.</i>	Coal	Deceased fell down at the approach of some tubs and died four hours after being brought to the surface, probably from heart failure. It is doubtful whether he was actually touched by the tubs.
132	3rd August, 3 P.M.	Serampur Mine, Giridih P. O., Bihar and Orissa	East Indian Railway Co.	Ganpat Chamar, (m.), 40, <i>Miner.</i>	Coal	A workman prised down a piece of coal, measuring 4' \times 3' 6" \times 3'. It rolled down a steep side of a fall of coal in the goaf and in its path it collided with a prop, 21 feet long, knocking it out. The prop struck deceased on the head causing fracture of the skull, from the effects of which he died about five hours later. Inspection and inquiry made.
133	7th August, 7 A.M.	Bejdih Mine, Sitarampur P. O., Bengal.	Equitable Coal Co., Ltd.	Prasanna Baurin, (f.), 45, <i>Bailing kamis.</i>	Coal	Deceased was sleeping by the side of a tramming level, with her left leg lying over a rail. A loaded tub came along and grazed her leg, causing a severe and dirty lacerated wound. Gangrene set in and she died sixty days later. Inspection and inquiry made.
134	4th November, 8-30 P.M.	North Kustore Mine, Kustore P. O., Bihar and Orissa.	Raniganj Coal Association, Ltd.	Meghni Turini, (f.), 24, <i>Coal carrier.</i>	Coal	Whilst deceased was pushing a loaded tub down a slight grade, a coal cutter following behind with another tub, overtook her. The second tub ran over her and she sustained injuries from which she died two days later. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1915—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.
SUNDRIES UNDERGROUND—contd.						
135	2nd December, 10 A.M.	Jibutil Mine, Morriston P. O., Madras.	Jibutil (Anantapur) Gold Mines, Ltd.	Raicherla Marrigadu, (m.), 34, <i>Stuff cooler.</i>	Gold	Deceased, while tramping with two others, was pulling the tub from in front instead of pushing it from behind. He got caught between the tub and the props on the side of the level. His chest was crushed and he was killed.
136	4th December, 8-15 A.M.	Old West Ledo Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Surai Chamar, (m.), 22, <i>Mason's labourer.</i>	Coal	Deceased was one of a gang of labourers, regularly employed in cooling, by means of water, an arching, which shut off an old fire on a haulage road. Whilst engaged in throwing water on the hot sand behind the arching, he was scalded by a rush of steam and succumbed to his injuries four days later. Inquiry made.
137	8th December, 5-30 A.M.	Jharia Khas Mine, Jharia P. O., Bihar and Orissa.	Standard Coal Co., Ltd.	Sida Bilaspuri, (m.), 25, <i>Coal cutter.</i>	Coal	Whilst a miner in a pillar cutting district was getting down roof coal, a large lump of coal fell against a prop, 19 feet in length, and knocked it out. The upper end of the prop struck deceased on the head and killed him instantly. Inspection and inquiry made.
SURFACE MACHINERY—(5 deaths).						
138	12th January, 3-30 P.M.	Ghusik Mine, Kalipahari P. O., Bengal.	Ghusik and Muslia Collieries, Ltd.	Fulu Hazra, (m.), 55, <i>Coolie.</i>	Coal	Whilst lowering a Lancashire boiler down the slope of a railway embankment, by means of a hand winch which was not provided with a brake, the boiler overpowered the twelve men at the handles. The wheels commenced to revolve at a great speed. Deceased was caught by one of the handles and sustained injuries from the effects of which he died six hours later. Inspection and inquiry made. <i>See Report, page 10.</i>
139	7th September, 2 P.M.	Sijua Mine, Sijua P. O., Bihar and Orissa.	Sijua Coal Co., Ltd.	Parshotam Latore, (m.), 35, <i>Labourer.</i>	Coal	A double purchase crab winch, geared at 54 to 1, was being used for rolling a Lancashire boiler, weighing 15 tons, up a slope of 1 in 3 on to an embankment, 8 feet high. Owing to the excessive strain set up when the flanges of the boiler touched the ground, the foundation bolts of the winch broke, the machine overturned and was jerked forward by the weight of the boiler when it rolled backward. The eight men turning the handles of the winch were hurled to the ground and deceased, who was one of them, received such severe injuries that he died a few hours later. Inspection and inquiry made. <i>See Report, page 10.</i>
140	9th September, 11-30 A.M.	Burelia Mine, Chora P. O., Bengal.	Burelia Coal Co., Ltd.	Domon Bauri, (m.), 40, <i>Coolie.</i>	Coal	Deceased was struck on the head by the driving belt of a screening plant. <i>Tetanus</i> set in and he died four days later. Inspection and inquiry made. <i>See Report, page 10.</i>
141	28th September, 2-45 P.M.	Lodna Mine, Jharia P. O., Bihar and Orissa.	Lodna Colliery Co., Ltd.	Suker Sirdar, (m.), 35, <i>Labourer.</i>	Coal	Whilst deceased was feeding black coal into a disintegrating machine, one of the cast iron gear pulleys, 4' in diameter × 8' wide × 3" thick, flew to pieces and he was killed on the spot by a flying fragment. Inspection and inquiry made.

142	6th November, 1 P.M.	Serampur Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co.	Bedo Kumbar, (m.), 18, <i>Screener.</i>	Coal	Deceased was climbing along some girders in a screening plant while the machinery was in motion and fell into the elevator. He was crushed severely and died twenty-one days later. Inspection and inquiry made.
SURFACE BOILERS OR PIPES BURSTING— (1 death).						
143	3rd December, 9-5 A.M.	Malkera-Choitodih Mine, Katrasgarh P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ld.	Panu Lohar, (m.), 35, <i>Enginewright.</i>	Coal	Whilst working alone at a steam pump in a ledge at the bottom of a shaft, 350 feet deep, deceased turned on the steam without first opening the drain cock. Water hammer occurred and the steam valve was blown to pieces. Deceased received injuries to which he succumbed two days later. Inspection and inquiry made.
ON SURFACE RAILWAYS AND TRAMWAYS BELONGING TO THE MINE—(7 deaths).						
144	6th February, 4 P.M.	Sowardih Mine, Bhujudih P. O., Bihar and Orissa.	Sowardih Coal Co.	Panchu Mullick, (m.), 45, <i>Tramming coolie.</i>	Coal	Whilst deceased was pushing a tub on a surface tram line, he slipped and fell and was run over by another loaded tub, which was following and which was being pushed by another trammer. His leg was amputated but he died three days later. Inspection and inquiry made.
145	16th February, 10-30 A.M.	Samla-Kendra Mine, Pandavagarh P. O., Bengal.	Samla and Kendra Collieries Syndicate, Ld.	Rajnandan Singh, (m.), 20, <i>Dak poon.</i>	Coal	Deceased, in boarding the blind side of a locomotive, which was leaving a siding, was trapped between it and the rear tub of a set standing on another pair of rails. He received injuries from which he died a few hours later. Inspection and inquiry made.
146	15th April, 6 P.M.	Lakorka Mine, Katrasgarh P. O., Bihar and Orissa.	Lakorka Coal Co., Ld.	Dobari Gope, (m.), 23, <i>Trammer.</i>	Coal	Deceased was pushing an empty tub on a surface tram line and on the approach, from behind, of a set of loaded tubs on a parallel tub line he appears to have lost his presence of mind and to have run in front of the set. He was run over and received injuries to which he succumbed two days later. Inspection and inquiry made.
147	28th April, 11-30 P.M.	Kurbarbari Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co.	Jagannath Chamar, (m.), 30, <i>Miner.</i>	Coal	Deceased was lying across the rails of a metre-gauge line on a bridge, when he was run over and killed by a locomotive and train. He was probably asleep at the time. Inspection and inquiry made.
148	3rd May, 6-30 P.M.	Sudamdih Mine, Bhujudih P. O., Bihar and Orissa.	Sudumdih Coal Co., Ld.	Nagwya Bhuia, (m.), 10, <i>Coal picker.</i>	Coal	Deceased was run over by a set of loaded tubs, which was being hauled along a level tub line by a pair of buffaloes. He died nine hours later. It is presumed that the boy was riding on the tubs, but no one saw him doing so. The practice is forbidden. Inspection and inquiry made.
149	27th August, 5 P.M.	Serampur Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co.	Chattar Meah, (m.), 55, <i>Trolleyman.</i>	Coal	Deceased was crushed between two loaded tubs at a pit bank tippler. In lowering the first tub to the tippler he omitted to transfer its locker to the second tub. He succumbed to his injuries six hours later. Inspection and inquiry made.
150	25th December, 11 A.M.	Jainty Mine, Karmataur P. O., Bihar and Orissa.	Villiers Colliery Co., Ld.	Nehal Meah, (m.), 36, <i>Trolleyman.</i>	Coal	While four men were lowering a set of eight empty tubs on a surface tub line, dipping 1 in 23, an empty tub ran uncontrolled behind and crushed deceased against the set. He died twelve days later from his injuries; the other men jumped aside and escaped. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1915—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.
MISCELLANEOUS ON SURFACE—(24 deaths).						
151	28th January, 3-30 P.M.	Hpaungdaw Mine, Tavoy P. O., Burma.	Quah Cheng Guan	Mahomed Gul, (m.), 25, <i>Miner.</i>	Wolfram	Deceased was leaving an adit in which he had been working, against orders, and was buried under a fall of earth, which occurred at the mouth of the adit and was suffocated.
152	3rd April, 4 P.M.	Sudamdih Mine, Bhujudih P. O., Bihar and Orissa.	Sudamdih Coal Co., Ltd.	Jomona Mahato, (f.), 36, <i>Earth cutter.</i>	Coal	While a gang of coolies was engaged in removing a spoil heap, some of them sat down in the shade afforded by a vertical face of earth 9 feet high. Whilst they were sitting smoking a mass of about 2 tons of earth fell upon them. Deceased sustained a fracture of the spine and died a few hours later. A girl sustained a broken leg and internal injuries. Inspection and inquiry made.
153	20th April, 6-30 P.M.	Monoharbahal Mine, Asansol P. O., Bengal.	Baraboni Coal Concern, Ltd.	Behari Dome, (m.), 35, <i>Earth cutter.</i>	Coal	Deceased was bailing water out of a bridge foundation trench. Whilst so engaged a mass of earth fell from one of the sides upon him and inflicted an injury to the spinal cord. He died two and a half hours later from heart failure consequent upon convulsions caused by the nature of his injury. Inspection and inquiry made.
154	26th April, 12-30 P.M.	Chitidand Mine, Golpur P. O., Panjab.	Panjab Coal Co.	Abdul Halim, (m.), 13; Usaf, (m.), 13, <i>Miscellaneous men.</i>	Coal	The two deceased were sitting by the side of a mine tramroad, under the shadow of a hill, when a landslip took place and a portion of the side of the hill, measuring 17' in length × 15' in height × 6' in thickness, fell upon them and killed them. Inspection and inquiry made.
155	25th May, 8 P.M.	Begunia Khas Mine, Barakar P. O., Bengal.	The Hon'ble Maharaj Sir Manindra Chandra Nandi.	Bada Balf Sircar, (m.), 20, <i>Store-keeper babu</i> ; Jagal Bauri, (m.), 13, <i>Store coolie.</i>	Coal	The two deceased were burned to death in an oil godown. There is no evidence to show how the fire originated. Inspection and inquiry made. <i>See Report, page 10.</i>
156	13th June, 1-30 P.M.	Kessabgunj Mine, Kalipahari P. O., Bengal.	Gunpat Ram Marwari	Mahan Bauri, (m.), 45, <i>Head khalasi.</i>	Coal	Deceased who suffered from a complaint of the lungs, was taken with a violent fit of coughing whilst standing on the top of a vertical boiler. In attempting to reach the ground he fell from a height of 11' 6". He was picked up unconscious and remained in this condition until death ensued half an hour later. In the absence of medical opinion death is assumed to be due to natural causes but accelerated by shock. Inspection and inquiry made.
157	5th July, 11 A.M.	Chitidand Mine, Golpur P. O., Panjab.	Panjab Coal Co.	Khuda Bux, (m.), 42, <i>Coolie.</i>	Coal	Deceased was ordered to drill a hole in a stone, measuring 14' × 8' × 8', in the side of a hill; instead of drilling a hole he attempted to loosen it from underneath, when it suddenly fell over on to him killing him on the spot.
158	10th August, 2 P.M.	Chooling Mine, Maliwun P. O., Burma.	Burma Development Syndicate, Ltd.	Bahi Singh, (m.), 35, <i>Coolie.</i>	Tin	Whilst deceased was working in an open cut excavation he slipped and fell 30 feet on to his head, breaking his neck.

159	12th August, 10-30 A.M.	Bhelatand Mine, Sijua P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ld.	Dhuma Singh, (m.), 25, <i>Labourer.</i>	Coal	Whilst deceased and two other men were at work inside an empty boiler they were scalded by an inrush of steam. The steam came through a blow-off pipe, which was connected to the blow-off pipe of another boiler, which was under steam. Deceased died four hours later. The other two men were only slightly injured. Inspection and inquiry made. <i>See Report, page 11.</i>
160	22nd August, 5 P.M.	Square Iqy Mine, Kodarma P. O., Bihar and Orissa.	L. Narayan	Gunpal Musohar, (m.), 16, <i>Coolie.</i>	Mica	Deceased was removing <i>debris</i> from an excavation and fell about 5 feet on to a stone. He fractured his jaw and died a few hours later.
161	31st August, 3-30 A.M.	Chanda Mine, Jharis P. O., Bihar and Orissa.	R. A. Mucadum & Sons	Bidi Baurin, (f), 35 ; Chandni Baurin, (f), 25 ; Dhami Baurin, (f), 16 ; <i>Coal carriers ;</i> Bijai Bauri, (m.), 33 ; Beni Bauri, (m.), 45 ; Jadu Bauri, (m.), 35 ; <i>Coal cutters ;</i> Gora Bauri, (m.), 6 ; Suka Bauri, (m.), 4 ; Niri Baurin, (f), 1 ; Sundra Bauri, (m.), 6, <i>Not employed.</i>	Coal	Whilst the ten deceased were asleep in their houses a collapse of the underground workings took place. The surface subsided over an area, measuring 135' x 85', and the half of a coolie barrack, 160 feet in length, fell into the cavity. The deceased were killed by the falling masonry and roof of the barrack. Three of the bodies were not recovered. Inspection and inquiry made. <i>See Report, page 11.</i>
162	10th September, 9-30 A.M.	Byaukchoung Mine, Tavoy P. O., Burma.	Tavoy Concessions, Ld.	Darni Singh, (m.), 34, <i>Coolie.</i>	Wolfram	Deceased was sitting at the bottom of an earth bank which was insufficiently sloped. About 3 tons of earth fell on to him from a height of about 7 feet and he was suffocated.
163	16th December, 3 A.M.	Sutikdih Mine, Bhujudih P. O., Bihar and Orissa.	Sutikdih Coal Co., Ld.	Gaya Rai, (m.), 22, <i>Banksman.</i>	Coal	Deceased was sleeping beside a fire which he had made himself near a tram line. His clothes caught fire and he was burned succumbing to his injuries a fortnight later.

APPENDIX II—*contd.*

Fatal Accidents, 1915—*conold.*

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.	Reason for exclusion.	Cause of accident and remarks.
DEATHS NOT INCLUDED IN THE STATISTICS—<i>conold.</i>							
21.	14th October, About 4 P.M.	Chanoh Mine, Barakar P. O., Bihar and Orissa.	Bengal Coal Co., Ld.	Suti Manjhian, (f.), 20, Coal-carrier; Budhan Manjhi, (m.), 2, Not employed.	Coal	Not a mining accident.	The two deceased, who were mother and child, were found drowned in an old shaft. Inspection and inquiry made.
22	4th December, 2 P.M.	Baraboni Mine, Asansol P. O., Bengal.	New Beerbhun Coal Co., Ld.	Lakheswar Hazra, (m.), 6.	Coal	Not employed	Deceased climbed the fence wall and fell into a feed water tank containing water 5' 0" deep and was drowned. Inspection and inquiry made.
23	16th December, 3 A.M.	Simlabahal Mine, Jharia P. O., Bihar and Orissa.	Bhalgora Coal Co., Ld.	Bhattu Bhuia, (m.), 50, Coal cutter.	Coal	Not a mining accident.	After filling two tubs in a well ventilated gallery in the mine, deceased, who was an old man, lay down to sleep in the gallery. Some hours later the sirdar found him dead. Death appears to have been due to natural causes. The <i>post-mortem</i> examination showed that he had suffered from lung trouble. Inspection and inquiry made.
24	20th December, Noon.	Charanpur Mine, Charanpur P. O., Bengal.	Apcar & Co.	Talu Manjhian, (f.), 3½.	Coal	Not employed	Deceased climbed the fence wall and fell into a feed water tank containing water 6' 6" deep and was drowned. Inspection and inquiry made.
25	Not known.	Tikuri Mine, Katni P. O., Central Provinces.	Katni Cement and Industrial Co., Ld.	Jograim Katchin, (f.), 30, Labourer.	Bauxite	Not employed	Deceased was found drowned in an abandoned incline.

APPENDIX II—contd.

Table No. 2.

Statement of fatal and serious accidents in and about mines regulated by the Indian Mines Act, 1901, during the year 1915.

PROVINCE.	District and mineral field.	Total average number of persons employed daily.	FATAL ACCIDENTS.				SERIOUS ACCIDENTS.				DEATH-RATE PER 1,000 PERSONS EMPLOYED.		
			Number of separate fatal accidents.	NUMBER OF DEATHS.		Total deaths.	Number of serious non-fatal accidents.	NUMBER OF PERSONS SERIOUSLY INJURED.		Total number of persons injured.	Below ground.	Above ground.	Below and above ground.
				Below ground.	Above ground.			Below ground.	Above ground.				
A.—COAL.													
Assam	Lakhimpur	2,767	22	25	...	25	95	87	14	101	13.28	...	8.08
	Naga Hills	112	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	2,879	22	25	...	25	95	87	14	101	13.28	...	8.08
Baluchistan	Kalat	37	...	...	...	...	...	...	...	...	...	...	...
	Loralai, Loralai	28	...	...	...	...	...	...	...	...	...	...	...
	Quetta, Pishin	110	...	...	...	...	...	...	...	...	...	...	...
	Sibi, Khost, etc.	793	3	3	...	3	4	3	1	4	6.24	...	3.78
	TOTAL	968	3	3	...	3	4	3	1	4	5.07	...	3.13
Bengal	Bankura, Raniganj	71	...	...	...	...	...	...	...	...	...	...	...
	Birbhum "	28	...	...	...	...	...	...	...	...	...	...	...
	Burdwan "	41,994	40	39	7	46	41	38	8	46	1.39	.50	1.10
	TOTAL	42,098	40	39	7	46	41	38	8	46	1.38	.50	1.09
Bihar and Orissa	Hazaribagh { Bokaro- Ramgarh. Giridih	112	...	...	...	...	1	...	1	1	...	...	...
	Jharria	2,011	...	...	...	...	3	...	3	3	...	...	...
	Manbhum, Jharria	76,346	58	58	19	72	48	36	15	61	1.08	.69	.94
	" Raniganj	5,006	3	3	...	3	7	5	2	7	.86	...	.60
	Palaman, Daltonganj	855	...	...	...	...	1	1	...	1	...	...	...
	Sambalpur, Hingir-Rampur	648	1	1	...	1	...	...	...	...	2.32	...	1.54
	Sonthal Parganas, Jainty	1,106	1	...	1	1	...	...	...	...	...	1.11	.90
	TOTAL	95,120	69	60	28	88	76	55	24	79	.97	.69	.67
Burma	Bhamo	16	...	...	...	...	...	...	...	...	...	...	...
Central Provinces	Chanda, Ballarpur	838	...	...	...	...	1	1	...	1	...	...	...
	Chhindwara, Fench Valley	1,118	1	1	...	1	4	3	1	4	1.22	...	.89
	Narsinghpur, Mohpani	1,220	2	2	...	2	3	1	2	3	2.49	...	1.64
	Yectmal	19	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	3,184	3	3	...	3	3	5	3	3	1.38	...	.94
North-West Frontier Province.	Hazara	9	...	...	...	...	...	...	...	...	...	...	...
Panjab	Jhalum	1,022	5	3	3	6	1	1	...	1	4.48	3.52	5.87
	Mianwali	89	...	...	...	...	...	...	...	...	...	...	...
	Shahpur	182	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	1,273	5	3	3	6	1	1	...	1	3.56	3.98	4.71
GRAND TOTAL (COAL)		145,587	142	138	38	166	225	189	50	239	1.39	.86	1.14

APPENDIX II—contd.

Table No. 2—contd.

Statement of fatal and serious accidents in and about mines regulated by the Indian Mines Act, 1901, during the year 1915—contd.

PROVINCE.	District and mineral field.	Total average number of persons employed daily.	FATAL ACCIDENTS.				SERIOUS ACCIDENTS.			DEATH-RATE PER 1,000 PERSONS EMPLOYED.			
			Number of separate fatal accidents.	NUMBER OF DEATHS.		Total deaths.	Number of serious non-fatal accidents.	NUMBER OF PERSONS SERIOUSLY INJURED.		Total number of persons injured.	Below ground.	Above ground.	Below and above ground.
				Below ground.	Above ground.			Below ground.	Above ground.				
B.—MICA.													
Bihar and Orissa	Gaya	1,286	1	1	...	1	1	1	...	1	1.22	...	.78
	Hasaribagh	6,104	4	3	1	4	...	...	...	...	.91	.86	.66
	Monghyr	205	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	7,595	5	4	1	5	1	1	...	1	.94	.80	.66
Madras	Nellore	2,911	...	...	...	...	1	1	...	1	...	...	...
	TOTAL	2,911	...	...	...	...	1	1	...	1	...	...	...
Rajputana	Ajmer	191	1	1	...	1	1	1	...	1	10.64	...	5.24
	Merwara	76	...	...	...	...	...	...	...	...	...	...	...
	Nasirabad	18	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	285	1	1	...	1	1	1	...	1	6.41	...	3.51
GRAND TOTAL (MICA)		10,791	6	6	1	6	3	3	...	3	.77	.23	.56
C.—MANGANESE.													
Bombay	Panch Mahals	970	...	...	...	...	...	...	...	...	...	...	...
Central Provinces	Balaghat	3,423	1	1	...	1	4	1	3	4	.39	...	.29
	Bhandara	1,371	...	...	...	...	...	...	...	...	...	...	...
	Chhindwara	964	1	1	...	1	2	...	2	2	1.16	...	1.04
	Jabalpur	26	...	...	...	...	...	...	...	...	...	...	...
	Nagpur	3,021	...	...	...	...	...	...	...	...	...	...	...
TOTAL	8,805	2	2	...	2	6	1	5	6	.30	...	.23	
Madras	Visagapatam	15	...	...	...	...	...	...	...	...	...	...	...
GRAND TOTAL (MANGANESE)		9,790	2	2	...	2	6	1	5	6	.27	...	.20
D.—LIMESTONE.													
Central Provinces	Jabalpur-Katni	1,847	...	...	...	...	...	...	...	...	...	...	...
Panjab	Hoshiarpur	60	...	...	...	...	...	...	...	...	...	...	...
GRAND TOTAL (LIMESTONE)		1,907	...	...	...	...	...	...	...	...	...	...	...
E.—SALT.													
Panjab	Jhelum	608	...	...	...	...	6	4	2	6	...	...	...
	Mianwali	77	...	...	...	...	...	...	...	...	...	...	...
	Shahpur	33	...	...	...	...	...	...	...	...	...	...	...
GRAND TOTAL (SALT)		718	...	...	...	...	6	4	2	6	...	...	...

APPENDIX II—contd.

Table No. 2—concl'd.

Statement of fatal and serious accidents in and about mines regulated by the Indian Mines Act, 1901, during the year 1915—concl'd.

PROVINCES.	District and mineral field.	Total average number of persons employed daily.	FATAL ACCIDENTS.				SERIOUS ACCIDENTS.			DEATH-RATE PER 1,000 PERSONS EMPLOYED.			
			Number of separate fatal accidents.	NUMBER OF DEATHS.			Number of serious non-fatal accidents.	NUMBER OF PERSONS SERIOUSLY INJURED.			Below ground.	Above ground.	Below and above ground.
				Below ground.	Above ground.	Total deaths.		Below ground.	Above ground.	Total number of persons injured.			
M.—COPPER ORE.													
Bihar and Orissa	Singhbhum	1,424	1	1	...	1	2	1	1	2	2.25	...	.70
Burma	Kathe	25	...	...	...	...	...	...	...	...	...	...	...
	Kyaukse	81	1	1	...	1	3	2	1	3	23.26	...	12.35
	Lower Chindwin	816	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	422	1	1	...	1	3	2	1	3	3.72	...	2.37
	GRAND TOTAL (COPPER)	1,846	2	2	...	2	5	3	2	5	2.30	...	1.08
N.—BAUXITE.													
Central Provinces	Jabalpur	41	...	...	...	...	...	...	...	...	...	...	...
O.—CLAY.													
Bihar and Orissa	Manbhum	65	...	...	...	...	...	...	...	...	...	...	...
	Palaman	29	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	94	...	...	...	...	...	...	...	...	...	...	...
Central Provinces	Jabalpur	250	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (CLAY)	344	...	...	...	...	...	...	...	...	...	...	...
P.—GALENA.													
Central Provinces	Drug	37	...	...	...	...	...	...	...	...	...	...	...
Q.—TIN.													
Bihar and Orissa	Hezeribagh	7	...	...	...	...	...	...	...	...	...	...	...
Burma	Mergui (Maliwan)	27	1	...	1	1	...	...	...	...	...	0.00	37.04
	Tavoy	...	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (TIN)	34	1	...	1	1	...	...	...	...	...	0.00	26.47
R.—STEATITE.													
Madras	Kurnool	12	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (STEATITE)	12	...	...	...	...	...	...	...	...	...	...	...
S.—FULLER'S EARTH.													
Central Provinces	Jabalpur	5	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (ALL MINERALS)	180,088	163	151	37	188	258	204	68	272	1.28	.80	1.04

* Figures included with those of Tavoy wolfram.

† Figures included with those of Jabalpur limestone.

APPENDIX II—contd.

Table No. 3.

Statement of fatal accidents in mines regulated by the Indian Mines Act, 1901, during the year 1915, classified according to the age and sex of the workers.

MINERAL.	PROVINCE AND MINERAL FIELD.	Number of separate fatal accidents.	NUMBER OF DEATHS.								TOTAL BELOW AND ABOVE GROUND.	
			BELOW GROUND.				ABOVE GROUND.					
			Adult males.	Adult females.	Children (under 15).	TOTAL.	Adult males.	Adult females.	Children (under 15).	TOTAL.		
COAL	Assam, Lakhimpur	22	22	8	...	25	...	...	...	...	25
	Baluchistan, Sibi	3	3	...	...	3	...	...	...	...	3
	Bengal, Raniganj	40	29	9	1	89	7	...	...	7	40
	Bihar and Orissa. {	Giridih	6	3	3	3	3	6
		Jainty	1	1	1	1
		Jharra	58	48	10	...	56	10	4	5	19	72
		Manbhum, Raniganj, Sambalpur, Hingir Rampur.	3	1	2	...	3	3
	TOTAL BIHAR AND ORISSA	69	48	12	...	60	14	4	5	28	83	
	Central Provinces {	Chhindwara	1	1	1	1
		Narsinghpur	2	...	2	...	2	2
	TOTAL CENTRAL PROVINCES	3	1	2	...	3	...	...	...	...	3
Panjab, Jhelum	5	3	...	...	3	3	...	...	...	3	6
TOTAL COAL	142	106	26	1	133	24	4	5	33	166		
MICA	Bihar and Orissa. {	Gaya	1	1	...	...	1	...	...	...	1
		Hazaribagh	4	3	3	1	1	4
	TOTAL BIHAR AND ORISSA	5	4	...	...	4	1	...	...	1	5
Rejputana, Ajmer	1	1	...	...	1	...	...	...	...	1	
TOTAL MICA	6	5	...	...	5	1	...	...	1	6	
MANGANESE	Central Provinces {	Balaghat	1	1	...	...	1	...	...	...	1
		Chhindwara	1	...	1	...	1	...	...	...	1
TOTAL CENTRAL PROVINCES	2	1	1	...	2	...	...	...	...	2	
GOLD	Madras, Anantapur	5	5	...	...	5	...	...	...	5	
WOLFRAM	Burma, Tavoy	5	4	...	...	4	2	...	...	2	6
COPPER	Bihar and Orissa, Singhbhum	Burma, Kyaukse	1	1	...	...	1	...	...	...	1
		Burma, Kyaukse	1	1	...	...	1	...	...	...	1
TOTAL COPPER	2	2	...	...	2	...	...	...	...	2	
TIN	Burma, Mergui	1	...	...	...	...	1	...	...	1	
GRAND TOTAL (ALL MINERALS)		163	123	27	1	151	23	4	5	37	193	

APPENDIX II—*concl'd.*

Table No. 4.

Statement of fatal accidents in mines regulated by the Indian Mines Act, 1901, during the year 1915, 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 of fire-damp.	Falls of roof.	Falls of sides.	In shafts.	Suffocation by gases.	By explosives.	Impactions of water or falling into water.	Struck.	Miscellaneous below ground.	Surface.	Total deaths.	Below ground.	Above ground.	Below and above ground.
Coal	142	1	49	36	15	...	8	2	16	11	39	166	1.39	.66	1.14
Manganese	2	...	...	...	...	...	...	1	...	1	...	2	.27	...	.20
Mica	6	...	1	2	...	...	1	...	1	...	1	6	.77	.23	.56
Gold	5	...	...	...	2	...	2	...	...	1	...	5	4.97	...	2.81
Wolfram	5	...	...	4	...	...	...	...	...	...	2	6	2.30	1.38	1.88
Copper	2	...	1	...	...	...	1	...	...	...	...	2	2.80	...	1.08
Tin	1	...	...	...	...	...	...	...	...	...	1	1	...	0.00	26.47
TOTAL 1915	163	1	51	42	17	...	7	3	17	13	37	188	1.23	.60	1.04
TOTAL PRECEDING YEAR.	152	1	48	47	22	1	16	8	21	10	17	191	1.45	.26	1.03
DIFFERENCE	+11	...	+3	-5	-5	-1	-9	-5	-4	+3	+20	-3	-17	+34	+01

APPENDIX III.

PROSECUTIONS UNDER THE MINES ACT.

Statement of prosecutions instituted under the Indian Mines Act, 1901, during the year 1915.

Province.	District.	Number of prosecutions.	Number of persons prosecuted.	Number convicted.	Numbers of rules and sections of the Act contravened.	REMARKS.
Bihar and Orissa	Manbhum	1	1	1	Section 20, Rule 12 of Notification No. 864-68-20, dated 10th March 1904.	Proceedings instituted during 1914, but cancelled in 1915.
	Do.	1	2	1	Section 20, Rules 2 (g), 7 and 8 of Notification No. 864-68-20, dated 10th March 1904.	Do.
	Do.	1	1	1	Section 20, Rule 12 of Notification No. 864-68-20, dated 10th March 1904.	Do.
Bengal	Burdwan	1	1	1	Section 20, Rule 19 of Notification No. 864-68-20, dated 10th March 1904, and Rule 8 of Notification No. 11798-103, dated 30th December 1908.	Do.
	Do.	1	1	1	Section 20, Rule 2 of Notification No. 11798-103, dated 30th December 1908.	
Central Provinces	Chhindwara	1	1	1	Section 20, Rule 24 of Notification No. 864-68-20, dated 10th March 1904.	
Bengal	Burdwan	1	1	1	Indian Mines Act, 1901, Section 13 (1).	
Bihar and Orissa	Manbhum	1	1	1	Section 20, Rule 1 of Notification No. 11798-103, dated 30th December 1908.	
	Do.	1	1	1	Ditto ditto.	
Bengal	Burdwan	1	1	1	Section 20, Rule 19 of Notification No. 864-68-20, dated 10th March 1904.	
Bihar and Orissa	Manbhum	1	1	...	Section 20, Rule 2 of Notification No. 11798-103, dated 30th December 1908.	Time-barred.
Madras	Nellore	1	1	...	Section 20, Rule 1 of Notification No. 11798-103, dated 30th December 1908.	Withdrawn.
Bihar and Orissa	Manbhum	1	1	...	Section 20, Rule 19 of Notification No. 864-68-20, dated 10th March 1904.	Proceedings dropped.
	Do.	1	1	...	Ditto ditto	Do.
Bengal	Burdwan	1	1	1	Section 20, Rules 2 (g) and 4 (b) of Notification No. 864-68-20, dated 10th March 1904.	
Bihar and Orissa	Hazaribagh	1	1	1	Section 20, Rule 1 of Notification No. 11798-103, dated 30th December 1908.	
	Do.	1	1	1	Ditto ditto.	
	Do.	1	1	1	Ditto ditto.	
	Do.	1	1	1	Ditto ditto.	
Bengal	Burdwan	1	1	1	Section 20, Rule 1 of Notification No. 864-68-20, dated 10th March 1904.	

APPENDIX III—concl'd.

PROSECUTIONS UNDER THE MINES ACT—concl'd.

Statement of prosecutions instituted under the Indian Mines Act, 1901, during the year 1915.

PROVINCE.	District.	Number of prosecutions.	Number of persons prosecuted.	Number convicted.	Numbers of rules and sections of the Act contravened.	REMARKS.
Bihar and Orissa	Manbhum	1	1	1	Indian Mines Act, 1901, Section 13 (1) and Section 20, Rule 45 of Notification No. 2968-82, dated 21st April 1906.	
	Do.	1	1	1	Section 20, Rule 1 of Notification No. 11793-103, dated 30th December 1908.	
	Do.	1	1	1	Ditto ditto.	
Bengal	Burdwan	1	1	1	Ditto ditto.	
	Manbhum	1	1	1	Ditto ditto.	
	Do.	4	4	4	Section 20, Rules 3, 9 and 19 of Notification No. 864-68-20, dated 10th March 1904.	
Bihar and Orissa	Do.	1	1	1	Indian Mines Act, 1901, Section 13 (1).	
	Do.	1	1	1	Section 20, Rule 2 of Notification No. 11793-103, dated 30th December 1908, and Rule 19 of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	1	1	Section 20, Rules 3, 7 and 19 of Notification No. 864-68-20, dated 10th March 1904.	
Bengal	Burdwan	1	1	...	Section 20, Rule 1 (a) of Notification No. 864-68-20, dated 10th March 1904, and Rule 50 of Notification No. 2968-82, dated 21st April 1906.	Not tried in 1915.

APPENDIX IV.
MISCELLANEOUS.

Statement No. 1.

List of Inspection Circles.

No. 1 Circle.	No. 2 Circle.	No. 3 Circle.
(a) All mines in the district of Manbhum, which are situated west of a line drawn from Adra Junction at mile 175 of the Bengal-Nagpur Railway to Gobindpur at mile 169 on the Grand Trunk Road and continued across the district in each direction, and all mines in the district of Palamanu.	(a) All mines in the districts of Burdwan and Bankura to the west of a line drawn from mile 131 on the East Indian Railway main line near Asansol to mile 141 on the Ondal loop near Gaurangdi, and continued across the districts in each direction; and all mines in the district of Manbhum east of a line drawn from Adra Junction at mile 175 on the Bengal-Nagpur Railway to Gobindpur at mile 169 on the Grand Trunk Road, and continued across the district in each direction, and all mines in the districts of Hazaribagh, Gaya, Monghyr, Darjeeling and Ranchi.	(a) All mines in the districts of Burdwan and Bankura to the east of a line drawn from mile 131 on the East Indian Railway main line near Asansol to mile 141 on the Ondal loop near Gaurangdi, and continued across the districts in each direction, and all mines in the districts of the Southal Parganas, Birbhum, Singhbhum and Sambalpur.
(b) All mines in Assam	(b) All mines in Baluchistan	(b) All mines in the Presidency of Bombay.
(c) All mines in Burma	(c) All mines in the United Provinces	(c) All mines in the Central Provinces.
	(d) All mines in the Panjab	(d) All mines in the Presidency of Madras.
	(e) All mines in Ajmer-Merwara.	

Statement No. 2.

List of holders of certificates as managers of coal-mines in British India.

(a) Certificates granted to holders of English certificates of competency.

FIRST CLASS.

NAME.	No. of Indian certificate.	Date of Indian certificate.	No. of English certificate.	Date of English certificate.
Bigg, John Wilson	190	4th March 1915	3506	30th December 1909.
London, James	191	Ditto	2443	8th June 1904.
Jack, George S.	192	Ditto	3737	22nd December 1910.
Beckett, Willis	193	Ditto	3478	22nd July 1909.
Thomas, Thomas John	194	Ditto	3724	14th October 1910.
Taylor, William Alexander	195	Ditto	3639	9th June 1910.
Buchanan, James	196	Ditto	3803	13th June 1911.
Bell, John Valentine	197	Ditto	3768	1st March 1911.
Dickinson, William	198	Ditto	3773	1st March 1911.
Angus, William	199	17th March 1915	3798	13th June 1911.
Thornton, James Brownlee	200	Ditto	3848	13th June 1911.
Tallack, Charles Cragoe	201	10th April 1915	103	2nd February 1914.
Oswald, Ernest William	202	11th December 1915	222	22nd July 1915.
Langley, Elijah	203	Ditto	3061	31st December 1907.
Burgoyne, George Ormerod	204	Ditto	2844	2nd July 1906.

SECOND CLASS.

Hunter, George	22	11th December 1915	3154	16th June 1897.
Edwards, David Lewis	23	Ditto	7013	2nd July 1909.

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 2—*concl'd.*List of holders of certificates as managers of coal mines in British India—*concl'd.*

(b) Certificates of Competency.

FIRST CLASS.

NAME.	No. of certificate.	Date of certificate.	REMARKS.
Das, Debendra Nath	78	10th April 1915.	
Knyvett, Godfrey Denzil	79	Ditto.	
White, Edward Beadon Deveria	80	Ditto.	
Mukherji, Dinesh Chandra	81	Ditto.	
Power, Clarence Eustace	82	Ditto.	

SECOND CLASS.

Nag, Hemanta Kumar	110.	10th April 1915.	
Lawton, Henry	111	Ditto.	
O'Reilly, Denis Edward	112	Ditto.	
Penfold, Douglas Kent	113	Ditto.	
Campbell, Archibald	114	Ditto.	
Naravane, Shankar Govind	115	Ditto.	
Kolya, Narayan Chandra	116	Ditto.	
Mukherji, Keshob Chandra	117	Ditto.	

(c) Certificate of Service.

FIRST CLASS.

Robertson, Ivanhoe George Chersley	138	10th March 1915.	
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APPENDIX IV—contd.

MISCELLANEOUS.

Statement No. 3.

List of Universities and Colleges approved by the Governor-General in Council for the purposes of Rules 32 and 33 under the Indian Mines Act, 1901.

Name of Institution and Degree or Diploma.	Date.
University of Birmingham in respect of its Degree of B.Sc. in Mining and Diploma in Mining.	11th June 1904.
University College of Bristol in respect of its Senior Diploma in Mining.	16th September 1904.
University of Cambridge in respect of its Diploma in Mining Engineering.	6th June 1905.
University of Durham in respect of its Degree of B.Sc. in Mining	21st December 1903.
Durham College of Science in respect of its Diploma in Mining .	29th June 1904.
University of Glasgow in respect of its Degree and Diploma in Mining.	28th September 1904.
Glasgow and West of Scotland Technical College in respect of its Diploma in Mining.	28th June 1904.
University of Leeds in respect of its Degree of B.Sc. in Mining and Diploma in Mining.	21st November 1904.
University of London in respect of its B.Sc. Degree in Mining for Internal Students, subject to the Degree being endorsed by the University with a certificate of four months' practical experience in a mine.	9th June 1905.
University of London in respect of its B.Sc. Degree in Mining for External Students, subject to the Degree being endorsed by the University with a certificate of four months' practical experience in a mine.	7th August 1906.
Royal School of Mines in respect of its Associateship in Mining .	24th March 1904.
University of Oxford in respect of its Diploma B. for Colliery Engineers (in Scientific Engineering and Mining subjects).	11th February 1905.
University College of Sheffield in respect of its Diploma in Mining.	15th July 1904.
University College of South Wales and Monmouthshire in respect of its Diploma in Mining.	19th April 1904.
Wigan Mining and Technical College in respect of its Diploma in Mining.	26th August 1904.
Civil Engineering College, Sibpur, in respect of its Diploma in Mining.	22nd February 1907.
Merchant Venturers' Technical College, Bristol, in respect of its Diploma in Mining Engineering.	5th October 1905.
Victoria University of Manchester in respect of its Degree and Certificate of Mining.	14th February 1906.
University College of Nottingham in respect of its Diploma in Mining Engineering.	23rd March 1906.
University of Sheffield in respect of its Degree of Bachelor of Engineering (Mining).	30th June 1906.
Heriot-Watt College in respect of its Certificate in Mining Engineering.	16th January 1908.
Calcutta University in respect of its Degree of Bachelor of Engineering in the branch of Mining Engineering.	24th September 1910.
Harvard University, Cambridge, Massachusetts, in respect of its Diploma in Mining Engineering.	22nd February 1913.
Columbia University, New York, in respect of its Degree of Engineer of Mines.	13th March 1915

APPENDIX IV—contd.

MISCELLANEOUS.

Statement No. 4.

SIBPUR COLLEGE.

THE MINING CLASSES.

CIRCULAR.

(All students must be resident.)

A course for the Diploma in the "Principles of Mining" is offered.

Arrangement of Classes.

First year.—Admissions about the end of January to the preliminary year, in which Mechanical, Electrical and Mining students are taught together.

Second year.—Promotion in April to the Junior Mining Class. Civil Engineering students who pass the Sub-Overseer examination are also admitted at this stage.

Third year.—Promotion in April to the Senior Mining Class. The examination for the Diploma in Mining is held at the end of this year.

(The possession of a certificate gives the holder no claim to any appointment under Government.)

The Mining Course.—This course covers three years (all at the College), preparing students for the examination for the Government Diploma in the "Principles of Mining." The first or preliminary year is common to the course in Mechanical and Electrical Engineering. Specialized instruction in Mining is offered only in the last two years. Students spend six weeks each year in learning practical Mine Surveying and in visiting collieries.

The courses of instruction are designed to afford theoretical training in the Principles of Mining generally, to prepare students for positions of responsibility in coal or metal mines, and in the case of students attending for instruction in coal-mining, to qualify them to appear at the examinations for mine managers as required by the Indian Mines Act. Students who obtain the College Diploma may be granted a reduction by two years in the qualifying period of practical work in a coal mine required of candidates for a colliery manager's certificate.

Admission to the Mechanical and Electrical Engineering and Mining Courses.—Admission to the first or preliminary year of the Mechanical and Electrical Engineering and Mining Courses is made at the end of January. Candidates must be qualified, as laid down above, for admission to the first year of the Sub-Overseer classes (B. Final certificate-holders are admitted only to the first or preliminary year of the Mechanical and Electrical and Mining Courses).

Applications must be received at the Principal's office by the 16th January.

Admission to advanced standing.—Students who have passed the Sub-Overseer examination may be admitted in April to the junior year of the Mining or the Mechanical and Electrical Engineering Courses, thus qualifying for admission to the final examination in those branches on the expiry of two years.

Age.—No limits of age are laid down for admission to the Mining and Mechanical and Electrical Engineering Courses.

Admission of special students to the Mining classes.—Provided there is room, persons who have completed at least two years' practical work upon a mine may be admitted direct to the junior year of the Mining Course as special students, irrespective of age, provided that their general education is such as to enable them to follow the course with profit. They must apply for admission before 1st March, producing statements from the managers under whom they have served, showing the nature of their employment and period.

Two places in the Mechanical and Electrical Engineering and two places in the Mining Courses are reserved for students from Bihar and Orissa.

The total number of admissions to the above courses in Civil and Mechanical and Electrical Engineering and Mining is limited to 60; preference is given to admissions to the junior years of the Upper Subordinate, the Mechanical and Electrical Engineering and Mining Courses and to the second year of the Sub-Overseer Courses. The number admitted to the Civil and Mechanical and Electrical and Mining Branches is regulated by the Principal, so that the total number in any combined class does not exceed 60, nor in any special branch shall it exceed 40.

In determining the age of candidates for admission, for Indian students the statement recorded in the school registers on their first joining any school is the only evidence of their age accepted. European students must produce their baptismal certificates.

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 4—*contd.*

MEDICAL EXAMINATION.

Every applicant must before admission present himself before the Medical Officer resident at the College for examination as to his eyesight, physical strength and fitness for manual labour. In the case of those resident at a distance, a Civil Surgeon's certificate will be accepted. Candidates not protected by vaccination must be vaccinated before admission.

COMMENCEMENT OF SESSION.

The second-year Sub-Overseer and the junior-year sessions of all courses commence in April as soon as possible after the B. Final or Sub-Overseer examination results are announced.

The first-year session commences on the first Monday in May.

Any student unable to join the College on the date mentioned in his admission letter must send by that date Rs. 9 of the first instalment of fees in order to secure his seat; failing this, another student will be admitted in his place. He must also bring with him, when he joins, a medical certificate from a Civil or Assistant Surgeon testifying his inability to join on the proper date, failing which he will be liable to a fine of Rs. 10.

VACATION.

The College will be closed for the long vacation from about the middle of August to the first Monday in November. No student may remain at the College during this period, except such as may be detained on duty by the Principal.

Residential arrangements.

All students must be resident.

There are separate furnished boarding arrangements for Europeans, Muhammadans and Hindus. Messes are maintained for Europeans and Hindus, Muhammadans make their own messing arrangements.

In the case of Muhammadans, on account of the greater cost of living at the College owing to the small number of Muhammadan students, Government maintain a cook and one other servant, and pay a stipend to each Muhammadan student varying from Rs. 6 to Rs. 1 a month according as there may be one or sixteen resident Muhammadans.

COLLEGE DUES.

Initial—

	Rs.	
Entrance fee, mess	2	} Non-returnable. Balance returnable if applied for within three years after paying College dues.
Entrance fee, athletic club	1	
Caution-money deposit	5	

Monthly—

Tuition	3	Payable for each month of the year.
Electric light	1	Payable for ten months of the year.
Board (session) 9½ months	...	Europeans, Rs. 25; Hindus, Rs. 11.
" (vacation) 2½ "	...	Europeans, Rs. 2; Hindus, Rs. 1.
Athletic club	1	in March, June and November.

Free studentships.—A total number of five free studentships for all branches in the Apprentice Department are available for European students.

Reduced feeships.—A total number of 25 reduced feeships for all branches of the Apprentice Department are available for Europeans. These reduce the fees to Rs. 5 for messing payable for 12 months in addition to the electric light and athletic club fees.

A total number of 40 reduced feeships are available for Indians. These reduce the fees to Rs. 2 for messing payable for twelve months in addition to the electric light and athletic club fees.

NOTE.—Free and reduced feeships apply only to students whose parents or guardians reside within the limits of the jurisdiction of the Governor of Bengal, but the sons of employés of the East Indian Railway, Bengal-Nagpur Railway or Eastern Bengal State Railway, of soldiers serving in India, of Survey, Telegraph and other Government officers who are liable to employment in Bengal, or pensioners who, when on active service, were liable to be so employed, are eligible for election.

Forms of application for the reduced feeships are available in the Principal's office.

These free and reduced feeships are awarded by the Board of Visitors after the commencement of the session from among students who have joined.

APPENDIX IV—*contd.*
MISCELLANEOUS.

Statement No. 4—*contd.*

SCHOLARSHIPS AND STIPENDS.

TENABLE IN JUNIOR AND SENIOR YEARS OF MINING COURSE FOR REGULAR STUDENTS
RESIDENT IN BENGAL.

Rs.

Two scholarships of	12	} Carrying exemption from tuition fee unless the holder is also on the Reduced Fee List.
Three " "	6	

FOR SPECIAL STUDENTS.

Europeans. Two Scholarships of	50	} Awarded on the result of the sessional examination of students attending evening classes in mining-instruction in the coalfield.
Indians " " " "	25	

SYLLABUS OF MINING COURSES.

COURSE I.

Geology applied to mining.—(One lecture per week.)

Classification of rocks: characteristic fossils and economic products of the principal systems.

Structure of rock; foldings, faults, cleavage, formation of mineral veins.

Principles of geological surveying: methods employed in constructing geological maps and sections. Special reference to the geology of India.

Mining Engineering.—(Two lectures per week.)

Boring by hand and power machines.

Sinking and lining shafts; various methods employed in special cases.

Systems of haulage, underground and aboveground, aerial ropeways.

Hoisting, head-gear, ropes, safety appliances.

Mining legislation.

Section A.—(One lecture per week.)

Methods of working coal, shafts, pillars, preliminary work, and various methods of working the seams. Special reference to thick coal working as practised in England and different parts of the world.

Shot-firing; coal-cutting by machinery.

Surface subsidence and under-sea working.

Timbering and other supports.

Coal mine plans and sections, connecting surface and underground surveys.

Section B.—(One lecture per week.)

Prospecting for and methods of working mineral veins.

Alluvial mining and open workings.

Hydraulic mining; dredging for gold; ore-beds and deep leads, overhand and underhand stopping.

Hand and power drilling; blasting, timbering.

Metal mine plans.

COURSE II.

Descriptive Mineralogy.—(One lecture per week.)

Physical properties of minerals; description of various ores and fuels; methods of determination.

Prospecting operations.

Mining Engineering.—(Two lectures per week during first-half of session.)

Drainage of mines; adits, levels; pumping machinery; dams; boring against old workings.

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 4—*contd.*

Ventilation of mines; natural and artificial ventilation; splitting and regulating air currents; types of fans; water-gauge and anemometer.
Power-application in a mine; discussion of relative merits of steam, water, compressed air, electricity and oil, as sources of applied power.

Section A.—(One lecture per week).

Description of gases found in coal mines; colliery explosions; safety lamps; instruments for detecting fire-damp; treatment of men overcome by foul air.

Arrangement of surface works at a colliery; sorting and screening coals; coal-washing, briquette making, coking and bye-products.

Section B.—(One lecture per week).

Surface works of metal mines, sorting, crushing, sizing and concentration of various ores. Modern ore-dressing machinery and slime tables.

Special reference to treatment of gold, silver, copper, and zinc.

Cyanide and Chlorine treatment of slimes.

Statement No. 5.

MINING INSTRUCTION IN BENGAL AND BIHAR AND ORISSA.

[The Mining Educational Advisory Board desire that Colliery Managers will kindly publish this information in their collieries. An appeal is also made to them to support the lectures by seeing that members of their colliery staff, who are suitable, take advantage of the lectures and attend them regularly.]

RANIGANJ AND JHARIA COALFIELDS.

Lectures will be delivered throughout the session at the following centres:—

<i>Place and days.</i>	<i>Lecturer and Secretary.</i>
(1) Lecture-room near Sijua station, on Tuesdays.	} Mr. H. C. Read.
(2) Lecture-room near the Jharia Club, on Mondays.	
(3) Lecture-room at Messrs. Apar and Company's Charanpur Colliery, on Fridays.	
(4) Lecture-room near Dishargarh Club, on Wednesdays.	
(5) Railway Institute, Raniganj, on Thursdays.	

The course of instruction, consisting of not less than 80 lectures, will commence the first week in September and end in the following April. An examination will be held in April 1916, and candidates who pass the examination will receive a certificate recording their success. No candidate will, however, be permitted to sit for the examination unless he has attended 50 per cent. of the lectures and received 40 per cent. of the marks allotted for home work.

All Europeans and English-speaking Indians are cordially invited to attend.

The following Sub-Committees have been appointed for each centre:—

RANIGANJ DISTRICT.

<i>Dishargarh Centre.</i>	<i>Charanpur Centre.</i>	<i>Raniganj Centre.</i>
Mr. G. C. Leach, <i>Chairman.</i>	Mr. G. C. Leach, <i>Chairman.</i>	Mr. G. C. Leach, <i>Chairman.</i>
" Glen George.	" T. Samson.	" P. S. Keelan.
" Geo. Miller.	" B. Mitchell.	" J. Mackintosh.
" F. Owen.	" E. M. Patterson.	" W. J. Rees.
Babu M. N. Roy (Begunia).	" A. Russell.	Babu Promotho Nath Hazra.
" P. C. Tarafdar.	Babu Rajani Prokash	" Bejoy Krishna Banerji.
" Hari Pada Mukherji.	" Chakravarti.	
	" Atul Shashi Mitra.	

APPENDIX IV—contd.

MISCELLANEOUS.

Statement No. 5—contd.

JHARIA DISTRICT.

Jharia Centre.

Mr. R. R. Simpson,
Chairman.
" R. G. M. Bathgate.
" J. S. Kean.
" A. S. Thomson.
Babu Sita Nath Dutta.
" Gobhurdhan Dass Manishankar.

Sijua Centre.

Mr. R. R. Simpson,
Chairman.
" A. A. Agabeg.
" E. S. Bennertz.
" B. Starksfield.
Babu Purshotan Bhimji Relia.

SYLLABUS OF THE COURSE OF INSTRUCTION.

The course will treat principally of the more practical operations in actual mining, with special reference to India, and the principles underlying such operations will be thoroughly discussed. Special attention will be paid to the various methods of working thick seams. Sketches illustrating the lectures will be distributed free of charge.

At the close of each lecture questions will be set for home work.

FIRST-YEAR COURSE.

1. *Geology*.—General structure of the crust of the earth; descriptions of fault, dykes, outcrop, dip, strike, unconformity, etc.; composition and properties of coal; special reference to the coal measures in India; importance of recording results of observations.

2. *Exploration*.—Advantages of borings; driving through faults, washouts, dykes, methods of maintaining the direction and gradient of such drivages.

3. *Boring and winning*.—Different systems of borings; choice of methods; cost of boring; winning coal by inclines, adits, shafts and cross-cut.

4. *Sinking*.—Site of colliery; position of shafts, excavation and shape; blasting with use of safety fuse and electric battery; explosives and detonators, their safe storing and handling; sinking and how to deal with difficulties: apparatus and tools used; lining shafts and scaffolding; pitbanking arrangements.

5. *Opening out and methods of working, surveying*.—Shafts; pillars; arching or supporting the pit bottom; quarrying; pillar and stall; double road stall; long wall; panel systems.

6. *Timbering and supporting*.—Fixing of props and double timber, chocks or cogs; special methods of timbering to withstand pressure from the roof sides and floor; securing dangerous holes in the roof due to heavy falls; use of iron or steel girders; stowing and packing; arching.

7. *Gases met with in coal mines*.—Their experimental preparation by chemicals, and illustration of their physical and physiological properties; methods of detecting; explosion and gob fires.

8. *Ventilation*.—Natural and artificial methods; coursing the air; use of stoppings, brattices, doors, air bridges, regulators; measuring the quantity of air, use of thermometer, barometer; water-gauge, anemometer; the friction of air in mines and the elementary theory of splitting.

9. *Safety lamps*.—Theory of safety lamps, Sir Humphrey Davy's experiment; the Davy lamp, the Clanny and Thomas and Williams lamps, the Marsuat and Mueseler lamps, fire-damp detectors.

SECOND-YEAR COURSE.

1. *Mechanical Engineering of collieries*.—Winding engines, discussion of the different types, calculation of the dimensions of cylinders, length of stroke, diameter of drum, etc.; strength of winding ropes and chains, detaching hooks, capping winding ropes, care and examination of ropes.

2. *Pumping*.—Importance of a good system; measurement of quantities of water; lifting and forcing pumps; pumps for sinking; temporary and permanent pumps; calculation of dimensions of pumps to perform a given duty, strength of pipes, methods of supporting; different types of joints.

APPENDIX IV—*contd.*

MISCELLANEOUS.

Statement No. 5—*contd.*

3. *Hauling*.—Tramways, tubs and waggons; conveyance by self-acting inclines; single-rope haulage; main and tail; endless rope; endless chain; calculation concerning inclines, sizes of haulage engines, ropes, etc.; signalling; capping of haulage ropes.

4. *Methods of working and ventilation*.—Revision of first-year course work, followed by a fuller treatment of these subjects.

5. *Surface arrangements*.—Boilers; Cornish, Lancashire, and water-tube types; boiler fittings, injectors, and steam-pipes, etc.; boiler explosions, incrustation, corrosion and priming; calculations of boilers. Heapsteads; arrangement of roads around pit bank; simple screening and sizing.

6. *Transmission of power*.—By steam, compressed air and electricity, discussing the relative merits of each system.

Text-books recommended.—Peel's or Kerr's Elementary Mining; O'Donoghue's Mining Arithmetic.

W. H. EVERETT,

(*Officiating Superintendent of Industries, etc.*),
Secretary to the Mining Educational Advisory Board,
Writers' Buildings, Calcutta.

WRITERS' BUILDINGS,
Calcutta, the 19th August 1915.

Statement No. 6.

No. 15874—82.

DEPARTMENT OF COMMERCE AND INDUSTRY.

NOTIFICATION.

GEOLOGY AND MINERALS.

Simla, the 16th October 1916.

In exercise of the power conferred by Section 20 of the Indian Mines Act, 1901 (VIII of 1901), the Governor-General in Council is pleased to direct that in the rules regarding certificates of mine managers issued with Notification No. 2968—82 (Geology and Minerals), dated the 21st April 1906, the following amendments shall be made, namely:—

The words "One of these persons shall be the owner or manager of the mine, the other shall be a mining engineer" in Rule 28 shall be cancelled.

S. H. SLATER,

for Secretary to the Government of India.

No. 15875—82.

A copy is forwarded to all Local Governments and Administrations, except the Chief Commissioner of Delhi.

A copy is also forwarded to the Railway Department, the Director, Geological Survey of India, the Chief Inspector of Mines in India, and the Secretary, Indian Mining Association.

By order, etc.,

E. P. JONES,

for Under-Secretary to the Government of India.

APPENDIX IV—*conold.*

MISCELLANEOUS.

Statement No. 7.

LAND ACQUISITION (MINES) ACT, 1885.

Particulars required to be furnished by colliery owners to Local Governments when giving notice under Section IV of the Land Acquisition (Mines) Act, 1885, of their intention to work coal under land acquired for a railway:—

- (a) The name, residence and profession of the person giving the notice.
- (b) The name of the mine, together with that of the village and district in which the mine is situate.
- (c) The name of the railway line or of the siding and the main line to which the siding is attached, under which the mine is situate.
- (d) The names of the railway stations and the mileage between which the said siding or the said portion of the railway land, under which the mine is situate, falls.
- (e) The number and date of the declaration under which the land was acquired.
- (f) A tracing, showing the boundaries of, and the area over which, the acquired land extends.