

Department of Mines, India

REPORT

OF THE

CHIEF INSPECTOR OF MINES IN INDIA

Under the Indian Mines Act (VIII of 1901)

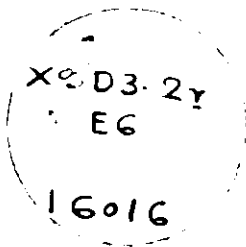
FOR THE

YEAR ENDING 31st DECEMBER

1916

BY

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



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CALCUTTA  
SUPERINTENDENT GOVERNMENT PRINTING, INDIA  
1917.

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**Department of Mines, India**

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FROM

G. F. ADAMS, Esq.,  
*Chief Inspector of Mines in India,*

To

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

*Dated Dhanbad, 24th May 1917.*

SIR,

I have the honour to submit the report upon the inspection of mines in British India for the year ending 31st December 1916.

### 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.

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#### Section I.—Persons employed.

During the year 1916 the average number of persons working in and about the mines regulated by the Indian Mines Act was 197,919, of whom 127,289 worked underground and 70,630 on the surface.

One hundred and twenty-four thousand seven hundred and seventy were adult males, 66,855 were adult females and 6,294 were children under 12 years of age. This is a decrease of 17,831 workers or 9.90 per cent.

Those employed in coal mines numbered 143,459, which is a decrease of 2,078, as compared with those employed in 1915.



The labour supply in the coal-fields of Bengal and of Bihar and Orissa was normal during the first nine months of the year. The rains lasted well into October, a fact which coincided with, and probably was the cause of, a most unusual and severe epidemic of malaria. The effect of this epidemic, as far as its relation to labour supply was concerned, was considered by some managers to equal that of the cholera epidemic of 1908. A late harvest and good crops were also resultants of the late rains and were contributory causes of shortage of labour, which was felt to the end of the year.

A special committee of inquiry was appointed by the Government of Bihar and Orissa towards the end of the year, to investigate the question of the housing of labourers at the collieries in the Province.

The labour supply to the Assam coal mines was affected by the stoppage of Arkattie recruiting, but, in view of the fact that 1916 was the first complete year for Sardarie recruiting, the result was fairly satisfactory. Nearly 400 sirdars were despatched for recruiting, of which about half were still away at the end of the year. The number recruited was 638. Six hundred and sixty-one Nepalese and 175 Mekranis were recruited by other agencies. The figures include children.

The percentage of foreign labour for manganese mines in certain districts of the Central Provinces continued to be high.

The scarcity of labour in the mica fields of Bihar and Orissa was an outstanding feature of the industry during the year. In the Madras field the supply met requirements. The experiment adopted some time ago of employing criminal tribes as mine labourers, mentioned in the report for 1913, has not proved a success. Owing to their indolent habits and lack of skill, they are more expensive than free labourers. The large settlement at Kalichedu, at one time numbering over 1,000 persons, has been reduced to about 400.

At the wolfram mines in Tavoy a "Protector of Chinese" has been appointed for the hearing of complaints and for the general amelioration of the coolies. The Chamber of Mines continued its activities, and every firm of importance is now represented on it.

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## Section II.—Output of Mineral.

### COAL.

There was again a small increase in the output, which was 16,419,082 tons. This is an increase of 66,602 tons or .41 per cent. over the output of 1915.

As might have been expected during such disturbed times, there were increases and decreases in the figures which go to make up the above total. The chief decreases were in Jharia, where the decrease was not far short of two hundred thousand tons, in Assam and in the Panjab. In the Raniganj field there was an increase of slightly over fifty thousand tons, and there were also increases in the Sonthal Parganas and in the Central Provinces. The chief increase, however, comes from the comparatively new coalfield of Bokaro-Ramgarh, which practically balanced the decrease in Jharia. If this new field had not come on during the year, as it did, there would have been a set back in the total output.

The coal trade passed through many vicissitudes during 1916, and many circumstances which could operate against the well being of a trade had to be contended with. Until March there was considerable wagon shortage and the early hot weather brought in cholera. In the latter part of the year, the outbreak of malaria, mentioned in the foregoing section, affected the output severely. It had the effect of increasing the demand for the Central Provinces product, the market for which was poor for the first eight months in the year. The late rains, however, which extended to this province, and exceptionally heavy crops acted adversely on the labour supply and curtailed raisings.

The opening stocks were 1,872,321 tons, and the closing stocks were 695,863 tons. The despatches amounted to 15,103,241 tons, and the colliery consumption to 1,625,255 tons, (9.89 per cent. of the output). The amount of

coal delivered to coking was 867,044 tons, from which 193,792 tons of hard coke and 324,172 tons of soft coke were made. Analyses of these figures will be found in Appendix I, table 2.

Of the total output, 15,754,598 tons or 95.95 per cent. were raised in Bengal and Bihar and Orissa, the percentage of the last five years being 95.76.

In the other provinces, the increases were in the Central Provinces, 13.71 per cent., and North-West Frontier Province (output negligible), 25 per cent., and the decreases were in Assam, 7.71 per cent.; in Baluchistan, 3.31 per cent.; in Burma (output negligible); 100 per cent.; and in the Panjab, 18.07 per cent.

The output per person employed during the year was (a) below ground 178 tons, and (b) above and below ground 114 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) 183 and 181, (b) 117 and 116; Assam (a) 155 and 184, (b) 103 and 120; Baluchistan (a) 61 and 73, (b) 38 and 47; the Central Provinces (a) 122 and 122, (b) 81 and 85; and the Panjab and North-West Frontier Province (a) 68 and 62, (b) 45 and 40.

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 a large increase in the output, which was 35,978 cwts. as compared with 24,063 cwts. in 1915. This is an increase of 49.52 per cent. Throughout the year, all mica, both block and splittings, and both Bengal ruby and Madras green, were in good demand and prices ruled firm, except for the cheaper grades of splittings, the price of which did not compensate for the great increase in freight and mining charges. A good deal of the trade in these cheaper classes was suspended.

The price of grades 5 (3 to 6 inches in area) and 6 (1 to 3 inches in area) was 25 per cent. higher than in 1915. The output of these grades approximates half the total output.

Good quality clear and partly stained ruby block mica was much sought after for munition purposes, and the supply coming forward was so unequal to the demand, that, at the request of the Ministry of Munitions, the Government of India prohibited all free dealings in these grades, (sizes 3 to 6) and purchased them for national use. This special demand resulted in a stimulation of buying activity, peculiarly of the lower grades, such consumers, as had formerly been buyers of high grades, being forced to fall back on inferior sorts. One result of this was that prices for consignments of Madras stained reached a considerably higher level than previously recorded.

In Bihar and Orissa unfortunately, many of the mines have been ruined, owing to the primitive methods adopted in the past, but, as has been previously reported, some owners are working on improved lines. Vertical shafts have been sunk to a considerable depth, crosscuts have been driven out in the lode at various levels, areas have been properly blocked out, and steam hoists and pumps are being used.

These remarks apply also to one mine in Madras, where generally speaking matters are much as they are in Bihar and Orissa.

If the mines generally were worked on better lines, and wasteful systems were abolished, the output of both fields could be increased considerably, with the same labour force and at a less cost.

It is significant of past methods that, in many cases where old "dumps" have been turned over, first class mica has been discovered.

#### MANGANESE.

There was a large increase in this output also, which was 568,032 tons, as compared with 378,172 tons in 1915. This is an increase of 50.20 per cent. There was a strong demand, for munition work, in all the allied countries

throughout the year and the mines were worked vigorously. The shortage of tonnage was to some extent relieved by special arrangements for shipment. Prices continued to advance and the average rate per unit was  $29\frac{1}{4}$  pence. Against this must be set a further abnormal increase in freights and other charges incidental to the period, but the results were more favourable to the mine owner than in 1915.

#### GEMS.

There was again a decrease in the output, which was 209,724 carats. In 1915, 251,449 carats were raised. This is a decrease of 16·59 per cent.

The Home markets were not so dead as in 1915. About the middle of the summer there was quite a demand for fine cut rubies and sapphires, especially the latter, but in the autumn the spurt died down. In India practically all varieties of rubies and sapphires were saleable, but the business was chiefly in the cheaper qualities. Prices advanced all round. The royalty payments from the native miners were almost double those of the previous year.

#### GOLD.

The output decreased to 23,235 ounces as compared with 24,320 ounces in 1915. This is a decrease of 4·46 per cent.

#### COPPER ORE.

There was a large decrease in copper ore. The output was 2,671 tons. In 1915 it was 8,010 tons. This is a decrease of 66·65 per cent.

#### WOLFRAM.

There was a large increase in the output, which was 59,094 cwts. as compared with 39,432 cwts. in 1915. This is an increase of 49·86 per cent. and represents nearly double the average output for the years 1912-14. This increase was the result of the efforts made to satisfy the demand for the mineral caused by the war. Considering the primitive methods of mining and concentration, the scarcity of labour and of supervision, the general absence of capital, the difficulties of transport in an unusually mountainous and thickly wooded area, the prevalence of malaria, and the abnormal distribution of the rains, the increase should be regarded with gratification.

New roads and mule tracks were constructed during the year. The Tavoy river was improved for navigation purposes. A special staff of officers was deputed to the district, under the Deputy Commissioner.

Several large firms entered the industry. Their advent has resulted in a large influx of mining engineers and trained subordinates whose influence should be felt as time progresses.

#### OTHER MINERALS.

There were increases in salt, iron ore, magnesite, chromite, clay, tin, steatite, silver, fuller's earth and graphite and decreases in limestone, slate and bauxite.

Two minerals, molybdenite and titanium, appear in the appendix for the first time.

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### Section III.—Accidents.

During the year 1916, at mines regulated by the Indian Mines Act, 1901, there were 140 fatal accidents, being a decrease of 23 as compared with the number in 1915, and a decrease of 4, as compared with the average number of the last five years. There would have been a still further decrease, if the accidents in wolfram mines had not increased considerably.

These accidents involved the loss of 206 lives, which is the largest number since 1913. As in that year, certain accidents occasioned loss of life on a large scale. Twenty-four lives were lost by a sudden subsidence of the surface, owing to the collapse of underground workings, 14 by an explosion of

firedamp, 9 by the bursting of a dam in a river, 6 by the collapse of a winding rope attachment, and 4 by a fall of roof. Number three of these occurred at a wolfram mine and the remaining four at coal mines.

Of these 140 accidents, I regard (a) 67 being due to misadventure, (b) 31 to the fault of the deceased, (c) 10 to the fault of fellow workmen, (d) 13 to the fault of subordinate officials and (e) 19 to the fault of the management.

The great majority of accidents, as in other parts of the world, continue to be caused by falls of roof and sides. In the year under report they numbered 70, being a decrease of 15, as compared with the previous year. Forty-nine of them occurred in the coal-fields of Bengal and Bihar and Orissa, and in 21 cases they were attributable to the fault of the deceased. Going through fences, to rob pillars was the cause of 14 accidents.

Next to falls of roofs and sides the most numerous accidents occur in shafts, by haulage and on the surface. During the year under report there was a small increase in accidents in shafts, from various causes. Haulage accidents showed a gratifying diminution, being only 12 in number. This is the smallest number for many years. Surface accidents showed a small decrease, but the figure is still high.

The increased use of electrical power at mines is bringing in its train its specific accidents. There were four such fatal accidents, resulting in five deaths, in the year under report.

The sinking of deep shafts is introducing a new danger from falls of material from the sides of the shaft. It has not been the custom in India to brick or line shafts, and at shallow depths this does not appear to have been much needed. As far, however, as a limited experience of shafts over 800 feet has proved, the increased pressure due to depth is exerting its effect and the liability to falls of stone from the sides of such shafts is greater. There is another aspect to this question. Under the rules, the sides of all shafts must be examined weekly. Even with shafts 400 to 600 feet in depth when they are unlined, this is a lengthy process, if it is done properly. In the case of shafts double this depth, the life of which may extend to fifty years, it is worth consideration whether economy, as well as safety, will not be the result of bricking the sides of such shafts, either entirely or for considerable lengths, and saving several thousands of hours taken up in weekly examinations.

The death-rate per thousand employed was 1.04, while that of the preceding five years was 1.10. At coal mines only these figures were 1.18 and 1.24 and at mines other than coal .68 and .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 10.29, while that of the preceding five years was 10.87. At coal mines in England during the ten years ending with and including 1914, the death-rate per million tons varied from 4.31 (lowest) to 6.37 (highest).

Of the 206 persons killed, 168 were males, and 38 were females.

The deaths occurring in each class of mines were as follows:—One hundred and sixty-nine in coal mines, 21 in wolfram mines, 5 in manganese mines, 4 in gold mines, 2 in iron mines, 2 in mica mines, 1 in salt mines, 1 in gem mines and 1 in copper mines.

Fourteen persons lost their lives by explosion of firedamp, 46 by falls of roof, 35 by falls of side, 29 in shafts, 4 by explosives, 3 by irruption of water, 12 by haulage, 7 by other accidents underground, and 56 on the surface.

A list of these persons appears in Appendix II, table I. In addition to this there were 34 other accidents causing the death of 37 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.

In the Bengal and Bihar mines, where most of the statistical accidents occur, there were 157 deaths, compared with 129 in 1915.

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 GAS.

## No. 1.—Equitable Coal Company, Limited's Dishergarh coal mine.

This explosion, by which 14 lives were lost, is the most serious of its kind in the coal-fields of Bengal and Bihar and Orissa, having regard to the fact that firedamp was ignited by a naked light and that there was no other contributing cause, such as a mine fire.

Three plans are attached to illustrate this report. Plan A shows the general outline of the underground workings and general scheme of ventilation. Plan B shows the workings and the arrangements for using safety lamps and naked lights in the neighbourhood of the explosion, and plan C shows in detail the portion of the mine where it occurred.

The Dishergarh colliery, in so far as the Dishergarh seam, in which the accident took place, is concerned, consists of two inclines (Nos. 1 and 2) and 3 shafts (Nos. 5, 6 and 7). About the middle of the colliery there is a barrier of coal. All galleries through this barrier, except one, are closed by stoppings. In the one gallery in which there is no stopping an iron door is fixed, which could be closed on an emergency, dividing the mine into two sections, eastern and western. The eastern section consists of Nos. 1 and 2 inclines and No. 5 shaft and the western of Nos. 6 and 7 shafts. The explosion occurred in the eastern section. The seam is 18 feet thick and dips to the south at an angle of 1 in 5½. The ventilation of the eastern section is effected as follows. The air enters the mine at Nos. 1 and 2 inclines and, by means of stoppings on the western side of No. 1 incline, is conducted down to the dip workings. As the galleries between Nos. 1 and 2 are all open, these two inclines, together with the galleries between them, form one intake air-course down to the point A, on plan A. At this point the main portion of the air current travels east and then south to B, and then west along the northern edge of the dip workings to C, where a small amount of air, which is allowed to leak through an opening in a regulating door R at A, joins it, and the air current then proceeds westwards to E, near the barrier, ventilating the whole of the dip workings. At this point the air current divides, a portion of it going to No. 5 shaft, where it returns to the surface, whilst the remaining portion goes through the iron door to F, where it joins an intake air current which ventilates a portion of the western section of the mine. This air current, as will be seen, comes down No. 7 shaft.

In the eastern section of the mine, the first mining-operation of forming pillars and galleries had been extended to the southern or dip boundary, and the work in progress consisted only of the removal or goafing of the pillars. The area from which pillars had been removed is shown hatched, and marked 'goaf' on plans A and B.

In the report for 1915, an account was given of an explosion in these workings, by which three men were burnt by gas igniting at their naked lights but without fatal results. The area from which the gas issued, causing this explosion, is shown by a yellow ring on plans A and B.

After this explosion, safety lamps were made compulsory in that portion of the workings marked A, B, C, D on plans A and B. Naked lights were allowed from D to E, in the western section. The limits of the safety lamps area are shewn by the positions of the restriction boards on plan B.

Gas was found and reported in the neighbourhood of the yellow ring, between the dates of the two explosions on 79 days in 1915 and on 125 days in 1916.

On the day of the accident, whilst several persons were working in the portion of the mine shewn by the red ring on plans A and B, the sound of a fall of roof in the goaf was heard. The workers retreated to the tram level, shewn on plans B and C, and almost immediately afterwards an explosion of gas occurred. Fourteen persons were burnt to such an extent that they succumbed, some soon after being brought out of the mine, and others on various subsequent dates. Four other persons were burnt more or less badly but recovered, and one or two were slightly burnt. The positions of the various persons are shewn on plan C. It will be noticed that some who were killed

were further away from the goaf than others who were not so badly burnt. The probability is that the gas was forced out of the goaf by the fall in a comparatively pure state and reached its maximum explosive point when it was mixed with the oxygen of the air, as it approached the tram level.

The explosion was fortunately local in its effects ; it did not spread further than the immediate locality, and there were no signs of violence.

An inspection made later on in the day disclosed the fact that gas was burning in the goaf, in which a high cavity was observed. The fire was only put out by shutting down the pits and inclines for some hours.

It cannot be stated with certainty from where the gas, which caused this explosion, came originally. It might have been occluded in the roof stone and released by the fall. This, however, is extremely unlikely. What is far more likely is that the gas flowed through the goaf to the cavity from which the fall of roof expelled it, in which case it either came from the goafing of the solid coal, immediately to the west of the red ring, or flowed over from the neighbourhood of the yellow ring. It admittedly did not pass from near the yellow ring along the travelling roads of the mine.

The Local Government ordered an inquiry under section 18 of the Indian Mines Act into the circumstances of this accident, and such inquiry was duly held by the Collector of Burdwan, with the Chief Inspector of Mines in India and Mr. T. H. Ward, Mining Engineer, as assessors.

It was fairly established, as the result of preliminary inquiry, that the gas was ignited by the naked lights used by the work persons. As has been stated, safety lamps were in use from A to D and naked lights from D to E. On the day of the explosion there were a little short of 100 of each kind in use.

The rule under the Indian Mines Act as to the use of safety lamps reads as follows:—

“No lamps or light other than a locked safety lamp shall be allowed or used—

(a) in any place in a mine in which there is or is likely to be any such quantity of inflammable gas as to render the use of naked lights dangerous ; or

(b) in any working approaching near a place in which there is likely to be an accumulation of inflammable gas ;

and when it is necessary to work the coal in any part of a ventilating district with safety lamps, it shall not be allowable to work the coal with naked lights in another part of the same ventilating district situated between the place where such lamps are being used and the return airway.

*Explanation*—For the purposes of this rule, the expression “ventilating district” means such part of a seam as has an independent intake commencing from a main intake air course, and an independent return airway terminating at a main return air course.”

There is no legal definition of a main airway in the Indian Mines Act, but in the English Coal Mines Act, 1911, it is laid down that “Main airway” means an airway commencing from, or terminating at, a shaft or outlet to the surface, or any airway from which a split is taken to ventilate any district of the mine, or into which a split so taken returns. It is to be inferred from the definition that an intake airway will cease to be a main intake airway at the point at which the last split is taken from it, and a return airway will cease to be a main return at the point at which the last split inbye enters it.

By the light of this definition and inference, there were only two main intakes in this seam, one the very short intake leading from No. 7 pit to where the air splits east and west, and the other the intake coming from Nos. 1 and 2 inclines. Similarly there were two main returns, one leading up to No. 5 pit and one leading up to No. 6 pit, and there were two ventilating districts, one from A to G and the other west of G.

Apart from these legal definitions, it is generally understood in mining parlance that there is (a) an intake taking air to the district, (b) the district

in which the miners work, and (c) the return airway, taking air from the district. An intake airway ceases to be one when it reaches the district and a return airway commences where it leaves the district.

Two questions therefore arose. Were safety lamps necessary from D to E (a) because this part itself was a place where there was likely to be a sufficient quantity of gas to render the use of naked lights dangerous, and (b) because they were on the return side of the safety lamps in use between A and D?

In the case of (a) the contention of the management was that, as no gas had been found between D and E, they were justified in using naked lights. In the case of (b) two pleas were advanced. Firstly, that the gas found between A and B was so small in amount that safety lamps were not necessary under the rule, but were merely used as a matter of precaution, and secondly, that because a freshening split of air was taken direct through a regulator door from A to C, the part A B C and the part C D E were two separate ventilating districts.

Using safety lamps as a temporary precaution in places such as advance drivings, where there might be a little gas and yet in such a minute quantity as not to make necessary the use of safety lamps in the terms of the rule, is, and always has been, common in mining. Nothing is stated with regard to the practice in the English Coal Mines Act, 1887, nor in the Indian Mines Act, but in the English Coal Mines Act, 1911, it is laid down that working with naked lights on the return side of safety lamps is not illegal, if the use of safety lamps is introduced as a temporary precaution and their introduction is not necessary throughout the district. In the absence of definite wording, this is, of course, implied.

To use safety lamps as a temporary precaution in an advance driving is, however, a very different thing from using nearly 100 lamps for several months over so large an area as that from A to D.

With reference to the question of the portion of the mine from A round B and C and the portion from C to E being two separate ventilating districts, it is an essential element in the definition of a separate ventilating district that it should have an independent return airway. There was no independent return airway in this case. In order to have an independent return of the air going from A round B to C, it would be necessary for this air to return to the surface without mingling with the air from C to E. This was not the case. Moreover, in any mine it may be necessary to erect doors and curtains either temporarily or permanently at any point in a ventilating district, to divert the air round certain working places, allowing it to mingle again with the current in the working district. In fact this is the usual method of clearing away an accumulation of gas. It cannot, however, be held to be 'splitting the air' in its legal sense.

The Court of Inquiry formed the opinion that the rule had not been observed in either of its phases. Legal proceedings were instituted against the agent and the manager as detailed in Part IV of this report. The judgment in this important case is, in plain English, that air passing over safety lamps where such are required by rule must not be taken on over naked lights, however much it is diluted.

#### FALLS OF ROOF.

No. 37.—Equitable Coal Company, Limited's Jamuria coal mine.

This accident, by which four lives were lost, occurred in a seam, 14 feet thick, in which the pillars were being goafed. The system practised was to split each pillar into four "stooks" by small galleries, from 10' to 12' high, and then to get out each "stook" to the same height. The timber was then withdrawn and the roof coal fell. The stone above did not fall, as a rule, except for a foot or two, which sometimes came down at the same time as the roof coal. After the roof coal had fallen, the edge of the goaf was examined and, if found good, props were reset under it, and if the fallen coal was found to be of good quality, that lying near the goaf edge was loaded out.

The management professed that no coal was loaded from beyond the props near the edge of the goaf, and that fences were erected to prevent persons

going beyond the props. The inquiry into this accident, and inspection in connection with it, however disclosed two facts:—

- (1) that fences were frequently, if not regularly, removed to allow persons to proceed further into the goaf and that at the discretion of the subordinate officials;
- (2) that very much more coal was salvaged from the goaf than that near the protected edge, as professed by the management.

With such a system an accident sooner or later was inevitable. Both in the report for 1910 and for 1912, with reference to certain accidents which involved serious loss of life, the dangers attending the repping of goaves, after the first fall had occurred, were commented upon. In the latter case, it was stated "the practice of leaving roof coal when getting pillars, is however, much too common. An element of risk is introduced, which might easily be avoided by the much safer and more economical process of taking down the roof coal as the work on the pillar progresses."

In case of this particular accident the manager, sixty hours before the accident, visited the vicinity and found miners picking up fallen coal at the goaf edge. Having sounded the roof he considered the place unsafe, and ordered the place to be fenced off. On the night of the accident, the night sirdar, having come to the conclusion that there was no danger, removed the fence and set men on to gather coal in the goaf. A very large fall of roof occurred, and four men were killed instantly.

After the accident an undertaking was given that the system would be changed.

#### FALLS OF SIDE.

No. 42.—Messrs. Martin and de Paulsen's Paungdaw wolfram mine.

No. 57.—Messrs. Finlay, Fleming & Co.'s Rubber Mile wolfram mine.

In the first of these two cases a man was killed by a fall of side in an open work, the side of which he had been undermining. The Deputy Commissioner of the district came to the conclusion that the supervision was defective and that if it had been effective the accident would not have occurred. In the second case a miner was killed by a fall of side in an abandoned adit. Beyond the warning said to have been given him by the tributer contractor, who worked the adit previous to its abandonment, no one appears to have forbidden him to work there. The high accident rate in wolfram mines will not be lowered unless responsible officials are appointed to stop persons, if necessary through interpreters, from working in disused or dangerous places. A headman or tributer contractor is not an official. The entrance of all such places should be barricaded off.

#### IN SHAFTS.

No. 72.—Bengal Coal Company, Limited's Sanctoria coal mine.

Whilst four men were being lowered in a shaft, 238 feet deep, the engine-man lost control of the winding engine and the cage struck the landing platform at the bottom with violence. One man was killed outright, another man died three days, and a third eleven days, later.

Overwinding accidents are rare in India, a fact which redounds greatly to the credit of the drivers. It was open to question whether or not the driver in this particular case was intoxicated. The Inspector of Mines formed the opinion however that, in addition to other defects, the brake was not of sufficient strength. He reported that "with steam shut off and the cylinders empty, it was impossible to hold the loaded cage a few feet above the bottom of the shaft."

According to the rule on the subject under the Indian Mines Act, the engine had to be fitted with "an adequate brake or brakes." This was copied from the English Act of 1887 and in neither Act is it laid down what constitutes an adequate brake. In the English Act of 1911, however, the rule reads as follows:—"Where the apparatus used for lowering and raising persons is



worked by mechanical power, there shall be provided one or more brakes of sufficient power by themselves to hold the cage, when loaded, at any point in the shaft."

In order to safeguard life and limb, owners, agents and managers should not be satisfied with a brake of less power than is specified in the above rule.

No. 75.—Messrs. Baliram & Company's Srikristopur coal mine.

Whilst a miner was descending a shaft, in a cage, he fell out to the bottom of the shaft, and was killed. The cage was not fitted with gates, or the man's life would not have been lost. They have since been fitted.

No. 77.—Bengal Coal Company, Limited's Sitalpur coal mine.

Six men got into the cage at the top of a shaft, in order to be lowered into the mine. The cage had not descended more than a few feet, before the wrought iron capel or sheath, which will be seen in Photograph No. 2, Plate A, by which the end of the rope is gripped and which, by means of a ring at the bottom, connects the rope with the chains of the cage, opened out and released the rope. The cage at once fell to the bottom of the shaft, a depth of 375 feet, and the occupants were all killed.

The mine consists of two shafts. No. 1 shaft being the downcast, through which the air enters the mine, and No. 2 at which the accident happened, the upcast, by which the air, having ventilated the mine, is drawn to the surface. This is effected by means of a suction fan at the top of the upcast shaft, and in order to ensure that the air shall be drawn from the mine itself, and not merely from the pit top into the fan drift, a few feet below, it was necessary to provide the top of this shaft with two covers or bonnets, as will be seen in Photograph 1, Plate A. Had the shaft not been used for winding, it would have sufficed to have planked over the top of the pit, but as it was used for winding, these bonnets, one for each cage, were installed. As each cage comes to the surface, the four chains from which the cage is suspended raise the bonnet, the place of which, as an airstop, is then taken by the cage itself.

The method by which the end of the rope is connected to the cage, is illustrated by plan D. The rope is first fixed in the capel. The capel is then attached to a D link and then again to an overwinding hook known as the King hook. The King hook is then attached to the four cage chains by another D link. In connection with the King hook, it should be mentioned that there is up in the head frame a plate known as the bell plate, or King plate, with a hole in it, about 8 inches in diameter. In the event of an overwind the rope, capping, D link and King hook would all be drawn up through the hole in the bell plate. The rivets in the King hook would be automatically sheared, and the hook itself, expanding automatically, would release the rope, keep the cage in position (since the hook after expansion could not pass back through the bell plate) and prevent it falling down the shaft.

A reference is now made to the detail of the capel. As will be seen in Photograph 2 (right side), Plate A, which shows both the capel and the King hook underneath it, it is in the shape of a very long U, and when the two legs of the U are brought together, they clamp tight on the rope. This in itself would not be enough to hold the rope under any tension. To give a better grip it is necessary to thicken the end of the rope, accordingly, about two feet from the end a small ring is fixed round the rope. The rope is then unravelled and the wires are cut into certain lengths, in order to form a cone when bent back over the ring. The cone is then bound round with spun yarn as shewn in Photograph 2 (left side), Plate A. This cone is then inserted in the capel, the two legs of which are held tight against the rope by means of three iron rings, which are hammered as far down as they will go over the capel. These rings will also be seen in Photograph 2 (left side), Plate A, resting on the cone of the rope, after it had been drawn out of the capel at the moment of the accident. The circular piece of wood seen in the photograph, just over the middle ring, lies on the top of the bonnet to prevent unnecessary leakage of air. The rope passes through a hole in this disc of wood, and through a larger aperture in the top of the bonnet.

The Local Government ordered an inquiry under section 18 of the Indian Mines Act into the circumstances of this accident and such inquiry was duly held by the Collector of Burdwan, with the Chief Inspector of Mines in India and Mr. G. C. Lathbury, Colliery Superintendent, East Indian Railway, as assessors.

The following extracts from the findings of the court are given :—

“ We should point out that for a rope to be pulled out of a capel, as this one was, in ordinary colliery winding, is unheard of, and it is necessary therefore to look for some very unusual cause. The theory advanced by the management was that the rope was drawn through the capel without the rings being disturbed, or at any rate without the rings being moved off the capel at the time of the accident. The agent of the colliery sought by some questions put to Indian witnesses to prove that the accident happened before the cage had descended two feet, in which case the rings could not have been disturbed by any outside agency, as the capel would not have passed through the aperture in the top of the bonnet. The onsetter at the pit bottom said : ‘ The southern cage had only risen two feet, when the cage fell ’. The banksman at the pit top said : ‘ When the cage fell it had descended about a foot from the pit top ’. The winding engineman said : ‘ When the cage fell it had been lowered about a foot from the keps ’.”

“ The evidence of Mr. Powell Williams, who is an expert in the subject and had also witnessed various tests of rope capping, is, however, fatal to this theory. Mr. Powell Williams says ‘ While the rings remained, even if they were loose the rope could not have been drawn through (the capel) without tearing it to pieces. My opinion is that at the moment of the accident the rings had been knocked off the capel ’.”

“ We consider this opinion entitled to the greatest weight, not only on account of the expert knowledge of the witness, but because it is confirmed by the professional experience of two of our number. The manager and the company’s mechanical engineer express the same view, as also the Inspector of Mines. We think it must be accepted as deciding the point at issue. The evidence of the Indian witnesses referred to above, men of low class and limited intelligence, cannot be taken as proving what we are convinced would be a physical impossibility. The ideas of such men, regarding time and space, are notoriously inaccurate, and it is very unlikely that in the excitement of the moment of such an accident they really would have been able to observe correctly the exact distance the cage had travelled, a matter which in their daily work they would never be called upon to notice. If their evidence be accepted as accurate, the only theory compatible with it and with the opinion of Mr. Powell Williams is that the rings were knocked off the capel at some time previous to the moment of the accident. Just before the six persons got into the cage a full load of coal had been drawn up the shaft in it, and on this theory we are compelled to assume that the rope had remained in the capel without the tightening rings upon it, though subjected to this extreme tension. We think it impossible that this could have happened. We come therefore to the conclusion that the rings were on the capel up to the moment of the accident. We have already found that with the rings still on the capel the rope could not have been drawn out. It follows therefore that the rings were knocked upwards off the capel on to the rope at the moment of the accident. Had this been done by a single blow, the shock must necessarily have been of such violence as to leave noticeable marks on the rings and on the top of the bonnet. No such marks were found, and it is therefore most probable that the rings, though still on the capel, were loose at the moment of the accident. We are of opinion that the rings were loosened probably through some period of time, by frequent knocking against the edge of the aperture in the top of the bonnet. This top consists of a circular ring of iron  $12\frac{1}{2}$  inches in diameter. Just below it the woodwork of the bonnet projects, so as to reduce the opening in one direction to  $10\frac{3}{4}$  inches. The Inspector of Mines points out in his report that the woodwork just below the ring on the north side of the opening was worn and torn in the form of a circle, and most of the torn fibres were bent down or had the appearance of having been struck violently by something circular in shape. This, in our opinion, points to the fact that the rope did not

always descend through the centre of the opening. It was noticed, when the court made an inspection of the apparatus, that the pulley wheel at the top of the head frame over which the rope goes from the engine to the shaft, was not revolving in an absolutely vertical plane, and this in itself would be enough to throw the rope out of the centre as it passed through the aperture. It was also noticed that the guides keeping the cages and the bonnet in position were not as tight as they should be, and that the bonnets did not always take up the same position when being lowered on to the shaft top by the descending cage. Some few days after the accident, the rope on the north cage was observed by one of the assessors to be out of the centre line, in the direction where the woodwork under the iron ring had been worn. The management brought evidence to prove that some of this wearing had been done by a chisel. Even had it been, we do not consider that it would have been chiselled in the peculiar small circular shape in which it was noticed to be, and the mere fact of its having had to be chiselled on this side, after it had been put into position, inclines us to think that something was wrong with the bonnet. In his evidence to the Inspector of Mines, the agent said: 'I noticed that the rivets of the iron ring at the top of the north bonnet were loose, and the woodwork was cracked down the side of the bonnet. I asked the manager the cause of this and he said they had been damaged by the bull (cage) chain and with this opinion I agreed.'

"We have grave doubts whether the damage was done to the bonnet by the bull chains. The actual reason was alleged to be that the plane of the chains, when tightened was not parallel with the slope of the bonnet. We do not consider that this in itself would be sufficient to loosen the rivets and crack the woodwork in the manner described. We think it far more likely that the bonnet was not receiving proper usage through being knocked by the capel and by the hook and links attached to the rope. It was urged by the management that the breadth of the King hook and the D links, being greater than the diameter of the rings, the former would be more likely to touch the sides of the bonnet than the rings above them. It is, however, quite possible that, as the King hook passed through, the rope was vibrated by the King hook knocking on one side of the bonnet and throwing the rings against the other side. Contributing causes may have been the fact of the pulley wheel not running true, or of the cage being taken to one side by the guides in the shaft. In his evidence given to the Inspector of Mines, the agent stated that, in his opinion, the accident was caused by vibration, which had loosened the rings on the capel. Such vibrations would be due to the rope being relieved of the weight of the bonnet, as it reached, and rested on, the shaft top. He admitted that this would be a long process extending over at least several days, but the effect would not be noticeable until just before the accident. He pointed out that the rings are held in position by spring friction and there might have been some skin friction, due to the shape of the jaw of the capping. In his evidence before this court the agent qualified his previous opinion by saying that, while the loosening of the two upper rings through vibration was the final cause of the accident, he thought that the loosening of the lower rings was due to the fact that possibly some time before the accident the cage had been taken up to the bell plate at night, without causing an overwinding, and that on the lowering of the cage, the bottom ring received a blow. He advanced another theory, that possibly at some time when the cage was being lowered, the winding rope slackened right down and the lowest ring received the blow. The company's mechanical engineer was of opinion that the ring was loosened by coming in contact with the cage, and the agent thought that that might be a possible theory; he admitted however that the loosening of the bottom ring in this way would not necessarily loosen the upper ones too. He also suggested that some persons might have loosened the rings from malice, in order to destroy property. But all these theories merely seek to explain how the rings may have become loose. They do not explain how the rope could have been drawn out of the capel, since we have found that this, with the rings still upon the capel even though loose, was impossible. The rings must have been knocked upwards off the capel at the moment of the accident. We consider that nothing but the top of the bonnet, either the iron ring or the woodwork, could have done this. The rings must have been loosened by previous blows, and it is perfectly

reasonable to assume that these were also caused by knocking on the bonnet top. What certainly happened once may also have happened before. This then is our conclusion."

"We wish to say that the capel is one of the best types of capels in daily use at collieries. We are also satisfied with the evidence of the Inspector of Mines, that, from its appearance after the accident, the capel had been properly put together and fastened to the rope. The bonnet is of a type used at the largest and best equipped collieries throughout the world, and if the capel, rings, links and hooks had always passed clear through the aperture at the top, the accident, in our opinion, could not have occurred. For this defect in the winding apparatus, we consider that the manager must be held ultimately responsible, but we must point out that so far as we are aware, this is the first accident from this particular cause that has ever occurred and we have no doubt that the manager did not realise the danger of the bonnet not keeping perfectly concentric with the winding rope. To this extent he committed an error of judgment. It must also be pointed out that this shaft was not generally used for the raising and lowering of persons. The other shaft, No. 1, was the one generally used, and No. 2 shaft was being so used on the day of the accident because the No. 1 shaft engine was being repaired."

"With regard to the position of the agent, he is the agent of all the Bengal Coal Company's collieries, and it is not the duty of an agent to see that every piece of apparatus at a colliery is in proper repair and properly run. That is the duty of the manager. When the agent discovered that the rivets and rings at the top of the bonnet were loose and that the woodwork was smashed he asked the manager the reason, as we have before stated. We consider that he was justified in accepting the manager's explanation."

"In rule 2 of Notification No. 864-68-20, dated 14th March 1904, made under section 20 of the Indian Mines Act, it is laid down that in any mine which is usually entered by means of machinery, as this mine is, a competent person or persons appointed by the owner, agent or manager for the purpose shall, once at least in every 24 hours, examine the state of the external parts of the machinery and of the head gear, ropes, chains and other similar appliances of the mine which are in actual use both above ground and below ground. At this mine this duty devolved upon the head fitter. It is clear from the evidence of the banksman, that the head fitter did not examine the capel and its rings. By the wording of the rule such capels and rings should be examined daily. Mere visual examination is useless. To examine them adequately they should be tapped with a hammer."

"We consider that this accident proves the necessity for taking the greatest care, when bonnets are used in upcast shafts, that there is no possibility of any part of the winding apparatus coming in contact with the bonnets."

#### No. 88.—Bengal Coal Company, Limited's Sodepur coal mine.

In this case a piece of coal fell down a shaft, 417 feet deep from the surface, through the clearance between the protection board and the cage and struck the onsetter at the bottom of the shaft.

In the report for 1915, when commenting on a fatal accident, attention was drawn to the danger attending in excessive clearance between the protection board and the cage, and it was stated that, with properly tightened guides, there was no reason why the distance should exceed six inches. In this case the clearance, which was irregular, was in one place 2'-8" and for a considerable length 1'-9". Such a pit bottom is a dangerous place. Precautions against common and obvious dangers, which are not enforced by law but are left to the professional knowledge of agents and managers, should receive special attention at their hands.

#### MISCELLANEOUS ON SURFACE.

#### No. 128.—Eastern Coal Company, Limited's Bhowra coal mine.

This accident occurred at night. Some workings in No. 14 seam, situated between two inclines, suddenly collapsed and the surface ground above them

subsided to a depth of 10 to 12 feet and over an area 200 feet by 190 feet. On or near this area of ground were three rows of miners' huts or dhowras. The eastern row, being just outside the subsided area, remained intact. The middle row went down vertically with the subsided ground and the occupants were uninjured. The western row collapsed completely, possibly because, being near the edge of the excavation, it did not fall vertically but was given a lateral push or rocking motion, or possibly because it was not so strongly built as the others. Unfortunately, several persons, about 45 in number, were asleep in this row, and 7 men, 9 women and 8 children were killed, being suffocated by the debris of the fallen building.

The seam is very thick, being from  $28\frac{1}{2}$  feet to 40 feet, and lies at the high inclination of 1 in 2.87. After the fall it was seen that the roof consisted of jointed shaley sandstones and there were signs of natural vertical cleavage, these conditions being no doubt due to the forces brought into play at the time of the formation of a fault on the dip side of the workings. This fault is an upthrow to the south-west. All the above conditions were adverse and were contributory causes in the bringing about of the accident.

The underground workings had been formed by making in the preliminary working, pillars,  $55' \times 45'$ , centre to centre, with galleries 10' wide. This would leave pillars  $45' \times 35'$ . After they had been so formed, a secondary working was decided on. The management did not want to bring in the surface at this place, as this would have involved water getting into the mine, to the detriment of some other workings in the vicinity. The goafing, or removal of pillars in the ordinary way did not therefore meet the case. At the same time it was desired to get as much coal as possible, before finally abandoning the district. It was therefore decided that the pillars should be split by driving galleries 10' high  $\times$  10' wide through them in both directions. Thus each pillar would be divided into four "knobs" or "stooks," which would be  $17\frac{1}{2}'$  by  $12\frac{1}{2}'$  for a height of 10 feet. This secondary working was carried out in the case of a good many pillars and in the case of nine pillars under the area which collapsed, leaving six pillars standing, as originally formed, in five of which splits had been commenced.

The Local Government ordered an inquiry under section 18 of the Indian Mines Act into the circumstances of this accident, and such inquiry was duly held by the Deputy Commissioner of Manbhum, with the Chief Inspector of Mines in India and Mr. T. H. Ward, mining engineer, as assessors.

The following extracts from the findings of the Court of Inquiry are given :—

"In our opinion the extraction of this amount of coal would not have endangered the surface, and the fact that the accident occurred as it did, forces us to the conclusion that a good deal more coal must have been extracted than was arranged by the management. Judging by the original galleries surrounding the subsided area, the original galleries in the subsided area were probably not much increased in width — probably 12 to 13 feet would represent the maximum width. We think therefore that it is reasonable to assume that the cause of the weakness was that splits, or galleries driven through the pillars, were of greater dimensions than  $10' \times 10'$ . The probability is that some of the "stooks" were nothing like  $17\frac{1}{2}' \times 12\frac{1}{2}'$ , the result being that at some weak point the power to sustain the pressure was overcome and the remaining pillars in the subsided area were unable to resist the change in the balance and collapsed, together with the pillar, at the weakest point. The great height of the pillars, extending in some cases to thirty feet, was an important factor in bringing about such collapse."

"The thinning of these "stooks" could have been brought about in two ways, either by deliberately allowing the miners to drive the splits too wide, or by subsequent pillar robbing by the miners, after the splits had been finished and fenced off. The latter cause is far the more likely. These splits are all close to the tram line and it is from such places that coal is generally robbed. With the connivance of the sirdar, such robbery would not be difficult."

"The evidence generally as to the size of the "stooks" is vague and unsatisfactory and in our opinion tends to prove that they were not the size they were

designed to be. There certainly was no direct evidence that they were of the proper size. The overman does not remember any day that he had a general look round inside the fenced areas. He admits however that he had several times found cases of pillar robbing and reported such cases to the manager. He further admits that the height of some of the splits was 15 feet, which would undoubtedly weaken the "stook" at such places, and stated that he did not think that the "stook" at one place was more than 10 feet square. The under-manager stated that he had not seen the fenced areas for a fortnight, and had certainly seen galleries wider than originally driven. He also spoke of falls from pillars. He said that to his knowledge there was no "stook" in that area seriously under the designed dimensions of  $17\frac{1}{2}' \times 12\frac{1}{2}'$ , but immediately afterwards qualified this by admitting that these dimensions would only hold good if the galleries and splits were 10 feet wide. The manager did not inspect the splits which had been fenced off."

"In our opinion there was no doubt that the "stooks" were of such dimensions as to be nothing like as strong as "stooks"  $17\frac{1}{2}' \times 12\frac{1}{2}' \times 10'$  would be, and, if our opinion is correct, the overman and the sirdar are primarily responsible for bringing this state of things about. They are of course not responsible for the presence of the persons in the dhowras. The under-manager's inspections, from the point of view of the stability of the workings, appear to have been worthless. The chief responsibility for the death of these persons, however, falls, in our opinion, on the manager. He was undoubtedly trying an experiment underground, in splitting the pillars in this way. Experiments may succeed and they may fail. If the dimensions originally designed were not conformed to, failure was more than possible. In these circumstances it is difficult to conceive how the manager omitted both to empty the dhowras and to take such steps as would ensure that the minimum amount of support was provided. Either one of the two should have been done and neither was done."

"We feel quite satisfied that the manager had no suspicion that the accident was likely to occur. At least Rs. 2,000 worth of tubs and Rs. 2,000 worth of rails have been lost in the collapse, the former of which could easily have been removed the day before the accident. The manager satisfied us also that there was no lack of dhowra accommodation and that he could easily have transferred these people had he realised that they were in danger."

#### No. 133.—Quah Cheng Guan's Wazunchaung wolfram mine.

The cause of this accident, by which nine lives were lost, was the breaking of a dam, which had been erected to dam back a river on another company's concession. The released water, sweeping down a valley, carried everything before it, including fallen trees and logs, by which much damage was done, and drowned the deceased in their coolie lines, which were about 85 feet from the river and approximately 20 to 25 feet above it. The lines were demolished.

The dam was built across a small valley, in order to supply water for sluicing the hill sides towards the east for wolfram. A fourteen inch cement concrete wall was built across the narrow valley, which is in granite on its southern side, and decomposed argillites or clay schists of the Mergui series on the other. This concrete wall for the greater part of its length projected very little above the bottom of the dam, in other words it bore very little pressure of the water behind the earthen embankment and did not serve in any way to protect the greater proportion of the bund above it. A wing wall of cement concrete 12 inches thick at the top was built against the granite on the south side, and in it a sluice gate and a by-pass or flood escape gate were placed. The wing wall was necessary to prevent erosion of the dam by the water passing through the sluice gate. The bund was about 10 feet high and built of decomposed argillites and its accompanying clay, from an excavation on the north side just above the dam. At the top of the concrete wall the bund was 24 feet thick and  $4\frac{1}{2}$  feet thick at the upper surface. The length of the dam was about 55 feet. At the by-pass sill the depth was 6 feet 8 inches, which would extend the water surface to approximately 130 feet up stream, measured from the centre of the dam, though up stream there is considerable shallowing. The top of the bund was slightly higher at the sides than in the centre, in other words it sagged towards

the point where the breach occurred, though it is not clear whether this was due to original construction or later sagging. The flood escape gate was 16 inches high by 9 inches wide. It only possessed therefore an area of one square foot. The breach in the bund was 18 feet in width and the earth had been cleaned right away down to the top of the wall.

The disaster was due to the bad location and worse construction of the dam. Regarding the latter, the following points may be noticed :—

- (a) In a situation of this kind the concrete wall should have been much higher and ought to have finished at the top of the bund, instead of at the bottom.
- (b) The section of the bund exposed in the breach shows that the earth, of which it was composed, was merely thrown in and not rammed down or deposited in layers. No attempt seems to have been made to puddle the material at all or to utilise the well-known principle of a clay core to prevent leakage.
- (c) The by-pass or flood water passage was totally inadequate and would not prevent the dam from overflowing. During heavy and continuous rain, its capacity would not allow it to remove as much water as the streams and catch water drain were pouring in.

#### 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 owner of Babu Annada Prosad Sircar's Khudika coal mine was prosecuted under rule 1 (a) and rule 50 of Notification No. 2698-82, dated 21st April 1906, for employing persons in a mine which was not provided with two outlets and for not authorising a person to act in an emergent case as manager. He pleaded disagreement with his managing agents, who were working the colliery. He was found, however, to be technically liable and was fined Rs. 50 : in default two weeks' simple imprisonment.

The owner and manager of Babu Satya Taran Chowdhury's Pandedih coal mine were prosecuted under rules 1, 3 and 7, read with section 23(3) (e) (1), for employing persons in a mine which had no second outlet, (2) for not having the roof of the workings kept secured and (3) for not fencing galleries, the roofs of which were unsafe. The owner was fined Rs. 100 and the manager Rs. 25.

The owner of Munshi Sheikh Woomerali's Egarcoor coal mine was prosecuted under rule 12, read with section 22(2) (b), for not furnishing the plan of a discontinued mine. He was fined Rs. 15 : in default two weeks' simple imprisonment.

The owner of the Birsingpur Coal Company's Birsingpur coal mine was prosecuted under section 13(1), read with section 23(3) (e), for working a mine without a properly qualified manager. He had been previously warned. He was fined Rs. 15 : in default fifteen days' simple imprisonment.

The owner and manager of Babu Bholanath Chatterji's Haripur coal mine was prosecuted under section 15(2), read with section 23(3) (a) and rules 2(b) and 2(e), read with section 22(3) (e), for (a) failing to comply with an order passed by the Inspector of Mines under section 15 (2), prohibiting employment of women and children underground, (b) not providing an adequate brake for a winding engine and (c) not providing guides in a shaft. They pleaded guilty. The owner was fined Rs. 35 : in default one month's simple imprisonment. The manager was fined Rs. 10 : in default two weeks' simple imprisonment, for the first offence, and was warned as regards the second and third offences.

The owner (also manager) of Babu Mungalbhai Somabhai Patel's Rajpura coal mine was prosecuted under rule 19, read with section 22(3) (e), for not fencing the top of a quarry. He pleaded guilty and was fined Rs. 5 : in default five days' simple imprisonment.

The owner of Babu Woopendra Nath Mukherji's Rajpura coal mine was prosecuted under rule 19, read with section 22(3) (e), for not fencing the top of a quarry. He was fined Rs. 5 : in default five days' simple imprisonment.

The owner of Babu Lalubhai Patel's Rajpura coal mine was prosecuted under rule 19, read with section 22(3) (e), for not fencing the top of a quarry. He was fined Rs. 5 : in default five days' simple imprisonment.

The owner and manager of Babu Moban Lal Parekh's Rajpura coal mine were prosecuted under rule 19, read with section 23(3) (e), for not fencing the top of a quarry. The owner was fined Rs. 10 : in default one week's simple imprisonment. The manager was fined Rs. 10 : in default one month's simple imprisonment.

The manager of Y. Adimma's Pattabhirama mica mine was prosecuted under rule 21 of Notification No. 6436-152, dated 2nd September 1911, read with section 22(3) (e), for not fencing a fly-wheel and a pulley of a pumping engine. He had been previously warned and was fined Rs. 50.

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

- (1) The owner of Bandhan modi's Barakola mica mine. Fined Rs. 5.
- (2) The owners (two) of Babus Pryag Singh and Ambica Singh's Tandya mica mine. Fined Rs. 2-8 each.
- (3) The owners (two) of Babus Kishun Lal Mahato and Nanku Mahato's Ghatia mica mine. Fined Re. 1 each.
- (4) The owners (two) of Babu Kishun Lal Mahato and Nanku Mahato's Vinjopok mica mine. Acquitted.
- (5) The owner of Babu Jainram Marwari's Kendwa mica mine. Fined Rs. 5.
- (6) The owner of Srimati Sindhubala Debi's Choto Dhemu coal mine. Fined Rs. 20 : in default 14 days' simple imprisonment.
- (7) The owner of Babu Tincouri Dey's New Mosila coal mine. Fined Rs. 25 : in default 14 days' simple imprisonment.
- (8) The owners (two) and manager of the Pioneer Coal Company's Pioneer coal mine. One owner fined Rs. 15 : in default two weeks' simple imprisonment. The other owner fined Rs. 5 : in default one week's simple imprisonment. Manager acquitted.
- (9) The owners (three) of the Rajput Coal Company's Pirorgoria coal mine. Two fined Rs. 25 each : in default one month's simple imprisonment. The case against the third dropped.
- (10) The owners (two) of the Pandedih Coal Syndicate's Pandedih coal mine. One fined Rs. 20 : in default two weeks' simple imprisonment. The other fined Rs. 10 : in default one week's simple imprisonment.
- (11) The owner of Babu Dhannuram Raghunath Ray's Chandkua coal mine. Acquitted.
- (12) The owners (two) of the A. I. Coal Company's Edgarcoor coal mine. Fined Rs. 15 each : in default fifteen days' simple imprisonment.

An underground assistant at the Minto Coal Company Ld.'s Viceroy coal mine was prosecuted by the manager under rule 4(b), read with section 22(3)(e), for not making a true report of the result of his inspection. He was fined Rs. 30 : in default three weeks' simple imprisonment.

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



An assistant, an overman and two sirdars at the Bengal Nagpur Coal Company, Limited's Bhuggutdih coal mine were prosecuted under rule 41, read with section 22(3)(e), for not seeing that the roof of a working place was made secure. The case arose out of a fatal accident, by which three men were killed. The assistant was fined Rs. 10 and the others Rs. 5 each.

A miner and his wife at Babu Ranjus Agarwala's Futtelhpur coal mine were prosecuted under rule 15, read with section 22(1)(e), for working in a place other than the one in which they had been ordered to work. The case arose out of a serious accident to the woman. They were fined Rs. 5 each : in default one week's simple imprisonment.

A sirdar at the Eastern Coal Company's Kankani coal mine was prosecuted under rules 4, 47 and 49, read with section 23(3)(e), for leaving his work without giving over charge. The case arose out of a fatal accident by fall of side. He was fined Rs. 5 : in default one week's rigorous imprisonment.

An engine driver at the Burelia Coal Company, Limited's Burelia coal mine was prosecuted under rules 4, 5 and 60, read with section 22(3)(e), for allowing an unauthorised person to take care of his engine. He absconded.

A miner at the Hon'ble Maharaja Sir N. C. Nandi's Begunia Khas 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. He absconded.

An assistant at the Bengal Coal Company, Limited's Sodepur coal mine was prosecuted under rule 4, read with section 22(3)(e), for deputing another person to do his work without sanction and for absenting himself without permission. The case arose out of an accident (non-fatal) by explosion of fire-damp. He was fined Rs. 5 : in default one week's simple imprisonment.

An engine-driver at the Nowagarh Coal Company's Katras coal mine was prosecuted under rules 4 and 60, read with section 22(1)(e), for allowing another person (an onsetter) to drive his engine without sanction. He was sentenced to six weeks' rigorous imprisonment and a fine of Rs. 20 or one week's further rigorous imprisonment.

The following judgment was delivered after the close of the year under report. In view, however, of its importance and to the fact that it related to an accident which occurred during the year, involving loss of life on a large scale, I append an extract from it in this report.

The agent and manager of the Equitable Coal Company's Dishergarh coal mine were prosecuted for a breach of rule 15, read with section 22(1)(e). The agent was convicted and the manager then pleaded guilty. It was pointed out by the accused that there was a practical difficulty against introducing safety lamps throughout the mine, in that they were not obtainable. The prosecution pointed out that the agent was officiating in that capacity for a few months only, while the regular agent was on furlough and that the manager had only held the post for a few weeks. The agent was fined Rs. 200 and the manager Rs. 100. The following is an extract from the judgment :—

\* \* \* \* \*

Three points have been raised by the defence :—

- (1) that accused was not responsible for anything that was done or was not done, but that the manager of the mine was responsible ;
- (2) that the ventilating district where the safety lamps were in use was not the same ventilating district as that where naked lights were used ; and
- (3) there was no likelihood of inflammable gas being found at the place where it eventually appeared, thereby causing the accident.

First \* \* \* \* \*  
accused kept the control in his own hands and was aware of all that was done

Secondly, were the safety lamps and the naked lights used in the same ventilating area ?

\* C. E. cannot be a separate ventilating district because it would be left with no independent intake and A, B, C, cannot be called a separate ventilating district because it has no independent return air course. The conclusion is that they are parts of the one ventilating district

The third point is whether there was any likelihood of inflammable gas being found near the area marked by the red circle \* the prosecution theory

is that the appearance of gas at frequent intervals near the goaf edge was a sure sign that the goaf was full of gas, since gas, being lighter than air, would fill the whole cavity of the goaf above the point where it appeared, before it appeared at that point

Mr. Leach

As to the letter from the chief point is that he advised in it that naked lights should not be used on the return side of the accumulation of gas found by him in the workings near B

Mr. Leach held that it was possible that there was a dangerous accumulation of gas in the goaf : but the manager of the mine did not

I conclude that on the facts known before the accident in July accused ought to have held there was gas in the goaf

Five permits, granted to managers of small mines, were cancelled during the year, on account of mismanagement, disclosed by inspection.

#### ADDITIONS TO THE ACT.

The forms (for the submission of annual return figures) prescribed by Notification No. 11793-103, dated the 30th December 1908, were altered, as prescribed by Notification No. 5072-113, dated the 1st July 1916.

During the year special rules under section 21 of the Act were established at 68 coal mines, making a total of 453, and at 15 manganese mines.

### Section V.—General Remarks.

#### HEALTH AND SANITATION.

The Asansol Board of Health held eight meetings during the year. There was no change in the personnel of the unofficial members. A Chief Sanitary Officer, Dr. J. W. Tomb, M.A., M.D., D.P.H., was appointed and took up his duties on the 3rd May 1916. Three Sanitary Inspectors were appointed to assist him. Their chief work consisted in investigating outbreaks of cholera, when notified, and in recommending steps for their suppression. In all cases where their suggestions were carried out, the disease was checked. They also carried out general inspections, with a view of securing improved water supply and better sanitation.

There were 671 cases of cholera and 241 deaths. These figures for small-pox were 564 and 90.

The Jharia Board of Health held twenty-two meetings during the year. There was no change in the personnel of the unofficial members. The Sub-Divisional Officer of Dhanbad was appointed to be an Additional Deputy

Commissioner of Manbhum during the year and was appointed Chairman of the Board, in lieu of the Deputy Commissioner. The Additional Superintendent of Police was thereupon appointed as an additional official member of the Board. A new rule was promulgated, enabling the Board to establish vaccine stations and appoint vaccinators. Larger powers were delegated to the Chief Sanitary Officer. The division of the mining settlement into three inspection districts, with a Sanitary Inspector for each, was maintained. The policy of the Board has been to inspire by precept and example the colliery owners and other property owners to undertake their own sanitation and conservancy.

There were 898 cases of cholera and 397 deaths. These figures for small-pox were 292 and 10. One death occurred from plague.

Outside the coalfields of Bengal and of Bihar and Orissa, epidemic malaria was reported from the wolfram mines in Tavoy. Efforts were made to cope with it. Cholera was reported from the manganeese mines in the Nagpur district. There were 24 deaths. Three deaths from plague occurred also. There were 8 cases of cholera and 3 deaths at Ballarpur colliery. At the Pench Valley collieries and Kutchi Dhana manganeese mines there were 69 cases and 36 deaths. Two deaths occurred from plague at these collieries. At Shivrajpur manganeese mine there were 49 cases of cholera and 23 deaths. At Anantapur gold mines there were 6 cases and 4 deaths from cholera, 11 cases and 3 deaths from small-pox and 1 death from plague.

The rainfall in the Jharia coalfield was 57.79 inches, in the Giridih coalfield it was 77.50 inches, and in the Raniganj coalfield it was 54.11 inches. These figures for 1915 were 38.83 38.68 and 39.43 inches, respectively. At the new Jharia water works the amount was 71.10 inches.

#### MINING EDUCATION.

The Professor of Mining at Sibpur College has reported that during the session 1915-16 there were 5 students in the senior course, of whom 3 gained diplomas, and 19 in the junior course, of whom 11 sat for the examination and 6 were qualified for promotion. Of the nine successful candidates in the first class colliery managers' examination, held in 1916, six were old Sibpur boys.

The annual mining camp was pitched at Aldih. There were 25 students in camp, of whom 17 were from the college and 8, who were attending a special course of mine surveying, were from the colliery districts.

The Mining Education Advisory Board held five meetings during the year. Mr. E. W. Bowrey's place, as the Chairman of the Indian Mining Association, was taken by Mr. B. White, and that of Mr. A. S. Thomson, who has left India, by Mr. Glen George. The members of the Board have been appointed members of the Board of Visitors of Sibpur College.

Lectures in the coalfields were again given at five centres during the session 1915-16. The average number of attendances was 24.06, which was a distinct advance on that in the previous session. In addition lectures were delivered in Bengali and Hindi during the cold session of 1915-16.

For some years lectures were given by various colliery managers at the different centres, but, for the session 1915-16, Mr. H. C. Read, who had previously been officiating as Professor of Mining at Sibpur College, was appointed lecturer for all the centres.

The system of education in the coalfields was extended by the holding of a class for the teaching of mine surveying, during the monsoon months, by Mr. Read.

The sessional examination was held simultaneously at the various centres in April 1916, the examiners being Messrs. G. C. Leach, Inspector of Mines, and E. H. Robertson, Professor of Mining at Sibpur College. Twenty-six candidates presented themselves for examination, of whom 17 passed. Mr. John Reynolds (Sijua Centre) obtained the highest marks. The examiners reported that the answer papers showed better application, being fuller in detail and showing considerable improvement in sketching, and showing also in many cases that the student had made a good attempt to cultivate his powers of observation at the mines.

**BOARD OF EXAMINERS FOR COAL MINE MANAGERS' CERTIFICATES.**

There was no change in the personnel of the Board, which consisted of the Chief Inspector of Mines in India (*ex-officio*) President, and Messrs. S. Heslop and T. H. Ward.

Seven meetings were held during the year. Five first class Indian certificates of competency were granted in lieu of English certificates.

Two first class certificates of service were granted during the year.

At the examination for colliery managers' certificates of competency held at Dhanbad on the 23rd, 24th and 25th February 1916, 49 candidates sat for first class and 70 for second class certificates. Certificates of competency were granted to 9 first class and 15 second class candidates. The examiners were Messrs. R. G. M. Bathgate, J. Kean 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 two meetings during the year when the following subjects were considered:—

- (1) Amendment of rules issued under section 11 of the Bengal Mining Settlements Act (Act II of 1912); (2) rules regarding allocation of the expenses of the Mines Board of Health between mine owners and royalty receivers; (3) a proposal to make rules to ensure adequate acquaintance on the part of mine officials with the number of persons working in a mine at any given time; and (4) new draft forms for submitting Annual Returns under the Indian Mines Act.

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) Alteration of rule 19, Notification No. 864—68—20, dated 10th March 1904, made under section 20 of the Indian Mines Act; (2) conversion of three inspection circles into two; (3) draft rules under Bengal Mining Settlements Act (Act II of 1912); (4) a proposal to make rules to ensure adequate acquaintance on the part of mine officials with the number of persons working in a mine at any given time; (5) enquiries into the housing of casual labour on the coalfields of Bihar and Orissa; (6) legal advice available for the Chief Inspector of Mines in India; (7) temporary additional provisions to rules 32 and 33 of the rules regarding coal mine managers and their certificates; (8) necessity or otherwise of more comprehensive rules under the Indian Mines Act for goafing in coal mines to minimize risk of subsidence; (9) steps to be taken to ensure more economical working of coal mines in respect of the methods of extraction adopted and the manufacture of coke; and (10) a proposal to make rules under the Indian Mines Act to regulate labour in Mines.

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

**MINING AND GEOLOGICAL INSTITUTE OF INDIA.**

The total membership at the end of the year, including subscribers, was 262. In addition to the annual meeting, four ordinary meetings were held during the year for the reading and discussion of papers and two geological field excursions were made. The entrance fee and subscription for an associate member has now been reduced from Rs. 15 to Rs. 10, and the council has the right to remit the entrance fee from time to time as they shall determine. The Government prize for the best paper during the year was awarded to Mr. F. L. G. Simpson for his paper on "A description of the methods of working out the pillars at the Mohpani mines by means of packing and a comparison of the dry and wet systems of packing." The Institute medals were awarded as follows:—

- (a) the gold medal to Mr. F. L. G. Simpson for his above-mentioned paper;

- (b) the silver medal to Mr. Glen George for his paper "Development of deep coal areas in Bengal;" and
- (c) the bronze medal to Mr. E. H. Robertson for his paper on "The commentation process of shaft making."

**THE ASSOCIATION OF COLLIERY MANAGERS IN INDIA.**

The honorary secretary reports that the membership of the Association increased during 1916 from 168 to 184. Monthly meetings of the council have been held regularly throughout the period and also special meetings when necessary. Many matters in connection with the immediate management of collieries have been dealt with. The Association has given its special attention to the questions of the better control of labour, housing of the workers and similar matters. General meetings have been held in both the Raniganj and Jharia coalfields, and visits of inspection have also been made to various collieries and other places of interest.

**LAND ACQUISITION (MINES) ACT, 1885.**

The number of original cases disposed of altogether at the end of 1916, stood at 292, twenty-eight of which were cases disposed of during the year.

**OFFICIAL DUTIES IN 1916.**

During the year the Government of India was pleased to direct that the three circles, into which the whole of British India has, since 1906, been divided for the purposes of mines inspection, should be rearranged as two circles, with an Inspector of Mines in charge of each, assisted by Junior Inspectors. The areas comprised in the circles, as thus rearranged, will be found in Appendix IV, Statement No. 1.

The Government of India was also pleased to direct that the Junior Inspectors should be appointed in all provinces, so that each could be sent on tour to any part of British India. This has added considerably to the efficiency of the Department.

The Government of India was also pleased to appoint the Chief Inspector of Mines as an Electric Inspector and to direct that he shall exercise the powers and perform the functions of an Electric Inspector under the said Act in all mines, as defined in the Indian Mines Act, 1901 (VIII of 1901), situated within the presidency of Bengal and the province of Bihar and Orissa.

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

Mr. R. R. Simpson was Inspector of Mines, No. 1 Circle. From the 25th April to the 24th May, he had charge of Nos. 2 and 3 circles and from the 25th May to the end of the year, charge of No. 2 circle, in addition to his own duties.

Mr. G. C. Leach was Inspector of Mines, Nos. 2 and 3 Circles. He was granted nine months' leave on the 25th April.

Mr. J. Coggin Brown, Assistant Superintendent, Geological Survey of India, continued to be an Inspector of Mines in Burma.

Mr. J. J. Turnbull was a Junior Inspector of Mines.

Mr. H. Lancaster was appointed a Junior Inspector of Mines on the 22nd February.

I have the honour to be,

SIR,

Your most obedient Servant,

G. F. ADAMS,

*Chief Inspector of Mines in India.*

## APPENDIX I.

### STATISTICS OF MINES AND MINERALS.

Table No. 1.

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1916.

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. Tons	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.	
Assam	Lakhimpur . . . . .	7	4	3	7	23	283,830	1,572	233	...	1,805	497	261	48	806	2,611
	Naga Hills . . . . .	1	...	1	1	2	3,135	52	...	...	52	117	14	...	131	183
	TOTAL	8	4	4	8	25	286,965	1,624	233	...	1,857	614	275	48	937	2,794
	<b>A.—COAL.</b>															
Baluchistan	Kalat . . . . .	5	...	5	1	1	2,763	55	...	...	55	41	..	...	41	96
	Loralai . . . . .	1	...	1	...	...	97	12	...	...	12	8	...	...	8	20
	Quetta-Pishin . . . . .	9	...	9	...	...	6,318	86	...	...	86	41	...	...	41	127
	Sibi-Khost . . . . .	7	2	5	5	10	32,906	541	...	...	541	302	...	25	327	868
	TOTAL	22	2	20	6	11	42,163	694	...	...	694	392	...	25	417	1,111
Bengal	Bankura, Raniganj . . . . .	2	...	2	1	1	6,965	41	22	...	63	28	13	...	41	104
	Birbhum " . . . . .	1	...	1	...	...	2,055	10	7	...	17	10	2	...	12	29
	Burdwan " . . . . .	166	140	26	143	309	4,983,356	17,551	10,089	135	27,775	9,457	5,325	350	15,132	42,907
	TOTAL	169	140	29	144	310	4,992,376	17,602	10,118	135	27,855	9,495	5,340	350	15,185	43,040

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 1916—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.		
<b>A.—COAL—contd.</b>																	
Bihar and Orissa .	Hazaribagh {	Bokaro-Ranagarh	7	1	0	2	5	192,365	821	756	2	1,579	382	97	...	479	2,058
		Giridih . . .	9	4	5	6	13	866,055	5,035	1,972	...	7,007	2,082	883	4	2,969	9,976
	Manbhum {	Jharia . . .	5	3	2	5	9	32,988	145	88	6	239	111	42	5	158	397
		Jharia . . .	249	156	93	172	333	8,917,330	24,598	19,901	363	44,862	17,774	7,577	1,362	26,713	71,575
	Sambalpur, Hingir-Rampur	Raniganj . . .	67	9	58	63	79	541,404	2,200	1,232	2	3,434	1,453	739	63	2,255	5,689
		Palamau, Daltonganj . . .	1	1	...	1	2	76,298	266	160	19	445	282	50	35	367	812
	Bonthal Parganas. {	Sambalpur, Hingir-Rampur . . .	1	1	...	...	...	59,737	341	183	...	524	189	27	14	230	754
		Jainty . . .	1	1	...	1	1	74,518	131	170	...	301	215	45	14	274	575
	Bonthal Parganas. {	Raniganj . . .	4	...	4	...	...	1,527	22	12	...	34	9	21	...	30	64
		<b>TOTAL</b> . . .	<b>344</b>	<b>176</b>	<b>168</b>	<b>250</b>	<b>442</b>	<b>10,762,222</b>	<b>33,559</b>	<b>24,474</b>	<b>392</b>	<b>58,425</b>	<b>22,997</b>	<b>9,481</b>	<b>1,497</b>	<b>33,175</b>	<b>91,900</b>
Central Provinces	Chanda, Ballarpur {	Chanda, Ballarpur . . .	3	2	1	3	4	84,889	533	21	2	556	265	66	3	334	890
		Chhindwara, Pench Valley . . .	7	7	...	3	4	154,548	754	280	49	1,083	218	135	41	394	1,477
		Narsinghpur, Mohpani . . .	1	1	...	1	3	48,395	501	220	...	721	416	51	...	467	1,188
		Yectmal . . .	1	...	1	...	...	...	1	...	...	1	2	...	...	2	3
	<b>TOTAL</b> . . .	<b>12</b>	<b>10</b>	<b>2</b>	<b>7</b>	<b>11</b>	<b>287,832</b>	<b>1,789</b>	<b>521</b>	<b>51</b>	<b>2,361</b>	<b>901</b>	<b>252</b>	<b>44</b>	<b>1,197</b>	<b>3,558</b>	

North-West Frontier Province.	Hazara . . . . .	1	...	1	...	...	75	7	...	...	7	...	...	...	...	7	
Panjab . . . . .	Jhelum . . . . .	6	...	6	6	8	44,944	631	...	5	636	299	...	8	307	943	
	Mianwali . . . . .	1	...	1	...	...	817	8	...	...	8	7	...	...	7	16	
	Shahpur . . . . .	2	...	2	1	1	1,688	43	...	...	43	48	...	...	48	91	
	TOTAL . . . . .	9	...	9	7	9	47,449	682	...	5	687	354	...	8	362	1,019	
GRAND TOTAL (COAL) FOR 1916.		565	332	233	422	808	16,419,082	55,957	35,348	583	91,886	34,253	15,348	1,972	51,573	143,459	
	" " OF PRECEDING YEAR.	583	334	249	429	884	16,352,480	59,111	35,596	806	95,513	32,195	15,814	2,015	50,024	145,537	
	DIFFERENCE . . . . .	-18	-2	-16	-7	-76	+66,602	-3,154	-250	-223	-3,627	+2,058	-466	-43	+1,549	-2,078	
Bihar and Orissa . . . . .	B.-MICA.																
							Cwts.										
	Bhagalpur . . . . .	1	...	1	...	...	19	15	8	...	23	...	...	...	...	23	
	Gaya . . . . .	44	5	39	...	...	4,749	713	370	90	1,173	305	240	172	717	1,890	
	Hazaribagh . . . . .	235	35	250	35	35	14,141	3,489	2,001	693	6,183	1,814	970	676	3,460	9,643	
Monghyr . . . . .	7	5	2	1	2	524	138	78	21	237	43	62	42	137	374		
TOTAL . . . . .	337	45	292	36	37	19,433	4,355	2,457	804	7,616	2,162	1,262	890	4,314	11,930		
Madras . . . . .	Nellore . . . . .	102	15	87	39	39	15,552	1,787	1,170	206	9,163	516	325	197	1,038	4,201	
	Salem . . . . .	1	...	1	...	...	106	14	...	...	14	21	17	1	39	53	
	TOTAL . . . . .	103	15	88	39	39	15,658	1,801	1,170	206	9,177	537	342	198	1,077	4,254	



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 1916—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.	
<b>B.—MICA—contd.</b>																
Cwts.																
Rajputana . . . . .	Ajmer-Merwara . . . . .	11	...	11	...	...	826	207	44	17	268	31	...	...	31	299
	Nasirabad . . . . .	1	...	1	..	...	61	4	3	...	7	1	...	...	1	8
	TOTAL . . . . .	12	...	12	...	...	887	211	47	17	275	32	..	...	32	307
	GRAND TOTAL (MICA) FOR 1916.	452	60	392	75	76	35,978	6,367	3,674	1,027	11,068	2,731	1,604	1,068	5,423	16,491
	" " OF PRECEDING YEAR.	366	13	353	34	35	24,063	3,865	2,179	474	6,518	1,751	1,617	905	4,273	10,791
	DIFFERENCE . . . . .	+86	+47	+39	+41	+41	+11,915	+2,502	+1,495	+553	+4,550	+980	-13	+183	+1,150	+5,700
<b>C.—MANGANESE.</b>																
Tons.																
Bombay . . . . .	Belgaum . . . . .	1	...	1	...	...	1,765	63	93	...	156	32	20	...	52	208
	Panch Mahals . . . . .	2	2	...	2	3	46,160	800	355	124	1,279	223	50	12	285	1,564
	TOTAL . . . . .	3	2	1	2	3	47,925	863	448	124	1,435	255	70	12	337	1,772
Central Provinces . . . . .	Balaghat . . . . .	16	...	16	16	16	241,771	2,643	2,047	100	4,790	502	334	51	887	5,677
	Bhandara . . . . .	11	...	11	5	5	74,882	686	555	31	1,272	323	190	62	584	1,856
	Chhindwara . . . . .	2	1	1	2	3	53,882	692	678	18	1,388	202	43	9	254	1,642
	Jabalpur . . . . .	1	...	1	...	...	270	7	7	...	14	...	...	...	...	14
	Nagpur . . . . .	24	1	23	17	18	146,547	1,657	1,436	11	3,104	652	471	57	1,180	4,284
	TOTAL . . . . .	54	2	52	40	42	517,352	5,685	4,723	160	10,568	1,679	1,047	179	2,905	13,473

Madras . . . . .	Vizagapatam . . . . .	5	...	5	2	2	2,755	121	84	...	205	59	21	8	88	213
	GRAND TOTAL (MANGANESE) FOR 1916.	62	4	58	44	47	568,032	6,869	5,255	284	12,208	1,993	1,138	199	3,330	15,538
	" " OF PRECED- ING YEAR.	50	4	46	29	30	378,172	3,914	3,246	215	7,375	1,365	868	162	2,415	9,790
	DIFFERENCE . . . . .	+12	...	+12	+15	+17	+189,860	+2,755	+2,009	+69	+4,833	+628	+270	+37	+915	+5,748
					D.—LIMESTONE.											
					Tons.											
Central Provinces . . . . .	Jabalpur, Katni . . . . .	34	5	29	14	15	44,905	369	697	26	1,092	203	196	34	433	1,525
Panjab . . . . .	Hoshiarpur . . . . .	1	...	1	...	...	385	59	...	..	59	45	...	..	45	101
	GRAND TOTAL (LIMESTONE) FOR 1916.	35	5	30	14	15	45,290	428	697	26	1,151	248	196	34	478	1,629
	" " OF PRECED- ING YEAR.	26	4	22	...	...	64,179	537	911	25	1,473	169	228	37	434	1,907
	DIFFERENCE . . . . .	+9	+1	+8	+14	+15	-18,889	-109	-214	+1	-322	+79	-32	-3	+44	-378
					E.—SALT.											
					Tons.											
Panjab . . . . .	Jhelum . . . . .	2	...	2	1	3	138,100	338	274	33	646	52	..	...	52	697
	Mianwali . . . . .	1	..	1	1	2	12,881	62	...	15	77	...	...	...	...	77
	Shahpur . . . . .	1	...	1	1	2	9,376	25	21	7	53	...	...	...	...	53
	GRAND TOTAL (SALT) FOR 1916.	4	...	4	3	7	160,357	425	295	55	775	53	...	...	52	827
	" " OF PRECED- ING YEAR.	4	...	4	4	7	144,770	478	345	57	680	38	...	...	38	918
	DIFFERENCE . . . . .	...	...	...	-1	...	+15,587	-53	-50	-2	+105	+14	...	...	+14	-91

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 1916—contd.

Provinces.	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. 136,783	...	...	...	...	...	...	...	...	...
		2	2	...	...	...	(b) Sapphires. 34,100	659	...	...	659	543	...	...	543	1,202
		...	...	...	...	...	(c) Spinel. 38,841	...	...	...	...	...	...	...	...	...
	TOTAL	2	2	...	...	...	209,724	659	...	...	659	543	...	...	543	1,202
	GRAND TOTAL (Gems) FOR 1916.	2	2	...	...	...	209,724	659	...	...	659	543	...	...	543	1,202
	" " OF PRECEDING YEAR.	3	3	...	...	...	251,449	551	...	...	551	421	...	...	421	972
	DIFFERENCE	-1	-1	...	...	...	-41,725	+108	...	...	+108	+122	...	...	+122	+230
Bihar and Orissa	Monghyr	4	...	4	...	...	G.—SLATE. Tons. 2,136	138	42	...	180	49	..	...	49	229
		1	...	1	...	...	69	...	...	...	17	...	...	...	17	17
Panjab	Gurdaspur	4	...	4	...	...	1,361	91	...	28	119	9	...	...	11	130
	Gurgaon	5	...	5	...	...	5,778	195	...	...	195	60	77	37	174	369
	Kangra	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

	TOTAL	10	...	10	...	...	7,208	286	...	28	314	86	77	39	202	516
	GRAND TOTAL (SLATE) FOR 1916.	14	...	14	...	...	9,344	424	42	28	494	135	77	39	251	745
	" " OF PRECEDING YEAR.	15	...	15	3	3	10,610	391	94	110	595	226	12	18	256	851
	DIFFERENCE . . .	-1	...	-1	-3	-3	-1,266	+33	-52	-82	-101	-01	+65	+21	-5	-106
	H.—GOLD.															
Bihar and Orissa . . .	Singhbhum . . . . .	1	...	1	...	...	Ozs. 864	30	18	3	51	30	19	17	66	117
Madras . . . . .	Anantapur . . . . .	3	3	...	3	7	22,371	931	...	...	931	728	147	131	1,006	1,937
	GRAND TOTAL (GOLD) FOR 1916.	4	3	1	3	7	23,235	961	18	3	982	758	166	148	1,072	2,054
	" " OF PRECEDING YEAR.	5	4	1	3	5	24,320	975	32	...	1,007	833	181	142	1,156	2,163
	DIFFERENCE . . . . .	-1	-1	...	...	+2	-1,085	-14	-14	+3	-25	-75	-15	+6	-84	-109
	I.—IRON ORE.															
							Tons.									
Bihar and Orissa . . .	Puri . . . . .	1	1	...	...	...	55	...	...	...	...	19	...	...	19	19
	Singhbhum . . . . .	1	1	...	...	...	142,185	456	309	35	800	207	65	...	272	1,072
	TOTAL . . . . .	2	2	...	...	...	142,240	456	309	35	800	226	65	...	291	1,091
Central Provinces . . .	Jabalpur . . . . .	1	...	1	...	...	366	...	...	...	...	30	36	8	74	74
	GRAND TOTAL (IRON) FOR 1916.	3	2	1	...	...	142,808	456	309	35	800	256	101	8	365	1,165
	" " OF PRECEDING YEAR.	3	2	1	...	...	126,617	445	266	37	748	160	35	28	223	971
	DIFFERENCE . . . . .	...	...	...	...	...	+15,989	+11	+43	-2	+52	+96	+66	-20	+142	+194

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 1916—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	Singhbhum	1	1	...	...	...	160	16	12	...	28	6	26	...	32	60
Burma	Mergui	1	...	1	...	...	3,776	200	...	...	200	65	50	6	101	301
	Tavoy	78	2	76	60	128	53,676	3,631	14	1	3,646	3,705	215	10	3,930	7,576
	Thaton	9	...	9	...	...	1,455	446	76	26	548	111	36	7	154	702
	TOTAL	88	2	86	60	128	58,907	4,277	90	27	4,394	3,881	281	23	4,185	8,579
Central Provinces	Nagpur	1	...	1	...	...	27	9	7	...	16	2	3	...	5	21
	GRAND TOTAL (WOLFRAM) FOR 1916.	90	3	87	60	128	59,094	4,302	109	27	4,438	3,889	310	23	4,222	8,660
	" " OF PRECEDING YEAR.	38	1	37	...	...	39,432	1,740	1	...	1,741	1,336	110	...	1,446	3,187
	DIFFERENCE	+52	+2	+50	+60	+128	+19,662	+2,562	+108	+27	+2,697	+2,553	+200	+23	+2,776	+5,473

		K.—MAGNESITE.															
		Tons.															
Madras . . . . .	Salem . . . . .	2	...	2	2	2	17,540	382	462	479	1,323	77	11	29	117	1,440	
	TOTAL OF PRECEDING YEAR . . . . .	2	...	2	...	...	7,450	198	169	133	500	74	...	28	102	602	
	DIFFERENCE . . . . .	...	...	...	+2	+2	+10,090	+184	+293	+346	+823	+3	+11	+1	+15	+838	
		L.—CHROMITE.															
		Cwts.															
Baluchistan . . . . .	Quetta-Fishin . . . . .	2	2	...	...	...	340	21	...	...	21	14	...	...	14	35	
	Zhob . . . . .	7	...	7	...	...	69,600	...	...	...	...	439	...	...	439	439	
	TOTAL . . . . .	9	2	7	...	...	69,940	21	...	...	21	453	...	...	453	474	
Bihar and Orissa . . . . .	Singhbhum . . . . .	2	...	2	...	...	30,140	158	208	29	395	28	...	...	28	423	
	GRAND TOTAL (CHROMITE) FOR 1916.	11	2	9	..	...	100,080	179	208	29	416	481	...	...	481	897	
	TOTAL OF PRECEDING YEAR	6	1	5	...	...	29,300	54	...	...	54	31	...	...	31	85	
	DIFFERENCE . . . . .	+5	+1	+4	...	...	+70,780	+125	+208	+29	+362	+450	...	...	+150	+812	

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 1916—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.	
<b>M.—COPPER ORE.</b>																
Bihar and Orissa	Singhbhum . . . . .	2	1	1	...	...	Tons. 2,173	168	...	...	168	569	183	42	794	962
Burma	Katha . . . . .	1	...	1	...	...	498	19	...	...	19	16	...	...	16	35
	Kyaukse . . . . .	1	...	1	...	...	...	30	...	...	30	40	10	...	50	80
	Lower Chindwin . . . . .	2	...	2	...	...	...	128	...	...	128	35	5	...	40	168
	TOTAL	4	...	4	...	...	498	177	...	...	177	91	15	...	106	283
	GRAND TOTAL (COPPER) FOR 1916	6	1	5	...	...	2,671	345	...	...	345	680	198	42	900	1,245
TOTAL OF PRECEDING YEAR	5	1	4	1	5	8,010	714	...	...	714	975	157	...	1,132	1,848	
DIFFERENCE	+1	...	+1	-1	-5	-5,339	-369	...	...	-369	-315	+41	+42	-232	-601	
<b>N.—BAUXITE.</b>																
Central Provinces	Jabalpur . . . . .	1	...	1	1	1	Cwts. 15,000	15	17	...	32	7	...	...	7	39
	TOTAL OF PRECEDING YEAR	1	...	1	...	...	17,520	20	18	...	38	3	...	...	3	41
	DIFFERENCE	...	...	...	+1	+1	-2,520	-5	-1	...	-6	+4	...	...	+4	-2

		O.—CLAY.					Tons.											
Bihar and Orissa	Manblum . . . . .	3	...	3	...	...	344	21	3	...	24	26	12	...	38	62		
	Palamau . . . . .	1	...	1	...	...	1,084	5	4	1	10	9	10	2	21	31		
	TOTAL . . . . .	4	...	4	...	...	2,278	26	7	1	34	35	22	2	59	93		
Central Provinces . . . . .	Jabalpur . . . . .	7	1	6	4	4	30,625	93	138	13	244	35	6	3	44	288		
Delhi . . . . .	Delhi . . . . .	1	...	1	...	...	3,214	...	...	...	...	...	...	...	...	...*		
GRAND TOTAL (CLAY) FOR 1916.		12	1	11	4	4	36,117	119	145	14	278	70	28	5	103	381		
TOTAL OF PRECEDING YEAR . . . . .		6	1	5	...	...	32,428	91	155	8	254	61	24	5	90	344		
DIFFERENCE . . . . .		+6	...	+6	+4	+4	+3,689	+28	-10	+6	+24	+9	+4	-	+13	+37		
		P.—GALENA.					Cwts.											
Central Provinces . . . . .	Drug . . . . .	1	...	1	...	...	140	10	20	...	30	2	25	...	27	57		
	TOTAL OF PRECEDING YEAR . . . . .	1	-	1	...	...	140	5	20	...	25	2	10	...	12	37		
	DIFFERENCE . . . . .	...	...	...	...	...	...	+5	...	...	+5	...	+15	...	+15	+20		
		Q.—TIN.					Cwts.											
Bihar and Orissa . . . . .	Hazaribagh . . . . .	1	...	1	...	...	...	...	-	...	...	3	...	...	3	3		
Burma . . . . .	Mergui . . . . .	1	...	1	...	...	13	...	...	...	...	52	...	...	52	52		
	Tavoy . . . . .	3	1	2	...	...	844	70	...	...	70	...	...	...	...	70		
	Thaton . . . . .	1	...	1	...	...	900	...	...	...	..	500	900	100	1,500	1,500		
	TOTAL . . . . .	5	1	4	...	...	1,757	70	-	...	70	552	900	100	1,552	1,622		
	GRAND TOTAL (TIN) FOR 1916.	6	1	5	...	...	1,757	70	...	...	70	555	900	100	1,555	1,625		
" " OF PRECEDING YEAR.	5	...	5	...	...	280	30	1	...	31	2	1	...	3	84			
DIFFERENCE . . . . .		+1	+1	...	...	...	+1,477	+40	-1	...	+38	+553	+899	+100	+1,552	+1,591		

\* Labour figures received too late to be entered in the statistics.



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 1916—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.		
			<b>R.—STEATITE.</b>														
							Cwts.										
Central Provinces . . . . .	Jabalpur . . . . .	5	...	5	1	1	17,835	91	81	5	177	49	43	12	101	281	
Madras . . . . .	Kurnool . . . . .	1	...	1	...	...	209	3	7	...	10	5	2	...	7	17	
	GRAND TOTAL FOR 1916 . . . . .	6	...	6	1	1	18,044	94	88	5	187	54	45	12	111	298	
	" " OF PRECEDING YEAR . . . . .	1	...	1	...	...	...	...	...	...	...	6	6	...	12	12	
	DIFFERENCE . . . . .	+5	...	+5	+1	+1	+18,044	+94	+88	+5	+187	+48	+39	+12	+99	+286	
				<b>S.—FULLERS' EARTH.</b>													
							Tons.										
Central Provinces . . . . .	Jabalpur . . . . .	1	...	1	1	1	179	...	...	...	...	...	...	...	...	...	
	TOTAL OF PRECEDING YEAR . . . . .	1	...	1	...	—	139	...	...	...	...	...	...	...	...	...	
	DIFFERENCE . . . . .	...	...	...	+1	+1	+40	...	...	...	...	...	...	...	...	...	

\* Labour figures included with those for Jabalpur limestone.

				<b>T.—SILVER.</b>														
						Oz.												
Madras . . . . .	Anantapur . . . . .	...	...	...	...	1,362	...	...	...	...	...	...	...	...	...	...	...	...
	TOTAL OF PRECEDING YEAR . . . . .	...	...	...	...	512	...	...	...	...	...	...	...	...	...	...	...	...
	DIFFERENCE . . . . .	...	...	...	...	+850	...	...	...	...	...	...	...	...	...	...	...	...
				<b>U.—GRAPHITE.</b>														
						Cwts.												
Rajputana . . . . .	Ajmer-Merwara . . . . .	3	...	3	...	21,328	118	19	...	137	11	4	...	15	152			
	TOTAL OF PRECEDING YEAR . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	DIFFERENCE . . . . .	+3	...	+3	...	+21,328	+118	+19	...	+137	+11	+4	...	+15	+152			
				<b>V.—MOLYBDENITE.</b>														
						Cwts.												
Burma . . . . .	Tavoy . . . . .	2	...	2	...	8	10	...	...	10	5	...	...	5	15			
	TOTAL OF PRECEDING YEAR . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	DIFFERENCE . . . . .	+2	...	+2	...	+8	+10	...	...	+10	+5	...	...	+5	+15			

\* Won from Anantapur gold mines.

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 1916—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 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.			
Burma . . . . .	Thaton . . . . .	1	...	1	...	...	W. TITANIUM.		...	...	...	...	...	...	...	...	...	...
	TOTAL OF PRECEDING YEAR . . . . .	...	...	...	...	...	Tons. 2		...	...	...	...	...	...	...	...	...	...
	DIFFERENCE . . . . .	+ 1	...	+ 1	...	...	+ 2		...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (ALL MINERALS) 1916.	1,283	416	867	630	1,097	Tons. 17,401,220 Cwts. 251,429 Carats. 209,724 Troy ounces. 24,597	77,990	46,704	2,595	127,289	46,780	20,151	3,699	70,630	197,919		
	GRAND TOTAL OF PRECEDING YEAR.	1,121	368	753	503	969	Tons. 17,124,855 Cwts. 110,734 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		
	DIFFERENCE . . . . .	+162	+48	+114	+127	+128	+276,365 Cwts. 140,695 Carats. 41,725 Troy ounces. 235	+1,871	+3,671	+730	+9,272	+7,112	+1,088	+359	+8,559	+17,831		

\* Figures included with those of Thaton wolfram mines.

APPENDIX I—contd.

Table 2.

Analysis of figures relating to output of coal.

Provinces.	District and mineral field.	OPENING STOCKS.		RAISINGS.		TOTAL.		DESPATCHES.		COLLIERY CONSUMPTION.		COAL DELIVERED TO COKING.		CLOSING STOCKS.		COKE MADE.	
		Steam.	Slack.	Steam.	Slack.	Steam.	Slack.	Steam.	Slack.	Steam.	Slack.	Steam.	Slack.	Steam.	Slack.	Hard coke.	Soft coke.
		Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Assam	Lakhimpur . . . . .	...	...	283,275	555	283,275	555	280,437	355	2,081	...	467	...	290	200	156	...
	Naga Hills . . . . .	3,650	...	3,135	...	6,785	...	...	...	...	...	...	...	6,785	...	...	...
	TOTAL	3,650	...	286,410	555	290,060	555	280,437	355	2,081	...	467	...	7,075	200	156	...
Baluchistan	Kalat . . . . .	...	...	2,138	625	2,138	625	2,089	579	...	...	...	...	49	46	...	...
	Loralai . . . . .	10	...	87	...	97	...	97	...	...	...	...	...	...	...	...	...
	Quetta-Pishin . . . . .	140	488	458	5,860	598	6,348	410	5,550	...	...	...	...	188	798	...	...
	Sibi-Khost . . . . .	421	1,371	10,659	22,336	11,080	23,707	10,886	19,046	126	4,263	...	...	68	398	...	...
	TOTAL	571	1,859	13,342	28,821	13,913	30,680	13,482	25,175	126	4,263	...	...	305	1,242	...	...
Bengal	Bankura-Raniganj . . . . .	91	900	6,524	441	6,615	1,341	6,456	282	155	400	4	...	...	659	...	3
	Birbhum " . . . . .	...	...	1,675	380	1,675	380	1,675	61	...	319	...	...	...	...	...	...
	Burdwan " . . . . .	346,275	155,434	4,008,519	974,837	4,354,794	1,130,271	4,103,022	541,234	75,425	498,009	118,075	7,880	58,272	83,148	2,453	79,019
	TOTAL	346,366	156,334	4,016,718	975,658	4,363,084	1,131,992	4,111,154	541,577	75,580	498,728	118,079	7,880	58,272	83,607	2,453	79,022

APPENDIX I—contd.

Table 2—concl'd.

Analysis of figures relating to output of coal—concl'd.

PROVINCE.	District and mineral field.	OPENING STOCKS		RAINFALL		TOTAL		DISPATCHES.		COLLIERY CONSUMPTION.		COAL DELIVERED TO COKING.		CLOSING STOCKS.		COKE MADE.		
		Steam.	Slack.	Steam.	Slack.	Steam.	Slack.	Steam.	Slack.	Steam.	Slack.	Steam.	Slack.	Steam.	Slack.	Hard coke	Soft coke.	
		Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	
Bihar and Orissa	Hazaribagh	Bokaro Ramgarh	744	2,895	158,785	33,540	159,529	36,478	158,064	24,440	1,154	5,565	...	4,505	311	1,968	501	3,012
		Giridih	11,172	29,011	671,486	194,569	682,658	223,580	673,952	108,041	267	49,828	...	56,211	8,439	9,600	39,677	859
		Jharia	3,996	3,661	27,258	5,730	31,254	9,391	25,156	2,401	844	3,118	205	...	5,049	3,872	...	136
	Manbhum	Jharia	864,439	344,021	6,892,190	2,025,140	7,756,629	2,369,161	6,974,047	1,273,270	213,899	6,22,257	286,600	200,497	282,083	183,137	151,005	171,232
		Raniganj	61,673	15,435	416,809	124,595	478,482	140,030	332,974	75,926	20,367	45,178	93,823	8,777	31,318	10,149	...	69,911
	Palamau-Daltonganj	4,812	1,949	66,113	10,185	70,925	12,134	70,767	3,899	...	7,722	...	...	158	513	...	...	
	Sambalpur-Hingir Rampur	740	...	44,684	15,053	45,424	15,053	42,282	4,857	3,123	10,196	...	...	19	...	...	...	
	Santal-Parganas	Jainty	10,049	1,816	62,856	11,662	72,905	13,478	71,630	866	1,079	10,340	...	...	196	2,272	...	...
		Raniganj	26	...	1,447	80	1,473	80	1,402	5	68	...	...	...	5	75	...	...
		TOTAL	957,651	398,731	8,341,628	2,420,594	9,299,279	2,819,385	8,350,274	1,493,705	240,799	754,204	380,628	359,990	327,578	211,486	191,183	245,150
Central Provinces	Chanda	...	13	61,391	23,498	61,391	23,511	60,686	11,736	610	11,463	...	...	95	312	...	...	
	Chhindwara	3,625	433	117,009	37,449	120,724	37,842	120,257	19,610	...	17,412	...	...	467	860	...	...	
	Narsinghpur	1,183	...	43,578	4,817	44,761	4,817	30,428	...	13,548	4,817	...	...	785	...	...	...	
	TOTAL	4,808	446	222,068	65,764	226,876	66,210	211,371	31,346	14,158	33,692	...	...	1,347	1,172	...	...	
North-West Frontier Province.	Hazara	...	...	...	75	...	75	...	75	...	...	...	...	...	...	...	...	
Panjab	Jhelum	...	1,845	2,426	42,518	2,426	44,363	2,418	40,748	...	1,554	...	...	8	2,061	...	...	
	Mianwali	...	...	25	792	25	792	25	360	...	...	...	...	...	412	...	...	
	Shahpur	...	...	...	1,688	...	1,688	...	720	...	70	...	...	...	898	...	...	
	TOTAL	...	1,845	2,451	44,938	2,451	46,843	2,443	41,848	...	1,624	...	...	8	3,371	...	...	
GRAND TOTAL	1,313,016	559,275	12,882,617	8,536,465	14,195,663	4,095,740	12,969,160	2,134,081	332,744	1,292,511	499,174	367,870	394,585	301,278	193,792	324,172		

APPENDIX I—*contd.*

Table No. 3.  
Number of mines opened and closed during the year ending 31st  
December 1916.

Province.	District.	Number of mines opened.	Number of mines closed.	
<b>A.—COAL.</b>				
BALUCHISTAN . . . . .	Kalat . . . . .	2	...	
	Quetta-Pishin . . . . .	2	...	
	Sibi-Khost . . . . .	1	1	
TOTAL . . . . .		5	1	
BENGAL . . . . .	Burdwan-Raniganj . . . . .	14	8	
BIHAR AND ORISSA . . . . .	Hazaribagh {	Bokaro-Ramgarh . . . . .	4	2
		Giridih . . . . .	2	2
	Manbhum {	Jharia . . . . .	...	2
		Jharia . . . . .	21	11
	Sonthal Parganas, Raniganj . . . . .	8	6	
TOTAL . . . . .		37	24	
CENTRAL PROVINCES . . . . .	Chanda . . . . .	...	1	
TOTAL (COAL) . . . . .		56	34	
<b>B.—MICA.</b>				
BIHAR AND ORISSA . . . . .	Bhagalpur . . . . .	1	...	
	Gaya . . . . .	13	3	
	Hazaribagh . . . . .	104	38	
	Monghyr . . . . .	1	4	
TOTAL . . . . .		119	45	
MADRAS . . . . .	Nellore . . . . .	33	20	
	Salem . . . . .	1	...	
TOTAL . . . . .		34	20	
RAJPUTANA . . . . .	Ajmer-Merwara . . . . .	4	...	
TOTAL (MICA) . . . . .		157	65	

APPENDIX I—*contd.*

Table No. 3—*contd.*  
 Number of mines opened and closed during the year ending 31st  
 December 1916—*contd.*

Province.	District.	Number of mines opened.	Number of mines closed.
<b>C.—MANGANESE.</b>			
CENTRAL PROVINCES . . .	Balaghat . . . . .	2	...
	Bhandara . . . . .	4	1
	Nagpur . . . . .	3	1
TOTAL . . . . .		9	2
MADRAS . . . . .	Vizagapatam . . . . .	3	1
TOTAL (MANGANESE) . . . . .	...	12	3
<b>D.—LIMESTONE.</b>			
CENTRAL PROVINCES . . . . .	Jabalpur . . . . .	8	17
PANJAB . . . . .	Hoshiarpur . . . . .	1	...
TOTAL (LIMESTONE) . . . . .	...	9	17
<b>E.—SLATE.</b>			
BIHAR AND ORISSA . . . . .	Monghyr . . . . .	...	1
<b>F.—IRON ORE.</b>			
CENTRAL PROVINCES . . . . .	Jabalpur . . . . .	1	1
<b>G.—WOLFRAM.</b>			
BIHAR AND ORISSA . . . . .	Singhbhum . . . . .	1	...
BURMA . . . . .	Tavoy . . . . .	54	10
	Thaton . . . . .	7	2
TOTAL . . . . .		61	12
CENTRAL PROVINCES . . . . .	Nagpur . . . . .	1	1
TOTAL (WOLFRAM) . . . . .	...	63	13

APPENDIX I—*concl.*

Table No. 3—*concl.*  
 Number of mines opened and closed during the year ending 31st  
 December 1916—*concl.*

Province.	District.	Number of mines opened.	Number of mines closed.
<b>H.—CHROMITE.</b>			
BALUCHISTAN . . . . .	Quetta-Pishin . . . . .	1	...
BIHAR AND ORISSA . . . . .	Singhbhum . . . . .	2	...
TOTAL (CHROMITE) . . . . .	.....	3	...
<b>I.—COPPER.</b>			
BURMA . . . . .	Katha . . . . .	...	1
	Lower Chindwin . . . . .	...	2
TOTAL (COPPER) . . . . .	.....	...	3
<b>J.—CLAY.</b>			
BIHAR AND ORISSA . . . . .	Manbhum . . . . .	1	2
CENTRAL PROVINCES . . . . .	Jabalpur . . . . .	1	...
TOTAL (CLAY) . . . . .	.....	2	2
<b>K.—GALENA.</b>			
CENTRAL PROVINCES . . . . .	Drug . . . . .	1	1
<b>L.—TIN.</b>			
BURMA . . . . .	Mergui . . . . .	1	...
	Tavoy . . . . .	1	...
	Thaton . . . . .	1	...
TOTAL (TIN) . . . . .	.....	3	...
<b>M.—STEATITE.</b>			
CENTRAL PROVINCES . . . . .	Jabalpur . . . . .	2	1
<b>N.—GRAPHITE.</b>			
RAJPUTANA . . . . .	Ajmer-Merwara . . . . .	2	...
GRAND TOTAL (ALL MINES) . . . . .	.....	311	141



APPENDIX I—*concl.*

Table No. 4.

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, bauxite, fuller's earth, silver, graphite, molybdenite and titanium.

YEAR.	Coal.	Manganese.	Mica.	Limestone.	Salt.	Wolfram.	Gold.	Copper ore.
	Tons.	Tons.	Cwts.	Tons.	Tons.	Cwts.	Troy ozs.	Tons.
1907 . . .	10,526,468	642,082	44,919	73,222	101,703	...	4,017	...
1908 . . .	12,149,020	494,942	46,208	101,569	93,779	...	7,242	10
1909 . . .	11,294,227	357,203	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	£,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	138,540	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	378,172	24,063	64,179	144,770	39,432	24,320	8,010
1916 . . .	16,419,082	568,932	35,978	45,290	180,357	59,094	23,235	2,671

Table No. 5.

The following table shows the amount of coal raised, the average number of persons working daily and the death-rates during the years 1907 to 1916 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.
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	106,698	148	12.28	1.38
1912 . . .	14,044,368	121,392	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
1916 . . .	16,419,082	143,459	169	10.29	1.18

**APPENDIX II.**  
**ACCIDENTS IN MINES.**

**Table No. 1.**  
**List of Fatal Accidents in mines regulated by the Indian Mines Act, 1901, during the year 1916.**

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 wrought.	Cause of accident and remarks.
<b>EXPLOSIONS OF FIRE DAMP—(14 deaths).</b>						
1	20th July, 10 A.M.	Dishergarh Mine, Dishergarh P. O., Bengal.	Equitable Coal Co., Ltd.	Rupai Manjhi, (m.), 28, <i>Haulage attendant.</i> Nagra Manjhi, (m.), 14, <i>Coal-cutter.</i> Dhanis Muchi, (m.), 23, <i>Propping carpenter's coolie.</i> Dayal Muchi, (m.), 27, <i>Propping carpenter.</i> Jogai Chamar, (m.), 29, Nania Muchi, (m.), 25, Dashu Muchi, (m.), 24, <i>Propping carpenter's coolies.</i> Bhagal Chamar, (m.), 23, <i>Propping carpenter.</i> Dharna Dubey, (m.), 20, Shunker Dubey, (m.), 30, Niaman Singh, (m.), 23, <i>Propping carpenter's coolies.</i> Dukhi Manjhian, (f.), 25, <i>Coal-carrier.</i> Sarka Manjhi, (m.), 27, Narayan Manjhi, (m.), 38, <i>Coal-cutters.</i>	Coal	While work was going on in a pillar-cutting district a noise of falling stone was heard in the "goaf." This was followed shortly afterwards by an explosion by which eighteen persons were burnt of which the fourteen deceased succumbed to their injuries. Inspection and inquiry made. <i>See Report, page 6.</i>
<b>FALLS OF ROOF AND SIDES—(81 deaths).</b>						
<b>(a) Falls of roof—(46 deaths).</b>						
2	7th January, 1-30 P.M.	West Ledo Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Banka Bengali, (m.), 26, <i>Coal shoveller.</i>	Coal	Timbermen were putting in new bars at a point about 30 feet above the bottom of a self-acting incline, on a slope of 1 in 2. Deceased was 5 feet above the bottom of the slope and was shovelling coal, which had fallen from the roof before during repairing operations. Whilst they were so employed, coal fell from the side at a point 15 feet above the timbermen. Three large lumps rolled down the steep slope and struck deceased, killing him on the spot. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1916—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 wrought.	Cause of accident and remarks.
<b>FALLS OF ROOF AND SIDES—contd.</b>						
<b>(a) Falls of roof—contd.</b>						
3	7th January, 7 P.M.	Kendwadih Mine, Jamadoba P. O., Bihar and Orissa.	Hariladiah Coal Co., Ld.	Chaiti Bilaspuri, (f.), 27, Coal-carrier.	Coal	Whilst deceased was loading a basket at the face in a pillar-cutting district, about half a ton of overhanging coal fell upon her from a height of 5 feet. She was killed on the spot. Inspection and inquiry made.
4	8th January, 11-30 A.M.	Kurhurbari Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co.	Rakhni Rajwarin, (f.), 17, Rukni Rajwarin, (f.), 16, Coal-carriers.	Coal	Roof coal, measuring 5' x 2'-9" x 1'-3" thick, fell from a height of 8 feet from a smooth "parting" in a gallery, and killed deceased outright. This coal had recently been exposed by dressing the side of the gallery. Inspection and inquiry made.
5	19th January, 5-30 P.M.	Namdang Mine, Margherita P. O., Assam.	Assam Railways & Trading Co., Ld.	Ganga Din Passi, (m.), 35, Coal-cutter.	Coal	Deceased and another miner, under the personal supervision of the European manager of the mine, were engaged in cutting down loose clay from the roof of an underground excavation, where a pump room was being made. A mass of nearly a ton of clay fell prematurely from "slips" in the roof. Deceased sustained injuries to which he succumbed on the following day. The manager had a narrow escape. Inspection and inquiry made.
6	20th January, 4-30 P.M.	Lutchipur Mine, Sitarampur P. O., Bengal.	Lutchipur Coal Co., Ld.	Jogdeo Bhar, (m.), 34, Carpenter.	Coal	Deceased entered a disused road against orders and drew some props from beneath a tender roof. In attempting to recover the bunter, a piece of roof stone, measuring 5' x 5' x 1'-9", fell from a height of 4½ feet and killed him outright. Inspection and inquiry made.
7	25th January, 11 A.M.	Lutchipur Mine, Sitarampur P. O., Bengal.	Damuda Coal Co., Ld.	Roghbir Ahir, (m.), 28, Deputy overman.	Coal	Deceased and the head overman were standing at the edge of a "goaf," from which the timber had recently been drawn, listening for any movement of the roof, when a sudden collapse of the roof occurred, apparently without warning, killing the former outright and slightly injuring the latter. Inspection and inquiry made.
8	26th January, 10-30 P.M.	Ghusik Mine, Kalipahari P. O., Bengal.	Ghusik and Muslia Collieries, Ld.	Khepa Manjhi, (m.), 19, Miner. Sukhi Manjhian, (f.), 33, Coal-carrier.	Coal	A fall of roof, measuring 22' x 8' x 1'-7" thick, fell from a height of 8 feet in a gallery and killed the two deceased outright. Another person was injured. The place was affected by "slips" and "joints" and was known to be dangerous. Precautions were taken but they proved to be inadequate. Inspection and inquiry made.
9	5th February, 5-30 P.M.	Kalikapur Mine, Bankulia P. O., Bengal.	R. M. Banerji & others	Mukundo Bauri, (m.), 35, Miner.	Coal	Deceased and his brother entered a fenced gallery to rob coal. While cutting the corner of a pillar, some roof coal, measuring 4' x 2' x 1'-3" thick, fell from a height of 6½ feet upon them killing deceased outright and fracturing the right leg of his brother. Inspection and inquiry made.

10	17th February, 6 A.M.	Viceroy Mine, Charanpur P. O., Bengal.	Minto Coal Co., Ld.	Hiru Chamar, (m.), 28, <i>Miner.</i> Padum Manjhian, (f.), 14, <i>Coal-carrier.</i>	Coal	Some roof coal, measuring 10' x 2'-0" x 2'-4" thick, fell upon the two deceased from a height of 13½ feet and inflicted injuries from the effects of which the man died half an hour later and the woman two days later. The overman was prosecuted by the management for breach of special rules and was fined Rs. 30 or three weeks' simple imprisonment. Inspection and inquiry made.
11	17th February, 4-30 P.M.	Jogta Mine, Sijua P. O., Bihar and Orissa.	Agabeg Brothers	Mohi Rai, (m.), 65, <i>Coal-cutter.</i>	Coal	Whilst cutting side coal in a gallery, 13 feet wide by 7½ feet high, deceased was killed by a fall of about 2 cwts. of coal and clay band, which fell from a "slip". Inspection and inquiry made.
12	21st February, 8-45 P.M.	Jamuria Mine, Nandi P. O., Bengal.	Equitable Coal Co., Ld.	Sukru Mahato, (m.), 25, Bhola Mahato, (m.), 35, <i>Miners.</i>	Coal	The two deceased and a companion had just commenced work on two small pillars at a goaf edge in a pillar cutting district, when a mass of roof, measuring 150' x 75' x 12' thick, fell. The pillar at which Sukru was at work was crushed out. Bhola was struck by a falling prop. Both were killed instantly. The other man escaped with a slight cut on one of his feet. Inspection and inquiry made.
13	4th March, 3-30 P.M.	Bulliar Mine, Kustore P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Chetan Gope, (m.), 40, <i>Coal-cutter.</i>	Coal	Deceased was employed in a pillar-cutting district. He left his appointed working place, broke down a fence and began to cut coal near the edge of a "goaf." He was struck by a fall of about 1½ tons of coal, which fell from converging "slips" in the roof, 7 feet above. He died within an hour. Inspection and inquiry made.
14	5th March, 12-30 A.M.	Jamuria Mine, Nandi P. O., Bengal.	Equitable Coal Co., Ld.	Lharan Manjhi, (m.), 24, <i>Miner.</i>	Coal	Deceased, against the orders of the sirdar and in his absence, began to cut some top coal, when several pieces of stone and coal fell upon him. He was found lying under a piece of stone, measuring 5' x 3' x 1' tapering to feather edges, with the ribs of his right side fractured. He died shortly afterwards from shock. Inspection and inquiry made.
15	6th March, 10-30 A.M.	Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Sorju Lohar, (m.), 26, <i>Loader.</i>	Coal	Deceased was struck by about 30 cwts of coal, which fell from the roof of an opening, 27' x 30' in area. He sustained serious injuries to his head and died twenty-four hours later. Inspection and inquiry made.
16	13th March, 12-30 P.M.	Serampur Mine, Girdih P. O., Bihar and Orissa.	East Indian Railway Co.	Chota Bulahi Meah, (m.), 45, <i>Deputy overman.</i>	Coal	Deceased was assisting the overman to draw timbers, prior to dropping roof coal, about 40' x 40' x 27' thick. A portion of the coal, measuring about 12' x 12' x 27' thick, came away suddenly and buried him. He was killed outright. Inspection and inquiry made.
17	26th March, 1 P.M.	Kendwadih Mine, Jamadoba P. O., Bihar and Orissa.	Hariladah Coal Co., Ld.	Jahani Kewat, (m.), 30, <i>Coal-cutter.</i>	Coal	In a pillar-cutting district in a coal seam 9 feet thick, a pillar, originally 45 feet square, had been split up into four "stooks," each 16 feet square. A gang of seven miners were engaged in extracting the last portion of one of these "stooks." They had reduced its dimensions to 4' x 2'-6" when it collapsed, and a slab of stone, 10' x 5' x 1', fell from the roof, knocking out several of the thirty props set. Deceased was killed on the spot. Two other men were slightly injured, one of them being pinned down by the fallen stone. Inspection and inquiry made.
18	30th March, 5 P.M.	Serampur Mine, Girdih P. O., Bihar and Orissa.	East Indian Railway Co.	Kella Mallah, (m.), 30, <i>Coal-cutter.</i>	Coal	When putting shot holes in a "knob" of coal supporting some roof coal, a piece of dyke stone, weighing about 3 cwts., fell upon deceased, as he was trying to escape. He died from the effects of his injuries an hour and a half later. Inspection and inquiry made.

APPENDIX II—*contd.*

Fatal Accidents, 1916—*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 wrought.	Cause of accident and remarks.
<b>FALLS OF ROOF AND SIDES—<i>contd.</i></b>						
<i>(a) Falls of roof—<i>concl'd.</i></i>						
19	25th May, 1 P.M.	Angarpatra Mine, Katrasgarh P. O., Bihar and Orissa.	Angarpatra Colliery Co. .	Ram Lal Bhuia, (m.), 35, <i>Coal cutter.</i>	Coal	Deceased entered a fenced gallery in a coal seam 6 feet thick and began to rob coal from the side. Whilst so engaged a triangular shaped area of roof shale, 13' x 7' x 2' thick, fell from between two "slips." He was killed on the spot. Inspection and inquiry made.
20	1st June, 5 P.M.	Jairamdanga Mine, Asansol P. O., Bihar and Orissa.	New Beerbhun Coal Co., Ld.	Ganga Dayal Passi, (m.), 35, <i>Coal-cutter.</i>	Coal	Deceased went into a fenced off gallery to rob roof coal. Whilst so engaged, a mass, weighing about 80 lbs., fell upon him from a height of 15 feet. He died six hours later. Inspection and inquiry made.
21	6th June, 10 P.M.	Lodna Mine, Jharia P. O., Bihar and Orissa.	Lodna Colliery Co., Ld. .	Manu Bhakta, (m.), 22, <i>Coal cutter.</i> Gurdayal Bhakta, (m.), 12, Jitni Bhaktin, (f.), 18, <i>Coal carriers.</i>	Coal	Whilst the three deceased were cutting coal in a gallery, 8 to 12 feet high and 10 feet wide, a mass of shale, 39' x 7' x 3' thick, fell upon them from the roof. Manu and Jitni were killed instantly and Gurdayal's injuries were such that he died eight hours later. Two other persons were slightly injured. Inspection and inquiry made.
22	29th June, 1 A.M.	Faridpur Mine, Charanpur P. O., Bengal.	Poniaty Coal Concern .	Naku Kole, (m.), 22, <i>Coal-cutter.</i>	Coal	Deceased, in the legitimate absence of the sirdar, went behind a fence to cut roof coal in a gallery. Whilst so doing, a piece of stone, weighing about 100 lbs., fell upon him from a height of 8 feet. He died twenty-six hours later. Inspection and inquiry made.
23	10th July, 11-30 P.M.	West Ledo Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld. .	Ghambir Koiri, (m.), 35, <i>Loader.</i>	Coal	Deceased was loading baskets inside the opening, when about 8 tons of coal fell without warning from a height of 16 feet and struck him, causing severe injuries. He died three and a half months later. Inspection and inquiry made.
24	26th July, 4 P.M.	Kapasara Mine, Mugna P. O., Bihar and Orissa.	Jafar Yusuf & Sons .	Kashi Kora, (m.), 18, <i>Coal-cutter.</i>	Coal	Deceased went through a fence and started to rob a pillar. A mass of overhanging coal, measuring 19' long x 5'-6" broad x 5' thick, fell upon him and killed him instantly. Inspection and inquiry made.
25	3rd August, 6-30 A.M.	Serampur Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co. .	Mojidan Joblin, (f.), 15, <i>Coal-carrier.</i>	Coal	Five women were employed in a pillar extraction area. They passed through a fence and whilst they were loading coal, a fall of roof shale, 10' x 10' x 9", occurred. Mojidan received internal injuries and died the same day. Another woman sustained fractures of the ribs and collar bone. Inspection and inquiry made.
26	19th August, 3-30 P.M.	Lakorka Mine, Katrasgarh P. O., Bihar and Orissa.	Lakorka Coal Co., Ld. .	Jagannath Koiri, (m.), 43, <i>Sirdar.</i> Bharun Bhuia, (m.), 19, <i>Coal-cutter.</i>	Coal	In a pillar-cutting district a pillar had been reduced to a "knob," 6' x 3'-6", when the roof began to "weight." The sirdar withdrew the miners and took out about 30 props. After a while, as the roof did not fall, he reset several props near the "knob" and set two coal-cutters to work to further reduce the "knob." Whilst so engaged, roof stone, 12' thick, fell over an area, 25' x 30', from which props had been removed. At the same time the same thickness of roof stone fell over an area, about

27	23rd September, 12 Noon.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway	Ram Sarup, (m.), 25, <i>Carpenter's coolie.</i>	Coal	Deceased, another coolie and a carpenter were timbering the face of a level when a large fall of coal occurred burying deceased, whose body was recovered six days afterwards.
28	26th September, 8 A.M.	Central Dhurmaband Mine, Katrasgarh P. O., Bihar and Orissa.	Central Dhurmaband Coal Co., Ltd.	Luchmi Burhi, (m.), 35, <i>Carpenter-mistri.</i>	Coal	Deceased was drawing timber in a "goaf" when a mass of roof coal, measuring approximately 12' square and 9' thick, fell without any warning. He was struck down and buried under the fall. Death must have been instantaneous. Inspection and inquiry made.
29	26th September, 2 P.M.	South Kustore Mine, Kustore P. O., Bihar and Orissa.	Raniganj Coal Association, Ltd.	Kachari Roy, (m.), 34, <i>Coal-cutter.</i>	Coal	Deceased had opened a fence and was robbing the corner of a pillar. A mass of coal, measuring 12' x 1' x 1'-6", fell from a height of 9 feet and killed him instantly. Inspection and inquiry made.
30	11th October, 12 Noon.	East Chandrabad Mine, Jharia P. O., Bihar and Orissa.	Ruplal Agarwala	Babi Bauri, (f.), 25, <i>Coal-carrier.</i>	Coal	Deceased went through a fence into a disused gallery. A fall of roof occurred and a piece of stone, measuring 2'-10" x 2'-0" x 6", fell upon her from a height of 6 feet. She sustained a broken spine and injuries to her skull. Death was instantaneous. Inspection and inquiry made.
31	18th October, 8-30 A.M.	Khas Jharia Mine, Jharia P. O., Bihar and Orissa.	Ramjus Agarwala	Sarna Munda, (f.), 14, <i>Coal-carrier.</i>	Coal	Deceased walked under some overhanging coal, which was being undercut by a miner. A piece, measuring 2'-6" x 1'-8" x 1'-5", broke away and fell from a height of 6 feet upon her. She sustained injuries to her spine and died in less than an hour. Inspection and inquiry made.
32	18th October, 5-30 P.M.	Jharia Khas Mine, Jharia P. O., Bihar and Orissa.	Standard Coal Co., Ltd.	Sew Charan Passi, (m.), 45, <i>Coal-cutter.</i>	Coal	A mass of roof coal, weighing about 5 cwts., fell from a height of 25 feet on to the base of a pillar in course of extraction. It broke into small pieces, one of which struck deceased, who was sitting some distance away. He sustained injuries to his spine from which he died on the 24th December. Inspection and inquiry made.
33	19th October, 11-30 A.M.	New Sinidih Mine, Katrasgarh P. O., Bihar and Orissa.	New Sinidih Coal Co., Ltd.	Butto Napit, (m.), 35, <i>Propping carpenter's coolie.</i>	Coal	A portion of soft ground, 30 feet inside the entrance of an incline, was being timbered. Deceased was making a hole in the side for a cross timber, when the roof suddenly caved in and buried him. Death was due to suffocation. Inspection and inquiry made.
34	19th October 2-30 P.M.	Kurhurburi Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co.	Tipon Burhi, (m.), 25, <i>Coal-cutter.</i>	Coal	Deceased was loading coal in a gallery in which roof coal was being cut. Whilst so doing, a piece of coal, measuring 2'-6" x 2'-9", fell upon him from a height of 7 feet. He was killed instantly. Inspection and inquiry made.
35	8th November, 5 P.M.	Lower Joyrampur Mine, Jharia P. O., Bihar and Orissa.	Ghelabhai Panchan & Co.	Polu Bauri, (m.), 35, <i>Coal-cutter.</i>	Coal	Whilst deceased was cutting roof coal in a gallery, a slab of stone, measuring 5' x 5' x 6" thick, fell from the roof, 11 feet above. He sustained injuries to which he succumbed an hour later. Inspection and inquiry made.
36	30th November, 9-45 P.M.	Sijua Mine, Sijua P. O., Bihar and Orissa.	Sijua Coal Co., Ltd.	Mangra Manjhi, (m.), 40, <i>Coal-cutter.</i>	Coal	Deceased was employed in splitting a pillar in a seam 9 feet thick. He went through a fence and began to cut coal from the corner of another pillar. Almost immediately an area of roof stone, 17' x 10' x 8" thick, fell upon him. His skull was fractured and he died about an hour later. Inspection and inquiry made.
37	9th December, 8-45 P.M.	Jamuria Mine, Nandi P. O., Bengal.	Equitable Coal Co., Ltd.	Dayal Meah, (m.), 24, Puna Meah, (m.), 25, Budhan Koiri, (m.), 30, Etwari Kole, (m.), 24, <i>Coal-cutters.</i>	Coal	Whilst engaged in loading fallen roof coal on the edge of a "goaf," the deceased were killed by a fall of roof stone which fell over a considerable area which could not be measured and which was 7 feet in thickness. Inspection and inquiry made. See Report, page 8.

APPENDIX II—contd.

Fatal Accidents, 1916—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 wrought.	Cause of accident and remarks.
<b>FALLS OF ROOF AND SIDES—contd.</b>						
<i>(b) Falls of side—(31 deaths).</i>						
38	4th January, 12 Midnight.	Satikdih Mine, Bhujndih P. O., Bihar and Orissa.	Satikdih Coal Co., Ld.	Baiju Rajwar, (m.), 30, Coal-cutter.	Coal	Deceased was employed in cutting floor coal in a gallery 15 feet high in a seam 26 feet thick. Against orders he undercut the side of a pillar and was killed on the spot by the fall of 1½ tons of coal. Inspection and inquiry made.
39	7th January, 11 A.M.	Borrea Mine, Sitarampur P. O., Bengal.	New Beerbhun Coal Co., Ld.	Bhutka Manjhi, (m.), 30, Miner.	Coal	Deceased was robbing coal from a pillar, situated in a fenced area, when a piece of overhanging coal, measuring 18' x 6' x 3'-6" thick, fell from a height of 12½ feet and killed him outright. Inspection and inquiry made.
40	11th January, 6 P.M.	New Suratar Mine, Jharia P. O., Bihar and Orissa.	New Suratar Coal Co., Ld.	Cheta Mallick, (m.), 55, Sirdar.	Coal	Whilst testing the stability of the side of a gallery by sounding it with a stick, a lump of coal, about 80 lbs. in weight, fell upon his shoulder from a height of 8 feet. He sustained a fracture of the collar bone and internal injuries, and, although he was able to walk out of the mine, he died two and a half hours later. Inspection and inquiry made.
41	30th January, 11-30 A.M.	Hermyingyi Mine, Tavoy P. O., Burma.	Hermyingyi Mining Co., Ld.	Yi Mong, (m.), 30, Miner.	Wolfram	Deceased was buried under several tons of earth, which fell from the side of an "open cut," and was killed instantly.
42	9th February, 1-10 P.M.	Paungdaw Mine, Tavoy P. O., Burma.	Martin and de Paulsen	Li Fook, (m.), 48, Miner.	Wolfram	As deceased was undermining the side of an "open cut" about two cubic yards of schist fell from the side, from a height of about 5 feet and killed him. See Report, page 9.
43	15th February, 10-30 A.M.	Bansdeopur Mine, Kusunda P. O., Bihar and Orissa.	Bansdeopur Coal Co., Ld.	Jhalua Chamar, (m.), 30, Coal-cutter.	Coal	Deceased and three other miners were employed in splitting a pillar 19 feet high in a pillar-cutting district. The European assistant and the sirdar found their working place unsafe on account of unsound side coal and sent them out with instruction to work on floor coal in another gallery. Pending repairs the place was fenced. Deceased broke down the fence and entered the place. Whilst he was working there, he was killed on the spot by the fall of a slab of coal from the side, 9' x 5' x 0' to 2' thick, from a height of 12 feet. Inspection and inquiry made.
44	15th February, 12 Noon.	Bansdeopur Mine, Kusunda P. O., Bihar and Orissa.	Bansdeopur Coal Co., Ld.	Rupan Chamar, (m.), 27, Coal-carrier. Ganu Chamar, (m.), 48, Coal-cutter.	Coal	Whilst Ganu was cutting floor coal in a pillar-cutting district, a triangular slab of coal, 9' long by 2' high and 1'-3" thick, fell from the roof and side from a height of 20 feet. Both he and Rupan were killed on the spot. Inspection and inquiry made.

45	18th February, 5-15 P. M.	Kutchi Dhana Mine, Ramkona P. O., Central Provinces.	Indian Manganese Co., Ld.	Amyar Khan, (m.), 40, Coolie.	Manganese	Deceased was using a crowbar to remove a portion of rock from the overburden. He slipped and fell with the rock which probably struck him on its rebound. He received injuries from which he died three days later.
46	18th February, 10-30 P. M.	Lodna Mine, Jharia P. O., Bihar and Orissa.	Lodna Colliery Co., Ld.	Sukar Mani Korin, (f.), 45, Cool-carrier.	Coal	In a floor-cutting district two coal cutters were employed on a ladder in dressing down overhanging side coal from a pillar 20 feet high. Deceased loaded the coal which they cut and carried it away in baskets. Whilst she was loading a basket, a mass of about 2 cwts. of coal, fell prematurely from the side. She was struck by the falling coal and sustained injuries to which she succumbed shortly after. Inspection and inquiry made.
47	17th March, 12-30 P. M.	East Ledo Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Samarn, (m.), 30, Cool-shoveller.	Coal	A piece of side coal fell from the side of a "fault" and crushed deceased against the side of the gallery in which he was shovelling coal. He died from internal injuries. Inspection and inquiry made.
48	23rd March, 4-30 A. M.	Kajora Mine, Ondal P. O., Bengal.	Kajora Coal Co., Ld.	Khudia Passi, (m.), 25, Miner.	Coal	While the side of a main gallery was being undercut to widen it, the undercut portion, measuring 7' x 4'-3" x 9' thick, fell and pinned deceased against the opposite side of the gallery, which was only 4 feet wide. He received injuries from which he died seventeen hours later. Inspection and inquiry made.
49	13th April, 2-30 P. M.	Baraboni Mine, Asansol P. O., Bengal.	Baraboni Coal Concern, Ld.	Surja Marandi, (m.), 35, Overman.	Coal	Deceased was supervising the removal of side coal, measuring 17' x 8' x 1'-6" thick, when it fell unexpectedly and a small portion struck him. He died from the effects of his injuries two hours later. Inspection and inquiry made.
50	27th April, 11-30 P. M.	Jharia Khas Mine, Jharia P. O., Bihar and Orissa.	Standard Coal Co., Ld.	Kessu Nazra, (m.), 36, Cool-cutter.	Coal	Deceased worked in a pillar-cutting district. He broke down a fence, entered the "goaf" and began to cut coal from the corner of a pillar, which had been reduced to 20' x 10' x 21' high and abandoned a fortnight previously. Whilst so engaged, a mass of side coal, exceeding 4 tons in weight, fell upon him from the corner of the pillar from a height of 8 feet. Death must have been instantaneous. Inspection and inquiry made.
51	20th May, 2 P. M.	Joyramdanga Mine, Asansol P. O., Bengal.	New Beerbhum Coal Co., Ld.	Pram Gope, (m.), 30, Propping mistri.	Coal	Deceased was sitting in a gallery cutting timber, when a piece of side coal fell and knocked out a prop. The falling prop struck him and threw him forward upon a stone, which smashed the frontal bone of his head. He died six hours later without having regained consciousness. Inspection and inquiry made.
52	1st June, 12-30 P. M.	Huntodih Mine, Mohoda P. O., Bihar and Orissa.	Huntodih Coal Co., Ld.	Chottu Bauri, (m.), 20, Cool-cutter.	Coal	Deceased whilst at work in the face of a gallery in a seam 6 feet thick, rising at an angle of 1 in 5, was killed by a mass of 15 cwts. of coal, which fell from two converging "slips" in the face. Before the accident the "slips" could not be seen. Inspection and inquiry made.
53	8th June, 10 A. M.	Bhor Mine, Quetta P. O., Baluchistan.	Sirdar Bhawal Khan	Taj Mahomed, (m.), 19, Coolie.	Coal	Whilst deceased and another man were filling bags of coal, which had been extracted on the previous evening, a fall of roof and sides occurred killing deceased and slightly injuring the other man.
54	14th June, 2-30 P. M.	Pagaye Mine, Tavoy P. O., Burma.	Rangoon Mining Co., Ld.	Horel, (m.), 30, Tribute worker.	Wolfram	Deceased was buried up to the waist by a fall of earth in an "open work." He was rendered unconscious and died that evening probably from shock. Inspection and inquiry made.
55	2nd July, 5 P. M.	Junawani Mine, Ramtek P. O., Central Provinces.	Bansilal Abirchand Mining Syndicate.	Guni Dukhia, (f.), 18, Coolie.	Manganese	A fall occurred from the side, from an area of about 6' x 6' and buried deceased. She probably died from suffocation. The ground is said to have been loosened by heavy rain.



APPENDIX II—contd.

Fatal Accidents, 1916—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 wrought.	Cause of accident and remarks.
<b>FALLS OF ROOF AND SIDES—contd.</b>						
<i>(b) Falls of sides—concl'd</i>						
56	4th July, 10 A.M.	Wazunchaung Mine, Tavoy P. O., Burma.	Quah Cheng Guan . .	Maung Pyu, (m.), 30, <i>Labourer.</i>	Wolfram .	Deceased and another man were working in an "open cut" when about half a ton of earth fell from the side and buried deceased. Death was instantaneous. There had been very heavy rain on the morning of the accident.
57	12th July, 8 P.M.	Rubber Mile Mine, Tavoy P. O., Burma.	Finlay, Fleming & Co. .	Ah Loy, (m.), 40, <i>Tributing coolie.</i>	Wolfram .	Deceased was undercutting the hanging wall in an adit when about half a ton of stone fell upon him from a height of about 5 feet and killed him. Inspection and inquiry made. <i>See Report, page 9.</i>
58	15th July, 1 A.M.	Chanch Mine, Barakar P. O., Bihar and Orissa.	Bengal Coal Co., Ld. .	Fucha Manjhi, (m.), 28, <i>Coal-cutter.</i>	Coal .	Whilst deceased was cutting side coal, a piece of overhanging side coal, measuring 6'-6" long × 7' broad × 1'-9" to 0'-6" thick, fell from a "slip." He sustained a compound fracture of his right leg and severe lacerations and succumbed to his injuries eleven days later. Inspection and inquiry made.
59	1st August, 11 A.M.	Kutchi Dhana Mine Ramkona P. O., Central Provinces	Indian Manganese Co., Ld.	Bandhari Teli, (m.), 35, <i>Miner.</i>	Manganese .	Deceased was working at the base of a vertical face of ore, 9 feet in height, when a mass of ore, weighing about two tons, fell upon him. He was killed instantly. Inspection and inquiry made.
60	30th August, 3-30 P.M.	South Jibutil Mine, Morrison P. O., Madras.	Jibutil (Anantapur) Gold Mines, Ld.	Coopan, (m.), 26, <i>Hand-driller.</i>	Gold .	A stone, estimated to measure 18" × 9" × 4", fell from the hanging wall, through a distance of 15 feet, upon the right leg of the deceased who was working at the bottom of the stope. He died in hospital on 11th December. Inspection and inquiry made.
61	17th September, 9-30 P.M.	Alkusa and Kiska Mines, Kusunda P. O., Bihar and Orissa.	Kanga & Co. . . .	Gurdayal Dosadh, (m.), 25, <i>Coal-cutter.</i>	Coal .	Deceased was robbing the corner of a pillar on the side of a haulage road. A "slip" of side coal, 14' × 1' × 2', fell over. A part of it, measuring 6' × 2' × 2', fell upon him and pinned him down. He expired before he could be extricated. Inspection and inquiry made.
62	9th October, 5-30 A.M.	Kurkend Mine, Kurkend P. O., Bihar and Orissa.	Sudamdih Coal Co., Ld. .	Mona Teli, (m.), 30, <i>Coal-cutter.</i>	Coal .	Deceased, contrary to orders, was cutting coal from the base of a pillar. A piece of coal, measuring 4' × 3' × 2', fell from a "slip" from a height of 5 feet striking deceased and killing him instantly. Inspection and inquiry made.
63	18th October, 5 P.M.	Lachmoniah Mine, Domchanch P. O., Bengal.	Jhari Singh . . . .	Budhan Gope, (m.), 30, <i>Miner.</i>	Mica	Whilst some forty persons were at work in a quarry, 22 feet deep, about 2 tons of soft schist fell from the side, from a height of 7 feet. Deceased was killed on the spot and another miner was injured but not severely. Inspection and inquiry made.

64	26th October, 7 A.M.	Douia Mine, Manharpur P. O., Bihar and Orissa.	Bengal Iron and Steel Co., Ltd.	Phutka, (m.), 10, <i>Coolie.</i>	Iron ore	Deceased was struck on the back of the head by a piece of ore which fell down a slope from a higher level. He died a week later.
65	6th November, 2-15 P.M.	Bansdeopur Mine, Kusunda P. O., Bihar and Orissa.	Bansdeopur Coal Co., Ltd.	Dhan Bhuia, (m.), 38, <i>Coal-cutter.</i>	Coal	Deceased, during the temporary absence of the sirdar, left his working place and went beyond a fence, where he began to cut coal from the corner of a pillar. A mass of coal, 20 feet high by 6 feet wide and 3 feet 6 inches thick, weighing about 16 tons, fell from a smooth "joint." He was killed on the spot. Inspection and inquiry made.
66	14th November, 4 P.M.	Chowrasi Mine, Dishergarh P. O., Bengal.	Equitable Coal Co., Ltd.	Pailu, (f.), 25, <i>Dust-carrier.</i>	Coal	Deceased was walking along a level when a piece of coal, 2'x2'x1', fell upon her from the side of a pillar from a height of 10 feet. She sustained a simple fracture of a thigh and died from tetanus fifteen days later. Inspection and inquiry made.
67	22nd November, 11-30 A.M.	New Khas Jharia Mine, Jharia P. O., Bihar and Orissa.	Ramjus Agarwala	Lilla Bauri, (m.), 32, <i>Coal-cutter.</i>	Coal	During the temporary absence of the overman and sirdar the deceased left his working place, passed through a fence and began to cut coal from the corner of a pillar, 40 feet in height. Some 8 tons of coal fell from a "slip" killing him on the spot. The assistant manager, the overman and a sirdar were dismissed at the request of the Inspector of Mines. Inspection and inquiry made.
68	26th November, 6 A.M.	Diarwa Mine, Kodarma P. O., Bihar and Orissa.	Monoranjan Guha	Dewa Teli, (m.), 24, <i>Earth-cutting coolie.</i>	Mica	Deceased went into the mouth of a gallery full of water, at the bottom of a quarry, 20 feet deep, to wash his hands, in spite of warnings to the contrary. The ground above was being sloped back at the time. A mass of strata, weighing some 4 to 5 cwts. fell without any warning and buried him. He sustained serious injuries to his head and shoulder and died on the way to hospital. Inspection and inquiry made.
69	9th December, 2-30 P.M.	Widnes Mine, Tavoy P. O., Burma.	High Speed Steel Alloy Co., Ltd.	Low Kid, (m.), 27, <i>Tributor.</i>	Wolfram	Deceased was killed by a fall of overburden, which he was undermining, in an open cast working. Three other men were injured.
70	13th December, 9-30 A.M.	Thandaung Mine, Tavoy P. O., Burma.	Steel Bros. & Co., Ltd.	Pahalwan, (m.), 25, <i>Coolie.</i>	Wolfram	Deceased, against orders, was undermining the side of an open cast working when about half a ton of earth fell on him from a height of 10 feet, and killed him instantly.
71	27th December, 12-15 P.M.	Bhowra Mine, Jamadoba P. O., Bihar and Orissa.	Eastern Coal Co., Ltd.	Thethor Bhuia, (m.), 28, <i>Coal-cutter.</i>	Coal	Whilst deceased, under the direct supervision of a sirdar, was taking down overhanging coal from a pillar, 18 feet high, in a pillar-cutting district, he was struck down by a mass of coal, weighing about a ton, which fell upon him from a height of 7 feet. He was killed on the spot. Inspection and inquiry made.

IN SHAFTS.

Overwinding—(4 deaths).

72	10th August, Midnight.	Sanctoria Mine, Dishergarh P. O., Bengal.	Bengal Coal Co., Ltd.	Akhal Singh, (m.), 32, Sukhar Singh, (m.), 30, <i>Timbermen,</i> Fagu Napit, (m.), 35, <i>Stone-cutter.</i>	Coal	Whilst four men were being lowered in a shaft, 288 feet deep, the engineman lost control of the winding engine, and the cage struck the landing platform at the bottom with violence. Akhal Singh was killed outright, Sukhar Singh died three days later and Fagu Napit eleven days later. The fourth man was slightly injured. Inspection and inquiry made. <i>See Report, page 9.</i>
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APPENDIX II—contd.

Fatal Accidents, 1916—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 wrought.	Cause of accident and remarks.
<b>IN SHAFTS—contd.</b>						
<b>Overwinding—concl'd.</b>						
73	25th September, 10-40 A.M.	Parbelia Mine, Dishergarh P. O., Bengal.	Bengal Coal Co., Ltd.	Gouri Singh, (m.), 24, <i>Stone-cutter.</i>	Coal	Deceased was a sinker, working at the bottom of a shaft, 280 feet in depth. An overwind occurred. The bell box of the safety detaching hook was smashed and a piece of the falling metal, 2½ lbs. in weight, struck deceased on his head. He died two days later. Inspection and inquiry made.
<b>Ropes and chains breaking—(1 death).</b>						
74	27th May, 5-46 P.M.	North Anantapur Mine, Morrison P. O., Madras.	North Anantapur Gold Mines, Limited.	Erode Rahman, (m.), 27, <i>Blaster.</i>	Gold	Deceased was riding in a loaded skip in a winze and had reached within 10 feet of the top, when the winding rope broke. He fell through a distance of 200 feet and was killed outright. Inspection and inquiry made.
<b>Whilst ascending or descending by machinery—(11 deaths).</b>						
75	4th January, 2 P.M.	Srikristopur Mine, Kalipahari P. O., Bengal.	Baliram and Co.	Dharu Manjhi, (m.), 45, <i>Miner.</i>	Coal	Deceased was descending a shaft, 173 feet deep, in a cage. He fell out of the cage to the bottom of the shaft and was killed instantly. The cage was not fitted with gates. Inspection and inquiry made. <i>See Report, page 10.</i>
76	17th February, 3-30 P.M.	Jibutil Mine, Morrison P. O., Madras.	Jibutil (Anantapur) Gold Mines, Ltd.	Malappati, (m.), 28, <i>Stuff coolie.</i>	Gold	Deceased and a fellow workman were, against standing orders, riding on a loaded bucket in a shaft, 350 feet in depth. When nearing the surface deceased released his hold and fell to the bottom of the shaft. He was killed outright. Inspection and inquiry made.
77	20th February, 7 A.M.	Sitalpur Mine, Dishergarh P. O., Bengal.	Bengal Coal Co., Ltd.	Dilu Mahato, (m.), 36, <i>Friction roller coolie.</i> Chutu Barrih, (m.), 24, Nandu Barrih, (m.), 20, Keshub Barrih, (m.), 26, Tulsi Barrih, (m.), 18, <i>Stone cutters.</i> Lalchand Barrih, (m.), 30, <i>Rail mistri.</i>	Coal	The six deceased had entered the cage in order to be lowered to the bottom of a shaft, 375 feet deep. Just as the descent commenced, the capping of the winding rope parted from the rope and the cage, with the six men, fell to the bottom. All were killed instantly. Inspection and inquiry made. <i>See Report, page 10.</i>

78	7th August, 11 A.M.	Barmondia Mine, Sitarampur P. O., Bengal.	Damuda Coal Co., Ltd.	Sura Bauri, (m.), 25, <i>Hookman.</i>	Coal	Deceased with three other men was being raised up a shaft, 670 feet deep. When the cage reached a point some 200 feet from the bottom of the shaft deceased fell out of the cage. He was killed instantly. Inspection and inquiry made.
79	6th September, 3 P.M.	Central Dhurmaband Mine, Katrasgarh P. O., Bihar and Orissa.	Central Dhurmaband Coal Co., Ltd.	Puran Kumbar, (m.), 30, <i>Head fitter.</i>	Coal	Whilst deceased and another man were being raised on a scaffold, which was actuated by a hand winch, from the bottom of a shaft, 271 feet in depth, deceased fell off into water below and was drowned. Inspection and inquiry made.
80	16th November, 2 P.M.	South Bulliari Mine, Kustore P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Gutwa Dhobi, (m.), 22, <i>Onsetter.</i>	Coal	Deceased was the onsetter in charge at the bottom of a shaft, 275 feet deep. The usual signal for men to ride was received at the surface, and the cage was raised in the usual manner. When it arrived at the surface, he was seen to be lying half in and half out of the cage, clasping its end. The winding engine was stopped before the cage reached the banking level, but, before assistance could be given, the deceased relaxed his hold and fell to the bottom of the shaft. His dead body was recovered shortly after. Inspection and inquiry made.
<b>Falling into the shafts from the surface—(5 deaths).</b>						
81	29th February, 9 A.M.	Kurkend Mine, Kurkend P. O., Bihar and Orissa.	Marine Coal Co., Ltd.	Manga Koiri, (m.), 28, <i>Banksman.</i>	Coal	Whilst assisting the European assistant manager to mark off the positions of the guide ropes for automatic fence gates, deceased overbalanced and fell to the bottom of a shaft, 250 feet deep. He was killed on the spot. Inspection and inquiry made.
82	11th May, 2 P.M.	Kujama Mine, Jharis P. O., Bihar and Orissa.	Kanji and Shamji Nanji.	Daya Walji Chohan, (m.), 50, <i>Coal-carrier.</i>	Coal	Deceased was employed in carrying coal through a gallery in an upper working in a seam of coal, 40 feet thick. In the floor of this gallery a shaft, 5 feet in diameter and 26 feet deep, makes a connection with a gallery in the lower working of the same seam. His lamp was accidentally extinguished and he blundered into the wire, which was fencing the shaft. One of the posts of the fencing gave way and he fell to the bottom of the shaft. He sustained severe injuries to his head and died a week later. Inspection and inquiry made.
83	17th May, 11-45 A.M.	Lutchipur Mine, Sitarampur P. O., Bengal.	Lutchipur Coal Co., Ltd.	Nokul Bauri, (m.), 20, <i>Hookman.</i>	Coal	A fitter engaged in repairing the guide of an automatic gate, fencing a cage pit, had opened the gate for his convenience in working. Deceased, whilst placing a tub in position in front of the opening, ready for the resumption of winding, pushed the tub too far and fell with it to the bottom of the shaft, 356 feet below. He was killed on the spot. Inspection and inquiry made.
84	22nd July, 9 A.M.	Chinitaung Mine, Monywa P. O., Burma.	A. K. A. S. Jamal	Thapa Damu, (m.), 32, <i>Miner.</i>	Copper	Deceased was winding a bucket, by means of a hand winch, up a shaft 90 feet deep. He slipped and fell to the bottom being killed instantly.
85	27th August, 10 P.M.	Bansdeopur Mine, Kusunda P. O., Bihar and Orissa.	Bansdeopur Coal Co.	Sukar Dosadh, (m.), 25, <i>Boiler fireman.</i>	Coal	Deceased, whilst sitting on top of the fencing around a shaft, overbalanced and fell to the bottom, a distance of 224 feet. He was killed instantly. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1916—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 wrought.	Cause of accident and remarks.
<b>IN SHAFTS—contd.</b>						
<b>Falling from part of the way down—(2 deaths).</b>						
86	16th June, 1 A.M.	Katras Mine, Katrasgarh P. O., Bihar and Orissa.	Nowagarh Coal Co., Ld.	Pal Singh, (m.), 25, <i>Labourer.</i>	Coal	Deceased and two other men were suspended in a bucket at a depth of 50 feet in a sinking shaft, 280 feet deep. They were engaged in re-adjusting one of the clamps, which secured three ranges of pipes to two wire ropes suspended from the surface. Whilst deceased was tightening a nut on the clamp, he overbalanced and fell into water at the bottom of the shaft. His body was found ten hours later. Death was considered to have been caused by drowning. Inspection and inquiry made.
87	20th December, 8 P.M.	Ramagiri Mine, Morriston P. O., Madras.	Anantapur Gold Fields, Ld.	Pyaneendy, (m.), 38, <i>Blaster.</i>	Gold	As deceased was climbing down a winze, 200 feet deep, he slipped and fell to the bottom. He was probably overcome by fumes caused by blasting. He was killed instantly.
<b>Things falling from the surface—(2 deaths).</b>						
88	22nd January, 4-20 P.M.	Sodepur Mine, Sitarampur P. O., Bengal.	Bengal Coal Co., Ld.	Ghoru Bauri, (m.), 19, <i>Onsetter.</i>	Coal	A piece of coal, measuring about 3' x 2' x 1½", fell from the surface, through the clearance between the protection boards and the cage, down a shaft, 417 feet deep, and struck deceased on the head, fracturing his skull. He died two days later. Inspection and inquiry made. <i>See Report, page 13.</i>
89	6th February, 1 A.M.	Bhalgora Mine, Jharia P. O., Bihar and Orissa.	Bhalgora Coal Co., Ld.	Majhlu Manjhi, (m.), 20, <i>Pit sinker.</i>	Coal	Whilst a gang of men were at work at the bottom of a sinking shaft, 245 feet deep, a piece of planking, 24' x 9' x 1½", fell from the surface. Deceased was struck on his head and killed on the spot. There was no evidence to show how the planking came to fall into the shaft, but it appears to have been used as a manhole covering for an opening in a platform giving access to a range of pipes. Inspection and inquiry made.

Things falling from part of the way down—(2 deaths).						
90	13th May, 7 A.M.	Kurhbari Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co.	Budhu Meah, (m.), 48, <i>Sycc.</i>	Coal	Deceased was standing inside a cage at the bottom of a shaft, 450 feet deep, when a piece of stone, measuring 2'-6" x 1'-7" x 9", fell from the side of the shaft, through a distance of 98 feet, upon the bonnet of the cage. His neck was broken and he died instantly. Inspection and inquiry made.
91	18th November, 1 P.M.	North Kustore Mine, Kustore P. O., Bihar and Orissa.	Raniganj Coal Associa- tion, Ltd.	Lalu Panjabi, (m.), 35, <i>Foreman labourer.</i>	Coal	Guide ropes were being fitted in a new shaft, 312 feet deep. In the process of tightening one of the ropes it fouled a pipe, 3" in diameter and 75 feet in length, supported in the shaft, near the surface, by four clamp bolts cemented in holes in the side of the shaft. The lowest of the clamp bolts drew out of its hole and fell to the bottom of the shaft, where deceased and two other men were engaged in fixing the guide ropes. Deceased was struck on his head and died two days later. Inspection and inquiry made.
Miscellaneous—(2 deaths).						
92	3rd February, 11 A.M.	Loyabad Mine, Bansjora P. O., Bihar and Orissa.	Barakar Coal Co., Ltd.	Maula Meah, (m.), 27, <i>Foreman labourer.</i>	Coal	In a shaft, 231 feet deep, the four guide ropes are kept taut by suspending a square wooden box filled with stones from their lower ends. During the operation of erecting a new head gear the box and guide ropes were lowered to the bottom of the shaft. When the erection was complete, the guide ropes were raised, by means of the winding engine rope and adjusted to the proper length. A gang of eight coolies was then employed in replacing the box. Whilst they were so engaged one of the guide ropes was raised a distance of 18 inches, causing the box to cant upwards at one corner. Deceased, who was sitting on the box at the time, was crushed between the box and one of the beams carrying the cage platform. He was killed on the spot. Inspection and inquiry made.
93	20th March, 10 A.M.	Sodepur Mine, Nos. 9 and 10 pits, Sittrampur P. O., Lengal.	Bengal Coal Co., Ltd.	Mongal Bauri, (m.), 30, <i>Trolleyman.</i>	Coal	Deceased was found beneath a cage which had just reached the shaft bottom. It was his duty to unhook the fence chain on the cage and it is surmised that he slipped and fell on the sumpboards as he was approaching the shaft. He died a few moments after being released. Inspection and inquiry made.
BY EXPLOSIVES—(4 deaths).						
94	29th May, 11 A.M.	Meke Myabya Mine, vay P. O., Burma.	Lim Kyi Yan	Ah Foon, (m.), 24, <i>Coolie.</i>	Wolfram	As deceased was pressing a detonator into a dynamite cartridge, it exploded in his hand. He received injuries from which he died nine hours later.

APPENDIX II—contd.

Fatal Accidents, 1916—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 wrought.	Cause of accident and remarks.
<b>BY EXPLOSIVES—concl'd.</b>						
95	18th July, 6-30 P.M.	Kutchi Dhana Mine, Ramkona P. O., Central Provinces.	Indian Manganese Co., Ltd.	Gouri Shanker Kole, (m.), 35, Miner.	Manganese.	Deceased and another coolie, who was injured, attempted to tamper with a shot hole that had missed on the previous evening. While doing so, the shot went off and deceased died from shock and other complications sixteen days later. A mines foreman who should have superintended the work was dismissed. Inquiry held.
96	29th July, 4-30 P.M.	Tagu Mine, Mergui P. O., Burma.	E. Ahmed . . .	Scin Pe, (m.), 20, Coolie.	Wolfram .	Deceased returned too soon to the place where a shot had hung fire. It went off and killed him instantly.
97	14th September, 12 Noon.	Aldih Mine, Sitarampur P. O., Bengal.	Aldih Coal Co., Ltd.	Jhaman Nunia, (m.), 20, Gunpowder maker.	Coal .	A person carelessly threw a lighted cigarette amongst some country gunpowder spread out in the open to dry. The powder caught fire and burnt deceased who was close by. He died twenty hours later. Inspection and inquiry made.
<b>IRRUPTIONS OF WATER OR FALLING INTO WATER—(3 deaths).</b>						
98	25th May, 11-30 A.M.	Bulluari Mine, Kurkend P. O., Bihar and Orissa.	Bulluari Coal Co. . .	Tejua Kandua, (m.), 30, Coal-cutter.	Coal .	A main gallery holed through, unexpectedly, into some old workings containing a large quantity of water. Deceased and nine other men were underground at the time. The nine men were able to escape up the shaft but deceased was overwhelmed by the flood and drowned before he could follow. Inspection and inquiry made.
99	22nd September, 6-30 P.M.	Damaghurria Mine, Kulti, P. O., Bengal.	Damaghurria Coal Co., Ltd.	Akkur Bauri, (m.), 35, Manu, (m.), 45, Main gallery drivers.	Coal .	During a heavy storm of rain a protective embankment was breached, and an incline was inundated. The two deceased, who were in the incline, were drowned in the flood. Inspection and inquiry made.

**HAULAGE—(12 deaths).**

100	3rd January, 7-30 A.M.	Narsamuda Mine, Sitarampur P. O., Bengal.	Sitarampur Coal Co., Ld.	Bhim Bauri, (m.), 37, <i>Signalman.</i>	Coal	As a set of twenty-one empty tubs was being lowered down a main dip haulage, the leading seven tubs ran wild owing to a drawbar breaking. Deceased was crushed between the side of a pillar and the runaway tubs. He was killed instantly. Inspection and inquiry made.
101	7th January, 5-30 P.M.	Aldih Mine, Sitarampur P. O., Bengal.	Aldih Coal Co., Ld.	Nidhu Baurin, (f.), 35, <i>Bailing kamin.</i>	Coal	As deceased with some companions was ascending a main haulage road she was knocked down and run over by a set of empty tubs. She received injuries from which she died twenty-two hours later. Inspection and inquiry made.
102	2nd February, 5-30 A.M.	Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Durga Singh Thapa, (m.), 32, <i>Trammer.</i>	Coal	Deceased was travelling out of the mine along the haulage road. He was struck by the outgoing set of tubs and killed instantly. Inspection and inquiry made.
103	6th April, 2 A.M.	Dishergarh Mine, Dishergarh P. O., Bengal.	Equitable Coal Co., Ld.	Muchiram Manjhi, (m.), 30, <i>Coal-cutter.</i>	Coal	Deceased with companions was sleeping on the side of a tram line. A tub of coal, which was being pushed from inbye, ran wild, and became derailed close to deceased, and either ran over or struck his left leg, causing a compound fracture. He died fifteen days later. Inspection and inquiry made.
104	19th April, 9-30 A.M.	Bon Jumerri Mine, Salanpur P. O., Bengal.	Bon Jumerri Anthracite Colliery, Ld.	Kunjo Lohar, (m.), 44, <i>Coal-cutter.</i>	Coal	An empty tub was being lowered down a haulage road when it collided with a full tub standing at the end of a plane. Deceased was crushed between the two tubs whilst in the act of picking up fallen coal. His left hip joint was dislocated. This injury and the shock accelerated an attack of strangulated hernia and he succumbed three hours later. He had suffered from hernia prior to the accident. Inspection and inquiry made.
105	29th April, 7 A.M.	Namdang Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Punty, (f.), 24, <i>Brakeswoman.</i>	Coal	As deceased was walking into the mine along the haulage road, she was run down by a train of tubs and dragged a distance of about 50 yards. When found she was quite dead. Inspection and inquiry made.
106	29th April, 1-30 P.M.	Ekra Khas Mine, Bansjora P. O., Bihar and Orissa.	The Hon'ble Maharaja Sir M. C. Nandi, K.C.I.E.	Chamarin Bilaspurin, (f.), 28, <i>Coal-carrier.</i>	Coal	Whilst a train of eight empty tubs was being lowered down a haulage slope a coupling chain fell off and seven tubs ran wild. Deceased, who was walking out of the mine at the time, was knocked down and killed on the spot. Inspection and inquiry made.
107	18th May, 11 A.M.	Sodepur Mine, Sitarampur P. O., Bengal.	Bengal Coal Co., Ld.	Latu Bauri, (m.), 50, <i>Coal-cutter.</i>	Coal	Deceased, whilst walking towards the shaft bottom, was pinned between a stationary tub of coal and another tub which was being shunted. He sustained internal injuries from which he died six hours later. Inspection and inquiry made.
108	8th July 3 A.M.	Sitalpur Mine, Dishergarh P. O., Bengal.	Bengal Coal Co., Ld.	Sahadeo Ram, (m.), 26, <i>Underground tub checker.</i>	Coal	As a train of eight empty tubs was being lowered down an engine plane, the front tub broke away and struck deceased, who was walking down the road, 400 feet below, and killed him instantly. Inspection and inquiry made.



APPENDIX II—contd.

Fatal Accidents, 1916--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 wrought.	Cause of accident and remarks.
<b>HAULAGE—concl'd.</b>						
109	21st July, 2 A.M.	Alkusa Mine, Kustore P. O., Bihar and Orissa.	Raniganj Coal Association, Ld.	Punit Dosadh, (m.), 27, <i>Hookman.</i>	Coal	Whilst a train of twelve empty tubs was being lowered down a haulage slope, 2,000 feet in length, a coupling chain fell off, and nine tubs ran wild into the landing station below. Their impact broke the buffer stop, and five loaded tubs ran over the ends of the rails and were piled up in a heap a short distance below. The haulage attendant attached the rope to these tubs and gave the signal to raise. After about three feet of rope had been hauled up the axle of one of the tubs caught under the end of the rails. The excessive strain set up caused the rope to break at a point about 250 feet from the hauling engine. Deceased had been stationed at a curve about 600 feet above the landing station, where it was his duty to transmit signals. He failed to stand clear and was struck by the released rope after its fracture. He sustained injuries to which he succumbed the same day. Inspection and inquiry made.
110	3rd August, 7 P.M.	Karmatand Mine, Nowagarh P. O., Bihar and Orissa.	D. H. Agarwala .	Rang Lal Napit, (m.), 24, <i>Water bailer.</i>	Coal	Three empty tubs ran wild from the top of a haulage slope, dipping at an angle of 1 in 3. Deceased was knocked down and sustained injuries to which he succumbed the next day. Inspection and inquiry made.
111	31st December, 10-15 P.M.	Jatachappa Mine, Pench P. O., Central Provinces.	Upper Pench Coal Co., Ld.	Ramadin, (m.), 26, <i>Water-coolie.</i>	Coal	Some full tubs ran wild down a self-acting incline and struck deceased at the bottom of the incline. He sustained injuries, from the effects of which he died twelve days later. Inspection and inquiry made.
<b>SUNDRIES UNDERGROUND—(7 deaths).</b>						
112	5th March, 11-30 A.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway .	Dittu, (m.), 35, <i>Plate laying coolie.</i>	Coal	Deceased was descending a haulage road, dipping at 51 degrees, to examine the track. He slipped and fell 900 feet to the bottom being killed instantly. Inspection and inquiry made.
113	13th July, 1 P.M.	Mayo Mine, Khewra P. O., Panjab.	Government of India .	Buksh, (m.), 50, <i>Miner.</i>	Salt	Deceased was employed in carrying salt from a working face for a distance of about 150 feet to a tram road. He carried out a load, and before depositing it, was seized with giddiness and fell between the edge of the loading wharf and a tram standing on the line. He sustained a concussion of the spine and died twelve days later of acute cerebro-spinal meningitis. Deceased was an old man and was weak through observance of the Ramzan fast. Inspection and inquiry made.

114	15th July, 3-30 P.M.	Chanch Mine, Barakar P. O., Bihar and Orissa.	Bengal Coal Co., Ltd.	Budhni Mejhian, (f.), 62, <i>Dust Kamin.</i>	Coal	Deceased was filling dust, close to where some miners were extracting a pillar. A large piece of coal fell from the pillar and deceased in attempting to run back out of danger, fell over. She succumbed to hæmorrhage of the brain three hours later. Inspection and inquiry made.
115	2nd October, 11 P.M.	Golukih Mine, Jharis P. O., Bihar and Orissa.	N. M. Chowdhury & Co.	Dugi Mejhian, (f.), 20, <i>Coal-carrier.</i>	Coal	Deceased was pushing an empty tub along a tram line level. In an attempt to keep clear of two tubs that were being brought along behind her, she stepped to one side, and fell down into a dip gallery in which some 8 feet to 10 feet of floor had been extracted. While in the act of falling she caught hold of the side of the tub, overbalanced it and dragged it over with her. She sustained a broken neck. Death was instantaneous. Inspection and inquiry made.
116	7th October, 10-45 A.M.	Dishergarh Mine, Dishergarh P. O., Bengal.	Equitable Coal Co., Ltd.	Raghunath Dubey, (m.), 40, <i>Electrical fitter.</i>	Coal	Deceased, whilst cutting an electrical lighting cable, charged with alternating current at 110 volts., received a shock and fell down. He had, before commencing work, cut out the switch, but an unauthorized person replaced it. In falling he struck the back of his head against a pipe lying on the ground. According to medical evidence his death was due to an electric shock. Inspection and inquiry made.
117	23rd October, 3-15 P.M.	New-West Ledo Valley Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Billar, (m.), 22, <i>Horse driver.</i>	Coal	Deceased, who was driving a restive horse, dropped his lamp, and whilst endeavouring to pick it up, let go the bridle. The horse moved forward and crushed him between the side and tub. He died a month later from injuries received. Inspection and inquiry made.
118	15th December, 12-30 P.M.	Noonoodih Mine, Jamadoba P. O., Bihar and Orissa.	Bengal Iron and Steel Co., Ltd.	Lakhan Bauri, (m.), 30, <i>Hauling engineman.</i>	Coal	Whilst deceased was opening a cast iron valve on a range of steam pipes, $\frac{1}{4}$ inch in diameter, the valve burst and he was scalded so severely that he died eight days later. Inspection and inquiry made.

SURFACE MACHINERY.—(3 deaths).

119	24th June, 6-30 P.M.	Bhowra Mine, Jamadoba P. O., Bihar and Orissa.	Eastern Coal Co., Ltd.	Punna Nowa, (m.), 22, <i>Engine minder.</i>	Coal	Deceased attempted to oil a disintegrating machine whilst it was in motion. He was drawn into the machinery and killed on the spot. Inspection and inquiry made.
120	25th June, 5-30 P.M.	Titalmuri Mine, Sijua P. O., Bihar and Orissa.	Titalmuri Collieries, Ltd.	Jiva Rajwar, (m.), 13, <i>Shale picker.</i>	Coal	Deceased worked at a mechanical coal screening plant and arrived at his home, about one hundred yards distant. He had been running, but fell down and became unconscious, dying about twenty minutes later. His skull and breast bone were found to be fractured. There were contused wounds on his body and the top of his left thumb was missing. No one saw the accident and there was nothing to show how it occurred. He must however have been crushed somehow in the machinery. The machinery was fenced. Inspection and inquiry made.
121	9th December, 11-45 A.M.	Sazar-In wash mill, Mogok P. O., Burma.	Burma Ruby Mines, Ltd.	Maung Pho Nyin, (m.), 33, <i>Clutchman.</i>	Babies	Deceased fell and was crushed between the gear wheels of a washing mill and killed instantly.

APPENDIX II—contd.

Fatal Accidents, 1916—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 wrought.	Cause of accident and remarks.
<b>ON SURFACE RAILWAYS AND TRAMWAYS BELONGING TO THE MINE.—(6 deaths).</b>						
122	29th April, 1 P.M.	Kurhbari Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co.	Banu Bhuia, (m.), 25, <i>Loco. Guard.</i>	Coal .	Deceased was employed on a colliery surface railway, and was accidentally killed by falling from a locomotive and being run over by a truck. Inspection and inquiry made.
123	1st May, 6-45 P.M.	Charanpur Mine, Charanpur P. O., Bengal.	Reliance Coal Co., Ld.	Munjari Baurin, (f.), 22, <i>Trammer.</i>	Coal .	Deceased, whilst helping to push a loaded tub along a surface tramway, slipped and fell, and was run over by a following tub. She died three hours later. Inspection and inquiry made.
124	19th May, 4 A.M.	Joyrampur Mine, Jharia P. O., Bihar and Orissa.	B. R. and Co.	Jiblal Bhuia, (m.), 16, <i>Trammer.</i>	Coal .	As deceased was pushing a tub of coal to the loading wharf, another tub of coal behind him ran away and before he could jump clear, his leg was pinned between the two tubs and fractured. He died two days later in hospital, after the limb had been amputated. Inspection and inquiry made.
125	1st August, 10 A.M.	Bokaro-Jharia Mine, Nowagarh P. O., Bihar and Orissa.	Bokaro-Jharia Coalfields, Ld.	Manu Beldar, (m.), 70, <i>Tramming coolie.</i>	Coal .	Whilst deceased and two other persons were pushing a loaded tub on a tram line up a grade of 1 in 50, they were overtaken by another tub being pushed by two other persons. His companions stepped to one side and told him to do so also, but he failed to do so and was crushed between the two tubs. He sustained a spinal injury to which he succumbed two days later. Inspection and inquiry made.
126	24th August, 1 A.M.	Douia Mine, Manharpur P. O., Bihar and Orissa.	Bengal Iron and Steel Co., Ld.	Tobo, (m.), 16, <i>Coolie.</i>	Iron Ore .	While moving a loaded tub, deceased slipped and fell and another tub, which was following closely, ran over his left leg. He died five days later.
127	21st September, 5-45 P.M.	Kutchi Dhana Mine, Ramkona P. O., Central Provinces.	Indian Manganese Co., Ld.	Fagu Kole, (f.), 13, <i>Coolie.</i>	Manganese .	Deceased was crossing a tram line, while carrying ore. A tub was being pushed by hand and was derailed probably by ore dropped by deceased. She was crushed by the tub and sustained injuries from which she died seven hours later. Inspection and inquiry made.
<b>MISCELLANEOUS ON SURFACE.—(47 deaths).</b>						
12E	4th February, Between 2 & 3 A.M.	Bhowra Mine, Jamadoba P. O., Bihar and Orissa.	Eastern Coal Co., Ld.	Pitamber Rajwar, (m.), 28, Behari Rajwar, (m.), 12, Baikunta Bauri, (m.), 28, Sambhu Bauri, (m.), 25, Allad Bauri, (m.), 13, Putku Bauri, (m.), 26, Sajhu Rajwar, (m.), 50, <i>Miners.</i>	Coal .	The deceased were asleep at night in their huts, which were situated over underground workings. In the middle of the night these workings suddenly collapsed, engulfing the huts. The deceased were buried under the debris of the fallen huts and killed. Inspection and inquiry made. <i>See Report, page 13.</i>

129	11th February, Between 7 & 8 A.M.	Wazunchaung Mine, Tavoy P. O., Burma.	Quah Cheng Guan .	Lakhi Rajwarin, (f.), 16, Mukti Rajwarin, (f.), 16, Dhiri Baurin, (f.), 16, Chandi Baurin, (f.), 15, Meni Baurin, (f.), 32, Thaki Baurin, (f.), 16, Jamuna Baurin, (f.), 12, Fudni Baurin, (f.), 16, Palani Baurin, (f.), 18, <i>Coal-carriers.</i> Bahadur Rajwar, (m.), 6, Bhagi Rajwarin, (f.), 8, Rishi Bauri, (m.), 9, Sristidhar Bauri, (m.), 1, Futi Baurin, (f.), 9, Abinash Bauri, (m.), 1, Baby Baurin, (f.), 6, Mabindi Bauri, (m.), 1. Maung Nu, (m.), 40, <i>Labourer.</i>	Wolfram	Deceased was struck by a falling tree which was blown down by a gale. He was killed instantly.
130	21st May, 6 A.M.	Sijua Mine, Sijua P. O., Bihar and Orissa.	Sijua Coal Co., Ltd. .	Rubin Dosadhin, (f.), 45, <i>Bailer woman.</i>	Coal	Deceased's body was found in a tank containing water to a depth of 6 feet. There was no evidence to show how her death was caused. Inspection and inquiry made.
131	21st May, 9 A.M.	East Nudkhurki Mine, Nowagarh P. O., Bihar and Orissa.	Auckland Coal Co., Ltd. .	Tuni Bhuiani, (f.), 20, Tenti Bhuiani, (f.), 40, <i>Coal-carriers.</i>	Coal	The two deceased were bathing in an old quarry. One of them went out of her depth and began to sink. The other went to the rescue and also got into deep water. Both were drowned. The top of the quarry was fenced. Inspection and inquiry made.
132	16th June, 9-30 A.M.	Kambank Mine, Tavoy P. O., Burma.	Radcliff & Co., Ltd. .	Pun Chi, (m.), 52, <i>Coolie.</i>	Wolfram	A hydraulic monitor got out of control and threw the jet near deceased and others working near him. Deceased was thrown against the roof of a bank and sustained injuries through which he died an hour later.
133	12th August, 9 A.M.	Wazunchaung Mine, Tavoy P. O., Burma.	Quah Cheng Guan .	Muk Khin, (m.), 27, Phoon Wai, (m.), 26, Chang King, (m.), 27, Lum Shin Tung, (m.), 21, Phun Tung Sang, (m.), 24, Owe Ngi, (m.), 31, Lai Ngi, (m.), 35, Chan Choi Kam, (m.), 20, Chong Hok, (m.), P <i>Labourers.</i>	Wolfram	Owing to the bursting of a dam, erected across a river for mining purposes, a flood occurred, and the deceased, who were in their coolie lines, over a mile away, at the time, were swept away and drowned. Inspection and inquiry made. <i>See Report, page 15.</i>
134	10th September, 11 P.M.	Nodiha Mine, Dishergarh P. O., Bengal.	Nodiha Coal Co., Ltd. .	Jhari Bauri, (m.), 22, <i>Pump khalasi.</i>	Coal	Deceased, whilst working on an electrical transmission pole, received a shock, by reason of the switch in the power house being inadvertently put in. He fell to the ground through a distance of 18 feet, and sustained injuries which resulted in death three days later. Another man working with him was slightly burnt. Inspection and inquiry made.

APPENDIX II—*contd.*

Fatal Accidents, 1916—*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 wrought.	Cause of accident and remarks.
<b>MISCELLANEOUS ON SURFACE—<i>concl'd.</i></b>						
135	22nd September, 4-30 P.M.	Serampur Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co.	Kesia Chamin, ( <i>f.</i> ), 14, <i>Coal-carrier.</i> Chamni Chamin, ( <i>f.</i> ), 4,	Coal	The two deceased were walking in a field during a severe cyclone and were struck by a broken low tension electric wire connected with the colliery. Both received a shock and fell into some water and were drowned. Inspection and inquiry made.
136	14th October, 10-30 A.M.	Kantapahari Mine, Panuria P. O., Bengal.	Barakar Coal Co., Ltd.	Lab Singh, ( <i>m.</i> ), 20, <i>Coolie.</i>	Coal	Deceased was crushed against a boiler by a large steel girder. He sustained internal injuries from which he died the following day. Inspection and inquiry made.
137	4th November, 3 P.M.	Kambauk Mine, Tavoy P. O., Burma.	Radcliff & Co., Ltd.	Pu Tit, ( <i>m.</i> ), 30, <i>Coolie.</i>	Wolfram	Deceased was working on the roof of a wolfram godown. He sustained a shock from an electric wire, fell to the ground and was killed.
138	4th November, 8-45 P.M.	Bagdiggi Mine, Jharia P. O., Bihar and Orissa.	C. J. Smith . . .	Etvari Mahato, ( <i>m.</i> ), 35, <i>Trammer.</i>	Coal	As deceased and another trolleyman were pushing an empty tub along a gantry, it derailed and fell from off the gantry. Both men jumped to the ground some 10 feet below. Deceased fell heavily and sustained internal injury, to which he succumbed about two hours later. Inspection and inquiry made.
139	20th December, 3 .M.	Kendwadih Mine, Knsunda P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Lildhari Dosadh, ( <i>m.</i> ), 20, <i>Onsetter.</i>	Coal	Deceased was employed as an onsetter at the top of a winding shaft. Being a cold night, he lay down and slept near a coal fire which he had lighted. His clothes caught fire, and he sustained burns to the effects of which he succumbed sixteen days later. Inspection and inquiry made.
140	27th December, 5 P.M.	Jogta Mine, Sijua P. O., Bihar and Orissa.	Agabeg Brothers . . .	Tetra Bhuia, ( <i>m.</i> ), 10, Panwa Bhuiani, ( <i>f.</i> ), 11, <i>Screeners.</i>	Coal	Whilst a number of children were loading small coal at the foot of a heap of coal, 22 feet in height, three of them were buried by small coal rolling down from the heap. When extracted the two deceased were dead. The other child revived after artificial respiration had been applied. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1916—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 wrought.	Reason for exclusion.	Cause of accident and remarks.
<b>DEATHS NOT INCLUDED IN THE STATISTICS.—(37 deaths).</b>							
1	1st January, 11-30 A.M.	Ghusik Mine, Kalipahari P. O., Bengal.	Baliram & Co.	Rama Turi, (m.), 5.	Coal	Not employed	Deceased fell into a boiler feed water tank, which contained water 3'-11" deep, and was drowned. The tank was fenced. Inspection and inquiry made.
2	18th January, 1 P.M.	Chowka Mine, (abandoned).	Equitable Coal Co., Ltd.	Unknown, (f.), 6.	Coal	Not employed	Deceased was found drowned in an old shaft. Inspection and inquiry made.
3	1st February,	Sowardih Mine, Bhujudih P. O., Bihar and Orissa.	Sowardih Coal Co.	Unknown, (f.), 28.	Coal	Not employed	Deceased's body was found at the bottom of a quarry 67 feet in depth. The fencing on the edge of the quarry was intact. Inspection and inquiry made.
4	4th February, 10-30 P.M.	Bejdih Mine, Sitarampur P. O., Bengal.	Equitable Coal Co., Ltd.	Kusumer Bagti, (f.), 6, Chunda Bagti, (f.), 30, <i>Brick-carrier.</i>	Coal	Not a mining accident.	While four members of a family were sleeping in brickmaker's hut, the straw thatch caught fire and the hut was burnt to the ground. The father dragged out his wife and one child, both seriously burned; but, before he could return for the other, the roof collapsed and she was burnt to death. The wife died eight days later. An open fire was burning only 3 feet away at the time and it is thought that a spark was blown on to the thatch. Inspection and inquiry made.
5	23rd February, 5 P.M.	Shampur Mine, Nirshachati P. O., Bihar and Orissa.	Shampur Coal Co., Ltd.	Fugri Manjhi, (m.), 50, <i>Miner.</i>	Coal	Not a mining accident.	Deceased, while in a fit, set fire to his clothes with an open lamp. He sustained severe burns to the lower portion of his body, from the effects of which he died twenty-four hours later. Inspection and inquiry made.
6	27th March,	Kandri Mine, Ramtek P. O., Central Provinces.	Central Provinces Pros- pecting Syndicate, Ltd.	Bihari Kachi, (m.), 36, <i>Coolie.</i>	Manganese	Not a mining accident.	Deceased fell down a well during the early hours of the morning. He was removed at 6-30 A.M. in an exhausted condition and died at 10 A.M. There was a wall, 4 feet high, round the well.
7	28th March, 11 A.M.	An abandoned quarry	— Roy	Borhana Meah, (m.), 14.	Coal	Not employed	Deceased and another child were scraping some fire clay from the back of an old quarry, when the ground above them gave way and some large lumps of earth, measuring up to 3' x 2' x 2', fell upon them. Deceased succumbed to his injuries the same day. Inspection and inquiry made.
8	1st April, 9-30 A.M.	Bamankua Mine, Shivrajpur P. O., Bombay.	Bamankua Co., Ltd. Manganese	Dhapi, (f.), 2.	Manganese	Not employed	Deceased who had been left by her mother, crawled under a wagon and dislodged a brake stick placed in position to jam the wheels. The wagon moved a little down the grade crushing her chest and killing her.

APPENDIX II—contd.

Fatal Accidents, 1916—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 wrought.	Reason for exclusion.	Cause of accident and remarks.
<b>DEATHS NOT INCLUDED IN THE STATISTICS—contd.</b>							
9	5th April, 8-30 A.M.	South Kustore Mine, Kustore P. O., Bihar and Orissa.	Raniganj Coal Association, Ltd.	Nazir Meah, (m.), 12, Shale picker.	Coal	Not a mining accident.	Whilst attempting to cross a railway siding during hand shunting operations, deceased was crushed between the buffers of two wagons and killed on the spot. Inspection and inquiry made.
10	7th April, 7 A.M.	Dishergarh Mine, Dishergarh P. O., Bengal.	Equitable Coal Co., Ltd.	Rajhu Passi, (m.), 30, Coal cutter.	Coal	Not a mining accident.	Deceased and another man were cooking their food inside a hut. A kerosine lamp was hanging on the wall near some clothing. The lamp set fire to the clothing and ignited the thatched roof. Whilst endeavouring to save the clothes within the hut deceased's own clothes caught fire. He was badly burned and died from the effects eleven days later. Inspection and inquiry made.
11	About 14th April.	Kendwadih Mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Dukhia Telin, (f.), 16.	Coal	Not employed	The body of deceased was found at the bottom of an air shaft about 100 feet deep. Inspection and inquiry made.
12	27th April, 10 P.M.	Tajuwala Mine, Rawal Pindi P. O., Panjab.	Northern India Coal Co.	Alam Khan, (m.), 22.	Coal	Not employed	Deceased and three other persons were riding on a water tank, which was being hauled up a steep slope by a locomotive. Owing to a jerk, the coupling pin came out and the tank ran backwards down the slope. The other men jumped off, but deceased failed to do so and was crushed between the tank and another tank, standing on the line, 1,000 feet down the slope. He sustained injuries to which he succumbed two days later. Inspection and inquiry made.
13	21st May, 12 Noon.	Hariladih Mine, Jharia P. O., Bihar and Orissa.	Equitable Coal Co., Ltd.	Unknown, (f.), 20.	Coal	Not employed	The body of deceased was found floating in water at the bottom of a disused shaft, 38 feet deep. Inspection and inquiry made.
14	25th May, 8 A.M.	Sibpur Mine, Charanpur P. O., Bengal.	Katras Jharia Coal Co.	Ful Basia, (f.), 4.	Coal	Not employed	Deceased was playing on a surface tramway, when she was run into by a loaded tub. She received injuries to her head, from which she died a few minutes later. Inspection and inquiry made.
15	30th May, 12-30 P.M.	Knordih Mine, Kalipahari P. O., Bengal.	Knordih Coal Co., Ltd.	Rajaram Gope, (m.), 8.	Coal	Not employed	Deceased fell into a water-logged subsidence and was drowned before help could be rendered. Inspection and inquiry made.
16	2nd June, 5-15 A.M.	Serampur Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co.	Dulia Jolhin, (f.), 70.	Coal	Not employed	Deceased was caught by the footboard of a brake van while attempting to cross the line. She sustained very severe injuries to which she succumbed.

17	3rd June, 12 Noon.	Sibpur Mine, Charanpur P. O., Bengal.	Katras Jharria Coal Co., Ld.	Khudu Turi, (m.), 6, Sugi Domin, (f.), 30.	Coal	Not employed	The two deceased fell into an old water-logged quarry and were drowned before aid could be rendered. The quarry was securely fenced on all sides. Inspection and inquiry made.
18	3rd July, 1-30 P.M.	Baraboni Mine, Asansol P. O., Bengal.	New Beerbhum Coal Co., Ld.	Chattu Rajwar, (m.), 30, Loading coolie.	Coal	Not a mining accident.	Deceased was underneath a main line wagon helping to hand shunt it in a colliery siding. He slipped and fell and was run over by one of the rear wheels. He sustained injuries which necessitated the amputation of his left arm. He died five days later. Inspection and inquiry made.
19	13th July, 2-30 P.M.	Charanpur Mine, Charanpur P. O., Bengal.	Apcar & Co.	Dukhi Telin, (f.), 5.	Coal	Not employed	Deceased was crushed between two wagons which were standing on a siding owing to another wagon, which was being shunted, colliding with them. She sustained injuries from which she died two days later.
20	8th August, 9 A.M.	Babisole Mine, Raniganj P. O., Bengal.	Bilbera Coal Co., Ld.	Sristy Bauri, (m.), 20, Coolie.	Coal	Not a mining accident.	Deceased jumped off the loading wharf and was run over by a passing train. He sustained injuries from which he died two days later.
21	18th August, 8 A.M.	Satak Mine, Dumrikhurd P. O., via Kumptec, Central Provinces.	Byramji Pestonji & Co.	Lahnia, (m.), 45, Barber.	Manganese	Not employed	Deceased was struck down by a tub on a tram line bridge and was killed instantly.
22	26th August, 4 P.M.	Barari Mine, Jamadoba P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Abdul Meah, (m.), 35, Bricklayer.	Coal	Not a mining accident.	Whilst dismantling a building scaffold, 10 feet high, deceased overbalanced and fell backwards on to a heap of bricks, sustaining a spinal injury, to which he succumbed some five weeks later. Inspection and inquiry made.
23	1st September, 9 A.M.	Hermyingyi Mine, Tavoy P. O., Burma.	Hermyingyi Mining Co., Ld.	Low Ah Him, (m.), 22, Coolie.	Wolfram	Not a mining accident.	Deceased was struck by a falling tree, which others were felling at the time. He was crushed and killed.
24	4th September, 4 P.M.	Saltore Mine, Dishergarh P. O., Bengal.	Saltore Coal Co., Ld.	Unknown, (m.), 30.	Coal	Not employed	Deceased's body was found in the sump of a shaft, 666 feet deep. His skull was fractured, and both legs and arms were broken in several places. The shaft was adequately fenced.
25	23rd September, 6 P.M.	Rakha Hills Mine, Rakha Mines P. O., Bihar and Orissa.	Cape Copper Co., Ld.	Vankat Ram, (m.), 23, Timber mistri.	Copper	Not a mining accident.	Whilst another workman was standing on a large stone engaged in erecting an archway under a road the stone became dislodged and crushed deceased killing him instantly.
26	29th September, 7-30 A.M.	Kendwadih Mine, Jamadoba P. O., Bihar and Orissa.	Hariladhi Coal Co., Ld.	Jung Bahadur Singh, (m.), 34, Trolley man.	Coal	Not a mining accident.	Deceased whilst attempting to descend a well on a rope, fell to the bottom and was drowned.
27	8th November, 8-30 A.M.	Ranidih Mine, Mohoda P. O., Bihar and Orissa.	S. N. Mittra	Bhutak Rai, (m.), 2.	Coal	Not employed	Deceased, whilst playing near his mother, who was engaged in carrying ashes near a boiler, fell into a boiler feed water tank and was drowned. The tank was unfenced. Inspection and inquiry made.
28	3rd December, 11-30 A.M.	Kambauk Mine, Tavoy P. O., Burma.	Radcliff & Co., Ld.	Chan Kao, (m.), 21, Coolie.	Wolfram	Not a mining accident.	Deceased was killed by the fall of a large tree, which was blown down by the wind.
29	17th December, 4 P.M.	Tikuri Mine, Katni P. O., Central Provinces.	Katni Cement and Industrial Co., Ld.	Pani, (f.), 11, Coolie.	Clay	Not employed	Deceased was found drowned in a disused China clay quarry.



APPENDIX II—*contd.*

Fatal Accidents, 1916—*concl'd.*

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 wrought.	Reason for exclusion.	Cause of accident and remarks.
<b>DEATHS NOT INCLUDED IN THE STATISTICS—<i>concl'd.</i></b>							
30	19th December, Between 8 and 9 A.M.	Sukli Mine, Tirodi P. O., Central Provinces.	Central India Mining Co., Ld.	Gulbasia, (f.), 50, <i>Coolie.</i>	Manganese.	Not a mining accident.	Deceased was found drowned in an old excavation. The excavation was fenced.
31	23rd December,	Dishergarh Mine, Dishergarh P. O., Bengal.	Equitable Coal Co., Ld.	Unknown, (m.), 40,	Coal	Not employed	Deceased was found dead at the foot of a pole, supporting wires which conveyed electrical current at an E. M. F. of 3,000 volts. Inspection and inquiry made.
32	27th December,	Bhulanbarari Mine, Jamudoba P. O., Bihar and Orissa.	Bhulanbarari Coal Co., Ld.	Kasinath Mukherji, (m.), 32, <i>Overman.</i> Joydeb Mukherji (m.), 28, <i>Sirdar.</i>	Coal	Not a mining accident.	The deceased passed the night in a room, closing the two windows and the door and keeping a fire inside. The fumes of the fire overcame them and they were found dead in the morning.
33	30th December, 12 Noon.	Scrampur Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co.	Alibur Meah, (m.), 5.	Coal	Not employed	Deceased fell into an old shaft containing water and was drowned. The shaft was fenced by a wall 3 feet high. Inspection and inquiry made.
34	?	Sunpur Mine, (Abandoned).	Ondal Coal Co., Ld.	Unknown, (f.), ?	Coal	Not employed	Deceased's body was found in a decomposed state at the bottom of an abandoned shaft. There was no evidence to show how she came to be there. The shaft was fenced.

## 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 1916.

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 accurate 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.				
<b>A.—COAL.</b>														
Assam	Lakhimpur . . . . .	2,611	8	8	...	8	75	72	6	78	4.43	...	3.06	
	Naga Hills . . . . .	183	...	...	...	...	...	...	...	...	...	...	...	
	TOTAL	2,794	8	8	...	8	75	72	6	78	4.31	...	2.86	
Baluchistan	Kalat . . . . .	96	1	1	...	1	...	...	...	...	18.18	...	10.42	
	Loralai, Loralai . . . . .	20	...	...	...	...	...	...	...	...	...	...	...	
	Quetta, Pishin . . . . .	127	...	...	...	...	...	...	...	...	...	...	...	
	Sibi, Khost, etc. . . . .	868	2	2	...	2	4	4	...	4	3.70	...	2.30	
TOTAL	1,111	3	3	...	3	4	4	...	4	4.32	...	2.70		
Bengal	Bankura, Raniganj . . . . .	104	1	1	...	1	...	...	...	...	15.87	...	9.62	
	Birbhum " . . . . .	29	...	...	...	...	...	...	...	...	...	...	...	
	Burdwan " . . . . .	42,907	32	57	2	59	48	38	12	50	2.05	.13	1.38	
	TOTAL	43,040	33	58	2	60	48	38	12	50	2.08	.13	1.39	
Bihar and Orissa	Hazaribagh {	Bokaro-Ramgarh . . . . .	2,058	1	...	1	1	7	1	6	7	...	2.09	.49
		Giridih . . . . .	9,976	8	7	3	10	21	15	6	21	1.00	1.01	1.00
		Jharia . . . . .	397	1	1	...	1	1	1	...	1	4.18	...	2.53
	Maubhum, Jharia . . . . .	71,575	50	45	34	79	56	45	15	60	1.00	1.27	1.10	
	" Raniganj . . . . .	5,689	6	5	1	6	2	1	1	2	1.46	.44	1.05	
	Palamanu, Daltonganj . . . . .	812	...	...	...	...	2	1	1	2	...	...	...	
	Sambalpur, Hingir-Rampur . . . . .	754	...	...	...	...	...	...	...	...	...	...	...	
	Sonthal Parganas, Jainty . . . . .	575	...	...	...	...	1	1	...	1	...	...	...	
" Raniganj . . . . .	64	...	...	...	...	...	...	...	...	...	...	...		
TOTAL	91,900	66	58	39	97	90	65	29	94	.99	1.16	1.06		
Burma	Bhamo . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	
Central Provinces	Chanda, Ballarpur . . . . .	800	...	...	...	...	2	2	...	2	...	...	...	
	Chhindwara, Pench Valley . . . . .	1,477	1	1	...	1	3	3	...	3	.92	...	.68	
	Narsinghpur, Mohpani . . . . .	1,188	...	...	...	...	1	...	1	1	...	...	...	
	Yeotmal . . . . .	3	...	...	...	...	...	...	...	...	...	...	...	
TOTAL	3,558	1	1	...	1	6	5	1	6	.42	...	.28		
North-West Province.	Frontier Hazara . . . . .	7	...	...	...	...	...	...	...	...	...	...	...	
Panjab	Jhelum . . . . .	943	...	...	...	...	...	...	...	...	...	...	...	
	Mianwali . . . . .	15	...	...	...	...	...	...	...	...	...	...	...	
	Shahpur . . . . .	91	...	...	...	...	...	...	...	...	...	...	...	
TOTAL	1,049	...	...	...	...	...	...	...	...	...	...	...		
GRAND TOTAL (COAL)		143,459	111	128	41	169	223	184	48	232	1.39	.79	1.18	

## 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 1916—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.			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.						
<b>B.—MICA.</b>																
Bihar and Orissa . . .	Bhagalpur . . . . .	23	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Gaya . . . . .	1,800	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Hazaribagh . . . . .	9,643	2	2	...	2	4	5	...	5	32	...	...	...	21	
	Monghyr . . . . .	374	...	...	...	...	1	3	...	3	...	...	...	...	...	
	<b>TOTAL</b> . . . . .	11,930	2	2	...	2	5	8	...	8	26	...	...	...	17	
Madras . . . . .	Nellore . . . . .	4,201	...	...	...	...	2	3	...	3	...	...	...	...	...	
	Salem . . . . .	53	...	...	...	...	...	...	...	...	...	...	...	...	...	
	<b>TOTAL</b> . . . . .	4,254	...	...	...	...	2	3	...	3	...	...	...	...	...	
Rajputana . . . . .	Ajmer-Merwara . . . . .	299	...	...	...	...	...	...	...	...	...	...	...	...	...	
	Nasirabad . . . . .	8	...	...	...	...	...	...	...	...	...	...	...	...	...	
	<b>TOTAL</b> . . . . .	307	...	...	...	...	...	...	...	...	...	...	...	...	...	
	<b>GRAND TOTAL (MICA)</b> . . . . .	16,491	2	2	...	2	7	11	...	11	18	...	...	...	12	
<b>C.—MANGANESE.</b>																
Bombay . . . . .	Belgaum . . . . .	208	...	...	...	...	...	...	...	...	...	...	...	...	...	
	Panch Mahals . . . . .	1,564	...	...	...	...	4	...	4	4	...	...	...	...		
	<b>TOTAL</b> . . . . .	1,772	...	...	...	...	4	...	4	4	...	...	...	...		
Central Provinces . . . . .	Balaghat . . . . .	5,677	...	...	...	...	5	...	5	5	...	...	...	...		
	Bhandara . . . . .	1,856	...	...	...	...	1	...	1	1	...	...	...	...		
	Chhindwara . . . . .	1,642	4	3	1	4	2	...	2	2	2.16	3.93	2.44	...		
	Jabalpur . . . . .	14	...	...	...	...	...	...	...	...	...	...	...	...		
	Nagpur . . . . .	4,284	1	1	...	1	1	...	1	1	32	...	...	23		
	<b>TOTAL</b> . . . . .	13,473	5	4	1	5	9	...	9	9	38	34	37			
Madras . . . . .	Viragapatam . . . . .	293	...	...	...	...	...	...	...	...	...	...	...	...		
	<b>GRAND TOTAL (MANGANESE)</b> . . . . .	15,338	5	4	1	5	13	...	13	13	33	30	32			
<b>D.—LIMESTONE.</b>																
Central Provinces . . . . .	Jabalpur-Katni . . . . .	1,525	...	...	...	...	...	...	...	...	...	...	...	...		
Panjab . . . . .	Hoshiarpur . . . . .	104	...	...	...	...	...	...	...	...	...	...	...			
	<b>GRAND TOTAL (LIMESTONE)</b> . . . . .	1,629	...	...	...	...	...	...	...	...	...	...	...			
<b>E.—SALT.</b>																
Panjab . . . . .	Jhelum . . . . .	697	1	1	...	1	9	7	2	9	1.55	...	1.43			
	Mianwali . . . . .	77	...	...	...	...	...	...	...	...	...	...	...			
	Shahpur . . . . .	53	...	...	...	...	...	...	...	...	...	...	...			
	<b>GRAND TOTAL (SALT)</b> . . . . .	827	1	1	...	1	9	7	2	9	1.29	...	1.21			

## 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 1916—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.		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.
<b>F.—GEMS.</b>													
Burma . . . . .	Mogok (Rubies, etc.) . . . . .	1,202	1	...	1	1	2	2	...	2	...	1.84	.83
<b>G.—SLATE.</b>													
Bihar and Orissa . . . . .	Monghyr . . . . .	229	...	...	...	...	1	...	1	1	...	...	...
Panjab . . . . .	Gurdaspur . . . . .	17	...	...	...	...	...	...	...	...	...	...	...
	Gurgaon . . . . .	130	...	...	...	...	...	...	...	...	...	...	...
	Kangra . . . . .	369	...	...	...	...	...	...	...	...	...	...	...
	TOTAL . . . . .	516	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (SLATE) . . . . .	745	...	...	...	...	1	...	1	1	...	...	...
<b>H.—GOLD.</b>													
Bihar and Orissa . . . . .	Singbhum . . . . .	117	...	...	...	...	...	...	...	...	...	...	...
Madras . . . . .	Anantapur . . . . .	1,937	4	4	...	4	4	1	3	4	4.30	...	2.07
	GRAND TOTAL (GOLD) . . . . .	2,054	4	4	...	4	4	1	3	4	4.07	...	.39
<b>I.—IRON ORE.</b>													
Bihar and Orissa . . . . .	Puri . . . . .	19	...	...	...	...	...	...	...	...	...	...	...
	Singbhum . . . . .	1,072	2	1	1	2	2	...	2	2	1.25	3.67	1.87
	TOTAL . . . . .	1,091	2	1	1	2	2	...	2	2	1.25	3.44	1.83
Central Provinces . . . . .	Jabalpur . . . . .	74	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (IRON ORE) . . . . .	1,165	2	1	1	2	2	...	2	2	1.25	2.74	1.72
<b>J.—WOLFRAM.</b>													
Bihar and Orissa . . . . .	Singbhum . . . . .	60	...	...	...	...	...	...	...	...	...	...	...
Bihar . . . . .	Mergui . . . . .	301	1	1	...	1	2	2	...	2	5.00	...	3.32
	Tavoy . . . . .	7,576	12	8	12	20	17	8	9	17	2.19	3.05	2.64
	Thaton . . . . .	702	...	...	...	...	1	1	...	1	...	...	...
	TOTAL . . . . .	8,579	13	9	12	21	20	11	9	20	2.5	2.87	2.45
Central Provinces . . . . .	Nagpur . . . . .	21	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (WOLFRAM). . . . .	8,600	13	9	12	21	20	11	9	20	2.03	2.84	2.42
<b>K.—MAGNESITE.</b>													
Madras . . . . .	Salem . . . . .	1,440	...	...	...	...	1	...	1	1	...	...	...

## 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 1916—contd.

PROVINCS.	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.			
<b>L.—CHROMITE.</b>											
Baluchistan . . . . .	Quetta-Pishin . . . . .	35	...	...	...	...	...	...	...	...	...
	Zhob . . . . .	439	...	...	...	...	...	...	...	...	...
	TOTAL . . . . .	474	...	...	...	...	...	...	...	...	...
Bihar and Orissa . . . . .	Singbhum . . . . .	423	...	...	...	...	...	...	...	...	...
GRAND TOTAL (CHROMITE)		897	...	...	...	...	...	...	...	...	...
<b>M.—COPPER ORE.</b>											
Bihar and Orissa . . . . .	Singbhum . . . . .	962	...	...	...	1	...	1	1	...	...
Burma . . . . .	Katha . . . . .	35	...	...	...	...	...	...	...	...	...
	Kyaukse . . . . .	80	...	...	...	...	...	...	...	...	...
	Lower Chindwin . . . . .	168	1	1	...	1	...	...	...	7.81	5.95
TOTAL . . . . .		253	1	1	...	1	...	...	...	5.65	3.53
GRAND TOTAL (COPPER)		1,245	1	1	...	1	...	1	1	2.90	.80
<b>N.—BAUXITE.</b>											
Central Provinces . . . . .	Jabalpur . . . . .	39	...	...	...	...	...	...	...	...	...
<b>O.—CLAY.</b>											
Bihar and Orissa . . . . .	Manbhum . . . . .	62	...	...	...	...	...	...	...	...	...
	Palamu . . . . .	31	...	...	...	...	...	...	...	...	...
	TOTAL . . . . .	93	...	...	...	...	...	...	...	...	...
Central Provinces . . . . .	Jabalpur . . . . .	288	...	...	...	...	...	...	...	...	...
GRAND TOTAL (CLAY)		381	...	...	...	...	...	...	...	...	...
<b>P.—GALENA.</b>											
Central Provinces . . . . .	Drug . . . . .	57	...	...	...	...	...	...	...	...	...
<b>Q.—TIN.</b>											
Bihar and Orissa . . . . .	Hazaribagh . . . . .	3	...	...	...	...	...	...	...	...	...
Burma . . . . .	Mergui (Maliwan) . . . . .	52	...	...	...	1	...	1	1	...	...
	Tavoy . . . . .	70	...	...	...	...	...	...	...	...	...
	Thaton . . . . .	1,500	...	...	...	...	...	...	...	...	...
TOTAL . . . . .		1,622	...	...	...	1	...	1	1	...	...
GRAND TOTAL (TIN)		1,625	...	...	...	1	...	1	1	...	...

## 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 1916—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.		Total number of persons injured.	Below ground.	Above ground.	Below and above ground.	
				Below ground.	Above ground.		Total deaths.	Below ground.					Above ground.
<b>R.—STEATITE.</b>													
Central Provinces . . . . .	Jabalpur . . . . .	281	..	...	...	...	...	...	...	...	...	...	
Madras . . . . .	Kurnool . . . . .	17	...	...	...	...	...	...	...	...	...	...	
	<b>GRAND TOTAL (STEATITE).</b>	298	...	...	...	...	...	...	...	...	...	...	
<b>S.—FULLER'S EARTH.</b>													
Central Provinces . . . . .	Jabalpur . . . . .	*	...	..	...	...	...	...	...	...	...	...	
<b>T.—SILVER.</b>													
Madras . . . . .	Anantapur . . . . .	† ...	...	...	..	...	...	...	...	...	...	...	
<b>U.—GRAPHITE.</b>													
Rajputana . . . . .	Ajmer-Merwara . . . . .	152	...	...	...	...	...	...	...	...	...	...	
<b>V.—MOLYBDENITE.</b>													
Burma . . . . .	Tavoy . . . . .	15	...	...	...	...	...	...	...	...	...	...	
<b>W.—TITANIUM.</b>													
Burma . . . . .	Thaton . . . . .	‡ ...	...	...	...	...	...	...	...	...	...	...	
	<b>GRAND TOTAL (ALL MINES)</b>	197,919	140	150	56	206	284	216	81	297	1.18	.79	1.04

\* Figures included with those of Jabalpur limestones.

† Won from Anantapur gold mines.

‡ Figures included with those of Thaton wolfram mines.

## 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 13).	TOTAL.	Adult males.	Adult females.	Children (under 13).	TOTAL.		
COAL	Assam, Lakhimpur . . . . .	8	7	1	...	8	...	...	...	...	8	
	Baluchistan {	Kalat . . . . .	1	1	...	...	1	...	...	...	...	1
		Sibi . . . . .	2	2	...	...	2	...	...	...	...	2
	TOTAL BALUCHISTAN		3	3	...	...	3	...	...	...	...	3
	Bengal, Raniganj . . . . .	33	54	4	...	58	1	1	...	2	60	
	Bihar and Orissa. {	Bokaro-Rainagarh . . . . .	1	...	...	...	...	1	...	...	1	1
		Giridih . . . . .	8	4	3	...	7	1	1	1	3	10
		Jharis, Hazaribagh . . . . .	1	1	...	...	1	...	...	...	...	1
		Jharis, Manbhum . . . . .	50	38	7	...	45	12	12	10	34	79
		Manbhum, Raniganj . . . . .	6	3	2	...	5	1	...	...	1	6
	TOTAL BIHAR AND ORISSA.		66	46	12	...	58	15	13	11	39	97
Central Provinces, Chhindwara . . . . .	1	1	...	...	1	...	...	...	...	...	1	
TOTAL COAL		111	111	17	...	128	16	14	11	41	169	
MICA	Bihar and Orissa, Hazaribagh . . . . .	2	2	...	...	2	...	...	...	...	2	
	TOTAL MICA		2	2	...	...	2	...	...	...	...	2
MANGANESE	Central Provinces {	Chhindwara . . . . .	4	3	...	...	3	...	1	...	1	4
		Nagpur . . . . .	1	...	1	...	1	...	...	...	...	1
	TOTAL MANGANESE		5	3	1	...	4	...	1	...	1	5
SALT	Punjab . . . . .	1	1	...	...	1	...	...	...	...	1	
GEMS	Burma (Mogok) . . . . .	1	...	...	...	...	1	...	...	1	1	
GOLD	Madras . . . . .	4	4	...	...	4	...	...	...	...	4	
IRON ORE	Bihar and Orissa, Singhbhum . . . . .	2	...	...	1	1	1	...	...	1	2	
WOLFRAM	Burma {	Mergui . . . . .	1	1	...	...	1	...	...	...	1	
		Tavoy . . . . .	12	8	...	...	8	12	...	...	12	20
	TOTAL WOLFRAM		13	9	...	...	9	12	...	...	12	21
COPPER ORE	Burma . . . . .	1	1	...	...	1	1	...	...	...	1	
GRAND TOTAL (ALL MINERALS)		140	131	18	1	150	30	15	11	56	206	

## 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 side.	In shafts.	Suffocation by gases.	By explosives.	Irruptions of water or falling into water.	Hanging.	Miscellaneous below ground.	Surface.	Total deaths.	Below ground.	Above ground.	Below and above ground.
Coal . . . . .	111	14	46	21	25	...	1	3	12	6	41	169	1.39	.79	1.18
Mica . . . . .	2	...	...	2	...	...	...	...	...	...	...	2	.18	...	.13
Manganese . . . . .	5	...	...	3	...	...	1	...	...	...	1	5	.93	.30	.32
Salt . . . . .	1	...	...	...	...	...	...	...	...	1	...	1	1.20	...	1.21
Gems . . . . .	1	...	...	...	...	...	...	...	...	...	1	1	...	1.84	.83
Gold . . . . .	4	...	...	1	3	...	...	...	...	...	...	4	4.07	...	.39
Iron . . . . .	2	...	...	1	...	...	...	...	...	...	1	2	1.25	2.74	1.72
Wolfram . . . . .	13	...	...	7	...	...	2	...	...	...	12	21	2.03	2.84	2.42
Copper . . . . .	1	...	...	...	1	...	...	...	...	...	...	1	2.90	...	.80
TOTAL 1916 . . . . .	140	14	46	35	29	...	4	3	12	7	56	206	1.18	.79	1.04
TOTAL PRECEDING YEAR.	163	1	51	42	17	...	7	3	17	13	37	188	1.23	.60	1.04
DIFFERENCE . . . . .	-23	+13	-5	-7	+12	...	-3	...	-5	-6	+19	+18	-.05	+.19	...



## APPENDIX III.

## PROSECUTIONS UNDER THE MINES ACT.

Statement of prosecutions instituted under the Indian Mines Act, 1901, during the year 1916.

PROVINCE.	District.	Number of prosecutions.	Number of persons prosecuted.	Number convicted.	Numbers of rules and sections of the Act contravened.	REMARKS.
Bengal	Burdwan	1	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.	Proceedings instituted in 1915.
Bihar and Orissa	Manbhum	1	2	2	Section 20, Rules 1, 3 and 7 of Notification No. 864-68-20, dated 10th March 1904.	
Madras	Nellore	1	1	...	Section 20, Rule 1 of Notification No. 11793-103, dated 30th December 1908.	Warned.
Bihar and Orissa	Hazaribagh	1	1	1	Ditto ditto	
	Do.	1	2	2	Ditto ditto	
	Do.	1	2	2	Ditto ditto	
	Do.	1	2	...	Ditto ditto	Acquitted.
Bengal	Do.	1	1	1	Ditto ditto	
	Do.	1	1	1	Ditto ditto	
Bihar and Orissa	Manbhum	1	2	2	Ditto ditto	
	Do.	1	1	...	Ditto ditto	Acquitted.
	Do.	1	3	...	Ditto ditto	Not tried in 1916.
	Do.	1	3	2	Section 20, Rule 12 of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	2	2	Section 20, Rule 1 of Notification No. 11793-103, dated 30th December 1908.	
	Do.	1	1	...	Ditto ditto	Absconded.
	Do.	1	1	...	Ditto ditto	Acquitted.
	Do.	1	2	2	Ditto ditto	
	Do.	1	1	1	Ditto ditto	
	Do.	1	1	1	Section 20, Rule 12 of Notification No. 864-68-20, dated 10th March 1904.	
Bengal	Burdwan	1	1	1	Section 13 (1) of the Indian Mines Act, 1901.	
	Do.	1	1	1	Section 15 of the Indian Mines Act, 1901, and Section 20 of Rules 2 (b) and 2 (c) of Notification No. 864-68-20, dated 10th March 1904.	
Bihar and Orissa	Do.	1	1	1	Ditto ditto	
	Manbhum	1	1	1	Section 20, Rule 19 of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	1	1	Ditto ditto	
	Do.	1	1	1	Ditto ditto	
Bihar and Orissa	Do.	1	1	1	Ditto ditto	
	Do.	1	1	1	Ditto ditto	
Madras	Nellore	1	1	1	Ditto ditto	
Bihar and Orissa	Manbhum	1	3	...	Section 20, Rule 21 of Notification No. 6436-162, dated 2nd September 1911.	
	Do.	1	2	...	Section 20, Rule 12 of Notification No. 864-68-20, dated 10th March 1904.	Not tried in 1916.
	Do.	1	3	...	Section 15 (2) of the Indian Mines Act, 1901.	Not tried in 1916.
					Section 20, Rule 12 of Notification No. 864-68-20, dated 10th March 1904.	Not tried in 1916.

**APPENDIX IV.**  
**MISCELLANEOUS.**

**Statement No. 1.**

**List of Inspection Circles.**

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

**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.
Russell, James . . . . .	205	4th February 1916 .	152	30th July 1914.
Pollock, John . . . . .	206	Ditto	3624	9th June 1910.
Cooper, Horace . . . . .	207	27th November 1916 .	3481	22nd July 1909.
Evans, Richard . . . . .	208	Ditto	204	22nd July 1915.
Farquhar, Andrew . . . . .	209	Ditto	47	30th July 1913.

(b) Certificates of competency.

**FIRST CLASS.**

NAME.	No. of certificate.	Date of certificate.	REMARKS.
Barrowman, Alexander . . . . .	83	30th March 1916.	
Bapty, Frederick . . . . .	84	Ditto	
Greer-Spencer, Benjamin . . . . .	85	Ditto	
Nag, Hemanta Kumar . . . . .	86	Ditto	
Lawton, Henry . . . . .	87	Ditto	
Hunter, Roger Joseph . . . . .	88	Ditto	
Penfold, Douglas Kent . . . . .	89	Ditto	
Hunter, George . . . . .	90	Ditto	
Payne, James Harold Willoughby . . . . .	91	Ditto	

APPENDIX IV—*contd.*MISCELLANEOUS—*contd.*Statement No. 2—*concl'd.*List of holders of certificates as managers of coal mines in British India—*concl'd.*(b) Certificates of competency—*concl'd.*

## SECOND CLASS.

NAME.	No. of certificate.	Date of certificate.	REMARKS.
Grieveson, Thomas John . . . . .	118	30th March 1916.	
Adamson, Bertram . . . . .	119	Ditto.	
Mukherji, Probodh Chandra . . . . .	120	Ditto.	
Mehta, Sant Ram . . . . .	121	Ditto.	
Roy, Upendra Nath . . . . .	122	Ditto.	
Mitra, Surendra Chandra . . . . .	123	Ditto.	
Sen, Dharendra Nath . . . . .	124	Ditto.	
Slatter, Robert Anderson Foxcroft . . . . .	125	Ditto.	
Cowan, William Barrington . . . . .	126	Ditto.	
Ghose, Hari Prasanna . . . . .	127	Ditto.	
Basu, Hara Kali . . . . .	128	Ditto.	
Pal, Shib Narayan . . . . .	129	Ditto.	
Sanyal, Bhupati Bhusan . . . . .	130	Ditto.	
Chakravarty, Profulla Ranjan . . . . .	131	Ditto.	
Roy Chowdhury, Abala Bandhu . . . . .	132	Ditto.	

(c) Certificates of service.

## FIRST CLASS.

NAME.	No. of certificate.	Date of certificate.	REMARKS.
Loving, Osmond Davis . . . . .	139	4th February 1916.	
Ramjidass Cacker . . . . .	140	Ditto.	

APPENDIX IV—*contd.*MISCELLANEOUS—*contd.*

## 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.	25th 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.	28th 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.
California University, United States of America, in respect of its Degree of Mining Engineer.	19th February 1916.
Pittsburg University, United States of America, in respect of its Degree of Engineer of Mines.	19th February 1916.

APPENDIX IV—*contd.*MISCELLANEOUS—*contd.*

## Statement No. 4.

## SIBPUR COLLEGE.

## THE MINING CLASSES.

## CIRCULAR.

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

The course of instruction is designed to afford theoretical training in the Principles of Mining generally, to prepare students for positions of responsibility on 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 of two years in the qualifying period of practical work in a coal mine required of candidates for a colliery manager's certificate.

## ARRANGEMENT OF CLASSES AND SESSIONS.

*First or Preliminary year.*—Admissions about the end of January to this year, in which Mechanical, Electrical and Mining students are taught together. The session lasts for about 14 months.

*Second or Junior year.*—Promotion to this class in April. Civil Engineering students who passed the Sub-Overseer examination are also admitted to the Mining classes at this stage.

*Third or Senior year.*—Promotion to this class in April. 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 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, during which six weeks is spent each year in learning practical Mine Surveying and in visiting collieries.

*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 on the third Monday in 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 first day in January.

*Age.*—No one over 20 years of age on 1st January of year of admission will be admitted 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 in November 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 July, 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 30.

In determining the age of candidates for admission, Indian students must produce a certificate signed by the Head Master of the School from which he matriculated certifying as to the age statement made by his guardian on the occasion of his first going to school; European students must produce their baptismal certificates.

**FOOT-NOTE.**—Drawing Syllabus.—*Geometrical.*—Division of lines and angles, construction of triangles and quadrilaterals, construction of regular polygons, inscribing triangles, polygons and circles in geometrical figures, construction of circles touching lines and circles, equality of areas, division of areas, construction of angles, use of protractor.

*Free-hand.*—Free-hand drawing of simple ornaments, etc., to larger or reduced sizes.

Candidates may be excused the Drawing Test in 1916, but are recommended to take it, if possible.

\* In 1917 admission to the Overseer Course will be made in April immediately the results are announced. Applications must be in the Principal's office on or before 30th March.

APPENDIX IV—*contd.*MISCELLANEOUS—*contd.*Statement No. 4—*concl'd.*

## 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.

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 students 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 barrack accommodation and messing arrangements for 36 Europeans and Anglo-Indians, 171 Hindus and 16 Muhammadans.

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

## COLLEGE DUES.

<i>Initials—</i>	Rs.	
Entrance fee, mess ...	2	} Non-returnable.
Entrance fee, athletic club ...	1	
Caution-money deposit ...	25	Balance after paying College dues returnable if applied for within three years from date of leaving College.

*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. 12.
„ (vacation), 2½ „ ...		Europeans, Rs. 5; Hindus, Rs. 2-8.
Athletic Club ...	1	in March, June and November.

*Free studentships.*—A total number of five are available for European students.

*Reduced feeships.*—A total number of 25 reduced feeships 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 12 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 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.

A small sum of money from the Mohsin Fund is placed at the disposal of the Principal for the payment of half the tuition fees of a limited number of poor Muhammadan students residents of Bengal.

APPENDIX IV—*contd.*MISCELLANEOUS—*contd.*

## 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 on the syllabus laid down for the first-year course:—

<i>Place and days.</i>	<i>Lecturer and Local Secretary.</i>
(1) Lecture-room near the Jharia Club, at 5-30 p.m., on Mondays.	} Mr. H. C. Read, Mining Instructor, Muslia, Asansol.
(2) Lecture-room near Sijua station, at 5 p.m., on Tuesdays.	
(3) Lecture-room near Dishergarh Club, at 5-30 p.m., on Wednesdays.	
(4) Railway Institute, Raniganj, at 5 p.m., on Thursdays.	
(5) Lecture-room at Messrs. Apar Co.'s Charanpur Colliery, at 5-30 p.m., on Fridays.	

The course of instruction, consisting of not less than 30 lectures, will commence the first week in September and end in the following April in which month an examination will be held. 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.

Rupees 100 monthly is offered in Scholarships awarded by the Mining Education Advisory Board on the results of the Sessional Examination, these will be tenable for two years at the Sibpur College and are granted to enable the holders to attend the full course for the Diploma in the Principles of Mining. One Scholarship of Rs. 50 is reserved for Europeans and two of Rs. 25 are awarded for Indians.

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

## RANIGANJ DISTRICT.

<i>Dishergarh 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 (Dishergarh).	„ T. Samson (Charanpur).	„ P. S. Keelan (Charanpur).
„ Geo. Miller (Sitarampur).	„ R. Mitchell (Nandi).	„ J. Mackintosh (Raniganj).
„ F. Owen (Dishergarh).	„ E. M. Patterson (Charanpur).	„ W. J. Rees (Raniganj).
Babu M. N. Ray (Begunia).	„ W. S. Elphinstone (Asansol).	Babu Promotho Nath Hazra (Toposi).
„ P. C. Tarafdar (Mugma).	Babu Atul Shashi Mitra (Asansol).	„ Kali Kumar Misra. (Searsole Raj Estate).
„ Hari Pada Mukharji (Mugma).		„ S. Chaudhuri (Jamehari, Raniganj).

APPENDIX IV—*contd.*MISCELLANEOUS—*contd.*Statement No. 5—*contd.*

## JHARIA DISTRICT.

<i>Jharia Centre.</i>	<i>Sijua Centre.</i>
Mr. R. R. Simpson, <i>Chairman.</i>	Mr. R. R. Simpson, <i>Chairman.</i>
„ R. G. M. Bathgate (Jamadoba).	„ A. A. Agabeg (Sijua).
„ J. S. Kean (Jamadoba).	„ R. Heron (Sinidih, Katrasgarh).
„ E. D. James (Lodna).	„ B. Starksfield (Bansjora).
„ R. Barrowman (Standard Coal Company, Jharia).	„ H. M. Bull (Bansjora).
Babu Gobhurdhan Das Manishankar (Jharia).	Babu Trikundas Doyal (Bansjora).
„ Narendra Nath Sarkar (South Kujama, Jharia).	„ Basanta Kumar Ray (Kurkend).

## 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, dyke, 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, wash-outs, 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-cuts.

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; pit banking 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 and 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—*contd.*Statement No. 5—*concl'd.*SECOND-YEAR COURSE—*concl'd.*

3. *Hauling*.—Tramways, tubs and waggons ; conveyance by self-acting inclines ; single-rope haulage ; main and tail ; endless rope ; endless chain ; calculations 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. Heap steads ; 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.

B. HEATON,

(Principal, Civil Engineering College),

Secretary to the Mining Educational Advisory Board.

SIBPUR COLLEGE,

Calcutta, the 12th July 1916.

## Statement No. 6.

No. 5072-113.

GOVERNMENT OF INDIA.

## DEPARTMENT OF COMMERCE AND INDUSTRY.

## NOTIFICATION.

## GEOLOGY AND MINERALS.

Dated Simla, the 1st July, 1916.

In exercise of the powers conferred by Section 20 of the Indian Mines Act, 1901 (VIII of 1901), the Governor-General in Council is pleased to make the following amendments in the rules issued with Notification No. 11793-103 (Geology and Minerals), dated the 30th December 1908, namely :—

(1) For Rule I substitute the following, namely :—

Forms I, II, III, IV, V and VI, respectively, for coal, mica and mines other than coal or mica, in the Schedule hereto annexed shall be <sup>(1)</sup> filled up in duplicate by the agent or if there is no agent, by the owner or manager of a coal, mica or other mine, as the case may be, and one copy of each shall be forwarded to the Chief Inspector of Mines and the other to the District Magistrate not later than the 21st January <sup>(2)</sup> in each year.

(2) In rule 8 for the words "Form V" substitute the words "Form VII."

(3) For the Schedule appended to the Rules the following shall be substituted, namely :—

(1) Under Section 22 (2) (b) of the Indian Mines Act, failure to forward correct returns to the Chief Inspector of Mines not later than the 21st January in each year will render the agent, owner or manager liable, on conviction, to a penalty which may extend to Rs. 500.

(2) It will greatly facilitate the preparation of the statistics if the returns are despatched as soon as possible after the close of the year.

**APPENDIX IV—contd.**  
**MISCELLANEOUS—contd.**

**Statement No. 6—contd.**  
**THE SCHEDULE.**  
**COAL MINES.**

**FORM I.**

*Annual Return for the year ending on the 31st December 19 .*

1. Name of Mine \_\_\_\_\_
2. Postal address of Mine \_\_\_\_\_
3. Date of opening \_\_\_\_\_
4. Date of closing (if closed) \_\_\_\_\_
5. Situation of Mine { District \_\_\_\_\_  
Province \_\_\_\_\_
6. { Name of Owner \_\_\_\_\_  
Postal address of Owner \_\_\_\_\_
7. { Name of Managing Agents (if any) \_\_\_\_\_  
Postal address of Managing Agents (if any) \_\_\_\_\_
8. { Name of Agent (if any) as defined in section 3 (a) of the Indian Mines Act \_\_\_\_\_  
Postal address of Agent \_\_\_\_\_
9. { Name of Manager \_\_\_\_\_  
Postal address of Manager \_\_\_\_\_
10. Means by which coal is raised from the mine, i.e., hand labour, mechanical or electrical power \_\_\_\_\_



APPENDIX IV—*contd.*

MISCELLANEOUS—*contd.*

Statement No. 6—*contd.*

FORM IV.

*Output for year ending on the 31st December 19 .*

Kind of coal.	Opening stock on 1st January 19 .	Raisings (including colliery consumption and coal used for coke making).	Value of raisings. ("Value" means and should be calculated upon actual or estimated selling price into wagons at the mine.)	Despatches.	Colliery consumption (exclusive of coal used for coke making).	Coal delivered to coking.	Closing stocks on 31st December 19 .	COKE MADE.	
								Hard coke in ovens.	Soft coke in open heaps or ovens.
1	2	3	4	5	6	7	8	9	10
	Tons.	Tons.	Rs.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
STEAM .. ..									
SLACK (including rubble and dust).									
TOTAL .. ..									

APPENDIX IV—*contd.*MISCELLANEOUS—*contd.*Statement No. 6—*contd.*

## FORM V.

*Accidents and Prosecutions.*

NUMBER OF SEPARATE ACCIDENTS REPORTED DURING THE YEAR.			NUMBER OF PERSONS.		Number of pro- secutions under the Act, with the sec- tions under which the prosecutions were instituted and the rules violated.	Number of persons convicted under the Act, with the sections under which the convictions were obtained.
Fatal.	Serious.	Total.	Killed.	Seriously injured.		
1	2	3	4	5	6	7
TOTAL	...					

## FORM VI.

*Epidemic Diseases.*

Name of disea-e.	Date of appearance.	Date of disappearance.	Number of cases.	Number of deaths.
Cholera ... ..				
Plague ... ..				
Small-pox ... ..				

Signature of Agent, or, if there is no Agent, of Owner or Manager \_\_\_\_\_

(If the form is signed by Managing Agents the words "for owners"

should be added.)

Date of Signature \_\_\_\_\_

APPENDIX IV—*contd.*MISCELLANEOUS—*contd.*Statement No. 6—*contd.*

## MICA MINES.

## FORM I.

*Annual Return for the year ending on the 31st December 19 .*

1. Name of Mine \_\_\_\_\_
2. Date of opening \_\_\_\_\_
3. Date of closing (if closed) \_\_\_\_\_
4. Means by which mica is raised from the mine, *i.e.*, hand labour, mechanical or electrical power \_\_\_\_\_
5. Situation of Mine {
 

District	
Province	
6. {
 

Name of Owner	
Postal address of Owner	
7. {
 

Name of Managing Agents (if any)	
Postal address of Managing Agents (if any)	
8. {
 

Agent (if any) as defined in section 3 (a) of the Indian Mines Act	
Postal address of Agent	
9. {
 

Name of Manager	
Postal address of Manager	
10. {
 

Name of person in charge at mine	
Postal address of person in charge at mine	

APPENDIX IV—*contd.*MISCELLANEOUS—*contd.*Statement No. 6—*contd.*

## FORM II.

*Persons employed during the year ending on the 31st December 19 .*

DAILY AVERAGE NUMBER OF PERSONS EMPLOYED AS CALCULATED BY DIVIDING THE AGGREGATE NUMBER OF ATTENDANCES BY THE NUMBER OF DAYS WORKED.										
		IN THE MINE.				ON SURFACE AND NOT IN THE MINE. INCLUDING ALL OFFICIALS AND PERSONS EMPLOYED ON SIDINGS, LOADING WHARVES, PRIVATE RAILWAYS AND SURFACE TRAMWAYS AND ALSO IN CARTING.				
Aggregate number of daily attendances during the year of persons permanently and temporarily employed.	Number of days worked.	Males over 12 years of age.	Females over 12 years of age.	Children under 12 years of age.	Total.	Males over 12 years of age.	Females over 12 years of age.	Children under 12 years of age.	Total.	Gross total obtained by adding totals in columns 6 and 10. This should equal the number obtained by dividing the number in column 1 by the number in column 2.
1	2	3	4	5	6	7	8	9	10	11
<b>Total</b>										

## FORM III.

*Particulars of Explosives.*

EXPLOSIVES.		
Name of explosive.	Quantity used in lbs.	Number of detonators used.
<b>TOTAL</b>		

**APPENDIX IV—contd.**  
**MISCELLANEOUS—contd.**

Statement No. 6—contd.

**FORM IV.**

*Output for year ending on the 31st December 19 .*

Total amount of mica raised. The figures should be stated in cwts. and lbs.	Total value at the mine of mica raised. ("Value" means and should be calculated upon actual or estimated selling price at the mine. Any charges incurred in transporting the mica outside the mine should not be included. Figures should relate to the quantity and value of mica consigned.)
1	2
* TOTAL ...	



APPENDIX IV—*contd.*  
 MISCELLANEOUS—*contd.*

Statement No. 6—*contd.*

FORM V.

*Accidents and Prosecutions.*

NUMBER OF SEPARATE ACCIDENTS REPORTED DURING THE YEAR.			NUMBER OF PERSONS.		Number of prosecutions under the Act, with the sections under which the prosecutions were instituted and the rules violated.	Number of persons convicted under the Act, with the sections under which the convictions were obtained.
Fatal.	Serious.	Total.	Killed.	Seriously injured.		
1	2	3	4	5	6	7
<b>TOTAL</b>						

FORM VI.

*Epidemic Diseases.*

Name of disease.	Date of appearance.	Date of disappearance.	Number of cases.	Number of deaths.
Cholera . . . . .				
Plague . . . . .				
Small-pox . . . . .				

Signature of Agent, or, if there is no Agent, of Owner or Manager \_\_\_\_\_

(If the form is signed by Managing Agents the word "for owners" should be added.)

Date of Signature \_\_\_\_\_

APPENDIX IV—*contd.*MISCELLANEOUS - *contd.*Statement No. 6—*contd.*

## MINES OTHER THAN COAL OR MICA.

## FORM I.

*Annual return for the year ending on the 31st December 19 .*

1. Name of Mine \_\_\_\_\_
2. Date of opening \_\_\_\_\_
3. Date of closing (if closed) \_\_\_\_\_
4. Means by which mineral is raised from the mine, i.e., hand labour, mechanical or electrical power \_\_\_\_\_
5. Situation of Mine { District \_\_\_\_\_  
Province \_\_\_\_\_
6. { Name of Owner \_\_\_\_\_  
Postal address of Owner \_\_\_\_\_
7. { Name of Managing Agents (if any) \_\_\_\_\_  
Postal address of Managing Agents (if any) \_\_\_\_\_
8. { Agent (if any) as defined in section 3 (a) of the Indian Mines Act \_\_\_\_\_  
Postal address of Agent \_\_\_\_\_
9. { Name of Manager \_\_\_\_\_  
Postal address of Manager \_\_\_\_\_
10. { Name of person in charge at mine \_\_\_\_\_  
Postal address of person in charge at mine \_\_\_\_\_

APPENDIX IV—*contd.*MISCELLANEOUS—*contd.*Statement No. 6—*contd.*

## FORM II.

*Persons employed during the year ending on the 31st December 19 .*

DAILY AVERAGE NUMBER OF PERSONS EMPLOYED AS CALCULATED BY DIVIDING THE AGGREGATE NUMBER OF ATTENDANCES BY THE NUMBER OF DAYS WORKED.										
IN THE MINE.						ON SURFACE AND NOT IN THE MINE. INCLUDING ALL OFFICIALS AND PERSONS EMPLOYED ON SIDINGS, LOADING WHARVES, PRIVATE RAILWAYS AND SURFACE TEAMWAYS AND ALSO IN CARTING.				
Aggregate number of daily attendances during the year of persons permanently and temporarily employed.	Number of days worked.	Males over 12 years of age.	Females over 12 years of age.	Children under 12 years of age.	Total.	Males over 12 years of age.	Females over 12 years of age.	Children under 12 years of age.	Total.	Gross total obtained by adding totals in columns 6 and 10. This should equal the number obtained by dividing the number in column 1 by the number in column 2.
1	2	3	4	5	6	7	8	9	10	11
<b>TOTAL</b>	...									

## FORM III.

*Particulars of Explosives.*

EXPLOSIVES.		
Name of explosive.	Quantity used in lbs.	Number of detonators used.
<b>TOTAL</b>	..	

APPENDIX IV—contd.

MISCELLANEOUS—contd.

Statement No. 6—contd.

FORM IV.

Output for year ending on the 31st December 19 .

Name of mineral raised, and metal (if any) extracted.	Total amount of mineral raised. The figures should be stated :— (a) in the case of gem-stones in carats; (b) in the case of alum, amber, asbestos, chromite, corundum (not being gem-corundum), graphite, jadestone, scapolite, tin-ore, tungsten-ore in cwts., or where the circumstances require greater particularisation in order to give an accurate estimate of small outputs, in cwts. and lbs. Output of radio-active minerals and rare minerals such as molybdenite, monazite, pitchblende, samarskite, tantalite, triplite, should be returned in cwts. or, where necessary, in cwts. and lbs.; (c) in the case of clay, limestone, magnesite, marble, phosphatic rock, salt, slate and other stone, and all metalliferous ores except those referred to in (b), in tons.	Total value at the mine of mineral raised. ("Value" means and should be calculated upon actual or estimated selling price at the mine. Any charges incurred in transporting the mineral outside the mine property should not be included.)	Quantity of metal or metals extracted the mine. Each metal should be shown separately :— (a) in the case of gold, silver and other precious metals in Troy ounces; (b) in the case of tin, in cwts. and fractions of cwts; (c) in the case of other metals in tons and fractions of tons.	Value of metal or metal extracted at the mines. The value of each metal should be shown separately.
1	2	3	4	5
TOTAL ...				

APPENDIX IV—*contd.*

MISCELLANEOUS—*contd.*

Statement No. 6—*contd.*

FORM V.

*Accidents and Prosecutions.*

NUMBER OF SEPARATE ACCIDENTS REPORTED DURING THE YEAR.			NUMBER OF PERSONS.		Number of prosecutions under the Act, with the sections under which the prosecutions were instituted and the rules violated.	Number of persons convicted under the Act, with the sections under which the convictions were obtained.
Fatal.	Serious.	Total.	Killed.	Seriously injured.		
1	2	3	4	5	6	7
TOTAL ...						

FORM VI.

*Epidemic Diseases.*

Name of disease.	Date of appearance.	Date of disappearance.	Number of cases.	Number of deaths.
Cholera ...				
Plague ...				
Small-pox ...				

Signature of Agent, or, if there is no Agent, of Owner or Manager \_\_\_\_\_

(If the form is signed by Managing Agents the words "for owners" should be added.)

Date of Signature \_\_\_\_\_

APPENDIX IV—*contd.*MISCELLANEOUS—*contd.*Statement No. 6—*concl'd.*

## FORM VII.

*Notice of Accident.*

FROM—

TO—The Inspector of Mines, through the <sup>District</sup><sub>Sub-divisional</sub> Magistrate of

Dated . . . 19 . . .

SIR,

I have the honour to furnish the following particulars of a <sup>fatal</sup><sub>serious</sub> accident which has occurred at the Mine :—  
an accidental explosion

1. Situation of the mine. (Village, Station, District, Province.)			
2. Mineral worked . . . . .			
3. Name and postal address of owner . . . . .			
4. Name and sex of persons		Age.	Occupation.
Killed.	Injured.		
5. Date and hour of accident . . . . .			
6. Place of accident . . . . .			
7. Cause and description . . . . .			
8. Classification of accident (1) . . . . .			
9. Nature of injury, and if fatal cause of death.			

I have the honour to be,

SIR,

Your most obedient servant,

Owner.

Agent.

Manager.

(1) Under one or other of the following heads, namely :—

- (1) Explosions of fire damp ; (2) falls of roof ; (3) falls of sides ; (4) in shafts (overwinding) ; (5) in shafts (ropes and chains breaking) ; (6) in shafts (whilst ascending or descending by machinery) ; (7) in shafts (falling into the shafts from the surface) ; (8) in shafts (falling from part of the way down) ; (9) in shafts (things falling from the surface) ; (10) in shafts (things falling from part of the way down) ; (11) in shafts (miscellaneous) ; (12) suffocation by gases ; (13) by explosives ; (14) irruptions of water or falling into water ; (15) haulage ; (16) by underground machinery ; (17) sundries underground ; (18) by surface machinery ; (19) surface boilers or pipes bursting ; (20) on surface railways or tramways belonging to the mine ; (21) miscellaneous on surface.

C. E. LOW,

Secretary to the Government of India.

APPENDIX IV—*concl'd.*MISCELLANEOUS—*concl'd.*

## 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.