

Department of Mines, India.

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**REPORT**

**OF THE**

**CHIEF INSPECTOR OF MINES IN INDIA**

Under the Indian Mines Act (VIII of 1901)

**FOR THE**

**YEAR ENDING 31st DECEMBER**

**1912**

**BY**

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



**CALCUTTA**  
**SUPERINTENDENT GOVERNMENT PRINTING, INDIA**  
1913

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FROM

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*Chief Inspector of Mines in India,*

TO

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

*Dated Dhanbaid, 19th June 1913.*

SIR,

I HAVE the honour to submit the report upon the inspection of mines in British India for the year ending 31st December 1912.

### 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 1904-1908 (Records, Geological Survey of India, Vol. XXXIX). Figures for Mysore, where most of the Indian gold is raised, are given in the report of the Chief Inspector of that Native State, and mineral statistics may also be found in the administrative reports of the various Presidencies, Provinces and States of India.

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

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

### Section I.—Persons employed.

During the year 1912 the average number of persons working in and about the mines regulated by the Indian Mines Act was 164,302, of whom 103,980 worked underground and 60,322 on the surface. One hundred and one thousand nine hundred and seventy-one of the persons were adult males; 56,507 were adult females and 5,824 children under 12 years of age. This is an increase of 17,966 workers or 12.27 per cent.

The increase related chiefly to those employed in coal mines, whose numbers increased by 14,794. This increase corresponds with that in the

number of those working in the coal mines of Bengal and Bihar, which was 14,736. In the district of Manbhum, which may be taken here to mean the Jbaria coal-field, it is reported that the supply of labour was not in excess of the demand, while in the Raniganj coal-field there was a distinct shortage of labour. Owing to the new large undertakings in the latter coal-field, alluded to in the next section, considerable additions to the present labour force will be required and considerable difficulty will be experienced in fulfilling those requirements, unless more systematic methods of recruiting, than those adopted up to now, are employed.

The increase in the number of those working in mines other than coal mines was 3,172. It is chiefly made up of increases in mica and in wolfram.

Except in some of the districts in the Central Provinces where manganese mines are situated; no other serious shortage of labour is reported. Wages have risen at the mica mines in Madras.

## Section II.—Output of mineral.

### COAL.

The output is the largest yet produced in British India, the next largest having been raised in 1908, when slightly over 12 million tons were recorded. The following year, 1909, there was a set back in the figures of '35 million tons, since when there has been a steady annual increase, culminating, for the year now under review, in an output of 14,044,368 tons. This, compared with 12,048,726 tons raised in 1911, is an increase of 16'56 per cent. In 1911 there was an increase of 5'80 per cent. These figures point to an expansion of trade, which it is to be hoped will be maintained. As far as the physical conditions of the great majority of the mines now opened are concerned, there is nothing to prevent further increases of output from them.

Of the total, 13,429,566 tons or 95'62 per cent. were raised in Bengal and Bihar, the rate in the previous year being 95'19 per cent. In these provinces there was an increase of 1,960,662 tons, which is slightly less than the increase for the whole of India, which was 1,995,642 tons. The improved condition of the trade was general throughout India. But the increase again comes mainly from the Jbaria coal-field, where there has been an increase of over 1½ million tons, or 20'07 per cent.

There were increases of 14'66 and 3'7 per cent. in the Raniganj and Giridih coal-fields. It is to be expected, however, that a larger comparative increase will accrue from the Raniganj field in the next few years. During last year, a depth of one thousand feet has been reached at one shaft, another has been sunk to a depth of over nine hundred feet, and a third, expected to be about the same depth, is in course of sinking. These are three separate undertakings. For operations of this magnitude to be successful, a large output is essential.

In the provinces outside Bengal and Bihar, with the exception of a decrease of 64'28 per cent. in the small output of the North-West Frontier Province, increased outputs are recorded in every coal-field, which are, in descending order as far as output is concerned, as follows:—

Assam 58 per cent., Central Provinces 10'57 per cent., Baluchistan 7'35 per cent., and the Panjab 25'62 per cent.

The output per person employed during the year was (a) below ground 180 tons, and (b) above and below ground 115 tons. The figures for the four years preceding were (a) 166 and (b) 106. Taking each group of coal-fields separately these figures were as follows:—Bengal and Bihar (a) 182 and 168, (b) 117 and 107; the Central Provinces (a) 129 and 121, (b) 92 and 84; Assam (a) 225 and 252, (b) 140 and 158; Baluchistan (a) 64 and 69, (b) 43 and 46, and the Panjab and North-West (a) 64 and 41, (b) 39 and 25. The output in England in 1911 was 331 tons per person employed below ground, and 268 tons per person employed above and below ground.

## MICA.

There was again a large increase in the output, which was 41,660 cwts. compared with 31,686 cwts. raised in 1911. This is an increase of 9,974 cwts. or 31.47 per cent. It was most marked in the Madras field. The demand for all classes of mica was fully maintained, and the prices of slab mica gradually improved as the year went on, weakening a little towards the end. The market for films, although always sufficient to absorb available supplies, was depressed by excessive quantities of low grade assortments. On the other hand, really first class splittings fetched quite good prices, as the demand exceeded the supply.

During recent years there has been a development of the mica industry in German East Africa, which will probably affect the industry in India, sooner or later.

With reference to the notice in last year's report of more modern methods of work, one large firm is making steady progress in this direction in underground development, by blocking out areas for stoping, and sinking shafts at suitable intervals. Though it is too early as yet to say whether this progressive attempt will be successful, there is no reason to doubt it. Hitherto there has been a very marked disinclination among mine owners to drive any exploration galleries, and in consequence large quantities of mica must have been left unworked, which a very little exploratory work would have disclosed, and therefore it is sincerely to be hoped that this method of blocking out areas for stoping will prove successful, in which case other owners will be induced to adopt it.

## MANGANESE.

The output of manganese ore again decreased, being 423,464 tons compared with 441,426 tons in 1911. This is a decrease of 17,962 tons or 4.06 per cent. The quoted price per unit of ore increased during the year to about eleven pence, but the industry suffered heavily, owing to the abnormal rise in ocean freights, which advanced by something like 80 per cent. Mine owners were actually worse off than in 1911, when, although the selling price of the ore was considerably lower, freights were normal.

## GEMS.

There was an increase of 12.15 per cent. in gems, the output being 323,247 carats, while in 1911 it was 288,216 carats. With the exception of 2 carats of diamonds from Madras, the entire output is from the ruby mines in Burma, from which, in addition to rubies, which form the chief asset, sapphires and spinels are produced also. There appears to have been no change in the ruby market in 1912 from its condition in 1911. Sapphires, however, jumped into great demand, prices, especially for really good stones, were as high, if not higher, than at any previous time. These high rates have stimulated native surface mining, and more valuable stones are stated to have been found last year than in the previous ten years.

## GOLD.

The output decreased from 8,277 ounces in 1911 to 7,269 ounces. This decrease, however, is due to the fact that in 1912 no further smelting was done in the Dharwar gold-field. The entire output now comes from one mine in the Anantapur district in Madras, and an increase was recorded. As reported last year this is still the only mine in the producing stage. Considerable progress has been made during the year and there has been a marked increase in the output of ore. It is proposed to erect an additional 10 heads to the battery of stamps. A plant for treating the tailings by the cyanide process is in course of erection. There are two main shafts on the property. One was sunk 269 feet during the year to a depth of 550 feet and sinking is still in progress. The other shaft is 575 feet deep.

There are two other mines in this field. One is still in the prospecting stage, but the other, at the southern end of the field, although not yet in the producing stage, has reached a vertical depth of 800 feet.

The field is employing more labour every month and there is every prospect of the mines being worked more extensively.

#### COPPER.

The output was 8,984 tons of ore compared with 2,079 tons in 1911. This is a substantial increase, in view of the fact that the output comes entirely from one mine, the Rakha Hills mine of the Cape Copper Company in the Singhbhum district of Bihar and Orissa. This Company has been prospecting in the locality since 1907 and has now reached the producing stage. The main shaft was 764 feet deep, measured on the incline, at the end of the year, and the amount driven, risen and sunk was 10,952 feet, or nearly two miles. The longest level is half a mile from one extreme end to the other. A concentration plant has been ordered, and it is proposed to instal an electrical installation for all motive power, including power for hoisting.

#### SAMARSKITE.

This valuable mineral was again extracted from the same mica mine in the Nellore district in Madras, as was referred to in the last report, the output being 29½ cwts. valued at Rs. 1,213-4-0, as compared with 23¾ cwts. valued at Rs. 1,329-8-0, in 1911.

#### WOLFRAM.

In 1909 the occurrence of wolfram in the districts of Tavoy and Mergui commenced to attract attention. A great development has since taken place and a very large number of areas have been taken up on prospecting licenses. In 1912 the output recorded was 25,397, compared with 8,394 cwts. recorded in 1911, and 28 mines, as compared with 4 in 1911, were brought definitely under the Act. The commonest method of extraction is by ground sluicing, and in one instance "hydraulicking," or the forcing of water at high pressure through a specially constructed nozzle, is practised in the rainy season. Actual mining on the veins is however on the increase, open cuts, extending in some cases to 100 feet in depth, have been excavated, and the driving of adits, levels and winzes is now carried on to a considerable extent. There are, however, no fitted winding shafts, as the veins have only been attacked in hills, where access can be obtained by adits. At a majority of the mines no machinery whatever is employed. Two extraction mills have been erected.

#### OTHER MINERALS.

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

### Section III.—Accidents.

During the year 1912, at mines regulated by the Indian Mines Act, 1901, there were 133 fatal accidents, being a decrease of 4 as compared with the number in 1911, and an increase of 4 as compared with the average number of last four years.

These accidents involved the loss of 185 lives. This is an increase of 11 upon the number of deaths in 1911. In that year, however, only two accidents caused more than 3 deaths (14 and 4), whereas in 1912 one accident caused 23 deaths and two caused 4 deaths. Moreover, 7 accidents, involving 13 deaths, occurred in wolfram mines, which had not been previously brought under the scope of the Act.

Of these 133 accidents, I regard (A) 49 as being due to misadventure, (B) 37 to the fault of the deceased, (C) 9 to the fault of fellow workmen, (D) 7 to the fault of subordinate officials, and (E) 31 to the fault of the management. The number in classes B and C together is large, but it must be remembered that the Indian miner, in every part of India, is to a great extent ignorant of the dangerous conditions under which he works, and although there were many cases of what can only be called foolhardiness and deliberate disobedience of



orders, there were others which go to show that increased supervision is still necessary. Supervision, all over India, is on the whole very much better than it used to be few years ago. Still, more remains to be done in this direction, as much in the interests of the mine owners as in that of the workers.

The death-rate per thousand employed was 1·12, that of the preceding four years being 1·18. At coal mines only these figures were 1·29 and 1·34, at mines other than coal '65 and '74. At coal mines in England, during the ten years ending with and including 1911, the death-rate per thousand employed varied from 1·19 (lowest) to 1·69 highest.

The death-rate per million tons raised at coal mines only was 11·17, that of the preceding four years being 12·62. At coal mines in England during the ten years ending with and including 1911 the death-rate per million tons raised varied from 4·29 (lowest) to 6·37 (highest).

Of the persons killed 145 were males and 40 were females. As is only natural from the nature of their several employments, the death-rate per thousand is very much higher in the case of males than in that of females.

The deaths occurring in each class of mine worked were as follows :—

One hundred and fifty-seven in coal mines, 2 in mica mines, 3 in manganese mines, 1 in gems mines, 4 in gold mines, 13 in wolfram mines, 2 in copper mines, 2 in clay mines and 1 in corundum mines.

One person lost his life by explosion of fire-damp; 79 by falls of roof and sides; 24 in shafts; 8 by explosives; 5 by suffocation of gases; 23 by irruption of water; 16 by haulage; 7 by other accidents underground and 22 on the surface.

I am pleased to be able to report a substantial decrease in the number of deaths from falls of roof and sides.

A list of these accidents appears in Appendix II, Table I. In addition to them there were 21 others, causing the deaths of 24 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 coal mines, where the large majority of the statistical accidents occur, there were 137 deaths compared with 118 in 1911. If the one accident which caused 23 deaths, and which was a drowning accident, due to misadventure, and caused by an irruption of rain flood water, is eliminated, there were 114 deaths, and this, with the very much increased output, works out at a death-rate of 8·48 per million tons raised as compared with 10·50 for the preceding four years. It is to be hoped that this improvement is due to greater care and vigilance on the part of managers, and to improved supervision. If it is, the improvement should be maintained. On the figures, as they stand, with the drowning accident included, the death-rate at coal mines in these provinces was 10·20 per million tons raised as compared with 11·17 for all coal mines.

The necessity of fencing boiler feed-water tanks, the fixing of safety chains to shaft cages, and the providing of second stopblocks on haulage inclines and of shaft harness when men are working in shafts was proved by the occurrence of accidents, which in all probability would not have occurred, had these provisions for safety been adopted.

At one coal mine, the manager has offered rewards to the subordinate Indian officials for proficiency in knowledge of the vernacular translation of the general rules.

Owing to considerable delay in the preparation of an official Bengali translation of the special rules for coal mines in these provinces, their introduction is still in abeyance. This work has just been completed and it is intended that these rules shall be established during the ensuing cold season.

There were 139 serious (non-fatal) accidents throughout British India, causing injury to 153 persons.

As mentioned in the last report, salvage operations were commenced in the case of a fire at the Baraboni Coal Concern's Haripur mine. Two attempts

were made, but were unsuccessful. The management, however, feel confident that the mine will soon be regained.

The above remarks apply also to the East Indian Coal Company Limited's Kendwadih mine referred to in the last report. Certain progress has been made in salvage operations, which, it is hoped, will eventually be successful.

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 Eastern Coal Company Limited's Bhowra coal mine.

This accident, by which one miner was killed, is illustrated by plan A. An advance crosscut A B was being driven and was being ventilated by a hand fan. Gas was constantly giving off in the crosscut, but in such small quantities that, when the fan was kept going, it could not be detected. But if the fan was stopped, gas accumulated in the crosscut, which was 5 feet high and 4 feet 9 inches wide at the face. The morning before the explosion, there having been no work the night before, the manager found gas only ten feet beyond the fan, and three days after the explosion I found it just beyond the fan.

There was no appointed lamp station. The sirdar for each shift had a safety lamp, and, after testing the crosscut for gas at the commencement of each shift, the lamp was handed over to the head of the gang working in the crosscut, but, as soon as the fan had cleared the gas naked lights were allowed to be taken to the face. The miners kept the safety lamp in the face, but the carriers were using naked lights.

The sirdar's evidence was to the effect that when testing for gas, on the morning of the explosion, the light of his safety lamp went out in the gas, and he returned to the shaft to relight the lamp, and that while he was doing so, the deceased and two other miners came down. He stated that he told them that he had found gas in the crosscut and told them not to go in, that he would come and examine the place again as soon as his lamp was relighted, and that they went on, as he was relighting the lamp. He further stated that subsequently he went after them, but saw a flame up in the crosscut and found deceased staggering back near the fan. The other two men were about thirty feet back and in a confused state.

An open lamp was found at the point indicated on the plan. It may be noted that it was on the intake side of the brattice sheet, but only a few feet from the end of it.

It was evident that the deceased had placed the light here and had started the fan, driving the gas back on to the light, at which it exploded. He was badly burned and died four days afterwards.

It was impossible to obtain any corroboration of the sirdar's statement, as the two miners who were with the deceased, and who were said to be his brothers, had left the colliery. If it was true, he could have had very little control over his men.

On the 14th of August 1911, the assistant manager was slightly singed by gas, in a gallery close to the crosscut, and a miner was burned about the shoulders on the following day. Gas was reported in the vicinity from time to time from then to the date of the explosion under review. It was considered that deceased met his death owing to a breach of the rules regarding safety lamps, and a prosecution was initiated against the manager, as detailed in section IV of this report.

#### FALLS OF ROOF AND SIDES.

##### No. 13.--Katras Jharia Coal Company Limited's Sibpur coal mine.

While some miners were engaged in drawing timber from under some roof coal, 2 feet thick, in a place where a pillar of coal had been taken out, a sudden fall of the coal took place, swaying out four props, three of which struck deceased and killed him on the spot. The props were 17 feet long. In this

case the management contended that over the greater part of the mine the roof over the coal was too weak to be supported on vertical props, although it was admitted that in this particular area the roof was strong. 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 the manner shown in plan B. A nicking is cut through the roof coal up to the sandstone on the opposite sides of the adjoining galleries to the pillar about to be attacked, and the faces thus formed are carried across to the sides of this pillar until they form one with them. Except in the rare cases where the roof above the coal is too weak to be supported by vertical props this procedure is perfectly safe, as well as having the merit of saving a considerable amount of coal, which is inevitably lost under the other conditions, under which the roof coal, sometimes 3 feet to 4 feet thick, is abandoned over large areas in the coal-fields. This loss is not justifiable in view of the experience which has now been gained of goafing operations in the thick seams in India. In seams liable to spontaneous combustion it involves the risk of communicating fire from one point to another in the goaf, if it does not give rise to spontaneous combustion itself.

No. 31.—Union Coal Company Limited's Angarpatra coal mine.

This accident occurred in what is known as the bottom section of No. 15 seam. The section, from the top downwards, is:—coal 1 foot 8 inches, a stone band 3 inches, coal 3 feet 3 inches, a stone band 2 inches, and coal 2 feet. It was the custom to work in the bottom coals, undercutting the upper band to a depth of about 2 feet, and then to take down the band and top coal. In this case a pillar 26 feet long had been undercut to a depth of 2 feet over a length of 15½ feet, without timbering. A slippery joint was exposed and a mass of coal fell away and killed a miner. This method of working cannot be commended. If top coal is undercut in this way, timber should be set. Since the accident the bottom coal and bottom band have been left and timber set upon it, and undercutting is to be limited to a depth of from 9 inches to 12 inches.

No. 35.—Empire Coal Company Limited's Sudamdih coal mine.

The scene of this accident was an old quarry, about 50 feet deep, in which, three weeks before the accident, the manager decided to reach a seam of coal situated below the seam originally worked, by excavating near the outcrop edge, where the overburden was 28 feet thick. Before doing so the side, which was of earth, was dressed back from 5 to 10 feet in thickness from the surface to the foot of the quarry and put on a slope of 60°.

Daily inspections were made by the manager and assistant, but no results of such inspections were recorded.

Two days before the accident the manager made an inspection in the afternoon and was satisfied that the place was safe. On the following day the inspection was made by the assistant at 9 o'clock in the morning when he observed that a portion of the side measuring about 7' x 2' and situated about 4' up the side was damp. He states that it was not very damp, no water was dripping, but, as he had not noticed it on a previous occasion, he reported the fact to the manager verbally, who questioned him as to the effect it had produced on the side and was assured by him that there was no danger. The manager was evidently satisfied with the report for he did not examine the place himself. At 3-30 o'clock the following morning, or 18½ hours later, while four men were at work, the side collapsed. About 100 tons fell and two men were buried and killed.

No inspection was made during the night on which the accident occurred by any official.

In regard to the cause of this accident, there was a drain situated near the edge of the quarry for carrying water past the excavation, to prevent it entering the mine. On both sides of this drain the ground was sodden with water,

and there is no doubt that percolation extended from it to the side of the quarry and produced the damp patch of ground observed by the assistant. The water acted as a lubricant, as it would in such ground, and lessened cohesion to such a degree that the side, standing at such a high angle, became unstable and ultimately slipped along the plane of percolation.

The failure to keep up a daily report book in regard to this part of the mine was considered to be a breach of rule, and a prosecution was initiated against the manager, as detailed in section IV of this report.

#### IN SHAFTS.

##### No. 76.—Lodna Colliery Company Limited's Sripur coal mine.

A shaft 16 feet in diameter had been sunk to a depth of 140 feet. The banking level was fitted with folding doors, arranged to rest slant-wise at an angle of about 90°, the opening forming nearly a square, one side being 5' 6" long and the other 5' 8½" long. The hoppit was of the usual self-tipping type of one ton capacity, with an overall diameter of 4' 4½", and the locking service for the bow consisted of a simple two-pronged fork of weak construction, hinged to the side of the hoppit. The winding engine was 12" x 24", geared 1 to 4, fitted with a drum 6 feet in diameter, and the winding rope was of the non-twisting class.

The accident happened at 6 A.M. just as the shift was about to change. The hoppit, filled to the brim with stone, was being raised and, on reaching the pit top, it collided with one side of the door frame. One prong of the locking fork was bent by the force of the collision, as shown in photograph No. 1 on plate A, to such an extent that the bow of the hoppit was released, the hoppit was overturned and about 15 cwts. of stone were discharged into the shaft, at the bottom of which 18 sinkers were at work. With the exception of four persons who were killed and three persons who were injured, all the sinkers were engaged at the time in drilling side holes. To this they owe their escape.

All the machinery was in working order. One of the banksmen stated in his evidence that he observed a slight oscillation of the rope while the hoppit was being raised, but he did not attach any importance to the fact, and it cannot be stated with certainty whether this oscillation was due to neglect to steady the hoppit at the shaft bottom, or to a sudden application of the brake to retard the speed, but it was due to one cause or the other, and it was this oscillation which caused the accident.

Folding doors are excellent appliances for sinking shafts, but the application of them is imperfect without the addition of guides. The best and safest form are ropes guides which reach from the top of the shaft to within 30 or 40 feet above the sump, the hoppit being guided on by means of a rider, which should be designed to permit the use of a detaching hook. This combination moreover has obvious advantages in the way of quick, as well as safe, winding, thereby expediting the work of sinking, and ensuring an earlier realisation of profits. All deep sinkings should be carried out with these arrangements. Even if, however, such guides are not fixed, short strap or plate guides should be fixed at the top of the shaft, to guide the hoppit into the folding doors. From the statement of dimensions given above it will be seen that the clearance between the hoppit and the door frame was only 6¼" in one direction and 8" in the other. Even with guides this amount of clearance would be small, but without them, as in this case, the most careful attention to winding and steadying could not in my opinion have averted a collision with the door frame for long, particularly as the headgear was nearly 30 feet high. As a matter of fact the folding doors were fixed less than a fortnight before the accident.

Photograph No. 2, on plate A, shows the hoppit between the folding doors.

The accident was actually due to the weakness of the catch or locking device on the hoppit. This, as I have stated, was merely a single two-pronged fork hinged to the side of the hoppit, to permit of its being raised or lowered to release or secure the bow. It is not a type to be relied on and ought not to have been used, because the slightest upward pressure on the catch would release the bow

and sufficiently severe downward pressure would wreat the catch from its position, with the same result.

Perhaps the safest form of catch is that which consists of a collar encircling the bow of the hoppit, which when in use passes over a projection rivetted to the side of the hoppit, any upward movement of the collar being arrested by means of a cotter pin. When it is desired to tip the hoppit, the cotter pin is withdrawn and the collar raised and hung on a boss made for the purpose on the bow. Even with this form of catch in use it is always prudent to have another catch on the other side of the hoppit.

Considering the type of catch that was used, there should have been two of them.

**No. 79.—Messrs. Trigunait Brothers' Angarpatra coal mine.**

A man was killed at the bottom of a sinking pit by a stone falling out of a small basket, in which it was being raised to the surface. The shaft was 90 feet deep and persons and rubbish were raised by women pulling the rope and basket. This is a customary way of sinking in India, but several accidents from time to time have proved the danger of the method, except at very shallow depths. After a depth of about 60 feet has been attained, machinery should be employed.

**BY EXPLOSIVES.**

**No. 87.—Khas Jharia Coal Company's Phularibad coal mine.**

In this case detonators were being tested with a galvanometer. An explosion occurred, resulting in the death of three men. It was evident that these detonators were being tested with dynamite close at hand, even if the detonator which exploded was not actually in a dynamite cartridge at the time. The manager was surprised to be told of the great danger attending such an action. The testing of detonators by a galvanometer is a great safeguard against the risk of misfires, which are a prolific source of accidents in mines, but a detonator is liable to explode when under test. No explosive should be allowed anywhere near where the operation is being carried out, and the detonator itself should be inserted in a pipe or similar receptacle, to avoid an accident in the event of its exploding.

**IRRUPTION OF WATER OR FALLING INTO WATER.**

**No. 90.—Phularitand Coal Company, Limited's Phularitand coal mine.**

This lamentable accident, by which twenty-three persons lost their lives, was caused by a sudden overflow of rain flood water into an incline.

The seam worked is No. 12 seam, which is 8 feet to 9 feet in thickness and dips to the south at an angle of 1 in 7. The coal is raised to the surface by a hauling engine through an inclined cutting on the outcrop known as No. 2 incline, and this road is also used by persons entering and leaving the mine. The second or emergency outlet prescribed by law is through No. 2 shaft, where a head frame, pulley and rope are provided for raising persons. An area, measuring 1,200 feet on the strike by 450 feet on the dip, had been cut up into pillars, 25' to 30' square, by galleries 10 feet wide.

The accident is illustrated by plan C and plates B and C. As may be seen from the plan the incline is situated in low lying ground, and some three feet above the natural drainage channel of a considerable catchment area. A high embankment for haulage purposes was made in 1909 and was swept away during the rains of the same year. In the cold season of 1909-10 this embankment was rebuilt, and a small stone culvert in it was replaced by the bridge at C, 12 feet wide and 11 feet high. (Upper Photograph 1, plate B.) Near the top of the incline another small culvert was also built. These openings sufficed to carry off water during the rainy seasons of 1910 and 1911, and apparently no anxiety was felt.

About 3 P.M. on the 11th July heavy rain fell. At Loyabad, 8 miles distant to the east, 8.20 inches were registered, most of which fell between 3 and

4-30 P.M. From all accounts the fall was heavier than this to the west. Eyewitnesses at Phularitand state that a rush of water came in a wave from the south and rushed down the incline. The rush was probably initiated by the bursting of a small tank about a quarter of a mile away to the south. This tank measured 225' x 150' and the breach in the bund was 3 feet deep. The water escaping, which flowed through the two small bridges at A and B, would be about 600,000 gallons or only one-thirteenth of the quantity which flowed into the mine. This alone was therefore insufficient to account for the inrush, but the effect of the tank bursting at a time when the ordinary rainfall was so heavy was that the bridge, at C, in the embankment was unable to carry off the water, with the result that it was dammed back and rose to such a height that, at about 5 P.M., just as the day shift of 36 workpeople was about to cease work, a small bank was scoured, as shown on plate C, and it rushed down the incline into the mine. The whole of the workings were filled within a period of from 20 to 25 minutes, as estimated by the manager. The quantity of water which entered the mine was, however, estimated at nearly 8 millions of gallons or 35,000 tons, and, assuming the water to have flowed into the mine in a stream 4 feet deep and 10 feet wide, it would take about 70 minutes to fill the workings. This is a considerable discrepancy in time.

The flood level at a bridge half a mile down stream is shown on the lower photograph on plate B.

Of the 15 persons at work in the galleries on the east side, 12 contrived to escape by the help of the haulage rope, which fortunately had previously been lowered into the mine and was lying in the middle of the road. Without the assistance thus afforded it is unlikely that many of them would have been able to make headway against the swift current. Several of them received cuts and bruises from stones, which were carried along by the flood. Of the 22 persons working in the west galleries, 2 only were able to fight their way to safety, by pulling themselves along hand over hand on the pump delivery pipes.

Owing to delay in the receipt of information of the disaster, Mr. R. R. Simpson, the Inspector of Mines for No. 1 Circle, did not reach the mine until the morning of the 13th, or 41 hours after the occurrence. The managing agent, the agent and the consulting mechanical engineer arrived at about the same time.

The level of the water in the incline was then 17 feet below the surface, but, from the statement of the manager, it appears that after the inrush the water rose in the incline to within about 7 feet of the surface. This level is considerably higher than the roof of the highest gallery in the mine. From this fact the Company's officials concluded that it was certain that all those imprisoned must have been drowned. They did not propose to commence pumping out the water until the arrival of a pump from Chora in the Raniganj coal-field. This pump, although despatched from Chora on the 15th, did not reach Phularitand until the 22nd or 11 days after the inrush.

After a study of the plan of the workings the Inspector came to the conclusion that there was good reason to hope that air compressed in the rise workings might artificially lower the water level sufficiently to permit possible survivors to remain there in safety. Levels taken subsequently show that the water in the incline rose to a height of 16 feet above the highest flood level in the mine, but dropped 10 feet by the 13th due to the escape of air. He represented strongly therefore that pumping operations should be immediately commenced, and suggested that a pump then at work in No. 13 seam should be installed at No. 2 incline. He also requested that a second pump should be brought from a neighbouring mine. The pump was brought from No. 13 seam and started working early on the morning of 14th July. He visited the mine again on the 15th and 17th idem and was compelled to complain that no effort was being made to fit up another pump. At his request a pulsometer was obtained from a neighbouring mine but it was not in order and could not be set to work.

On the 19th instant, 8 days after the accident, the water had been lowered to a point about one foot below the roof of the first east gallery and at 2 P.M.

shouts were heard, and after some little difficulty 2 survivors (man and wife) were assisted out through a depth of 5 feet of water. These persons although weak were not emaciated. They were able to walk and to answer questions intelligently. They recovered completely within a few days, and are now working in the same mine. There is no doubt that they had been imprisoned in a cushion of compressed air.

On the following day the Inspector again visited the mine and found that another pump was installed, but not being in good order it was of little or no service. An exploration of the east workings proved that there were no other survivors on that side. On the 22nd the pump from Chora arrived and was set to work. By the 23rd the water was lowered sufficiently to permit of the exploration of the west workings, and in the first rise gallery, within 30 feet of the incline, 16 bodies were found in an advanced state of decomposition. Identification was impossible, but a *post-mortem* examination by the Assistant Surgeon proved that in all cases death was due to drowning, soon after partaking of food. As the level of the water lowered, other bodies were found, the total number drowned being 12 males and 11 females.

The accident was due to misadventure. I should myself have considered the bridge opening sufficiently wide to carry off the rainfall. The event has, however, proved otherwise.

Those responsible were fortunate in that such pumping operations as were carried on did, as a matter of fact, save the lives of such persons who could possibly have been saved.

Several precautions, notably the constructing of a second bridge at C, 6 feet wide, alongside the first one, the building of a brick wall at the incline and the making of another incline outlet from the workings have been taken since, to avoid another such calamity. In addition, it has been arranged that the accumulation of rain flood water shall be carefully watched during the ensuing monsoon.

#### Section IV.—Prosecutions and additions to the Act.

##### PROSECUTIONS.

Judgment was given in the following prosecutions during the year; unless otherwise stated the rules referred to are rules issued under Notification No. 864-6S-20, dated 10th March 1904, made under section 20 of the Indian Mines Act.

In the last annual report an account was given of a fatal accident by haulage at the Lakorka Coal Company, Limited's Lakorka coal mine. It was stated that proceedings had been instituted against the manager for not providing manholes within the proper distances. This omission constituted a breach of rule 8, and the case was taken under section 22 (3) (e) read with the above rule. It was not contended that the loss of life was due to the omission. The manager pleaded guilty and was fined Rs. 20, or a fortnight's simple imprisonment.

The part-owner and the manager of the New Kusunda Coal Company, Limited's New Kusunda coal mine were prosecuted under section 22 (3) (e) read with rules 4, 7 and 14, for not keeping up a daily report book, for not fencing unused galleries, and for not producing an adequate amount of ventilation. The Company had been previously warned. Both pleaded guilty. The part-owner was fined Rs. 50 or one month's simple imprisonment and the manager was fined Rs. 75 or one month's simple imprisonment.

The manager of the Empire Coal Company, Limited's Sudamdih coal mine was prosecuted under section 22 (3) (e) read with rule 4 (b), for not recording

daily inspections, the duty of which he had taken upon himself. The case arose out of a fatal accident, No. 35 on the list, described in section III of this report. He pleaded not guilty, alleging that the pit in question was not a mine as it did not extend to more than 20 feet below the adjacent ground. He admitted that the original excavation was 40 or 50 feet deep, but pleaded that he was working at a point not 20 feet deep. The Court did not accept this plea, but considered the offence a technical one. He was fined Rs. 10 or one week's simple imprisonment.

The manager of the Empire Coal Company, Limited's Sudamdih coal mine was prosecuted under section 22 (1) (e) read with rule 7, for not fencing an unused gallery. The case arose out of a fatal accident, No. 107 on the list. He pleaded guilty and was fined Rs. 50 or two weeks' simple imprisonment.

The part-owners (2) of the Tentulia Colliery Company's Tentulia coal mine were prosecuted under section 22 (3) (e) read with rules 3, 7, 8, 19 and 20 for not securing the roof and sides, for not fencing unused galleries, for omission to provide signals and manholes on a haulage incline, for not fencing shafts and an incline, and for not fencing dangerous machinery. They had been previously warned about fencing unused galleries. They pleaded guilty and each was fined Rs. 20 or one month's simple imprisonment.

The owner of Babu S. P. Dey's Egarcor coal mine was prosecuted under section 22 (2) (b) read with rule 1 of Notification No. 11793-103 of 30th December 1908, made under section 20, for omitting to furnish a correct annual return form by the 1st of February. He was fined Rs. 50 or one month's simple imprisonment.

On the same count the owners (2) of Messrs. Dutt Kabra Coal Company's Begunia coal mine were fined Rs. 25 each or one month's simple imprisonment.

The owners and manager of the Baliram Coal Company's Ghusik and Srikrishnapur coal mine were prosecuted under section 22 (3) (e) read with rules 2 (e), 9 and 19, for failing to provide guides at a shaft, for failing to keep a proper plan, and for failing to fence a shaft when the trolley was moved away from it. They had been warned repeatedly. The manager pleaded guilty in regard to the plan, but said he did not consider guides necessary, as the shaft was connected with another shaft, and that he considered the shaft was fenced. These pleas were overruled and he was fined on all three counts, Rs. 100 in all. The case against the owners was withdrawn.

The manager of the Lodna Colliery Company, Limited's Chasnala coal mine was prosecuted under section 22 (3) (e) read with rule 4 (b) for failing to maintain a daily report book. He pleaded guilty. It was admitted by the prosecution that the inspections had been made and that the colliery was thoroughly well managed. He was fined Rs. 10 or one day's simple imprisonment.

The owner of Messrs. R. A. Mucadam & Sons' Chanda coal mine was prosecuted under section 22 (3) (e) and (2) (b) read with rules 7 and 19, and rule 1 of Notification No. 11793-103, dated the 30th December 1908, respectively, for not fencing unused galleries, for not fencing the top of a quarry and



the top of an incline, and for not submitting a correct annual return by the 1st February. He pleaded guilty and was fined Rs. 45 on the first count, and Rs. 15 on each of the other counts, making Rs. 75 in all.

The owner and manager of Babu Gopal Mahaton's Chilingia mica mine were prosecuted under section 22 (3) (c) read with section 16, for failing to report the opening of the mine, which was working before the Indian Mines Act came into force. The owner pleaded limitation, which was not accepted by the Court. He then withdrew this plea, and pleaded guilty, but it was pleaded in extenuation (a) that it was the first prosecution of the kind and (b) that he had taken over the mine as a going concern. He was fined Rs. 10 and the case against the manager was withdrawn.

The owner and manager of Babu Ganga Singh's Laharia mica mine were prosecuted on the same count. The owner was fined Rs. 10. The manager was reported to be deceased and the proceedings against him were dropped.

The agent and manager of the Bengal Iron and Steel Company Limited's Noonodih coal mine were prosecuted under section 22 (3) (e) read with rule 8, for failing to provide a manhole in a haulage incline. The case arose out of a fatal accident, No. 101 on the list. The defence taken by the agent was that he was not the agent. The judgment was as follows:—"It is admitted by the manager that accused has inspected the mine under the instructions of the general manager. The manager would not be inspected by a subordinate, and therefore I can only conclude that accused is the superior of the manager for the time being, while he is inspecting the mine, and his directions must be obeyed by the manager. If this is not the case, the inspection would seem to be a futile proceeding. I find accused guilty of a breach of rule 8 under section 20 of the Indian Mines Act."

In the case of the manager the defence taken was that the haulage incline was not used as a travelling road. The judgment was as follows:—"The whole question turns on whether a haulage slope was used as a travelling road or not. If used as a travelling road, rule 8 under section 20 of the Indian Mines Act requires that manholes should be provided every 60 feet at least. The manhole in this case was 89 feet from the top of the slope. For the defence it is contended that the haulage slope was not used as a travelling road, and that the travelling road ran parallel. A man, however, was killed on the haulage slope on June 4th and two women in February. The Inspector of Mines himself saw people using the haulage slope, and there can be no doubt whatever that it was so used, though doubtless the mine authorities did not recognise it. It was their duty, however, to see that the haulage slope was not used as a travelling road, or if so used, was properly provided with manholes. The accident in February should have provided the necessary lesson. I find accused guilty of the breach of rule 8 under section 20 of the Indian Mines Act." The agent and manager were each fined Rs. 30.

The manager of the Eastern Coal Company Limited's Bhowra coal mine was prosecuted under section 22 (1) (e) read with rule 15, for failing to work exclusively in a particular part of the mine with safety lamps. The case arose out of a fatal accident, No. 1 on the list, described in section III of this report. It was admitted by the prosecution that he was temporarily acting as manager for the regular manager, who was on furlough. He pleaded guilty and was fined Rs. 50.

The owner and manager of Babu Umesh Chandra Bhattacharj's Pandedih coal mine were prosecuted under section 22 (3) (e) read with rules 4, 10 and 19, for failing to maintain a daily report, failing to keep a plan of the

workings at the mine, and failing to fence the tops of inclines. Both pleaded guilty. The owner was fined Rs. 10 on each charge, or Rs. 30 in all, and the manager was fined Rs. 5 on each charge, or Rs. 15 in all.

The owner of Babu Bidhu Sekhar Banerji's Sabanpur coal mine was prosecuted under section 22 (2) (b) and under section 22 (3) (e) read with rule 19 for failing to give notice of an accident which occurred at a disused incline, and for failing to fence the said incline. He pleaded guilty and was fined Rs. 50 on the first charge and Rs. 25 on the second, or Rs. 75 in all.

The owners (3) and the manager of the Central Tentulia Coal Company's Tentulia coal mine were prosecuted under section 22 (3) (e) read with rules 1, 3, 7, 19 and 20, and under rules 46 and 51 of Notification No. 2968-82, dated the 21st April 1906, for failing to make proper arrangements for persons to descend or ascend a second outlet, failing to secure roof and sides, failing to fence unused galleries, failing to properly fence a shaft and an incline, and failing to fence a hauling engine, for (owners only) allowing the mine to be managed without a manager qualified according to the rules, and for allowing more than one mine to be managed by the same manager. All of them pleaded guilty and the owners were fined Rs. 100 each, or two months' simple imprisonment, and the manager was fined Rs. 40 or one month's simple imprisonment.

Two permits granted to managers of small mines were cancelled during the year on account of mismanagement disclosed by inspections.

## Section V.—General Remarks.

### HEALTH AND SANITATION.

The Jharia Sanitation Committee continued during the year to supervise operations in connection with sanitation in Jharia. In Jharia town the first cases of cholera were reported on 27th May, and between this and 14th June there were 41 cases—all fatal. An outbreak occurred almost simultaneously at the Katras end of the field, 4 cases occurring between 21st and 25th. In the same week 15 cases with 10 fatal results occurred on a colliery about 2 miles to the west of Jharia, and the next serious outbreak was on the 30th June at a village at the west end of the field. No reliable information was available but the Sanitary Inspector estimated there were 30 fatal cases. With the full break of the rains, which sluiced out filthy water courses, increased existing sources of water-supply and provided supplies of good water where none existed, cholera soon died out and there were no further serious outbreaks after 30th June.

Altogether there were known to be 66 deaths from cholera at coal mines in Bihar and Orissa and 2 at coal mines in Bengal. Seven deaths occurred in the Jharia coal-field from small-pox.

One case of plague was found in the Jharia bazar on 20th January and, on investigation, it was proved that the patient had come from Dhanbaid. Although rats were dying on collieries adjacent to the Jharia bazar, no other case of plague was reported. The infection appears to have spread in a north-westerly direction, and reports of rats dying were reported to the Sanitation Committee from Bhuggutdih, Nayadi, Kustore and Kendwadiah. From the date on which it was first observed that rats were dying in the Jharia bazar three months elapsed, when a similar state of affairs was reported from Kendwadiah bazar, which lies about 4 miles from Jharia. Several dead rats were examined at the request of owners of the bazar by Dr. F. T. Simpson, who reported the

B. *Pestis* in great number with the result that the bazar was at once totally evacuated. About three days after evacuation, a boy died in the empty bazar, having in all probability been brought there by his friends. Rat catching was resumed on 1st November 1912, and at the close of the year no further case of plague had been reported.

Malaria was again reported from the mines at Tavoy in Burma and is partly attributed to the impermanent nature of the buildings in which the coolies are housed. In this connection the Deputy Commissioner is submitting proposals to relax the conditions under which licensees and lessees are allowed to cut timber.

A few cases of plague occurred in the early part of the year at Mohpani coal mine in the Central Provinces. The outbreak was, however, stamped out in March, owing to the special measures taken by the manager to get his people inoculated. There were 6 deaths.

Plague and cholera were also reported from Ballarpur coal mine in the Central Provinces. There were 21 deaths from plague and 24 from cholera.

Malaria was reported from the Khost coal mines in the autumn, and from an area in the Madras mica mines. Plague and cholera were reported from the manganese mines in the Nagpur district, and cholera from the manganese mines in the Chhindwara district, in the Central Provinces.

The total rainfall at Jéalgora in the Jharia coal-field was 44.69 inches, or 2.87 in excess of the previous year. At Giridih it was 54.86 inches, the average of the last five years being 54.37. At Dishargarh in the Raniganj coal-field it was 37.64 inches.

#### AMBULANCE WORK.

I am very pleased to report that this movement again made considerable headway during the year under report. The Central Committee was constituted as follows: The Chief Inspector of Mines in India (President), Messrs. S. Heslop and R. J. Browne (Vice-Presidents), the Collector of Burdwan, the Deputy Commissioners of Hazaribagh and Manbhum, the Sub-divisional Officers of Asansol and Dhanbaid, the Inspectors of Mines in India, Messrs. A. A. Agabeg, F. J. Agabeg, T. Adamson, R. G. M. Bathgate, R. J. Barrowman, E. S. Bennertz, H. M. Bull, G. Crawford, G. H. Fairhurst, Glen George, W. Hutton-Williams, J. S. Kean, P. Keelan, G. C. Lathbury, A. Mackay, J. Mackintosh, G. Miller, Robert Mitchell, C. Nairne, F. Owen, E. M. Patterson, W. J. Rees, A. S. Thomson, and E. S. Tarlton.

The names of those who generously subscribed last year were given in the last report, and subscriptions received during the current year will be published in the next one.

Ten classes for Indians and Europeans were held at seven local branches, *viz.*, Charanpur, Dishargarh, Jharia, Kusunda, Mugma, Raniganj and Sijua, and were attended by 493 students. Of these 162 were examined with the result that 151 passed. Certificates of proficiency in "First Aid" were gained by 149 candidates and 2 gained vouchers. Classes were also started for instruction in the vernacular and proved a great success. It is very gratifying to note the increase in the number of cases in and about the mines treated by first

aiders before the arrival of the doctor. This, more than anything, goes to justify the inception of these classes.

The committee has under consideration a scheme for presenting medals instead of certificates of proficiency to successful Indian candidates.

The formation of ambulance brigades at suitable stations for members of the classes who have made themselves proficient in "First Aid" is receiving the attention of the committee. Enrolment will entitle the trained men to wear uniforms approved by the King-Emperor himself and they will qualify after a certain number of years' service for a decoration given by the King-Emperor exactly similar to the Volunteer Decoration.

#### SIBPUR COLLEGE MINING DEPARTMENT.

Mr. E. H. Robertson, the Professor of Mining at Sibpur College, has reported that the number of students on the roll at the beginning of session 1912-13 was seventeen, of whom twelve were enrolled in Course I and five in Course II. At the diploma examination held in March 1912 five were successful, one being a special student. At the annual examination held at the same time to qualify students to pass from Course I into Course II, only three were successful, one of whom was a special student. Two other special students, however, having passed in mining subjects, were permitted to study in Course II.

It was mentioned last year that the special scholarships, formerly awarded annually, had been abandoned, but that in spite of this four young men had relinquished their means of livelihood and joined the mining department of the college at their own expense. Unfortunately they found the cost of living near Calcutta higher than they expected, and before the long vacation two of them decided to leave the college, as they saw that their resources could not possibly hold out to the end of the two years' course. A third remained up to the end of the camp period, and then decided to withdraw his name, as his savings would not keep him to the end of the course, although two small college scholarships of six rupees each were diverted to the use of the two special students remaining at the time. Thus only one special student is left. A proposal is on foot to renew the special scholarships in a modified form, which it is to be hoped will be successful, as there is no doubt of the ambition and high endeavour of these young men.

The annual mining camp was pitched in November and December in the Jharia district, where much instructive and useful work was got through. Visits were made to many important collieries, including Jamadoba, where an up-to-date screening plant has recently been erected; Barari, where the efforts of the management to cope with a severe outbreak of fire have been so successful; Hariladih, an object lesson in shaft sinking under heavy water difficulties; Kustore, with its pressure filters, sanitary appliances and electrical installation; Giridih, where excellent sinking operations with guided kibble and water bucket are being carried on, and where the well-equipped workshops and the electric underground pumps and haulages were inspected. Field geology was studied at Bhowra, Goluckdih, and Kankani. Surface and underground surveys were made of portions of Lodna and Benahir collieries.

The Students' Mining Society is still flourishing, and has nearly completed seven volumes of the "Journal." The offer of an annual prize of Rs. 30 to be given to the student who compiles the best notebook during the camp period was made by Mr. C. H. McCale, Manager of the Damuda Coal Co. Ltd.'s collieries and an external member of the Society. This generous prize of Mr. McCale's is much appreciated. It gives the students a special inducement to exercise to the full their powers of observation and expression.

The apparatus pertaining to the Mining Department has been added to during the past year, a small diamond boring outfit, a polarising lantern and microscopes, and a number of mineral specimens and microscope and lantern slides having been procured. The museum attached to the department has been enlarged, and a new shed is being built, in which the Giridih headgear model will be housed, and which will act as a repair shop, and a storehouse for samples in bulk and other sundries.

#### MINING EDUCATION IN THE BENGAL COAL-FIELDS.

One meeting of the Mining Educational Advisory Board was held during the year.

The lecturers appointed for the session 1912-13 were as follows:—

Jharia Centre—Mr. J. Wilson, B.Sc., Sijua Centre—Mr. B. Starks-Field, Charanpur Centre—Mr. H. C. Read, B.Sc., and Dishargarh Centre—Mr. C. Ashcroft, F.G.S.

The lecturers of the session 1911-12 report that the total number of names on the register was 260. This is an advance of 23 on the numbers of the previous year. The average number of students who attended the Courses was 20.15 per lecture, 75 students (34 Europeans and 41 Indians) made 50 per cent. or more of the possible number of attendances and thus became eligible candidates for the sessional examinations. These figures are practically the same as for the previous year.

Complaint was made of the difficulty in teaching mining to students who were deficient in the knowledge of Arithmetic and elementary Mathematics. All the lecturers endeavoured to induce students to work at home, in addition to attending the lectures.

The sessional examinations were held simultaneously on the 3rd June 1912 at Jharia, Charanpur and Dishargarh, the Sijua students being examined at Jharia, the examiners being Professor E. H. Robertson, M.Sc., and Mr. R. E. Simpson, M.Sc. Of the 75 eligible candidates, only 25 presented themselves for examination and 16 candidates (8 Europeans and 8 Indians) were successful in obtaining the necessary number of marks to qualify for certificates. In the previous year 36 candidates presented themselves and 18 were successful.

The Examiners reported as follows:—

“As compared with last year very little improvement in the quality of the students' work can be detected. The majority of the candidates are ignorant of the elements of drawing and are unable to sketch a simple piece of machinery. Other defects are failure to understand the meaning of definitions, incoherency of expression, faulty mensuration and carelessness. This could in fact be remedied by inducing students to pay more attention to home work.”

There is no doubt that deficiency in ordinary, if not primary, education, in the case of many students prevents them assimilating the lectures on mining. It is impossible to learn a particular art without at any rate a certain knowledge of the other arts, and of the sciences, upon which that art is based. The consideration of the whole question of mining education generally in the coal-fields has been retarded, owing to the uncertainty as to the future of the Sibpur Engineering College. It is however understood that a final decision on this matter will be come to soon, and, whatever the decision is, the necessity of a more comprehensive scheme of local technical education must be met, if Indian and Anglo-Indian managers are to take their proper place in the rapid development of coal mining in India.

#### MINING AND GEOLOGICAL INSTITUTE OF INDIA.

The total membership of the institute at the end of the year, including subscribers, was 303. Four meetings were held during the year. In addition to the above meetings, several meetings of the Jharia and Raniganj coal-fields branches have been held, at which interesting and instructive discussions have taken place. The Government prize for the best paper read during the year was divided between Messrs. E. C. Agabeg and A. Mort.

#### BOARD OF EXAMINERS.

No change is to be reported among the non-official members of the Board. The Board therefore was the same as that of last year, *viz.*, Mr. G. F. Adams, Chief Inspector of Mines in India (*Ex-officio* President), and Messrs. S. Heslop and R. J. Browne.

Four meetings were held by the Board during the year.

There were five applicants for first class Indian certificates of competency in lieu of English certificates, all of whom were furnished with Indian certificates. There were five applicants for second class certificates of service. Two of them were granted certificates.

An examination for certificates of competency as colliery managers was held at Dhanbaid in the office of the Department of Mines on the 21st and 22nd February 1912, at which 25 candidates competed for first class and 58 for second class certificates. Out of the above numbers, only 4 were successful in obtaining first class, and 11 second class, certificates.

The non-official examiners at the above examination were Messrs. T. Adamson and F. Owen. Mr. R. R. Simpson being the official examiner.

#### MINING BOARD.

No meetings of the Mining Board were held during the year.

#### OFFICIAL DUTIES IN 1912.

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

Mr. R. R. Simpson was Inspector of Mines for No. 1 Circle. From the 27th September to the 30th November he had charge of Nos. 2 and 3 Circles in addition to his own duties.

Mr. G. C. Leach was Inspector of Mines for No. 2 Circle. From the 2nd March till the 26th September he had charge of No. 3 Circle in addition to his own duties. He was granted privilege leave for three months, combined with leave on medical certificate for nine months from the 27th September 1912.

Mr. C. J. E. David was Inspector of Mines for No. 3 Circle. From the 1st December to the end of the year he was in charge of No. 2 Circle in addition to his own duties. He was granted privilege leave for one month, and leave on medical certificate for 8 months from the 2nd March 1912.

The Department was therefore shorthanded for the greater part of the year. I wish to thank Mr. R. R. Simpson for the manner in which he kept up the office work and necessary field work of all three circles during the absence of both Mr. G. C. Leach and Mr. C. J. E. David.

I have the honour to be,

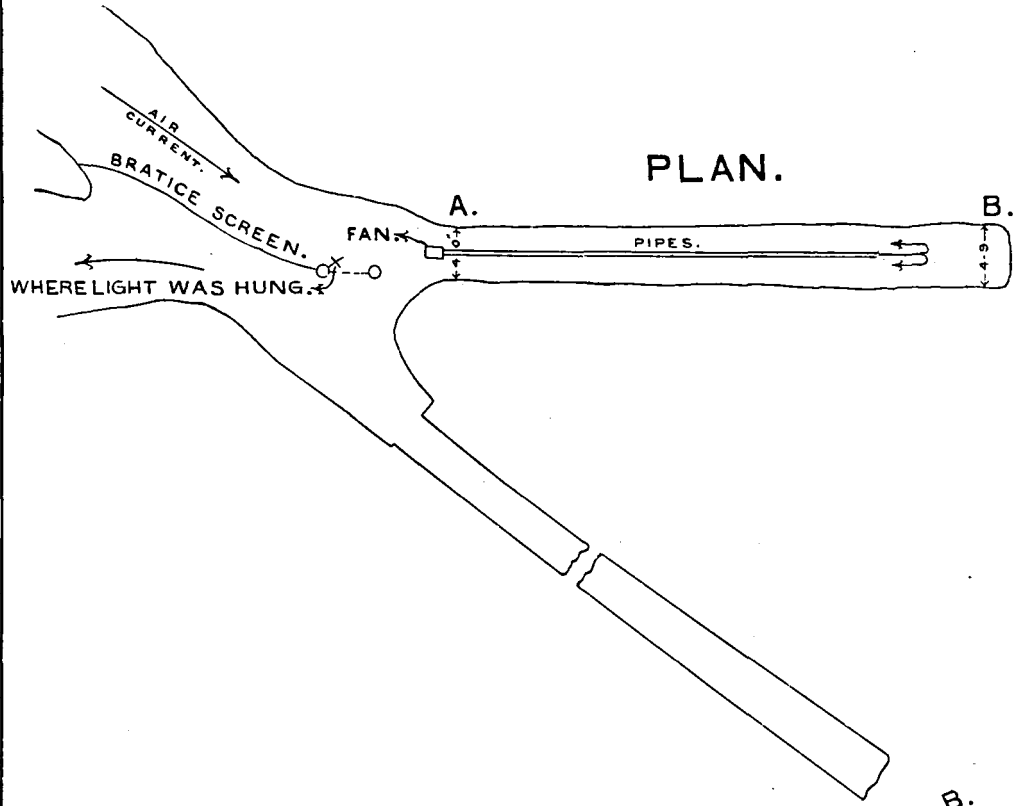
SIR,

Your most obedient Servant,

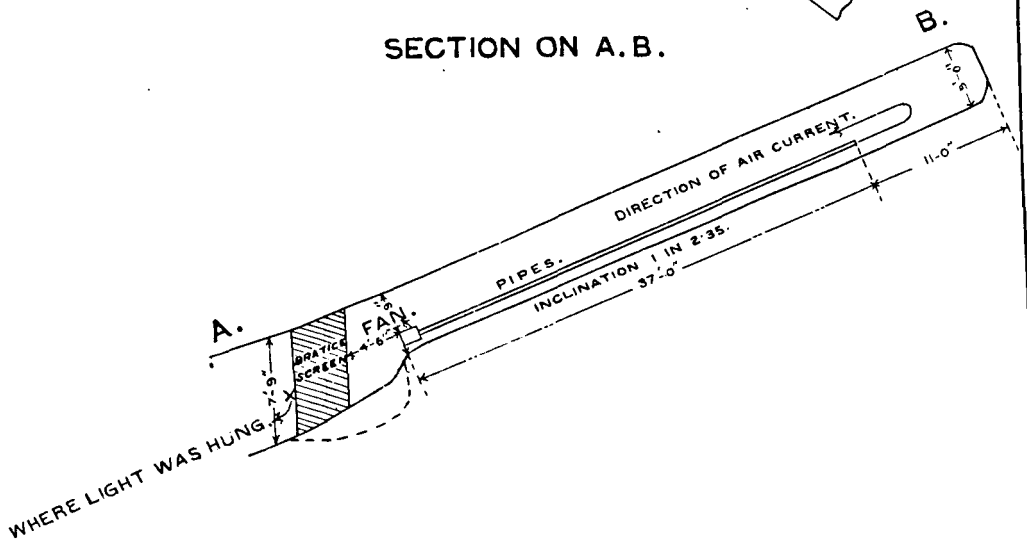
G. F. ADAMS,

*Chief Inspector of Mines in India.*

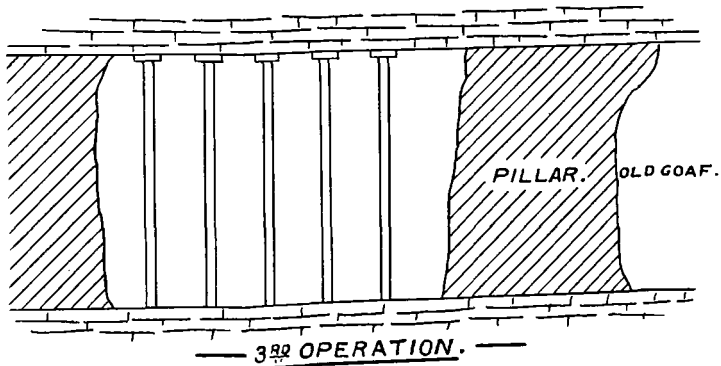
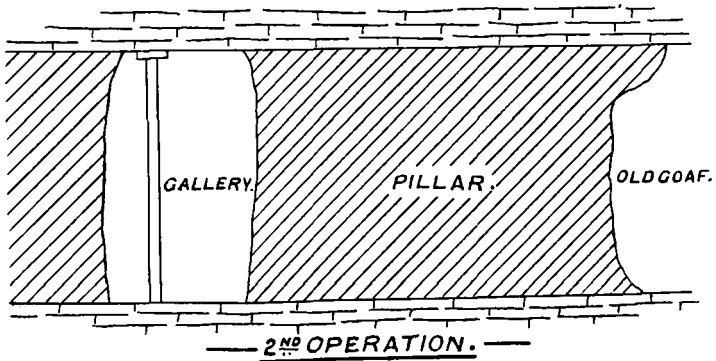
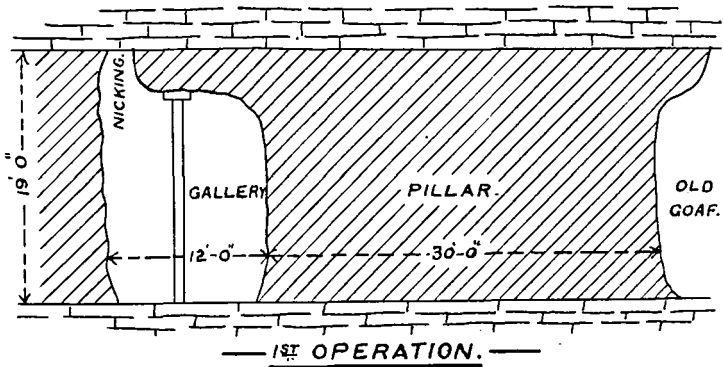
PLAN ILLUSTRATING REPORT ON  
FATAL ACCIDENT BY EXPLOSION OF FIREDAMP  
AT  
THE EASTERN COAL CO., LTD'S BHOWRA MINE  
SCALE 1 INCH=10 FEET.



SECTION ON A. B.

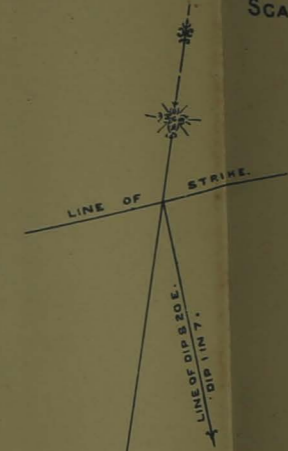


PLAN ILLUSTRATING REPORT ON  
FATAL ACCIDENT BY FALL OF ROOF  
AT  
THE KATRAS JHERRIA COAL CO., LTD. SIBPUR MINE  
SCALE 1 INCH=10 FEET.





PLAN ILLUSTRATING REPORT ON  
**FATAL ACCIDENT BY IRRUPTION OF WATER**  
 AT  
**THE PHULARITAND COAL CO. LTD. PHULARITAND MINE**  
 SCALE 1 INCH=50 FEET.



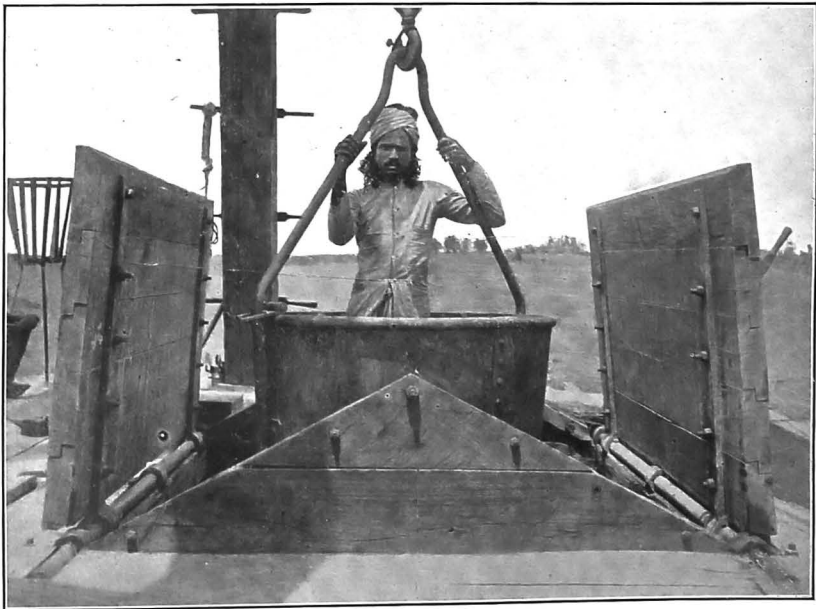
**REFERENCES.**

- Surface features shown in black lines
- Underground workings shown
- Places where bodies were found
- Highest flood level on surface
- Highest flood level underground
- Contour lines on surface one foot apart shown
- Embankments on surface shown
- R. L. Relative level. Datum line of 50 feet at highest flood level on surface
- Blue wash in the galleries shows the area filled with compressed air

PLATE ILLUSTRATING REPORT ON  
FATAL ACCIDENT IN A SHAFT  
AT  
THE LODNA COLLIERY Co., LTD'S SREEPUR MINE.



PHOTOGRAPH No. 1.



PHOTOGRAPH No. 2.

PLATE ILLUSTRATING REPORT ON  
FATAL ACCIDENT BY IRRUPTION OF WATER  
AT  
THE PHULARITAND COAL Co., LTD.'S PHULARITAND MINE.

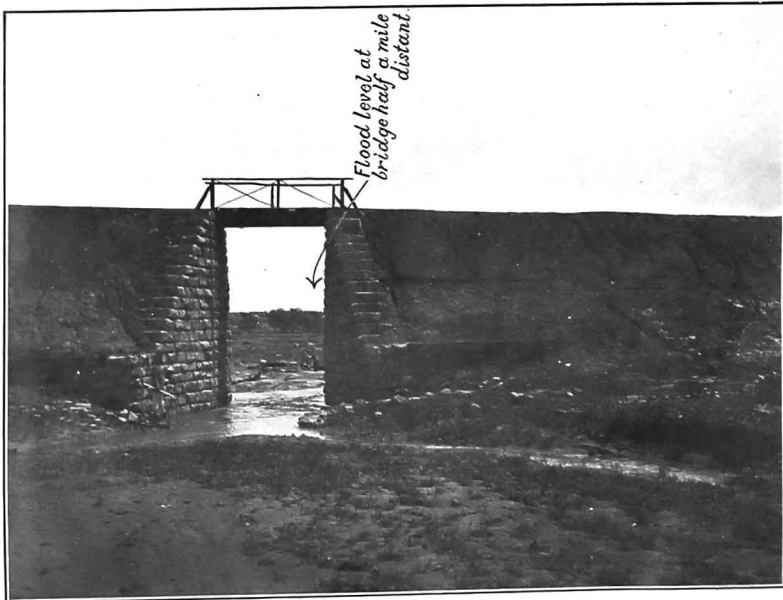
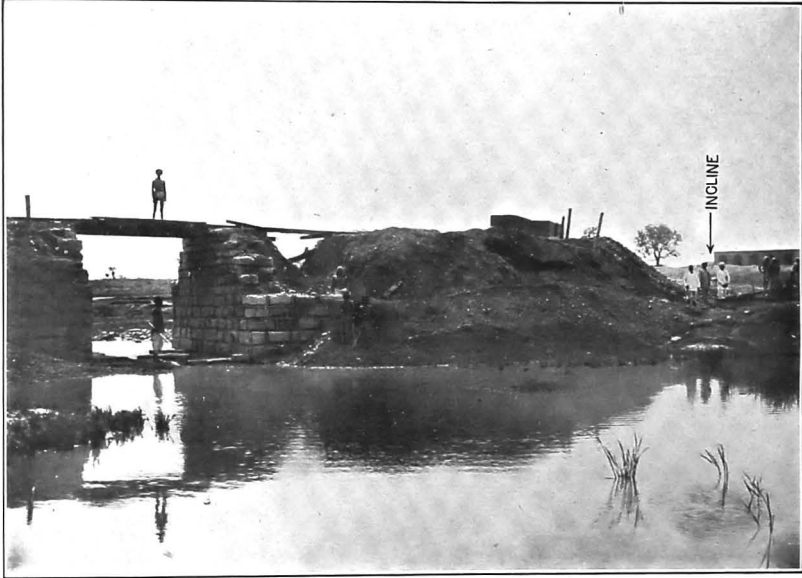


PLATE ILLUSTRATING REPORT ON  
FATAL ACCIDENT BY IRRUPTION OF WATER  
AT  
THE PHULARITAND COAL Co., LTD.'S PHULARITAND MINE.



**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 1912.

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.		
Bihar and Orissa	Hazaribagh {	Bokaro-Ramgarh	10	...	10	18	22	5,310	42	69	11	122	44	68	2	114	296
		Jharia	1	...	1	...	...	110	3	...	...	3	25	...	...	36	28
	Manbhum {	Giridih	7	5	2	5	10	780,530	3,323	1,400	...	4,723	1,807	906	47	2,830	7,573
		Jharia	235	115	120	218	394	7,653,342	22,355	17,526	262	49,143	14,614	7,372	1,265	23,271	63,414
	Sambalpur, Hingir Rampur	Raniganj	71	9	62	37	55	635,764	2,543	1,034	7	3,634	1,097	652	41	1,700	5,424
		Sonthal Parganas {	1	1	...	...	...	21,314	273	...	...	273	176	19	...	195	408
	Palpamu, Daltonganj	Raniganj	2	...	2	...	...	2,376	10	8	...	18	5	5	...	10	28
		Rajmahal	1	...	1	...	...	2,776	7	9	2	18	4	6	2	12	30
			1	1	...	1	2	71,917	165	176	15	356	252	35	47	334	690
		TOTAL	329	131	198	279	473	9,123,437	28,721	20,272	297	49,200	18,024	9,168	1,424	23,601	77,891
Bengal	Burdwan, Raniganj	162	135	27	101	175	4,296,367	16,345	7,560	199	24,104	8,078	4,204	318	12,600	30,704	
	Birbhum	1	...	1	...	...	1,728	10	6	...	16	7	2	...	9	25	
	Bankura	2	...	2	1	1	7,584	55	35	...	90	4	5	...	9	99	
	TOTAL	165	135	30	102	176	4,306,129	16,410	7,601	199	24,210	8,089	4,211	318	12,618	30,828	

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 1912.

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.		NUMBER OF MINES INSPECTED DURING THE YEAR.		TOTAL OUTPUT.	AVERAGE NUMBER OF PERSONS EMPLOYED DAILY IN AND ABOUT THE MINES.								
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		BELOW GROUND.				ABOVE GROUND.				Grand total below and above ground.
								Adult males.	Adult females.	Children (under 13).	Total below ground.	Adult males.	Adult females.	Children (under 13).	Total above ground.	
Central Provinces	Jhansi, Panch Valley Narsinghpur, Mohpuri Chanda, Ballarpur	4	2	2	...	...	Tons. 90,722	401	212	10	623	115	48	16	179	802
		1	1	...	...	...	56,837	475	217	...	692	349	54	...	403	1,095
		1	1	...	...	...	86,417	499	...	...	499	134	...	...	134	633
	TOTAL	6	4	2	...	...	233,996	1,375	429	10	1,814	598	102	16	716	2,530
Panjab	Jhelum Shahpur Mianwali	5	...	5	7	9	33,192	460	...	...	460	204	...	16	220	680
		2	...	2	1	1	3,617	90	...	...	90	110	...	...	110	300
		2	...	2	...	...	1,600	42	...	...	42	59	...	...	59	101
	TOTAL	9	...	9	8	10	36,409	592	...	...	592	373	...	16	389	981
Assam	Lakhimpur	8	5	3	8	16	296,615	1,114	202	...	1,316	508	251	40	799	2,115

Baluchistan	Sibi . . . . .	8	1	7	4	11	45,477	694	...	...	694	310	...	21	331	1,026
	Loralai . . . . .	1	...	1	...	...	255	12	...	...	12	8	...	...	8	20
	TOTAL	9	1	8	4	11	45,732	706	...	...	706	318	...	21	339	1,045
North-West Frontier Province.	Hazara . . . . .	1	...	1	...	...	50	2	...	...	2	...	...	...	...	2
	GRAND TOTAL (COAL) FOR 1912.	527	276	261	401	686	14,044,368	48,920	28,504	506	77,930	27,910	13,717	1,635	43,462	121,392
	" " OF PRE-CELEBRATED YEAR.	450	276	174	362	704	12,048,728	43,783	24,579	505	68,867	24,803	11,454	1,474	37,731	106,598
	DIFFERENCE	+77	...	+77	+39	-18	+1,995,642	+5,137	+3,925	+1	+9,063	+3,107	+2,263	+361	+5,731	+14,794
	B.-MICA.															
Bihar and Orissa	Monghyr . . . . .	15	...	15	...	...	Cwts. 576	215	146	2	363	142	117	42	301	664
	Hazaribagh . . . . .	356	8	348	...	...	21,462	3,509	2,101	371	5,981	1,487	1,427	1,010	3,024	9,905
	Gaya . . . . .	24	...	24	...	...	6,838	539	246	49	834	148	226	196	570	1,404
	TOTAL	395	8	387	...	...	28,876	4,263	2,493	422	7,178	1,777	1,770	1,248	4,795	11,073
Madras	Nellore . . . . .	65	1	64	...	...	12,535	1,709	1,129	132	2,970	377	602	576	1,555	4,525
	Salem . . . . .	2	...	2	...	...	108	24	2	...	26	10	36	16	69	88
	TOTAL	67	1	66	...	...	12,643	1,733	1,131	132	2,996	387	638	592	1,624	4,613

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 1912.

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 15).	Total below ground.	Adult males.	Adult females.	Children (under 15).	Total above ground.	
<b>B.—MICA—contd.</b>																
Rajputana . . . . .	Ajmer-Merwara . . . . .	11	...	11	7	7	Cwts. 641	210	82	...	242	98	68	33	193	435
	GRAND TOTAL (MICA) FOR 1912.	473	9	464	7	7	41,680	6,208	3,656	554	10,418	2,262	2,471	1,872	6,605	17,021
	" " OF PRECEDING YEAR.	488	15	473	115	117	31,686	6,081	2,733	394	9,208	2,105	2,307	1,954	6,366	15,574
	DIFFERENCE . . . . .	-15	-6	-9	-108	-110	+9,974	+125	+923	+160	+1,208	+157	+164	-83	+239	+1,447
<b>C.—MANGANESE.</b>																
Central Provinces	Nagpur . . . . .	18	3	15	...	...	Tons. 125,230	1,194	906	5	2,105	323	240	29	592	2,697
	Bhandara . . . . .	9	...	9	...	...	78,840	289	210	...	499	482	402	20	964	1,463
	Balaghat . . . . .	8	...	8	...	...	104,581	1,119	638	42	1,799	217	205	15	437	2,236
	Chhindwara . . . . .	2	1	1	...	...	16,517	88	78	...	163	35	22	1	58	224
	TOTAL . . . . .	37	4	33	...	...	395,168	2,690	1,832	47	4,669	1,057	929	65	2,051	6,620
Madras . . . . .	Vizagapatam . . . . .	8	3	5	...	...	54,758	1,319	717	24	2,080	505	406	70	981	3,041



Bombay . . . . .	Panch Mahals . . . . .	2	1	1	...	...	43,538	273	137	23	432	597	381	61	939	1,371
	GRAND TOTAL (MANGANESE) FOR 1912.	47	8	39	...	...	423,464	4,281	2,686	94	7,061	2,159	1,616	196	3,971	11,032
	" " OF PRECED- ING YEAR.	44	5	39	23	39	441,426	5,347	3,387	128	8,862	1,785	1,103	134	3,023	11,884
	DIFFERENCE . . . . .	+3	+3	...	-23	-38	-17,962	-1,066	-701	-34	-1,801	+374	+513	+62	+949	-852
							D.—LIMESTONE.									
							Tons.									
Central Provinces . . . . .	Jabalpur, Katni . . . . .	20	1	19	...	...	91,739	703	762	63	1,527	404	631	44	1,079	2,606
Panjab . . . . .	Hoshiarpur . . . . .	1	...	1	...	...	45	40	...	...	40	43	...	...	43	83
	GRAND TOTAL (LIMESTONE) FOR 1912.	21	1	20	...	...	91,784	742	762	63	1,567	446	631	44	1,121	2,688
	" " OF PRECED- ING YEAR.	21	1	20	27	30	92,692	870	973	176	2,019	581	792	80	1,453	3,472
	DIFFERENCE . . . . .	...	...	...	-27	-30	-908	-128	-211	-113	-452	-135	-161	-36	-332	-784
							E.—SALT.									
							Tons.									
Panjab . . . . .	Shahpur . . . . .	1	...	1	...	...	5,486	18	16	4	38	...	...	...	...	33
	Jhelum . . . . .	2	...	2	1	2	115,615	411	349	54	814	50	...	...	50	364
	Mianwali . . . . .	1	...	1	1	2	10,132	52	...	16	68	...	...	...	...	68
	GRAND TOTAL (SALT) FOR 1912.	4	...	4	2	4	131,233	481	365	74	920	50	...	...	50	970
	" " OF PRECED- ING YEAR.	4	...	4	...	...	124,603	454	349	54	857	33	...	...	33	890
	DIFFERENCE . . . . .	...	...	...	+2	+4	+6,630	+27	+16	+20	+63	+17	...	...	+17	+80

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 1912.

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	Mogok	8	...	8	F.—GEMS.		Carats. 250,987	769	...	...	769	938	...	...	938	1,707		
					(a) Rubies.	...											...	
	Mogok				(b) Sapphires.	...											...	18,552
	Mogok				(c) Spinels.	...											...	53,706
	TOTAL	8	...	8	...	...	769	...	...	769	938	...	...	938	1,707			
Madras	Kurnool	1	...	1	(d) Diamonds.		2	7	5	..	12	...	...	...	...	13		
	GRAND TOTAL (Gems) FOR 1912.	9	...	9	...	...	323,247	776	5	...	781	938	...	...	938	1,719		
	" " OF PRECEDING YEAR.	7	6	1	...	...	288,216	708	7	2	717	825	...	...	825	1,542		
	DIFFERENCE	+2	-6	+8	...	...	+35,031	+68	-2	-2	+64	+113	...	...	+113	+177		

G.—SLATE.

							Tons.										
Bihar and Orissa	Monghyr	6	...	6	...	...	2,000	30	24	...	54	192	32	...	224	278	
Panjab	Kangra	5	...	5	9	10	5,015	112	...	...	112	221	65	58	344	456	
	Gurgaon	5	...	5	4	9	2,976	141	...	38	179	57	...	9	66	345	
TOTAL		10	...	10	13	19	7,991	253	...	38	291	278	65	67	410	701	
GRAND TOTAL (SLATE) FOR 1912.		16	...	16	13	19	9,991	283	24	38	345	470	97	67	634	979	
" " OF PRECEDING YEAR.		14	...	14	9	9	7,135	199	23	29	251	396	80	94	570	821	
DIFFERENCE		+2	...	+2	+4	+10	+2,856	+84	+1	+9	+94	+74	+17	-27	+64	+158	
							H.—GOLD.										
							Ozs.										
Madras	Anantapur	3	3	...	...	...	7,269	535	...	...	535	880	298	43	1,221	1,766	
TOTAL of preceding year		4	3	1	3	3	8,277	560	...	...	560	700	69	45	814	1,374	
DIFFERENCE		-1	...	-1	-3	-3	-1,008	-25	...	...	-25	+180	+229	-9	+407	+382	
							I.—IRON.										
							Tons.										
Bihar and Orissa	Singhbhum	1	...	1	1	4	79,083	775	500	125	1,400	50	25	25	100	1,600	
Central Provinces	Jabalpur	1	...	1	...	...	300	...	4	4	8	6	20	8	32	40	
GRAND TOTAL (IRON) FOR 1912.		2	...	2	1	4	79,383	775	504	129	1,408	56	45	31	132	1,640	
" " OF PRECEDING YEAR.		2	...	2	...	...	36,601	351	25	37	413	545	410	...	955	1,368	
DIFFERENCE		...	...	...	+1	+4	+42,782	+424	+479	+92	+995	-489	-365	+31	-823	+172	

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 1912.

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>J.—WOLFRAM.</b>																
							Cwts.									
Barma . . . . .	Tavoy . . . . .	28	...	28	...	...	25,397	950	18	1	969	1,048	128	10	1,186	2,155
Central Provinces . . . . .	Nagpur . . . . .	1	...	1	...	...	4	4	8	...	12	1	4	...	5	17
	<b>GRAND TOTAL (WOLFRAM) FOR 1912.</b>	<b>29</b>	<b>...</b>	<b>29</b>	<b>...</b>	<b>...</b>	<b>25,401</b>	<b>954</b>	<b>26</b>	<b>1</b>	<b>981</b>	<b>1,049</b>	<b>132</b>	<b>10</b>	<b>1,191</b>	<b>2,172</b>
	" " OF PRECEDING YEAR.	4	1	8	...	...	8,394	388	...	5	393	152	...	...	152	545
	<b>DIFFERENCE . . . . .</b>	<b>+25</b>	<b>-1</b>	<b>+21</b>	<b>...</b>	<b>...</b>	<b>+17,007</b>	<b>+566</b>	<b>+26</b>	<b>-4</b>	<b>+588</b>	<b>+897</b>	<b>+132</b>	<b>+10</b>	<b>+1,039</b>	<b>+1,627</b>
<b>K.—MAGNESITE.</b>																
							Tons.									
Madras . . . . .	Salem . . . . .	1	...	1	...	...	15,379	399	466	165	1,080	69	21	5	95	1,125
	TOTAL of preceding year	1	...	1	...	...	3,490	150	105	33	288	24	10	5	39	327
	<b>DIFFERENCE . . . . .</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>+11,889</b>	<b>+249</b>	<b>+361</b>	<b>+132</b>	<b>+792</b>	<b>+45</b>	<b>+11</b>	<b>...</b>	<b>+56</b>	<b>+798</b>

		L.—CHROMITE.														
Baluchistan . . .	Quetta-Pishin . . . . .	2	...	2	...	...	Cwts. 120	5	...	...	5	4	...	...	4	9
	TOTAL of preceding year . . .	4	1	3	4	5	5,880	8	...	...	8	1	...	...	1	9
	DIFFERENCE . . . . .	-2	-1	-1	-4	-5	-5,260	-3	...	...	-3	+3	...	...	+3	...
		M.—COPPER ORE.														
Bihar and Orissa . . .	Singhbhum . . . . .	1	1	...	1	2	Tons. 8,984	593	...	...	593	380	173	45	597	1,190
	TOTAL of preceding year . . .	1	1	...	1	4	2,079	423	313	51	787	533	...	3	536	1,323
	DIFFERENCE . . . . .	...	...	...	...	-3	+6,905	+170	-313	-51	-194	-153	+173	+43	+61	-133
		N.—FULLER'S EARTH.														
Central Provinces . . .	Jabalpur . . . . .	1	...	1	...	...	Tons. 98	...	...	...	...	...	...	...	...	...
	TOTAL of preceding year . . .	1	...	1	1	1	113	...	...	...	...	...	...	...	...	...
	DIFFERENCE . . . . .	...	...	...	-1	-1	-20	...	...	...	...	...	...	...	...	...
		O.—CLAY.														
Central Provinces . . .	Jabalpur . . . . .	3	...	3	1	1	Tons. 18,285	39	55	...	94	27	9	...	36	130
	TOTAL of preceding year . . .	3	1	2	1	1	14,927	27	46	...	73	21	7	...	28	101
	DIFFERENCE . . . . .	...	-1	+1	...	...	+3,358	+12	+9	...	+21	+6	+2	...	+8	+29
		P.—BAUXITE.														
Central Provinces . . .	Jabalpur . . . . .	1	...	1	...	...	Tons. 950	12	20	...	33	4	...	6	10	43
	TOTAL of preceding year . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	DIFFERENCE . . . . .	+1	...	+1	...	...	+950	+13	+20	...	+33	+4	...	+6	+10	+43

\* Figures included with those of Central Provinces Limestone.

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 1912.

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.
Madras	Kurnool	1	...	1	...	...	160	18	14	8	35	3	3	...	6	41
	TOTAL of preceding year	2	1	1	...	...	4	19	9	3	25	2	2	...	4	29
	DIFFERENCE	-1	-1	...	...	...	+156	...	+5	+5	+10	+1	+1	...	+2	+13
Burma	Mergui	1	...	1	...	...	1,285	70	...	...	70	85	...	...	85	155
	Tavoy	1	...	1	...	...	80	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (TIN) FOR 1912.	2	...	2	...	...	1,265	70	...	...	70	85	...	...	85	155
	" " OF PRECEDING YEAR.	2	1	1	...	...	283	36	...	...	36	37	...	...	37	73
	DIFFERENCE	...	-1	+1	...	...	+982	+34	...	...	+34	+48	...	...	+48	+82

\* Labour figures included with those for Wolfram.

						<b>S.—STEATITE.</b>												
						Cwts.												
Central Province	Jabalpur	1	...	1	...	...	11,200	24	36	...	60	4	8	...	12	72		
	TOTAL of preceding year	3	...	3	...	2	12,136	31	12	11	54	22	13	...	35	89		
	DIFFERENCE	-2	...	-2	-2	-2	-936	-7	+24	-11	+6	-18	-5	...	-23	-17		
							<b>T.—GRAPHITE.</b>											
						Cwts.												
Madras	Ramad	1	...	1	...	...	...	4	...	...	4	6	2	...	8	12		
	TOTAL of preceding year	1	...	1	...	...	1,076	10	1	...	11	2	12	...	14	25		
	DIFFERENCE	...	...	...	...	...	-1,076	-6	-1	...	-7	+4	-10	...	-6	-13		
							<b>U.—CORUNDUM.</b>											
						Cwts.												
Madras	Trichinopoly	1	...	1	...	...	2,494	21	88	4	113	36	74	34	144	257		
	TOTAL of preceding year	1	...	1	...	...	2,167	30	120	75	225	10	30	25	65	200		
	DIFFERENCE	...	...	...	...	...	+327	-9	-32	-71	-112	+26	+44	+9	+70	-33		
							<b>V.—SAMARSKITE.</b>											
						Cwts.												
Madras	Nellore	1	...	1	...	...	29	...	...	...	...	...	...	...	...	...		
	TOTAL of preceding year	1	1	...	...	...	24	2	...	...	2	...	...	...	...	2		
	DIFFERENCE	...	-1	+1	...	...	+5	-2	...	...	-2	...	...	...	...	-2		

\* Figures included with that of Madras mica.

APPENDIX I—contd.

STATISTICS OF MINES AND MINERALS—contd.

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 1912.

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.	
	GRAND TOTAL (ALL MINERALS.)	1,147	299	848	426	723	Tons. 14,823,919 Cwts. 82,329 Ounces. 7,269 Carats. 323,247	65,133	37,211	1,636	103,980	36,838	19,296	4,168	60,322	164,302
	GRAND TOTAL OF PRECEDING YEAR.	1,058	313	745	548	914	Tons. 12,771,797 Cwts. 61,150 Ounces. 8,277 Carats. 283,216	59,471	32,662	1,503	93,656	32,577	16,269	3,814	52,680	146,336
	DIFFERENCE . . .	+89	-14	+103	-122	-191	Tons. +2,052,122 Cwts. +21,179 Ounces. -1,008 Carats. +35,031	+5,662	+4,549	+133	+10,324	+4,261	+3,027	+374	+7,642	+17,966



## APPENDIX I—contd.

Table No. 2.  
Number of mines opened and closed during the year ending 31st  
December 1912.

Province.	District.	Number of mines opened.	Number of mines closed.
<b>A.—COAL.</b>			
ASSAM . . . . .	Lakhimpur . . . . .	—	1
BALUCHISTAN . . . . .	Sibi . . . . .	4	1
BIHAR AND ORISSA . . . . .	Hazaribagh	Bokaro-Ramgarh . . . . .	2
		Ghridih . . . . .	...
	Manbhurn	Jharia . . . . .	39
		Raniganj . . . . .	24
TOTAL		71	8
BENGAL . . . . .	Burdwan-Raniganj . . . . .	18	3
CENTRAL PROVINCES . . . . .	Chhindwara . . . . .	2	...
PANJAB . . . . .	Jhelum . . . . .		1
		Shahpur . . . . .	1
TOTAL (COAL)		97	14
<b>B.—MICA.</b>			
BIHAR AND ORISSA . . . . .	Monghyr	Hazaribagh . . . . .	10
		Gaya . . . . .	237
			4
TOTAL		251	85
MADRAS . . . . .	Nellore		17
		Salem . . . . .	2
TOTAL		19	9
RAJPUTANA . . . . .	Ajmer-Merwara . . . . .	8	...
TOTAL (MICA)		278	94
<b>C.—MANGANESE.</b>			
CENTRAL PROVINCES . . . . .	Bhandara		2
		Nagpur . . . . .	3
TOTAL		5	5
MADRAS . . . . .	Vizagapatam . . . . .	...	1
TOTAL (MANGANESE)		5	6
<b>D.—LIMESTONE.</b>			
CENTRAL PROVINCES . . . . .	Jabalpur . . . . .	6	4
<b>E.—SALT.</b>			
PANJAB . . . . .	Jhelum . . . . .	...	1
<b>F.—GOLD.</b>			
BOMBAY . . . . .	Dharwar . . . . .	...	1
<b>G.—IRON.</b>			
CENTRAL PROVINCES . . . . .	Jabalpur . . . . .	...	1
<b>H.—WOLFRAM.</b>			
BURMA . . . . .	Tavoy . . . . .	4	...
<b>I.—GALENA.</b>			
MADRAS . . . . .	Kurnool . . . . .	...	1
<b>J.—BAUKITE.</b>			
CENTRAL PROVINCES . . . . .	Jabalpur . . . . .	...	1
<b>K.—GEMS.</b>			
MADRAS . . . . .	Kurnool . . . . .	...	1
<b>L.—CHROMITE.</b>			
BALUCHISTAN . . . . .	Quetta-Fishin . . . . .	...	1
GRAND TOTAL		390	125

APPENDIX I—*concl'd.*

Table No. 3.

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

YEAR.	Coal.	Manganese.	Mica.	Limestone.	Salt.
	Tons.	Tons.	Cwts.	Tons.	Tons.
1903	6,812,725	171,223	20,100	35,238	99,067
1904	7,561,333	138,733	21,320	50,347	107,413
1905	7,770,471	204,194	25,548	93,170	94,078
1906	9,112,663	436,442	50,438	43,336	118,023
1907	10,523,468	642,082	44,919	73,222	101,703
1908	12,149,020	494,942	46,203	101,569	93,779
1909	11,294,227	357,205	32,011	56,502	126,987
1910	11,387,716	463,669	21,375	81,253	119,887
1911	12,048,726	441,426	31,636	92,692	124,603
1912	14,044,363	423,464	41,660	91,784	131,233

Table No. 4.

The following table shows the amount of coal raised, the average number of persons working daily and the death-rates during the years 1903 to 1912 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.
1903	6,812,725	79,561	67	9.83	.84
1904	7,561,333	82,002	55	7.27	.67
1905	7,770,471	79,506	58	7.46	.72
1906	9,112,663	90,159	80	8.73	.89
1907	10,523,468	102,639	89	8.45	.86
1908	12,149,020	120,107	164	13.49	1.36
1909	11,294,227	109,291	119	10.53	1.03
1910	11,387,716	105,235	160	14.05	1.52
1911	12,048,726	106,598	143	12.23	1.33
1912	14,044,363	121,392	157	11.17	1.29

Table No. 5.

Statement showing the output of coal, the number of persons employed and the number of tons of coal raised per person employed in and about the coal mines of the principal coal-producing countries of the world.

YEAR.	Country.	Tons of coal raised.	Persons employed.	Tons raised per person employed.
1911	United Kingdom	271,378,124	1,032,702	263
1910	United States	447,655,535	725,030	617
"	Germany	218,861,550	694,216	315
"	Austria	32,292,112	131,066	292
"	France	37,040,262	196,786	188
"	Belgium	23,538,635	143,902	163
"	Nova Scotia	5,477,146	11,001	497
"	British Columbia	3,139,235	7,753	404
"	Australia	9,758,994	27,264	357
"	Natal	2,294,746	10,501	218
"	Transvaal	3,543,550	8,795	403
"	Japan	15,433,560	137,467	112
"	New Zealand	2,197,362	4,599	477
1909	Russia	...	...	...
		1,079,315,861	3,131,087	344
1912	British India	14,044,363	121,392	115

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

Table No. 1.

List of Fatal Accidents in mines regulated by the Indian Mines Act, 1901, during the year 1912.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
<b>EXPLOSIONS OF FIRE-DAMP—(1 death).</b>						
1	15th May, 8 A.M.	Bhowra Mine, Jamadoba P. O., Bihar and Orissa.	Eastern Coal Co. Ltd.	Tiku Singh, (m.), 46, Main-Header.	Coal	Deceased turned on a hand fan 48 feet from the face of a cross-out heading, which was full of gas. He fanned the gas back on to a naked light near the fan, an explosion occurred, and he was burned, dying four days afterwards. Inspection and inquiry made. See Report, page 6.
<b>FALLS OF ROOF AND SIDES—(79 deaths).</b>						
(a) Falls of roof—(35 deaths).						
2	11th January, 11 P.M.	Banakuri Mine, Chowkidanga P. O., Bengal.	South Konda Coal Co.	Purish Bauri, (m.), 60, Coal-cutter.	Coal	Deceased with some loading kamina went without orders into a road where a shot had been fired close to the tubs they were loading, in order to get some of the fallen coal. A small piece (20 lbs.) fell from the roof on to deceased's arm and broke his wrist. Blood poisoning set in and he died ten days later. His arm should have been amputated, but he refused to go to hospital for the purpose. Inspection and inquiry made.
3	25th January, 5 P.M.	North Kustore Mine, Kusunda P. O., Bihar and Orissa.	Kusunda and Nayadi Collieries, Ltd.	Janki Hazam, (m.), 45, Miner.	Coal	A piece of roof coal, measuring 5½' x 3' x 3' thick, fell from a height of 5' 6" upon deceased and killed him outright. He had entered the place without a light during prohibited hours with the object, it is surmised, of loading up some loose coal, as a basket only was found by his side. Inspection and inquiry made.
4	3rd February, 1-30 P.M.	Pathargada Mine, Bhujudih P. O., Bihar and Orissa.	Kohinoor Coal Co. Ltd.	Sonohand Kora, (m.), 28, Miner. Sohain Korin, (f.), 19; Mukta Korin, (f.), 14, Coal-carriers.	Coal	Five persons were working in the head end of a gallery when signs of roof weighting were heard. They made a dash for the entrance of the gallery, but were caught by an extensive fall of roof, measuring 19' long x 0½' wide x 3' thick. The three deceased were killed outright and the other two were seriously injured but recovered. Inspection and inquiry made.
5	8th February, 10 A.M.	Lodna Mine, Jharra P. O., Bihar and Orissa.	Lodna Colliery Co. Ltd.	Ramni Bhuia, (f.), 20, Coal-carrier.	Coal	Deceased's husband broke down a fence and commenced to work in the face of a gallery near the outcrop. The soft roof caved in and deceased who was filling a basket with coal was severely injured by the fall of about two tons of stone. She did not die until the 29th September, after giving birth to a child, and did not work again after the accident. Inspection and inquiry made.

APPENDIX II—*contd.*

Fatal Accidents, 1912—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
<b>FALLS OF ROOF AND SIDES—<i>contd.</i></b>						
<b>(a) Falls of roof—<i>contd.</i></b>						
6	12th February, 11-30 A.M.	Ledo Valley, West Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Birbahadur Paharia, (m.), 23, Basket-carrier.	Coal.	Whilst deceased was emptying a basket into a coal tub inside a "chamber" a fall of about half a ton of coal fell without warning from a height of 14 feet. His skull was crushed between the edge of the tub and the coal and he was killed on the spot. The sirdar was present at the time. Inspection and inquiry made.
7	17th February, 3 A.M.	New Tettaria Mine, Katrasgarh P. O., Bihar and Orissa.	New Tettaria Coal Co., Ltd.	Robi Bauri, (m.), 40, Coal-cutter.	Coal.	Roof coal was being taken down on a tram road whilst traffic of tubs was permitted to go on. Miners working inbye were disputing with those working at the roof coal for the possession of empty tubs when a piece of the roof coal, 2 feet thick, fell over an area 12' long by 4' wide. Deceased was killed on the spot and another miner was severely injured. Inspection and inquiry made.
8	23rd February, 2 P.M.	Lutchipur Mine, Sitarampur P. O., Bengal.	Lutchipur Coal Co., Ltd.	Kadi Manjhan, (f.), 23, Tub-filler.	Coal.	Deceased was standing at the mouth of a gallery when a stone, 3' 8" long × 10" to 2" at each end thick × 1' 6" high, fell from a height of 5 feet on to her. The place had been recently dressed down. She sustained a compound fracture of the leg. Her relatives refused proper treatment, and she was burned four days afterwards through their carelessness. The immediate cause of death was shock caused by the burning. Inspection and inquiry made.
9	26th February, 4-30 P.M.	Bhatgoria Mine, Jamshedpore P. O., Bihar and Orissa.	Aldih Coal Co., Ltd.	Mada Panks, (m.), 38, Coal-cutter.	Coal.	Whilst getting out the last portion of a coal pillar in "broken" workings deceased undercut too far and brought down about half a ton of roof coal from a height of 7 feet. The mass measuring about 3' × 3' × 15" thick, fell on him and fractured his spine. He died in hospital a fortnight later. The sirdar had warned him against undercutting only a few minutes before the accident. Inspection and inquiry made.
10	18th March, 6 P.M.	North Kustore Mine, Kustore P. O., Bihar and Orissa.	Raniganj Coal Association, Ltd.	Bhattu Roy, (m.), 25, Coal-cutter.	Coal.	Deceased was one of a number of miners engaged in the extraction of a pillar of coal in a "broken" district. He undercut the end of the pillar to a depth of three feet and was struck by the fall of about 2 tons of roof coal. The mass fell away from a pronounced "slip" and measured 6' × 3' × 2' 8" thick. Inspection and inquiry made.
11	27th March, 6-30 A.M.	North Kustore Mine, Kusunda P. O., Bihar and Orissa.	Kusunda Nayadi Collieries, Ltd.	Umrao Gossain, (m.), 32, Propping-coolie.	Coal.	Deceased was one of a gang of men who were employed in taking down roof coal and timbering the roof thus exposed. Whilst they were setting a prop under the roof a mass of coal, 7' × 6' × 3' thick, fell from a "slip" knocking out five props set beneath it. Deceased was caught by the fall and killed outright. Two other men were slightly injured. Inspection and inquiry made.

12	3rd April, 9 A.M.	Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Lokheang Tieng, (m), 30, <i>Basket-carrier.</i>	Coal . .	Whilst fifteen men were working in a "chamber," 48'x48'x13'-30" high, the roof coal began to weight. The sirdar gave the alarm and everyone ran out except deceased who delayed to pick up a basket and was buried by a fall of about 3 tons of coal. When extricated fifteen minutes later he was dead. Inspection and inquiry made.
13	5th April, 2 P.M.	Sibpur Mine, Charanpur P. O., Bengal.	Katras Jharis Coal Co., Ltd.	Binda Passi, (m), 35, <i>Underground sirdar.</i>	Coal . .	While drawing timber from under some roof coal, 2 feet thick, in a place where a pillar had been taken out, a sudden fall of the coal took place which swayed out four props, 17 feet long, three of which struck deceased and killed him on the spot. Inspection and inquiry made. <i>See Report, page 6.</i>
14	3rd May, 11 P.M.	Bhaga Mine, Jharis P. O., Bihar and Orissa.	Jharis Colliery Co., Ltd.	Abdul Meah, (m), 25, <i>Coal-cutter.</i>	Coal . .	Owing to the roof coal weighting three miners were prevented by the sirdar from commencing to load fallen coal at the edge of the goaf. He fenced the place off and told the men to await his return. Some two hours later deceased went through the fence to see the condition of the roof, and was killed on the spot by a fall of roof coal, 8 feet long by 2'-8" wide by 4' thick, fringing a pillar on the edge of the goaf. Inspection and inquiry made.
16	17th May, 1 P.M.	West Gopalchak Mine, Kusunda P. O., Bihar and Orissa.	Gopalchak Coal Co., Ltd.	Manwa Chamarin, (f), 20, <i>Coal-carrier.</i>	Coal . .	Whilst a miner was robbing coal from the corner of a pillar in fenced off workings, roof coal, 9 inches thick, fell over an area about 6 feet in diameter. Deceased, who carried coal for the miner, was struck on the head and killed on the spot. The miner absconded. Inspection and inquiry made.
10	30th May, 4 A.M.	Bullari Mine, Jharis P. O., Bihar and Orissa.	Khas Jharis and Bullari Coal Concern.	Kunjai Ganda, (m), 30, <i>Sirdar.</i> Dukhni Gandsin, (f), 25, <i>Coal-carrier.</i>	Coal . .	The deceased sirdar deliberately removed a fence set round an old goaf in order that the woman, who was his wife, might pick up some coal from the goaf. A fall of roof, 15'x6'x2' 8", occurred killing both deceased outright and injuring two other persons. The place appeared to have been well timbered and it is probable that work on a pillar near by caused the roof to fall. Inspection and inquiry made.
17	6th August, 1 P.M.	Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Sambhu Santal, (m), 24, <i>Basket-filter.</i>	Coal . .	Deceased was caught by a fall of about two tons of coal which came from a smooth parting in the roof not previously disclosed. The sirdar on hearing the roof coal weighting gave the alarm, but deceased continued working; death was instantaneous.
18	20th August, 2 A.M.	Jamdoba Mine, Jamdoba P. O., Bihar and Orissa.	Indian Collieries Syndicate, Ltd.	Rangu Bhuia, (m), 32, <i>Coal-cutter.</i>	Coal . .	Whilst commencing a new gallery where the roof was unsound a piece of shale, 7'x4' 6" x 13", weighing two tons, fell from the roof and killed deceased on the spot. The sirdar who gave instructions for work there was fined and dismissed. Inspection and inquiry made.
19	24th August, 5 P.M.	Lowar Kusunda Mine, Kusunda P. O., Bihar and Orissa.	Kusunda and Nayadi Collieries, Ltd.	Surhu Munda, (m), 18, <i>Coal-cutter.</i>	Coal . .	Deceased and another miner were commencing to drive a pair of galleries through a large pillar in a "broken" area. The galleries were only two feet apart, and deceased cut away the rib in between and brought down roof coal, measuring 9'x2' 6" x 2' 6" and weighing about two tons. He was struck on the head and died from the injury about two hours later. Inspection and inquiry made.
20	6th September, 6-30 P.M.	Bhagaband Mine, Jharis P. O., Bihar and Orissa.	Borrea Coal Co., Ltd.	Dukhi Singh, (m), 25, <i>Coal-cutter.</i>	Coal . .	Whilst outting side coal under orders from a sirdar, deceased undercut to a depth of four feet in a seam 7' high. Roof stone, 2' 8" x 1' 6" x 4" thick, fell on his head and killed him on the spot. The sirdar who had seen the place just before the accident was fined and dismissed. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1912—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
<b>FALLS OF ROOF AND SIDES—contd.</b>						
<b>(a) Falls of roof—contd.</b>						
21	8th September, 8 A.M.	Loyabad Mine, Bansiara P. O., Bihar and Orissa.	Barakar Coal Co., Ltd.	Kehali Dhobi, (m.), 25, Coal-cutter.	Coal	Deceased deliberately broke down a fence and accompanied by another miner and two carriers was about to rob coal from a pillar. No sooner had he sounded the roof than a mass of coal, 18' x 4' x 1' thick and weighing three tons, fell and killed him on the spot. Inspection and inquiry made.
22	24th September, 5 A.M.	Kendwadhi Mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Jagnarnath Chamar, (m.), 25, Coal-cutter.	Coal	Deceased and another miner were ordered to load dust inside a fence close to a pillar under extraction. They opened the fence and loaded six tubs of coal from an abandoned stump on the edge of the goaf. Some 5 cwts. of coal fell from a height of 10 feet and struck deceased on the head fracturing his skull. He was killed on the spot. The sirdars and the other members of the gang were fined and dismissed. Inspection and inquiry made.
23	27th September, 12-30 A.M.	North Kustore Mine, Kustore P. O., Bihar and Orissa.	Raniganj Coal Association, Ltd.	Pokhan Mesh, (m.), 45, Coal-cutter.	Coal	Whilst deceased was standing near a pillar in a pillar cutting district some 5 tons of "Jhamma" coal fell from the roof and side swaying out three vertical props. He received injuries which resulted in death a few hours later. Sprags would have prevented the accident whereas vertical props failed to do so. Inspection and inquiry made.
24	9th November, 8 P.M.	Barari Mine, Janadoba P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Sheo Ratan Dasadh, (m.), 30, Sirdar.	Coal	Whilst some forty persons were loading out coal from a pillar which had been "dropped" in a seam 28' thick, the roof began to weight. All ran out except deceased who remained behind apparently to watch developments and was killed by a fall of roof stone, measuring 60' x 10' x 12' to 30' thick. Inspection and inquiry made.
25	13th November, 11 A.M.	Asansol Mine, Asansol P. O., Bengal.	Ghusik and Muslia Collieries, Ltd.	Nathoo Khayra, (m.), 22, Propping mistri.	Coal	Deceased entered, without instructions, an old road which was fenced off, in order to knock out some props, which he intended to set in another place. He had knocked out two and as he was knocking out the third a stone, 1' 3" x 1' 0" x 6", fell. He died three hours later from injuries received. Inspection and inquiry made.
26	16th November, 1 A.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway	Habibullah Khan, (m.), 30, Coal miner. Ahmad Ali, (m.), 22, Coolie.	Coal	The deceased Habibullah was cutting coal when a fall of roof occurred, which fell on him crushing his head and chest. The deceased Ahmad Ali was also injured in the leg. The former was killed at once and the latter died three months later.
27	20th November, 8-30 A.M.	Bhagaband Mine, Jbaria P. O., Bihar and Orissa.	Borra Coal Co., Ltd.	Maksadan Mahato, (m.), 30, Coal-cutter.	Coal	After the miners and sirdar had left the mine deceased returned, unknown to them, to cut a few more baskets full to fill his tub. No sooner had he begun to cut coal at the corner of a pillar where he worked in a new pillar cutting district, than a fall of side coal and roof shale came over. He was struck by a slab of shale, measuring 7' 6" x 8' 6" x 4", and died shortly after from a fracture of the skull. Inspection and inquiry made.

28	23rd November, 7 A.M.	Kuordih Mine, Kalipahari P. O., Bengal.	Kuordih Coal Co., Ltd.	Khidon Khora, (m.), 28, <i>Coal-cutter.</i>	Coal	Deceased was taking off a piece of roof coal at the corner of a pillar and was standing on top of his basket cutting it when it came away. His foot slipped off the basket and a piece weighing about 15 cwts. struck him and smashed his leg. He was taken to hospital where he died next day. Inspection and inquiry made.
29	25th November, 4-30 A.M.	Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Shadai Teli, (m.), 30, <i>Coal-trammer.</i>	Coal	Deceased was walking up an opening preparatory to recommencing work when about a ton of dirt fell suddenly on to him and killed him. There was a bolt hole within four feet. The "Baskawalla" gave warning but the fall and the warning were practically simultaneous.
30	29th November, 5-30 A.M.	West Gopalichak Mine, Kusunda P. O., Bihar and Orissa.	Gopalichak Coal Co., Ltd.	Nagu Singh, (m.), 30, Churu Gope, (m.), 40, <i>Coal-carriers.</i>	Coal	The two deceased went illegally through a fence into the goaf either to cut coal or to pick up fallen coal, and were killed by the fall of a mass of roof coal, about 40 feet square and 6 feet thick, and weighing some hundreds of tons. Inspection and inquiry made.
31	16th December, 7-50 P.M.	Angarpatra Mine, Katrasgarh P. O., Bihar and Orissa.	Union Coal Co., Ltd.	Moni Meah, (m.), 28, <i>Coal-cutter.</i>	Coal	Whilst getting coal in a pillar-cutting district deceased undercut the stone band and top coal until a mass of stone and coal, 6' 8" x 3' x 16", fell away from a joint and knocked him down inflicting injuries from which he died a few hours later. Inspection and inquiry made. See Report, page 7.
(b) Falls of sides—(44 deaths).						
32	10th January, 6 A.M.	Tikak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Ramanandan, (m.), 27, <i>Coal-filler.</i>	Coal	Deceased was filling baskets from a large heap of coal and stone when a piece of fallen stone weighing about 10 cwts. slipped down from the rise side and pinned him against the lower wall of the "chamber." He sustained fractures of both thighs and dislocation of both hip joints and died on the 24th February. Inspection and inquiry made.
33	18th January, 8 A.M.	Pagayo Mine, Tavoy P. O., Burma.	E. Crisp & Co.	Ah Taik, (m.), 25, Ah Toon, (m.), 30, <i>Miners.</i>	Wolfram	Whilst undercutting in an open cutting the two deceased were killed on the spot by a fall of side. Inspection and inquiry made.
34	18th January, 8 P.M.	West Wagon, Tavoy P. O., Burma.	C. Soo Don	Ah Hin, (m.), 26, <i>Minor.</i> Maung Gya, (m.), 28, <i>Coolie.</i>	Wolfram	Whilst undercutting in the face of an open cutting the two deceased were killed on the spot by a fall of side. Inspection and inquiry made.
35	1st February, 8-30 A.M.	Sudamdih Mine, Bhujudih P. O., Bihar and Orissa.	Empire Coal Co., Ltd.	Sona Gope, (m.), 35, Deya Gope, (m.), 30, <i>Stone-cutters.</i>	Coal	A mass of earth, weighing about 100 tons, slipped from the side of a quarry which had recently been sloped to an angle of 60° and buried deceased who were working below. A slight percolation of water from an adjoining nallah had affected the side and facilitated collapse. Inspection and inquiry made. See Report, page 7.
36	5th February, 9 P.M.	Salanpur Mine, Sitarampur P. O., Bengal.	Borraea Coal Co., Ltd.	Naran Ghatwal, (m.), 21, <i>Coal-cutter.</i>	Coal	While in the act of cutting coal a piece came away and fell on deceased's right thigh causing injuries from which he died the following day.
37	11th February, 7 A.M.	Kendwadih Mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Gonori Rajwar, (m.), 38, <i>Coal-cutter.</i>	Coal	In the course of his work in a "broken" district deceased brought down a mass of some two tons of coal from a pillar. The coal knocked out a prop 17 feet in length which fell on him and killed him. Inspection and inquiry made.

APPENDIX II—*contd.*

Fatal Accidents, 1912—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
<b>FALLS OF ROOF AND SIDES—<i>contd.</i></b>						
<b>(b) Falls of sides—<i>contd.</i></b>						
38	24th February, - 8-20 A.M.	No. 2 Clay pit, Jabalpur P. O., Central Provinces.	Perfect Pottery Co., Ltd.	Dularia Kachin, (f), 25, <i>Clay-carrier.</i> Samalia Chamar, (m.), 24, <i>Labourer.</i>	Clay	During the firing of a shot the two deceased took refuge under the side of an abandoned portion of a quarry. The concussion set up by the blast caused the side, which was insecure through weathering, to fall upon them causing such serious injuries that they both succumbed the same day. Inspection and inquiry made.
39	7th April, 6 A.M.	Barari Mine, Jamadoba P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Dubraj Bauri, (m.), 25, <i>Miner.</i>	Coal	Deceased worked with others at a "knob" of coal which was being removed in the course of pillar extraction. Owing to their having improperly undercut the "knob" the sirdar removed them and set them to cut floor coal further back. Deceased disobeyed the orders and passing through the fence cut coal from the "knob." Whilst doing so a slab of coal, 2' 6" thick and weighing about 1½ tons, fell on him and killed him on the spot. Inspection and inquiry made.
40	18th April, 1-40 P.M.	Bhulanbarari Mine, Jharia P. O., Bihar and Orissa.	Bhulanbarari Coal Co., Ltd.	Bilasha Bilaspuri, (f), 23, <i>Coal-carrier.</i>	Coal	Deceased went through a fence and whilst there was killed by the fall of about 5 tons of coal from the side of a pillar 25 feet high. Inspection and inquiry made.
41	30th April, 11 A.M.	Hermyingyi Mine, Tavoy P. O., Burma.	Hermyingyi Mining Co., Ltd.	Wong Sheg, (m.), 25, Wong Htwes, (m.), 28, <i>Miners.</i>	Wolfram	The two deceased were undercutting a hanging wall in an open cutting when they were killed on the spot by a fall of side. Inspection and inquiry made.
42	30th April, 5 P.M.	Budha Mine, Ramgarh P. O., Bihar and Orissa.	Sadananda Banerji	Jarni Kurmin, (f), 50, <i>Coal-carrier.</i>	Coal	Deceased was working in a quarry and was killed by the fall of overburden. The excavation had approached too near the edge of an adjacent quarry worked by another owner. Inspection and inquiry made.
43	20th May, 10 A.M.	Tiyak Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Gathuri Raighotar, (m.), 30, <i>Basket-filler.</i>	Coal	Three shots had been fired in a "chamber" by the head sirdar who afterwards examined the place and declared it safe. About an hour later whilst both the opening sirdar and the opening man were present a mass of about a ton of coal fell from the side of the opening from a height of 12 feet. Whilst running out deceased was knocked down 6 feet from the bolt hole, and killed on the spot. Inspection and inquiry made.
44	30th May, 1 P.M.	Belrai Mine, Sitarampur P. O., Bengal.	New Beerbhun Coal Co., Ltd.	Aklu Lohar, (m.), 50, <i>Miner.</i> Kumuda Loharin, (f), 13, <i>Coal-carrier.</i>	Coal	The deceased, Aklu, deliberately crossed over a stone, taking Kumuda and another child with him. He commenced to rob the corner of a pillar, when about 1½ tons of coal fell suddenly. He died a few minutes after being brought to the surface. Kumuda was killed outright. The other child was injured, but recovered. Inspection and inquiry made.



45	4th June, 2 P.M.	Meke Myebye Mine, Tavoy P. O., Burma.	Lim Kyeo Yan	Ah Pwa, (m.), 25, Ah Lwin, (m.), 22, Shang Eng, (m.), 22, I. Shang, (m.), 30, <i>Miners.</i>	Wolfram	Whilst getting ore from an open cutting the deceased were killed on the spot by a fall of earth due to a dangerous method of working in unsupported ground and to a lack of proper supervision. Inspection and inquiry made.
46	28th June, 2-30 P.M.	Gopalchak Mine, Jharia P. O., Bihar and Orissa.	Gopalchak Coal Co., Ld.	Kaila Manjhi, (m.), 34, <i>Coal-cutter.</i>	Coal	A miner and a sirdar were engaged in bringing down a mass of side coal, 6' x 4' x 2', from a pillar in a pillar cutting district. When the coal fell it knocked out two props, 13 feet in length, and the end of one of these props struck deceased on the head and killed him on the spot. Inspection and inquiry made.
47	18th August, 5 P.M.	Dhibri Mine, Ganwan P. O., Bihar and Orissa.	Ram Prosad	Resoni Ghatwarin, (f.), 14, <i>Coolie.</i>	Mica	Deceased was one of a chain of earth coolies taking out earth from an old excavation. She was standing under a bank of earth, 13 feet high, which suddenly fell and smashed her knee. She died from shock while being taken to hospital. Inspection and inquiry made.
48	20th August, 2 P.M.	Loyabad Mine, Banjora P. O., Bihar and Orissa.	Barakar Coal Co., Ld.	Debi Lal Mullick, (m.), 19, <i>Coal-carrier.</i>	Coal	Deceased left his working place and accompanied by his mother and his brother was robbing coal from the corner of a pillar near the loading siding, when a mass of coal, 9' x 5' x 1'3" and weighing about 2 tons, fell from a "slip" and killed him on the spot. His father was the sirdar in charge of the mine and denied complicity, but was fined and dismissed. Inspection and inquiry made.
49	11th September, 11 A.M.	Chanck Mine, Barakar P. O., Bihar and Orissa.	Bengal Coal Co., Ld.	Fathi Manjhi, (m.), 48, <i>Coal-carrier.</i>	Coal	A piece of coal, measuring 7' x 7' x 1', that had just been detached from the side of a pillar fell against a prop and knocked it out. This in turn knocked out another prop which struck the deceased on the abdomen. He died from the effects the following day. Inspection and inquiry made.
50	11th September, 12 Midnight.	Gopalchak Mine, Jharia P. O., Bihar and Orissa.	Gopalchak Coal Co., Ld.	Sanihari Turin, (f.), 17, <i>Coal-carrier.</i>	Coal	Whilst two coal-cutters were robbing coal from the corner of a pillar a mass of coal, measuring 5' 6" x 3' 6" x 2' and weighing 1½ tons, fell from a "slip" upon deceased who was filling a basket. She sustained a fracture of the thigh and laceration of the leg and ankle and died from shock 2½ hours later. Inspection and inquiry made.
51	12th September, 3 A.M.	Kurhurbari Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co.	Urdu Bhuiya, (m.), 55, <i>Coal-cutter.</i>	Coal	Deceased appears to have been engaged in cleaning up some dirt when a piece of stone, which another miner was wedging off, rolled against him causing injuries from which he died shortly after while being taken to hospital. Inspection and inquiry made.
52	6th October, 2 P.M.	Kusunda Mine, Kusunda P. O., Bihar and Orissa.	Kusunda and Nayadi Collieries, Ld.	Juhiya Karmi, (f.), 15, Sonia Karmi, (f.), 20, Akl Ghatwal, (f.), 24, <i>Coal-loaders.</i>	Coal	The deceased were employed in loading small coal in a pillar cutting district. They removed a fence and began to load coal on a travelling road which had become dangerous and had been fenced off some days before. Whilst doing so a slab of coal, 12' long x 1'-2" thick and 16" high, fell from a pillar and killed them on the spot. Inspection and inquiry made.
53	16th October, 12 Noon.	Baraboni Mine, Chhannapur P. O., Bengal.	Ghusik and Muslia Col- lieries, Ld.	Jugal Bauri, (m.), 41, <i>Coal-cutter.</i> Rangi Baurin, (f.), 30, <i>Coal-carrier.</i>	Coal	A gang of four coal-cutters and three female carriers entered the mine and proceeded to the usual working place where they were dissatisfied with the positions of the empty tubs. They decided not to work that day and had walked out as far as the main haulage slope when the deceased miner, who was the headman, broke down a fence and took the gang inside to get a few baskets of coal for domestic use. No sooner had he commenced to cut coal from a pillar than a slab of coal, 12' high x 8' wide and 12" thick, fell over upon them. He and his wife were killed, two others were seriously injured and two were slightly injured. Inspection and inquiry made.

APPENDIX II—*contd.*

Fatal Accidents, 1912—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
<b>FALLS OF ROOF AND SIDES—<i>concl'd.</i></b>						
<i>(b) Falls of sides—concl'd.</i>						
54	17th October, 10 A.M.	Kanbauk Mine-Tavy P. O., Burma.	Badcliff & Co.	Young Yun, (m.), 30, Miner.	Wolfram	Deceased went to work in an abandoned open cutting unknown to the manager. Some 16 tons of earth fell from the side and killed him on the spot. Inspection and inquiry made.
55	21st October, 4 P.M.	Basi Mine, Kataungi P. O., Central Provinces.	Lala Gonosh Prosad	Sonkai, (f.), 40, Negi, (f.), 50, Coolies.	Manganese	The side wall of a boulder pit collapsed killing Sonkai and injuring Negi who died two days afterwards; another woman was also injured.
56	29th October, 8 A.M.	Pagaya Mine, Tavy P. O., Burma.	Rangoon Mining Co., Ld.	Ah Chee, (m.), 28, Miner.	Wolfram	Deceased was engaged in cleaning a fall of ground in an open cutting when a mass of from two to three cwt. of rock fell away from a height of 15 feet above and killed him on the spot. Inspection and inquiry made.
57	2nd November, 3 P.M.	Banahi Mine, Joba P. O., Bengal.	Phularitand Coal Co., Ld.	Lasa Manjhi, (m.), 25, Miner.	Coal	Deceased left his proper working place and in order to rob coal went through a fence to a dangerous place which had been fenced off by the manager's orders. A piece of coal, weighing about 6 cwt., fell on him from a height of 10 feet and injured him. He died in two hours. Inspection and inquiry made.
58	5th November, 12 Midnight.	Sanctoria Mine, Dihargurh P. O., Bengal.	Bengal Coal Co., Ld.	Dilla Singh, (m.), 30, Miner.	Coal	A sirdar noticed that a place was dangerous and told deceased and other miners not to work there. Deceased however attempted to cut coal at this place when the sirdar had gone away for fencing and a piece of coal, 4' x 3' x 1', fell from a height of 11 feet and killed him immediately. Inspection and inquiry made.
59	14th November, 6 A.M.	Dhruvabad Mine, Sitarampur P. O., Bengal.	New Manbhun Coal Co., Ld.	Rohana Manjhi, (m.), 26, Coal-cutter.	Coal	Deceased went through a fence into the goaf and had no sooner begun to cut coal from a pillar than about 2 tons of coal fell and killed him on the spot. Inspection and inquiry made.
60	13th December, 9 P.M.	North Kustore Mine, Kusunda P. O., Bihar and Orissa.	Kusunda and Nayadi Collieries, Ld.	Kaman Mesh, (m.), 25, Coal-cutter.	Coal	Deceased was accustomed to work on the night shift at a pillar in a "broken" district. As it had become dangerous this place was stopped by the overman during the day shift and fenced off. Whilst the day overman and the night sirdar were making safe another working place for the night shift deceased and three other persons passed through the fence and sat down. Shortly after a mass of coal, 13' x 20' x 20', fell from the pillar, killing deceased and severely injuring a woman. Inspection and inquiry made.
61	17th December, 9 P.M.	Khas Jharis Mine, Jharis P. O., Bihar and Orissa.	Khora Ramji	Lakshmi Manjhan, (f.), 20, Coal-loader.	Coal	Deceased went through a fence and was killed on the spot by the fall of a mass of coal which fell from a pillar 35 feet high. The mass measured 13' x 6' x 7' 3" and fell from smooth joints at a height of 7' 6" from the floor. Inspection and inquiry made.
62	19th December, 1-30 P.M.	Beko Mine, Jhumri Tilaya P. O., Bihar and Orissa.	Chagmull Lachminarain	Jharis Hazam, (m.), 20, Miner.	Mica	Deceased was killed by a fall of earth while washing himself in a part of the mine to which he had been forbidden to go owing to its being dangerous. Inspection and inquiry made.

IN SHAFTS—(24 deaths).

Whilst ascending or descending by machinery—(3 deaths).

63	27th April, 3 P.M.	Bejdih Mine, Sitarampur P. O., Bengal.	Equitable Coal Co., Ltd.	Shasi Bauri, (m.), 36, Pump khalasi.	Coal	One of the cages in a shaft had an open top and was fitted permanently with a square iron water bucket bolted to the floor of the cage. Deceased and another man were being pulled up slowly in order to examine the steam pipes. Both were sitting on the top of the frame of the cage. Deceased lost his balance and fell head first into the water bucket, a distance of 43'. His head came in contact with one of the bolts and he died in three hours. Inspection and inquiry made.
64	7th November, 5 A.M.	Saltore Mine, Dihargarh P. O., Bihar and Orissa.	Saltore Coal Co., Ltd.	Deodat Singh, (m.), 40, Miner.	Coal	The bucket was raised up the shaft before it had been properly steadied. It caught in some projection and deceased was thrown out of it. His body was found on a water landing in the shaft, 383 feet from the surface. He was killed on the spot. Inspection and inquiry made.

Falling into the shaft from the surface—(2 deaths).

65	15th May, 10-30 A.M.	Kendra Mine, Pandaveswar P. O., Bengal.	Samla and Kendra Collieries, Ltd.	Satish Akhuria, (m.), 24, Head Bankman.	Coal	As the banksman was pulling a tub out of the cage at the pit top the two front wheels came off the rails. Deceased ordered the engineman to raise the cage to let the tub fall out on to the pit bank. He then got into the cage. The tub fell out and fell down the pit. This lightened the cage which was then lifted 5 feet. Deceased got frightened and jumped. He just landed on the bank, but fell backwards and fell down the pit, which is 185 feet deep. He was killed instantly. Inspection and inquiry made.
66	26th July, 9 A.M.	Loyabad Mine, Bansjora P. O., Bihar and Orissa.	Barakar Coal Co., Ltd.	Chhedi Mesh, (m.), 35, Fitter.	Coal	Whilst deceased was standing on a head frame in course of erection the frame suddenly tilted and fell against the derrick pole. The jerk caused him to lose his hold and he fell to the bottom of the shaft, a distance of 120 feet, and was killed on the spot. Another workman clung to the frame and escaped. Inspection and inquiry made.

Falling from part of the way down—(11 deaths).

67	8th February, 12 Noon.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway	Melaram, (m.), 18, Coolie.	Coal	Deceased was engaged in assisting a carpenter to set timber in a road dipping at an angle of 52° when he slipped and fell to the bottom, a distance of nearly 400 feet. He was killed outright. Inspection and inquiry made.
68	19th March, 2-30 P.M.	Lodna Mine, Jharia P. O., Bihar and Orissa.	Lodna Colliery Co., Ltd.	Mohan Rowani, (m.), 20, Coal-cutter.	Coal	Whilst attempting to get into the bucket from a temporary platform in a sinking shaft, 380 feet deep, deceased's foot slipped and he fell to the bottom into water and was drowned. Inspection and inquiry made.
69	1st April, 10 P.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway	Bahadur, (m.), 35, Carpenter.	Coal	Deceased was getting out of a tub on a road dipping at an angle of 52° at a middle landing when by some mischance he slipped and fell to the bottom of the road, a distance of 350 feet. He was killed on the spot. Inspection and inquiry made.
70	10th May, 4-30 A.M.	Kendwadhi Mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Brihaspat Roy, (m.), 20, Stones-cutter.	Coal	Three men were engaged in cutting a hole for a buntin in the side of the shaft and were standing on the top of the cage for the purpose. By some means the deceased fell to the bottom, 80 feet below, and received injuries from which he died an hour later. The provision of shaft harness would have prevented the accident. Inspection and inquiry made.

APPENDIX II—*contd.*

Fatal Accidents, 1912—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
<b>IN SHAFTS—<i>contd.</i></b>						
<b>Falling from part of the way down—<i>concl'd.</i></b>						
71	26th May, 12 Noon.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway.	Kareem, (m.), 22, <i>Pack coolie.</i>	Coal	Deceased was climbing a haulage road, rising at an angle of 52°, against orders, when he slipped and fell a distance of about 260 feet. He was dead when found. Inspection and inquiry made.
72	8th June, 10-30 A.M.	Charanpur Mine, Charanpur P. O., Bengal.	Reliance Coal Co., Ltd.	Gora Manjhi, (m.), 17, <i>Miner.</i>	Coal	Deceased was descending the shaft in a cage together with another miner and the pumpman. The pumpman got out at the top seam at 119 feet and the cage went on down to the bottom seam at 269 feet. Deceased fell out somewhere, but the cause of the accident is unknown, for the other miner went away from the shaft at once and has not been heard of since. There were no safety chains on the cage to prevent persons falling out. Inspection and inquiry made.
73	18th August, 4-30 A.M.	Bejdi Mine, Sitarampur P. O., Bengal.	Equitable Coal Co., Ltd.	Santo Panjabi, (m.), 22, <i>Coolie.</i>	Coal	While deceased and two other men were making joints in a steam pipe range a screwed flange gave way, six pipe lengths further up the shaft, causing the pipe to drop about 5 or 6 feet. When this occurred deceased was standing on the top of the cage with one arm round the pipe and was screwing up a nut with his other hand. It seems that the falling pipes caused him to fall off the cage to the bottom of the shaft, a distance of about 200 feet. Although life lines were attached to the cage none of the men had one on at the time of the accident. The wrought-iron pipe and flange were not properly made. Inspection and inquiry made.
74	26th October, 6 P.M.	West Ghusik Mine, Kalipahari P. O., Bengal.	West Ghusik Coal Concern.	Bhoju Manjhi, (m.), 35, Chiru Manjhi, (m.), 30, <i>Coal-cutters.</i> Lakhi Manjhi, (f.), 13, <i>Carrier.</i>	Coal	In a shaft, 124 feet deep, where winding with double buckets is practised it is the custom when persons ride to use only one bucket and permit the other rope and chains to run loose. Whilst four persons were descending one of the loose chains attached to the ascending rope caught in one of the hooks of the descending bucket, and the latter was drawn up the shaft. Three of the occupants were precipitated to the bottom of the shaft. Two were killed on the spot and the third died an hour afterwards. One woman contrived to cling to the bucket and was drawn safely to the surface. Inspection and inquiry made.
75	13th December, 8 P.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway.	Safdarali, (m.), 22, <i>Miner.</i>	Coal	After getting out of the tram at a level landing deceased was going across a hinged pair of drop rails when he fell between the rails and a fixed girder, down a distance of 200 feet, on a slope of 60°, and was killed.

Things falling from the surface—(7 deaths).

76	19th April, 6 A.M.	Sripur Mine, Kalipahari P. O., Bengal.	Lodna Colliery Company, Ld.	Bali Ram Mahara, (m.), 37, Karu Mahara, (m.), 33, Ramu Mahara, (m.), 45, Lekhu Mahara, (m.), 20, <i>Sinkers.</i>	Coal
77	27th April, 6 A.M.	Anantapur Mine, Morriston P. O., Madras.	Anantapur Gold Fields, Ld.	Peeran Sahab, (m.), 36, <i>Hand jumper coolie.</i>	Gold
78	27th December, 5-30 A.M.	Narsamuda Mine, Asansol P. O., Bengal.	Sitarampur Coal Co., Ld.	Prem Hazam, (m.), 25, <i>Stone-cutter.</i>	Coal
79	27th December, 7 P.M.	Angarpatra Mine, Katrasgarh P. O., Bihar and Orissa.	Trigunait Brothers	Chatlal Singh, (m.), 40, <i>Pit sinker.</i>	Coal

Things falling from part of the way down—(2 deaths).

80	10th May, 6 A.M.	Dishargarh Mine, Dishargarh P. O., Bengal.	Equitable Coal Co., Ld.	Mohan Bauri, (m.), 35, <i>Miner.</i>	Coal
81	10th May, 7 A.M.	Rakha Hills Mine, Rakha Mines P. O., Bihar and Orissa.	Capo Copper Co., Ld.	Baser, (m.), 16, <i>Muck coolie.</i>	Copper

Suffocation by gases—(5 deaths).

82	4th May, 9 A.M.	Harold's No. 3 Mine, Sharigh P. O., Baluchistan.	W. C. Clements	Desambi, (m.), 88, <i>Sub-jamadar.</i>	Coal
83	10th May, 4-30 A.M.	Namdang Mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Charsombey Mokrani, (m.), 30, Omar Mokrani, (m.), 30, Nawab Mokrani, (m.), 30, <i>Coal-cutters.</i>	Coal
84	21st September, 12 Midnight.	Sanctoria Mine, Dishargarh P. O., Bengal.	Bengal Coal Co., Ld.	Kunja Lall Muchi, (m.), 24, <i>Stone-cutter.</i>	Coal

A sinking hopbit of the self-tipping type with an overall diameter of 4' 4½" containing a ton of stone collided with the frame of the folding door, the opening of which was 3' 8½" x 5' 6" at the surface. The catch locking the bow was damaged and the hopbit overturned discharging its contents into the shaft where 18 sinkers were at work. Three of them were killed outright, one died an hour later and three others were seriously injured. Inspection and inquiry made. See Report, page 8.

The winding driver unclutched, with the empty bucket at surface, not thinking the load would be sufficient to turn the drum. The bucket fell 100 feet and struck deceased. The injury was not at first considered serious.

Owing to the sinking kibble fouling the water shoot, a baulk, 4' x 10" x 6", on which the kibble landed and which was loose, was precipitated down the shaft and struck deceased, killing him instantly. Another man was injured. Inspection and inquiry made.

Whilst at work with a gang of sinkers, at the bottom of a sinking shaft, deceased was struck on the head by a stone which fell from a basket of rock which was being raised to the surface by a gang of coolies pulling a rope. He died a few hours later whilst on the way to hospital. Inspection and inquiry made. See Report, page 9.

While deceased and two women were descending a shaft which was 463 feet deep a stone fell from some place in the shaft on to the bonnet of the cage. The bonnet was bent in and deceased's head was injured by it. He died in three hours. The spot from where the stone fell could not be located. Inspection and inquiry made.

A stay plank, 4' x 8' x 1", holding a suction pipe fell and struck deceased on the head while he was at work at the shaft bottom 20 feet below and killed him. Inspection and inquiry made.

Deceased, without permission, entered a disused stenton containing black damp and was overcome. After strenuous and gallant attempts at rescue, his body was recovered about 24 hours later. Inspection and inquiry made.

Deceased were suffocated by the smoke and fumes from an underground fire which broke out one night owing to spontaneous combustion. The fan had been allowed by the fan and boiler attendants to drop to half speed and an important ventilation door was found afterwards to have been detached from its frame. These causes operated together to drive the smoke on to the deceased. Inspection and inquiry made.

Deceased had been excavating a foundation for a brick stopping in the rise workings. For some unknown reason he crossed a line of fences at No. 7 pit level and also fences lower down and was suffocated by carbonic acid gas in the old dip workings. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1912—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
<b>IN SHAFTS—contd.</b>						
<b>Explosives—(8 deaths).</b>						
85	23rd January, 10-30 A.M.	North Kustore Mine, Kusunda P. O., Bihar and Orissa.	Kusunda and Nayudi Col- lieries, Ld.	Munshi Halwai, (m.), 25, <i>Onsetter.</i>	Coal .	Although properly warned deceased and another man who was injured neglected to take shelter when a round of five dynamite shots was being fired at a distance of 72 feet from them. They were struck by the flying debris, deceased being killed on the spot. Inspection and inquiry made.
86	9th October, Between 3 and 4 P.M.	Corundum Mines, Kandampalayam P. O., Madras.	Govindji Odavaji Sait	Nachayi, (f.), 18, <i>Coolie.</i>	Corundum .	Deceased was standing 300 feet from a pit in which the shot hole was being fired. A small piece of stone blown out of the pit struck her on the head causing injuries from which she died in two days.
87	22nd October, 1-35 P.M.	Phularibed Mine, Jharis P. O., Bihar and Orissa.	Khas Jharis Coal Co.	Nobi Bux Menh, (m.), 19, <i>Pump khalasi.</i> Bhatas Lohar, (m.), 35, <i>Tindal.</i> Gunpat Rai, (m.), 40, <i>Sinking sirdar.</i>	Coal .	Gunpat Rai was testing detonators with a galvanometer, having dynamite near at hand. The other two deceased were sitting near him. An explosion occurred. The other two deceased were killed immediately and Gunpat Rai died in three hours. Inspection and inquiry made. <i>See Report, page 9.</i>
88	27th October, 11-45 A.M.	Jamgram Mine, Panuria P. O., Bengal.	Barakar Coal Co., Ld.	Bhagwan Mahato, (m.), 28, Kaila Singh, (m.), 27, <i>Sinkers.</i>	Coal .	Whilst a gang of twelve sinkers was engaged in loading rock and dressing the sides of a sinking shaft at a depth of about 100 feet an explosion occurred killing the two deceased and seriously injuring a third man. It is probable that the occurrence was due to an unsuspected misfire of dynamite. It was the practice to fire all shots electrically from the surface. Inspection and inquiry made.
89	21st November, 5 A.M.	Jamuria Mine, Nandi P. O., Bengal.	Equitable Coal Co., Ld.	Mahabir Passi, (m.), 46, <i>Miner.</i>	Coal .	Deceased lighted the fuse of a shot and told his mate to get out of the way. When the mate returned he could not see deceased and thought he had gone up the pit. The loading kamin came in to fill the coal and after filling five tubs discovered deceased dead under the coal. There was no evidence to show why deceased was caught by the shot. Inspection and inquiry made.
<b>Interruptions of water or falling into water.—(23 deaths).</b>						
90	11th July, 4-30 P.M.	Phularitand Mine, Katrasgarh P. O., Bihar and Orissa.	Phularitand Coal Co., Ld.	Hari Manjhi, (m.), 45, Naran Manjhi, (m.), 36, Salku Manjhi, (m.), 35, Herbal Rajwar, (m.), 35, Haris Napit, (m.), 40, <i>Cool-cutters.</i> Tejua Napit, (m.), 13, <i>Waiting coolie.</i> Bama Manjhi, (m.), 40, Samer Manjhi, (m.), 35,	Coal .	Whilst the deceased were working underground a heavy downpour of rain flooded the surface. A bank about a quarter of a mile away burst and the water unable to escape through a bridge near the incline poured into the workings. The rush of water was so great that they were unable to effect an escape and were drowned. Inspection and inquiry made. <i>See Report, page 9.</i>

Madan Manjhi, (m.), 38,  
 Chhata Manjhi, (m.), 35,  
*Coal-cutters.*  
 Faria Muchini, (f.), 16,  
 Karmi Manjhan, (f.), 25,  
 Nunki Manjhan, (f.), 25,  
 Dulia Manjhan, (f.), 19,  
 Charki Manjhan, (f.), 23,  
*Coal-carriers.*  
 Falia Bhuiani, (f.), 40,  
 Bhudia Bhuiani, (f.), 15,  
*Bailing women.*  
 Barki Manjhan, (f.), 32,  
*Coal-carrier.*  
 Lakhinarayan Manjhi, (m.),  
 30,  
*Miner.*  
 Taju Napit, (m.), 12,  
*Bailing coolie.*  
 3 unknown, (f.), 28, 30, 32,  
*Coal-carriers.*

HAULAGE—(16 deaths).

91	5th January, 8 A.M.	Jamadoba Mine, Jamadoba P. O., Bihar and Orissa.	Indian Collieries Syndi- cate, Ld.	Karamdhari Mahato, (m.), 30, <i>Hookman.</i>	Coal	Whilst attempting to jump on a moving train of loaded tubs deceased was crushed between the tubs and the side of the road receiving injuries from which he died an hour later. Inspection and inquiry made.
92	18th January, 1-30 A.M.	Minto No. 1 Mine, Nandi P. O., Bengal.	Minto Coal Co., Ld.	Nanku Passi, (m.), 30, <i>Sirdar.</i>	Coal	A set of tubs which were standing and being loaded on a gradient of 1 in 13 being insufficiently spragged were set loose by a tub bumping into them from the rear. Deceased was knocked over by them and sustained a fractured hip. He died from shock twelve days later. He was responsible for seeing that the tubs were safely secured. Inspection and inquiry made.
93	10th February, 8-30 P.M.	Noonodib Mine, Jamadoba P. O., Bihar and Orissa.	Bengal Iron and Steel Co., Ld.	Tripura Baurin, (f.), 30, Kheti Baurin, (f.), 25, <i>Dust women.</i>	Coal	Owing to a missed coupling two empty tubs ran wild for 300 feet down a haulage slope and struck the two deceased. Tripura Baurin died on the following day and Kheti Baurin sixteen days later. There was no second stop block or runaway point although attention had been drawn previously to this matter. Inspection and inquiry made.
94	17th February, 4 A.M.	New Teturia Mine, Katrasgarh P. O., Bihar and Orissa.	New Teturia Coal Co., Ld.	Abdul Khan, (m.), 80, <i>Bottom hookman.</i>	Coal	Owing to a broken haulage rope a train of ten tubs ran back down a slope of 1 in 7. Deceased was knocked over and killed on the spot. The fracture of the rope appears to have been due to the use of too large a capping. Inspection and inquiry made.
95	18th February, 10 A.M.	Jamadoba Mine, Jamadoba P. O., Bihar and Orissa.	Indian Collieries Syndicate, Ld.	Aina Manjhi, (m.), 14, <i>Coal-carrier.</i>	Coal	Owing to failure to sprag a train of seven loaded coal tubs, the train ran wild down a slight grade. The front tub tilted up and its contents were thrown out. Deceased was standing at the side of the road near a refuge hole and was struck on the head by a piece of flying coal about 10 lbs. in weight. His skull was fractured and he died on the spot. Inspection and inquiry made.
96	18th March, 2-30 P.M.	Murulidih Mine, Mohoda P. O., Bihar and Orissa.	Bengal Coal Co., Ld.	Bisu Mahato, (m.), 24, <i>Tub-pusher.</i>	Coal	Whilst a train of nine loaded tubs was being hauled up a slope the hook of a draw-bar broke and the tubs ran back into the mine. Deceased was killed and another man sustained a compound fracture of the leg. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1912—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
<b>HAULAGE—concl'd.</b>						
97	20th April, 11 P.M.	Ekra Khas Mine, Bansjora P. O., Bihar and Orissa.	Maharaja Monindra Chan- dra Nandi.	Sarbaria Manjhi, (m.), 45, <i>Coal-cutter.</i>	Coal	Thirteen empty tubs were standing against a wooden buffer on a haulage road dipping at 1 in 4. Whilst they were being loaded with coal the buffer broke and the tubs ran down the slope and crushed deceased against the side of the road. He succumbed to his injuries three days later. Inspection and inquiry made.
98	8th May, 2-30 A.M.	Mohpani Mine, Mohpani P. O., Central Provinces.	Great Indian Peninsula Railway.	Binnini, (f.), 30, <i>Coal-carrier.</i>	Coal	A set of five full tubs started off the engine bank with too much slack rope. The rope broke and the tubs ran wild. One tub was driven through the bottom landing and caught deceased who was lying there. She was killed on the spot.
99	30th May, 1 P.M.	Bhalgora Mine, Jharia P. O., Bihar and Orissa.	Bhalgora Coal Co., Ld.	Jogu Bhuia, (m.), 14, <i>Coal-carrier.</i>	Coal	Whilst a train of empty tubs was entering a landing the tubs derailed and deceased, who had run forward to claim a tub, was crushed to death against the side of the road by one of the derailed tubs. Inspection and inquiry made.
100	31st May, 8-30 P.M.	Ena Mine, Dhanbaid P. O., Bihar and Orissa.	North-West Coal Co., Ld.	Parbati, (f.), 35, <i>Coal dust loader.</i>	Coal	Whilst loading coal tubs in a siding underground deceased was crushed between two tubs, one of which was allowed to run uncontrolled into the siding. She sustained a compound fracture of the leg and died from shock two days later. Inspection and inquiry made.
101	4th June, 11-30 P.M.	Noonoodih Mine, Jamadoba P. O., Bihar and Orissa.	Bengal Iron and Steel Co., Ld.	Musabib Kahal, (m.), 22, <i>Hookman.</i>	Coal	Deceased was standing on a dip haulage slope ready to assist the empty train over a bad crossing when a draw-bar broke and eight tubs ran wild. He was crushed against the side of the road and received injuries from which he died twelve hours later. Inspection and inquiry made.
102	21st August, 5-30 P.M.	Bhutgoria Mine, Jamadoba P. O., Bihar and Orissa.	Aldih Coal Co., Ld.	Chowdaria Gope, (m.), 26, <i>Trolleyman.</i>	Coal	Deceased omitted to sprag the last tub left in a siding and whilst he was taking another tub down a grade, varying from 1 in 40 to 1 in 25, the last tub ran wild behind him for a distance of 150 feet and he was crushed between the two tubs, receiving injuries from which he died half an hour later. Inspection and inquiry made.
103	26th September, 6 P.M.	Dishargarh Mine, Dishargarh P. O., Bengal.	Equitable Coal Co., Ld.	Samai Manjhi, (m.), 25, <i>Onsetter.</i>	Coal	Deceased had just brought three out of four tubs to the pit bottom and had neglected to sprag the fourth tub which followed on and jammed his head between the third and fourth tubs. He died two hours afterwards. Inspection and inquiry made.
104	4th December, 10 P.M.	Khuldiha Mine, Girdih P. O., Bihar and Orissa.	Bengal Coal Co., Ld.	Bhattu Musohar, (m.), 18, <i>Coal-carrier.</i>	Coal	Deceased was loading a tub on a siding where loading was forbidden. Whilst another tub was being lowered by hand into the siding down a grade of 1 in 16, a wooden sprag broke and the tub ran wild for a distance of 70 feet. Deceased was knocked down and received injuries from which he died. Inspection and inquiry made.



108	13th December, 9 A.M.	Joba Mine, Kalipahari P. O., Bengal.	Eastern Coal Co., Ltd.	Mungri Manjhan, (f.), 40, <i>Dust kamia.</i>	Coal	Deceased and another dust kamia were taking a loaded tub down an incline of about 1 in 12 when a full tub was started by some means from the top and coming down behind them caught deceased between the buffers and broke her leg just below the knee. She died of shock while being taken to hospital. Inspection and inquiry made.
<b>UNDERGROUND MACHINERY—(1 death.)</b>						
106	10th July, 7 A.M.	Intchipur Mine, Sitarampur P. O., Bengal.	Danuda Coal Co., Ltd.	Dappu Bauri, (m.), 27, <i>Pump khalasi.</i>	Coal	While attempting to open the ordinary screwed cover of a 2½" stop valve on a steam pipe communicating with a pump the cover flew off and scalded deceased who died from the effects twenty-three hours later. It was subsequently discovered that the spindle had jammed in the cover. Inspection and inquiry made.
<b>SUNDRIES UNDERGROUND—(6 deaths.)</b>						
107	21st January, 8-30 A.M.	Sadamdib Mine, Bhujudih P. O., Bihar and Orissa.	Empire Coal Co., Ltd.	Jagu Ganju, (m.), 20, <i>Labourer.</i>	Coal	Whilst taking refuge in a side gallery from a train of tubs which was descending a haulage incline deceased fell 40 feet over an unfenced ledge where floor coal had been excavated. He died four hours later. Inspection and inquiry made.
108	18th March, 4-30 P.M.	Benahr Mine, Jharis P. O., Bihar and Orissa.	Standard Coal Co., Ltd.	Sripati Surak, (m.), 23, <i>Coal-cutter.</i>	Coal	Deceased mistook the road to his working place and entered a disused tram road pushing a tub in front of him. At the end of the line he pushed the tub through a fence and fell with the tub to a level 10 feet below, where floor coal had been cut. He was found dead from internal injuries. Inspection and inquiry made.
109	18th August, 10 A.M.	North Anantapur Mine, Morriston P. O., Madras.	North Anantapur Gold Mines, Ltd.	Thangadapalle Papanan, (m.), 28, <i>Coolie.</i>	Gold	Deceased was passing along the 150' level and in getting out of the way of a tram wagon coming from the opposite direction fell down a mine which was 50 feet deep.
110	12th September, 6 P.M.	Central Kurkend Mine, Kusunda P. O., Bihar and Orissa.	Central Kurkend Coal Co., Ltd.	Khuli Turin, (f.), 13, <i>Coal-carrier.</i>	Coal	Whilst throwing a large lump of coal into a tub deceased misjudged the distance with the result that the coal struck the outside of the tub and fell upon her foot. The toes were severed and she succumbed to shock on the following day. Inspection and inquiry made.
111	7th December, Between 10 and 11 P.M.	Alguda Mine, Sharigh P. O., Baluchistan.	Baluchistan Coal Co., Ltd.	Din Mahomed, (m.), 80+ <i>Miner.</i>	Coal	While deceased (in front) and another man (behind) were taking a loaded tub of coal from their working place, deceased went ahead to clear the line after which he told the other man to let the tub go. At that moment deceased's lamp went out and he was knocked down by the tub, dying shortly after.
112	25th December, 5 P.M.	Senampur Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co.	Raghu Gopa, (m.), 35, <i>Coal-cutter.</i>	Coal	Deceased was standing on a ladder making some side safe when a piece of coal rolled against the ladder causing him to fall. He died from shock.
<b>ON SURFACE RAILWAYS AND TRAMWAYS BELONGING TO THE MINE—(7 deaths.)</b>						
113	14th February, 1-30 P.M.	Charanpur Mine, Charanpur P. O., Bengal.	Roliance Coal Co., Ltd.	Bhudan Dhungar, (m.), 10, <i>Bellows boy.</i>	Coal	Deceased was run over by a colliery locomotive. It is presumed that he jumped on an empty truck, which the locomotive was taking into the siding, and was knocked off against the retaining wall of the loading platform. The wheels passed over his neck and killed him. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1912—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Cause of accident and remarks.
<b>ON SURFACE RAILWAYS AND TRAMWAYS BELONGING TO THE MINE—concl'd.</b>						
114	5th June, 7 A.M.	Bansjora Mine, Bansjora P. O., Bihar and Orissa.	Bansjora Coal Co., Ltd.	Sadda Singh, (m.), 40, Labourer.	Coal.	Deceased was one of a gang of Panjabi labourers employed in transporting a boiler. He was riding on a trolley in front of another trolley carrying a crab winch. The two trollies were coupled together and ran down a grade of about 1 in 40 colliding with a train of loaded tubs at the foot of the slope. He was thrown off and the crab winch fell on top of him causing injuries from which he died ten hours later. Inspection and inquiry made.
115	15th July, 4-30 P.M.	Kodar Mine, Chipurupalle P. O., Madras.	Vizianagram Mining Co., Ltd.	Yempadapu Masalaya, (m.), 47, Coolie.	Manganese.	Deceased was caught by the legs between two trucks while tramping spoil. Both legs were fractured and he died three days afterwards.
116	15th August, 5-45 P.M.	Rakha Hills Mine, Rakha Mines P. O., Bihar and Orissa.	Cape Copper Co., Ltd.	Chnuu, (m.), 55, Coolie.	Copper.	Some alterations were being made on a double road incline and the assistant surveyor who was in charge ordered two men to take a tram frame up the road to test it by running it down. The two men got on the trolley which ran away and in jumping off they upset it and it struck deceased who was standing on the other line. He died the next day from injuries received. Inspection and inquiry made.
117	19th October, 10 A.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway.	Mir Zaman, (m.), 18, Coolie.	Coal.	Deceased, against orders, attempted to jump on one of some wagons which were being drawn by a mule, when he slipped and fell between the wagons, receiving injuries from which he died two days later.
118	28th November, 6-30 A.M.	Jamadoba Mine, Jamadoba P. O., Bihar and Orissa.	Indian Collieries Syndicate, Ltd.	Jheri Mahato, (m.), 16, Locomotive fireman.	Coal.	Deceased whilst sitting on the buffer of a locomotive and sanding the track fell on the line and was run over. He was killed on the spot. Inspection and inquiry made.
119	28th December, 5 P.M.	Khost Mine, Khost P. O., Baluchistan.	North-Western Railway	Dil Mahomed, (m.), 50, Surface coolie.	Coal.	Instead of waiting, as his companions did, outside the tunnel through which the colliery locomotive was passing deceased said he would find room to stand at the side. His chest was crushed between the locomotive tank and the side of the tunnel. He died while being taken to hospital.
<b>MISCELLANEOUS ON SURFACE—(15 deaths).</b>						
120	4th January, 9 A.M.	Kujama Mine, Jharia P. O., Bihar and Orissa.	L. H. Das and Co.	Punia Kamin, (f.), 28, Coal-carrier.	Coal.	Deceased slipped and fell over the edge of an unfenced bridge carrying a tram line over a river. She sustained a fractured thigh and died a month afterwards. Inspection and inquiry made.
121	21st February, 11-30 A.M.	Serampur Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway	Fagu Manjhi, (m.), 45, Tender sirdar.	Coal.	While dismantling a short pipe, weighing 24 lbs., which was not secured by any rope or chain, on a water cooling tower at an elevation of 18 feet deceased lost his balance and fell into an empty tank. He never recovered consciousness and died the following day. Inspection and inquiry made.

122	18th March, 11-30 A.M.	Burra Dhemo Mine, Sitarampur P. O., Bengal.	Burra Dhemo Coal Co., Ltd.	Mether Chamar, (m.), 55, <i>Surface coolie.</i>	Coal	A flue wall of a Lancashire boiler was being taken down when some brick work, about 3' x 2' x 1' 3", collapsed and crushed deceased's head against the side of the boiler, killing him instantaneously. The mortar of the brick work was found to be inferior. Inspection and inquiry made.
123	25th April, 1-45 P.M.	Serampur Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co.	Bewa Turi, (m.), 50, <i>Tindal sirdar.</i>	Coal	Deceased was walking along the 10" side of a 10" x 5" girder and fell a distance of 23 feet. He died in hospital the next day. Inspection and inquiry made.
124	1st June, 2-15 P.M.	Charanpur Mine, Charanpur P. O., Bengal.	Apcar & Co.	Khamon Dome, (m.), 26, Dalu Bauri, (m.), 38, <i>Pit bankmen.</i>	Coal	While a storm of unusual severity was in progress the deceased and two other men took refuge in an engine-house. The corrugated iron roof was lifted off by the wind. The other two men jumped under the drum of the engine but the two deceased ran out of the engine-house and were buried under the collapse of the front wall. Khamon Dome was killed on the spot and Dalu Bauri died six hours afterwards. Inspection and inquiry made.
125	6th August, 12 Noon.	Hermyingyi Mine, Tavoy P. O., Burma.	Hermyingyi Mining Co., Ltd.	Leo Cheon, (m.), 32, <i>Coolie.</i>	Wolfram	Deceased was engaged in erecting scaffolding to carry a pipe line over a rocky gorge in flood. Whilst doing so he slipped and fell into the stream and was killed or drowned. Inspection and inquiry made.
126	14th August, 2 A.M.	Shwebontha Mine, Mogok P. O., Burma.	Burma Ruby Mines, Ltd.	Faw Ai Yat, (m.), 40, <i>Coolie.</i>	Rubies	Deceased was running to get out of the way of a slip of the bank when he collided with a truck and was squeezed up against it by the rush of mud. He died in hospital a few hours later.
127	17th August, 5 P.M.	South Mudidih Mine, Sijua P. O., Bihar and Orissa.	Reliance Coal Co., Ltd.	Mangal Dossadh, (m.), 65, <i>Bellowsman.</i>	Coal	Deceased was a cripple employed as a bellows blower in a workshop on the surface. During a rain storm a wall of sun-dried bricks collapsed and the roof fell in. The other occupants ran out and escaped but deceased was pinned down and received injuries from which he died shortly after. Inspection and inquiry made.
128	7th September, 7-30 P.M.	Muttigarra Mine, Novagarh P. O., Bihar and Orissa.	Muttigarra Coal Co., Ltd.	Bhagia Turin, (f.), 45, <i>Labourer.</i>	Coal	While crossing a bridge on her way to work she fell over the edge, a distance of 12 feet. Her skull was fractured and she was killed on the spot. Inspection and inquiry made.
129	24th September, 2 P.M.	Jibuttil Mine, Morrison P. O., Madras.	Jibuttil Gold Mines, Ltd.	Venkattasami, (m.), 21, <i>Bricklayer.</i>	Gold	Deceased was buried under a scaffolding on which he was standing and which collapsed bringing with it part of the gable wall of a building and was killed.
130	29th September, 8 P.M.	Kurhbari Mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co.	Bholi Meah, (m.), 35, <i>Tindal coolie.</i>	Coal	Deceased and some other coolies were pulling a guide rope at the top of a shaft; they allowed it to run back some feet and deceased was caught in the loop thus formed and got jammed against the handle of the keps and the pillar of the side fence. He died three days later.
131	7th October, 6-30 P.M.	North Anantapur Mine, Morrison P. O., Madras.	North Anantapur Gold Mines, Ltd.	Abdul Kadir, (m.), 12, <i>Oiler.</i>	Gold	Deceased climbed on to the wall of a boiler feed-water tank, 5 ft. high, in order to wash a cloth and fell into the water which was hot. He had no right to be there. He died from scalding two days later.
132	4th November, 11 A.M.	Saltore Mine, Dishargah P. O., Bihar and Orissa.	Saltore Coal Co., Ltd.	Mahon Gope, (m.), 25, <i>Ropeway greaser.</i>	Coal	As deceased was crossing on an aerial tramway, of which he was the ropeway greaser, he was seen to lean on the outer side of the bucket, presumably to look at a trestle which he was passing. This caused the other side of the bucket to tilt towards the trestle, which it struck. Deceased and the bucket were thrown down to the river bed, 55 feet below. He died in a few minutes. Inspection and inquiry made.
133	18th December, 8-30 A.M.	Gopalpur Mine, Sitarampur P. O., Bengal.	Damuda Coal Co., Ltd.	Harn Turi, (m.), 28, <i>Miner.</i>	Coal	Deceased was found one morning by the boiler attendant at No. 2 Incline. It is presumed that he went to bathe in the boiler feed-water tank and was seized by a fit and fell in and was drowned. The water was over 6½ feet deep. Inspection and inquiry made.

APPENDIX II—*contd.*

Fatal Accidents, 1912—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral worked.	Reason for exclusion.	Cause of accident and remarks.
<b>DEATHS NOT INCLUDED IN THE STATISTICS—(24 deaths).</b>							
1	16th January, 8-30 A.M.	Sutikdih Mine, Bhujudih P. O., Bihar and Orissa.	Sutikdih Coal Co., Ltd.	Bison Lohar, (m), 8.	Coal	Not employed.	While the deceased child was by the fireside his clothes caught fire. He died from heart failure.
2	20th February, Not known.	New Khas Jharria Mine, Jharria P. O., Bihar and Orissa.	Ramjus Agarwala .	Kadu Kaiyat, (f), 23.	Coal	Not employed	Deceased's body was found in a well near the mine. Foul play was suspected. Inspection and inquiry made.
3	20th March, 1 P.M.	Nandi Mine, Nandi P. O., Bengal.	Adjai Coal Co., Ltd.	Suru Bourin, (f), 7.	Coal	Not employed	The deceased child fell into a boiler feed-water tank containing water to the depth of 3' 11". It is surmised that she climbed upon the protection wall by way of an ash heap, which reduced the height of the wall to 2' 4", to get a drink of water and in leaning over lost her balance. Her body was found in the tank. Inspection and inquiry made.
4	30th March, 9-30 A.M.	Kuordih Mine, Kalipahari P. O., Bengal.	Kuordih Coal Co., Ltd.	Surabela Kora, (f), 3.	Coal	Not employed	A piece of roof coal, measuring 7' x 7' x 1 1/4' thick, suddenly fell while a miner was cutting at one side of it and swayed out the props that were supporting it. One of the props caught deceased, over the heart and killed her outright. She had just been brought into the mine by her parents. Inspection and inquiry made.
5	9th April, 11-30 A.M.	Kurhurbhari Mine, Girdih P. O., Bihar and Orissa.	East Indian Railway Co.	Bhagia Burhin, (f), 3 1/2.	Coal	Not employed	Deceased was drowned in a pool of water at the entrance to an old incline which was fenced off.
6	11th April, 2-30 P.M.	Charanpur Mine, Charanpur P. O., Bengal.	Apear & Co. .	Kalibash Kasarwani Bania, (f), 60.	Coal	Not employed	Deceased was crossing a tram line looking in the opposite direction when a colliery locomotive and three tubs ran over her. The engineman stated that he whistled and that she paid no attention. She died in hospital.
7	18th April, 6-30 A.M.	Narsamuda Mine, Asansol P. O., Bengal.	Sitarampur Coal Co., Ltd.	Tulsi Manjhian, (f), 27, Coal-carrier.	Coal	Not a min- ing accident.	While drawing water from a village well, the top of which was flush with the ground, the deceased appears to have slipped, being pitched headlong into the well. She was drowned despite early attempts at rescue. Inspection and inquiry made.

8	18th April, 12-30 P.M.	Lutchipur Mine, Sitarampur P. O., Bengal.	Damuda Coal Co., Ltd.	Pania Musharin, (f), 8.	Coal	Not employed	The deceased child was run over by some empty wagons as she was crossing the railway siding belonging to the mine. It is surmised that some children lifted the brake or brakes of the wagons which allowed them to run uncontrolled down a grade. Inspection and inquiry made.
9	21st April, 6 P.M.	Sibpur Mine, Charanpur P. O., Bengal.	Katras Jharia Coal Co., Ltd.	Phudni Korin, (f), 30, <i>Coal-carrier</i> . Futchi Korin, (f), 4, Baktal Korin, (m.), 2.	Coal	Not part of a mine.	During a violent gale the roof of a hut, in which two children were lying, flew off and fell upon a fire, situated outside, at which the mother of the children was cooking. It fell across the doorway and caught fire. The mother entered the hut with the object of rescuing her children, but was prevented by the flames from returning. They were all severely burnt and died from shock shortly afterwards. Inspection and inquiry made.
10	21st April, 6 P.M.	Bhutgoria Mine, Jamsdoba P. O., Bihar and Orissa.	Aldih Coal Co., Ltd.	Rajang Mahato, (m.), 25.	Coal	Not employed	As deceased was crossing the railway line he got jammed between the buffers of two wagons, one of which was being hand-shunted. He died two days later from internal injuries.
11	15th May, 6 A.M.	Sabanpur Mine, Sabanpur P. O., Bengal.	Bidhu Sekhar Banerji	Thaku Rajwarin, (f), 55.	Coal	Not employed	Deceased was found drowned in a disused and unfenced incline. She was a leper and a beggar and probably committed suicide. Inspection and inquiry made.
12	28th May, 1-30 A.M.	Rajhara Mine, Rajhara P. O., Bihar and Orissa.	Bengal Coal Co., Ltd.	Ram Prosad Nunnia, (m.), 7.	Coal	Not employed	Whilst a miner was robbing coal from the corner of a pillar in fenced off old workings some 15 tons of roof stone fell, leaving a cavity 10' x 8' x 4'. Deceased who was the miner's child was killed on the spot and his wife was severely injured. Inspection and inquiry made.
13	5th June, 7 A.M.	Bansjora Mine, Bansjora P. O., Bihar and Orissa.	Bansjora Coal Co., Ltd.	Bhukli Kora, (f), 18, <i>Coal-carrier</i> .	Coal	Not a mining accident.	Deceased was drowned in an old unfenced quarry, 18 feet deep, which had been abandoned for fifteen years and was used as a reservoir and bathing tank. Inspection and inquiry made.
14	18th June, 3 A.M.	Sudamdih Mine, Bhubjudih P. O., Bihar and Orissa.	Sudamdih Coal Co., Ltd.	Bhatu Lohar, (m.), 55, <i>Fitter</i> .	Coal	Not a mining accident.	Deceased was crossing a railway in a drunken state at the time wagons were being shunted. He was run over and killed on the spot.
15	23rd June, 12 Noon.	Mucheridih Mine, Mohoda P. O., Bihar and Orissa.	Mucheridih Coal Co., Ltd.	Gaju Bhula, (m.), 2.	Coal	Not a mining accident.	The deceased child was drowned in the foundation cutting of a bridge which was being put in by the District Board at the mine.
16	27th August, 1-30 P.M.	Kendwadih Mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Sorma Baurin, (f), 8.	Coal	Not employed	Whilst bathing the deceased child fell into a boiler feed-water tank and was drowned. The tank was unfenced. Inspection and inquiry made.
17	31st October, 2 P.M.	Barari Mine, Jamsdoba P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Soni Gorain, (f), 24, <i>Coal-carrier</i>	Coal	Not a mining accident.	Deceased was drowned whilst bathing in an old surface cutting 10 feet deep. Inspection and inquiry made.
18	7th October, 1 P.M.	Jharia Khas Mine, Jharia P. O., Bihar and Orissa.	Standard Coal Co., Ltd.	Kashi Chamar, (m.), 10.	Coal	Not employed	The deceased child was run over by empty wagons during shunting operations and died in three hours.

APPENDIX:II—concl'd.

Fatal Accidents, 1912—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 worked.	Reason for exclusion.	Cause of accident and remarks.
<b>DEATHS NOT INCLUDED IN THE STATISTICS—concl'd.</b>							
19	3rd November, 11 A.M.	Asansol Mine, Asansol P. O., Bengal.	Ghusik and Muslia Collieries, Ld.	Ramjan Sheik, (m.), 40.	Coal	Not employed	Deceased was in the habit of bathing in a disused incline full of water. He was sitting by the side and fell in. He is said to have been able to swim. If so, he was probably seized with sudden illness. The incline was properly fenced. Inspection and inquiry made.
20	3rd December, 6 A.M.	Mundulpur Mine, Nandi P. O., Bengal.	Mundulpur Coal Co., Ld.	Durga Das Roy, (m.), 28, Contractor. Radha Raman Mukherji, (m.), 18, Pit sirdar.	Coal	Not a mining accident.	The two deceased and another man went to sleep at night in a room where there was a fire. The room was 13' x 10' x 10' having a door and window, both of which were shut. They were discovered next morning. The two deceased were found to be dead. Artificial respiration was employed for nearly six hours in the case of the other man and he recovered. Inspection and inquiry made.
21	28th December, 2-30 P.M.	Charanpur Mine, Charanpur P. O., Bengal.	Reliance Coal Co., Ld.	Badli Manjhan, (f), 8 months.	Coal	Not employed	Drowned in an unfenced tank of a Jewell filter.

## 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 1912.

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 persons injured.	
<b>A.—COAL.</b>														
Bihar and Orissa .	Mazaribagh { Bokaro-Ramgarh-Giridih .	236	1	1	...	1	...	...	...	...	8.19	...	4.23	
		7,573	6	3	3	6	6	9	3	12	.63	1.05	.79	
		28	...	...	...	...	...	...	...	...	...	...	...	
		Manbhum, Jharua . . . . .	68,414	56	83	5	88	59	49	12	61	2.06	.21	1.38
		" Raniganj . . . . .	5,424	3	2	1	3	3	...	3	3	.55	.55	.55
		Sonthal Parganas, Raniganj . . . . .	28	...	...	...	...	...	...	...	...	...	...	...
		" Rajmahal . . . . .	30	...	...	...	...	...	...	...	...	...	...	...
		Palamau, Daltonganj . . . . .	690	...	...	...	...	...	...	...	...	...	...	...
	Sambalpur, Hingir-Bampur . . . . .	468	...	...	...	...	...	...	...	...	...	...	...	
	TOTAL . . . . .	77,891	66	89	9	98	68	58	18	76	1.60	.31	1.25	
Bengal . . . . .	Bankura, Raniganj . . . . .	92	...	...	...	...	...	...	...	...	...	...	...	
		25	...	...	...	...	...	...	...	...	...	...	...	
		36,704	30	34	5	39	34	25	11	36	1.41	.39	1.06	
	TOTAL . . . . .	36,822	30	34	5	39	34	25	11	36	1.40	.39	1.06	
Central Provinces . . . . .	Chhindwara, Fenich Valley . . . . .	802	...	...	...	...	1	2	...	2	...	...	...	
		1,095	1	1	...	1	...	...	...	...	1.44	...	.91	
		638	...	...	...	...	1	1	...	1	...	...	...	
	TOTAL . . . . .	2,530	1	1	...	1	2	3	...	3	.55	...	1.39	
Panjab . . . . .	Jhelum . . . . .	680	...	...	...	...	...	...	...	...	...	...	...	
		200	...	...	...	...	...	...	...	...	...	...	...	
		101	...	...	...	...	...	...	...	...	...	...	...	
	TOTAL . . . . .	981	...	...	...	...	...	...	...	...	...	...	...	
Assam . . . . .	Lakhimpur . . . . .	2,115	7	9	...	9	1	1	...	1	0.83	...	4.25	
Baluchistan . . . . .	Sibi, Khost, etc. . . . .	1,025	9	8	2	10	6	5	1	6	11.52	6.04	9.75	
		20	...	...	...	...	...	...	...	...	...	...	...	
	TOTAL . . . . .	1,045	9	8	2	10	6	5	1	6	11.33	5.89	9.56	
North-West Province.	Frontier Hazara . . . . .	2	...	...	...	...	...	...	...	...	...	...	...	
	GRAND TOTAL (COAL) . . . . .	1,21,392	113	141	16	157	111	92	30	122	1.80	.36	1.29	

## 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 1912—contd.

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.				
<b>B.—MICA.</b>												
Bihar and Orissa . . . . .	Monghyr . . . . .	664	...	...	...	...	...	...	...	...	...	
	Hazaribagh . . . . .	9,905	2	2	...	2	2	4	...	4	33	
	Gaya . . . . .	1,404	...	...	...	...	...	...	...	...	...	
	<b>TOTAL</b>	11,973	2	2	...	2	2	4	...	4	27	
Madras . . . . .	Nellore . . . . .	4,525	...	...	...	...	2	3	...	3	...	
	Salem . . . . .	88	...	...	...	...	...	...	...	...	...	
	<b>TOTAL</b>	4,613	...	...	...	...	2	3	...	3	...	
Rajputana . . . . .	Ajmer-Marwara . . . . .	435	...	...	...	...	...	...	...	...	...	
<b>GRAND TOTAL (MICA)</b>		17,021	2	2	...	2	4	7	...	7	19	
<b>C.—MANGANESE.</b>												
Central Provinces . . . . .	Nagpur . . . . .	2,697	...	...	...	...	3	...	3	3	...	
	Bhandara . . . . .	1,463	...	...	...	...	1	...	1	1	...	
	Balaghat . . . . .	2,236	1	2	...	2	1	...	1	1	11	
	Chhindwara . . . . .	224	...	...	...	...	...	...	...	...	...	
<b>TOTAL</b>	6,620	1	2	...	2	5	...	5	5	44		
Madras . . . . .	Visagapatam . . . . .	3,041	1	...	1	1	6	2	4	6	102	
Bombay . . . . .	Panch Mahals . . . . .	1,371	...	...	...	...	2	...	2	2	...	
<b>GRAND TOTAL (MANGANESE)</b>		11,082	2	2	1	3	18	2	11	18	28	
<b>D.—LIMESTONE.</b>												
Central Provinces . . . . .	Jabalpur-Katni . . . . .	2,606	...	...	...	...	...	...	...	...	...	
Punjab . . . . .	Hoshiarpur . . . . .	82	...	...	...	...	...	...	...	...	...	
<b>GRAND TOTAL (LIMESTONE)</b>		2,688	...	...	...	...	...	...	...	...	...	
<b>E.—SALT.</b>												
Punjab . . . . .	Shahpur . . . . .	38	...	...	...	...	...	...	...	...	...	
	Jhelum . . . . .	864	...	...	...	...	9	8	1	9	...	
	Mianwali . . . . .	68	...	...	...	...	...	...	...	...	...	
<b>GRAND TOTAL (SALT)</b>		970	...	...	...	...	9	8	1	9	...	





## 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 1912.

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 persons injured.			
Bihar and Orissa	Singhbhum	1,190	2	1	1	2	...	...	...	...	1.68	1.67	1.68
Central Provinces	Jabalpur	* ...	...	...	...	...	...	...	...	...	...	...	...
Central Provinces	Jabalpur	180	1	2	...	2	...	...	...	...	31.27	...	15.88
Central Provinces	Jabalpur	42	...	...	...	...	...	...	...	...	...	...	...
Madras	Kurnool	41	...	...	...	...	...	...	...	...	...	...	...
Burma	Mergui	155	...	...	...	...	...	...	...	...	...	...	...
	Tavoy	† ...	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (Tin)	155	...	...	...	...	...	...	...	...	...	...	...
Central Provinces	Jabalpur	72	...	...	...	...	...	...	...	...	...	...	...
Madras	Ramnad	12	...	...	...	...	...	...	...	...	...	...	...
Madras	Trichinopoly	237	1	1	...	1	...	...	...	...	8.84	...	8.89
Madras	Nellore	‡ ...	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (ALL MINERALS).	164,802	133	163	22	185	189	110	42	153	1.57	.86	1.12

\* Figures included with those for Limestone.  
† Do. do. do. do. Wolfram.  
‡ Do. do. do. do. Mica.

APPENDIX II—*contd.*

Table No. 3.

Statement of fatal accidents in mines regulated by the Indian Mines Act, 1901, during the year 1912, classified according to the age and sex of the workers.

MINERAL.	PROVINCE AND MINERAL FIELD.	Number of separate fatal accidents.	NUMBER OF DEATHS.								TOTAL BELOW AND ABOVE GROUND.	
			BELOW GROUND.				ABOVE GROUND.					
			Adult males.	Adult females.	Children (under 15).	TOTAL.	Adult males.	Adult females.	Children (under 15).	TOTAL.		
COAL . . . . .	Baluchistan . . . . .	9	8	...	...	8	2	...	...	2	10	
	Bihar and Orissa. {	Bokaro-Ramgarh . . . . .	1	...	1	...	1	...	...	...	1	1
		Giridih . . . . .	6	3	...	...	3	3	...	...	3	6
		Jharia . . . . .	56	57	26	...	83	3	2	...	5	88
		Raniganj . . . . .	3	2	...	...	2	1	...	...	1	3
	TOTAL . . . . .	66	62	27	...	89	7	2	...	9	98	
	Bengal-Burdwan . . . . .	30	29	5	...	34	4	...	1	5	39	
	Central Provinces . . . . .	1	...	1	...	1	...	...	...	...	1	
Assam . . . . .	7	9	...	...	9	...	...	...	...	9		
Penjab . . . . .	...	...	...	...	...	...	...	...	...	...		
TOTAL COAL . . . . .	118	108	33	...	141	13	2	1	16	167		
MICA . . . . .	Bihar and Orissa . . . . .	2	1	1	...	2	...	...	...	...	2	
	Madras . . . . .	...	...	...	...	...	...	...	...	...	...	
TOTAL MICA . . . . .	2	1	1	...	2	...	...	...	...	2		
MANGANESE . . . . .	Central Provinces . . . . .	1	...	2	...	2	...	...	...	...	2	
	Madras . . . . .	1	...	...	...	...	1	...	...	1	1	
	TOTAL MANGANESE . . . . .	2	...	2	...	2	1	...	...	1	3	
GRANITE . . . . .	Burma . . . . .	1	...	...	...	...	1	...	...	1	1	
GOLD . . . . .	Madras . . . . .	4	2	...	...	2	2	...	...	2	4	
WOLFRAM . . . . .	Burma . . . . .	7	12	...	...	12	1	...	...	1	13	
COPPER . . . . .	Bihar and Orissa . . . . .	2	1	...	...	1	1	...	...	1	2	
CLAY . . . . .	Central Provinces . . . . .	1	1	1	...	2	...	...	...	...	2	
CORUNDUM . . . . .	Madras . . . . .	1	...	1	...	1	...	...	...	...	1	
GRAND TOTAL, ALL MINERALS . . . . .		133	125	33	...	163	19	2	1	22	185	

## APPENDIX II—concl'd.

Table No. 4.

Statement of fatal accidents in mines regulated by the Indian Mines Act, 1901,  
during the year 1912, 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.	By explosives.	Suffocation by gases.	Eruptions of water or falling into water.	Heavals.	Miscellaneous below ground.	Surfacc.	Total deaths.	Below ground.	Above ground.	Below and above ground.
Coal . . . . .	118	1	35	26	23	7	5	23	16	6	16	157	1'80	'36	1'29
Mica . . . . .	2	...	...	2	...	...	...	...	...	...	...	2	'19	...	'11
Manganese . . . . .	2	...	...	2	...	...	...	...	...	...	1	3	'28	'25	'27
Gems . . . . .	1	...	...	...	...	...	...	...	...	...	1	1	...	1'06	'58
Gold . . . . .	4	...	...	...	1	...	...	...	...	1	2	4	3'78	1'68	2'27
Wolfram . . . . .	7	...	...	12	...	...	...	...	...	...	1	18	12'28	'84	6'98
Copper . . . . .	2	...	...	...	1	...	...	...	...	...	1	2	1'68	1'67	1'68
Clay . . . . .	1	...	...	2	...	...	...	...	...	...	2	21'27	...	15'38	...
Corundum . . . . .	1	...	...	...	...	1	...	...	...	...	1	8'64	...	3'89	...
Total 1912 . . . . .	133	1	35	44	24	8	5	23	16	7	22	185	1'67	'96	1'12
Total preceding year.	137	17	51	43	13	7	2	1	19	5	16	174	1'68	'80	1'18
Difference . . . . .	-4	-16	-16	+1	+11	+1	+3	+23	-3	+2	+6	+11	-11	+06	-06

## APPENDIX III.

## PROSECUTIONS UNDER THE MINES ACT.

Statement of prosecutions instituted under the Indian Mines Act, 1901,  
during the year 1912.

PROVINCE.	District.	Number of prosecutions.	Number of persons prosecuted.	Number convicted.	Numbers of rules and sections of the Act contravened.	REMARKS.
Bihar and Orissa	Manbhum	1	1	1	Section 20, Rule 8.	
		1	1	1	" " " 7.	
		1	1	1	" " " 4 (b).	
		1	3	3	" " Rules 3, 7, 8, 19 and 20.	
		1	1	1	Section 20, Rules 4, 7 and 14.	
		1	1	1	Section 20, Rules 4, 7 and 14.	
		1	1	1	Notification No. 11793—103, dated 30th December 1908, Rule 1.	
		1	1	1	Section 20, Rules 7 and 19, and Notification No. 11793—103, dated 30th December 1908, Rule 1.	
		1	1	1	Section 20, Rule 4(b).	
		1	1	1	Section 20, Rules 4, 10 and 19.	
		1	1	1	Section 20, Rules 4, 10 and 19.	
		1	1	1	Section 20, Rule 8.	
		1	1	1	" " "	
		1	1	1	" " " 15(e)	
		1	3	3	" " Rules 1, 3, 7, 19, 20, 46 and 51.	
		1	1	...	Section 20, Rules 1, 3, 7, 19, 20 and 51.	Withdrawn.
		Bihar and Orissa	Hazaribagh	1	1	1
1	1			...	" " "	Withdrawn.
1	1			1	" " "	
1	1			...	" " "	Withdrawn.
1	1			1	Section 20, Rules 2(e), 9 and 19.	
Bihar and Orissa	Bardwan	1	3	...	Section 20, Rules 2(e), 9 and 19.	Withdrawn.
		1	2	2	Notification No. 11793—103, dated 30th December 1908, Rule 1.	
		1	1	1	Notification Nos. 864-88-20, dated 10th March 1904, Rule 19.	
Bengal	Bardwan	1	1	1	Notification No. 11793—103, dated 30th December 1908, Rule 8.	

## APPENDIX IV.

## MISCELLANEOUS.

## Statement No. 1.

## List of Inspection Circles.

No. 1 Circle.	No. 2 Circle.	No. 3 Circle.
(a) All mines in the district of Manbhum, which are situated west of a line drawn from Adra Junction at mile 175 of the Bengal-Nagpur Railway to Gobindpur at mile 169 on the Grand Trunk Road and continued across the district in each direction, and all mines in the district of Palamau.	(a) All mines in the districts of Burdwan and Bankura to the west of a line drawn from mile 181 on the East Indian Railway main line near Asansol to mile 141 on the Ondal loop near Gaurangdi, and continued across the districts in each direction; and all mines in the district of Manbhum east of a line drawn from Adra Junction at mile 175 on the Bengal-Nagpur Railway to Gobindpur at mile 169 on the Grand Trunk Road, and continued across the districts in each direction, and all mines in the districts of Hazaribagh, Gaya, Monghyr, Darjeeling and Ranchi.	(a) All mines in the districts of Burdwan and Bankura to the east of a line drawn from mile 181 on the East Indian Railway main line near Asansol to mile 141 on the Ondal loop near Gaurangdi, and continued across the districts in each direction, and all mines in the districts of the Sonthal Parganas, Birbhum, Singhbhum and Sambalpur.
(b) All mines in Assam.	(b) All mines in Baluchistan.	(b) All mines in the Presidency of Bombay.
(c) All mines in Burma.	(c) All mines in the United Provinces.	(c) All mines in the Central Provinces.
	(d) All mines in the Panjab.	(d) All mines in the Presidency of Madras.
	(e) All mines in Ajmer-Merwara.	

## APPENDIX IV--contd.

## MISCELLANEOUS.

## 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.
Atkinson, Bertram . . . . .	163	9th December 1912 .	2203	16th June 1903.
Thompson, Cyril . . . . .	164	Ditto	3846	18th June 1911.
Crerar, Donald Campbell . . . . .	165	Ditto	3077	8th January 1908.
Henderson, Gerald Liddell Baker . . . . .	166	Ditto	3140	11th June 1908.
Crofton, Charles Arthur . . . . .	167	Ditto	1976	27th February 1902.

(b) Certificates of competency.

## FIRST CLASS.

NAME.	No. of certificate.	Date of certificate.	REMARKS.
Mitchell, Phillip Thomas . . . . .	60	16th March 1912.	
Bhattacharji, Surath Nath . . . . .	61	Ditto	
Evans, John Henry . . . . .	62	Ditto.	
Mukherji, Tarak Nath . . . . .	63	Ditto.	

## SECOND CLASS.

Vanderbeck, Percy William . . . . .	64	18th March 1912.	
White, Edward Beadon Deveria . . . . .	65	Ditto.	
Mokadam, Baliram Pandarang . . . . .	66	Ditto.	
Roy, Mani Bhusan . . . . .	67	Ditto.	
Cornish, Charles Phillip . . . . .	68	Ditto.	
Dutt, Fanindra Krishna . . . . .	69	Ditto.	
Payne, James Harold Willoughby . . . . .	70	Ditto.	
Rayneau, Cyril Alexander . . . . .	71	Ditto.	
Mayer, Harry . . . . .	72	Ditto.	
Kanungoo, Manindra Chandra . . . . .	73	Ditto.	
Engledow, Richard Denis . . . . .	74	Ditto.	

(c) Certificates of service.

## SECOND CLASS.

Dutt, Ram Saran . . . . .	187	9th December 1912.	
Lodha Ram . . . . .	188	Ditto.	

APPENDIX IV—*contd.*

## MISCELLANEOUS.

## Statement No. 3.

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

Name of Institution and Degree or Diploma.	Date.
University of Birmingham in respect of its Degree of B.Sc. in Mining and Diploma in Mining.	11th June 1904.
University College of Bristol in respect of its Senior Diploma in Mining.	16th September 1904.
University of Cambridge in respect of its Diploma in Mining Engineering.	6th June 1905.
University of Durham in respect of its Degree of B.Sc. in Mining	21st December 1903.
Durham College of Science in respect of its Diploma in Mining .	29th June 1904.
University of Glasgow in respect of its Degree and Diploma in Mining.	28th September 1904.
Glasgow and West of Scotland Technical College in respect of its Diploma in Mining.	28th June 1904.
University of Léeds 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.



APPENDIX IV—*contd.*

## MISCELLANEOUS.

## Statement No. 4.

## SIBPUR COLLEGE.

## THE MINING CLASSES.

## CIRCULAR.

These classes are attached to the Overseer Section of the Apprentice Department.

*General explanation.*—The Mining Classes are designed to afford theoretical training in the principles of mining generally, to prepare students for positions of responsibility in coal or metal mines, and in the case of students attending for instruction in coal mining, to qualify them to appear for the examinations of mine managers, as required by the Indian Mines Act, VIII of 1901.

The course at Sibpur for regular mining students will extend over four years. At the end of the second year the sub-overseer examination is held. The specialised instruction in mining at Sibpur is given in the third and fourth years of the college course, according to the attached syllabus and the diploma examination takes place at the end of the fourth year.

The classes are open to both regular students and special students.

*Regular students.*—Are those who have qualified for admission by passing the sub-overseer examination of the Civil Engineering College, or an equivalent test of other colleges.

Their age limits are 17 years minimum and 19 years maximum on admission.

*Special students.*—Persons resident in Bengal, who have been employed upon mines, will be admitted as special students under the following conditions:—

- (a) that they have completed at least two years' practical work upon a mine; and
- (b) that they have passed (i) the B. Final Examination, (ii) the Matriculation or Entrance Examination of any Indian University, or (iii) any test equivalent to the Middle School Examination of the Code for European Schools.

There is no limit of age for such special students.

All applications for admission from outside candidates should be posted so as to reach the Principal's office by 1st April.

Regular students should apply in the proper form available from the Principal's office.

Special students must provide, (a) proof of educational attainments, and (b) a statement showing the nature and extent of their employment upon mines and the period thereof, supported by certificates from the mine managers under whom they have worked.

## SCHOLARSHIPS AWARDED BY THE GOVERNMENT OF BENGAL.

*For regular students.*—Two scholarships of Rs. 12 monthly and three of Rs. 6 are provided. These will be awarded on the results of the sub-overseer examination by the Director of Public Instruction on the recommendation of the Principal. Students trained at the Civil Engineering College or any affiliated technical school in Bengal are eligible for these scholarships. If they are on the Reduced fee list, they will be charged full tuition fees.

*For special students.*—Two scholarships of Rs. 150 monthly for European candidates and two of Rs. 50 monthly for Indian candidates, each tenable for two years, are offered. These will be awarded annually by the Director of Public Instruction on the recommendation of the Mining Advisory Board.

These scholarships are available for candidates who have had at least two years' actual experience of colliery work. They must have passed the Calcutta University Entrance Examination or an equivalent. For Europeans the Middle Scholarship Examination of the Code for European Schools or equivalent is accepted.

There is no limit of age.

Application for these scholarships should be made to the Principal of the Civil Engineering College, when applying for admission.

There is no residential accommodation available at the college for special students, scholarship-holders or otherwise: they must make their own arrangement for board and lodging, and must attend the college daily from 8 A.M. A mid-day meal will be supplied if desired at the college at a definite monthly charge to be fixed by the Principal.

## SCHOLARSHIPS AWARDED BY THE GOVERNMENT OF EASTERN BENGAL AND ASSAM.

*For regular students.*—Three of the value of Rs. 15, one being reserved for each of the following classes, namely, European, Muhammadan and Hindu, confined to students domiciled in Assam.

APPENDIX IV—*contd.*

## MISCELLANEOUS.

Statement No. 4—*contd.*

*For special students qualified as above.*—One of Rs. 30 for an European. Two of Rs. 20—one for a Muhammadan and one for a Hindu. The rates for special students are fixed on the understanding that they will reside at the college hostel. If accommodation is not available, Government are prepared to consider an increase. Applications for these scholarships to be made to the Director of Public Instruction of Assam.

The session begins each year on or about the first Monday in May. The college closes for the long vacation about the first week of August and re-opens about the end of October.

Special students must pass all college test examinations and must appear at the diploma examination held at the end of the course.

The following fees will be charged from special students:—

*Caution money deposit.*—Rs. 5, which will be returned on leaving the college after deducting any charge-dues owing.

*Tuition fee.*—Rs. 3 monthly payable for 12 months in the year.

*Mid-day meal.*—Rs. 10 monthly for Europeans, and Rs. 5 for Indians.

All fees become due on the 15th of the month.

Regular students, who must be residents, will be charged in full the fees noted in the Rules of the Apprentices Department.

A camp of practical mining and surveying will be held for six weeks in the cold weather of each session in the colliery districts.

## SYLLABUS OF MINING COURSES.

## COURSE I.

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

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

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

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

*Mining Engineering.*—(Two lectures per week.)

Boring by hand and power machines.

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

Systems of haulage, underground and aboveground, aerial ropeways.

Hoisting, headgear, ropes, safety appliances.

Mining legislation.

*Section A.*—(One lecture per week.)

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

Shot-firing; coal-cutting by machinery.

Surface subsidence and under-sea working.

Timbering and other supports.

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

*Section B.*—(One lecture per week.)

Prospecting for and methods of working mineral veins.

Alluvial mining and open workings.

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

Hand and power drilling; blasting, timbering.

Metal mine plans.

## COURSE II.

*Descriptive Mineralogy.*—(One lecture per week).

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

Prospecting operations.

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

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

Ventilation of mines; natural and artificial ventilation; splitting and regulating air-currents; types of fans; water-gauge and anemometer.

Power-application in a mine; discussion of relative merits of steam, water, compressed air, electricity and oil, as sources of applied power.

*Section A.*—(One lecture per week.)

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

APPENDIX IV—*contd.*

## MISCELLANEOUS.

Statement No. 4—*concls.*

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

*Section B.*—(One lecture per week).

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

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

Cyanide and Chlorine treatment of slimes.

## Statement No. 5.

## MINING INSTRUCTION IN BENGAL AND BIHAR AND ORISSA.

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

## RANIGANJ AND JHARIA COAL-FIELDS.

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

1. Lecture room near Sijua station on Tuesdays at 6-30 P.M.  
Lecturer—Mr. B. Starks Field.
2. Lecture room near the Jharia Club on Mondays at 5-30 P.M.  
Lecturer—Mr. J. Wilson, B.Sc.
3. Lecture room at Messrs. Apar and Company's Charanpur Colliery on Fridays at 5-30 P.M.  
Lecturer—Mr. H. C. Read, B.Sc. (BIRM.)
4. Lecture room near Dishargarh Club on Wednesdays at 5-30 P.M.  
Lecturer—Mr. C. E. Ashcroft, F.G.S.

The course of instruction, consisting of not less than 25 lectures, will commence in the last week in October and end in the following May. An examination will be held on 2nd June 1913, and candidates who pass the examination will receive a certificate recording their success. No candidate will, however, be permitted to sit for the examination, unless he has attended 50 per cent. of the lectures and received 40 per cent. of the marks allotted for home work.

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

*The following Sub-Committees have been appointed for each centre.*

## RANIGANJ DISTRICT.

*Dishargarh Centre.*

- Mr. G. C. Leach (Chairman).  
 „ Glen George.  
 „ J. Mackintosh.  
 „ Geo. Miller.  
 „ F. Owen.  
 „ M. N. Roy (Begunia).  
 „ Babu H. P. Mukherji (Chota Dhemo).  
 „ D. C. Tarafdar.  
 The Local Lecturer (Secretary).

*Charanpur Centre.*

- Mr. C. J. E. David (Chairman).  
 „ S. Heslop.  
 „ R. Mitchell.  
 „ E. M. Patterson.  
 „ A. Russell.  
 Babu Rajoni Prokash Chuckerbutti.  
 The Local Lecturer (Secretary).

APPENDIX IV—*contd.*

## MISCELLANEOUS.

Statement No. 5—*contd.*

## JHARIA DISTRICT.

*Jharia Centre.*

The Chief Inspector of Mines (Chairman).  
 Mr. T. Adamson.  
 „ R. G. M. Bathgate.  
 „ R. J. Browne.  
 „ A. S. Thomson.  
 Babu Bhupati Mukherji.  
 „ Sita Nath Dutta.  
 The Local Lecturer (Secretary).

*Sijua Centre.*

Mr. R. R. Simpson (Chairman).  
 „ A. Agabeg.  
 „ E. S. Bennertz.  
 „ J. S. Kean.  
 Babu Moti Lal Raha.  
 „ Surendra Nath Sarkar.  
 The Local Lecturer (Secretary).

Particulars of the Sibpur College Mining Classes and of the scholarships connected therewith may be obtained from the Principal of the College. Instruction is given in Methods of Mining, General Engineering, Mechanics, Surveying, Science, Mineralogy and Workshop practice. On completion of the course (4 years for beginners and 2 years for those having previous mining experience and requisite educational qualifications), a diploma is granted to successful students.

## 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 boring; choice of methods; cost of boring; winning coal by inclines, adits, shafts and crosscut.
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*.—Shaft 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 Marsaut and Mueseler lamps; fire-damp detectors.

## SECOND-YEAR COURSE.

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

APPENDIX IV—*contd.*

## MISCELLANEOUS.

Statement No. 5—*concl'd.*

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.

3. *Hauling.*—Tramways, tubs and wagons, 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 on 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.

W. H. EVERETT,

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

## Statement No. 6.

## 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.

CALCUTTA  
SUPERINTENDENT GOVERNMENT PRINTING, INDIA  
8, HASTINGS STREET