

Department of Mines, India

REPORT

OF THE

CHIEF INSPECTOR OF MINES IN INDIA

UNDER THE INDIAN MINES ACT (VIII OF 1901)

FOR THE YEAR ENDING

31st December 1919

BY

R. R. SIMPSON, M.Sc.

Offg. Chief Inspector of Mines in India



CALCUTTA
SUPERINTENDENT GOVERNMENT PRINTING, INDIA
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The delay in the issue of this publication was due to the Press strike.

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FROM

R. R. SIMPSON, Esq., M. Sc.,

Offg. Chief Inspector of Mines in India,

TO

THE SECRETARY,

BOARD OF INDUSTRIES AND MUNITIONS.

Dated Dhanbad, the 10th July 1920.

SIR,

I have the honour to submit the report upon the inspection of mines in British India for the year ending 31st December 1919.

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 Indian States, whether from workings under the Act or not, are published annually in the Records of the Geological Survey of India, whilst every five years a Quinquennial Review of the Mineral Production of India is issued by the same Department. The latest review published is that for the years 1909-13 (Records, Geological Survey of India, Volume XLVI). Figures for Mysore, where most of the Indian gold is raised, are given in the report of the Chief Inspector of that Indian 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 1919 the average number of persons working in and about the mines regulated by the Indian Mines Act was 249,156, as compared with 237,738 in the previous year. This is an increase of 11,418 persons or 4.8 per cent. Of these persons 156,741 worked underground and 92,415 on the surface.

One hundred and fifty one thousand eight hundred and forty one were adult males, 89,565 were adult females and 7,750 were children under 12 years of age.

Those employed in coal mines numbered 190,052, which is 13,783 in excess of those employed in 1918.

Famine conditions prevailed in those districts from whence the labour supply for the Bengal and Bihar and Orissa coalfields is drawn. Owing to the high prices of food stuffs and clothing materials several firms sold rice at cheap rates, and cloth at cost price was sold at Government depôts. In the Raniganj and Jharia coalfields there were serious epidemics of cholera and small-pox, and influenza again caused a heavy mortality.

There were increases in the wages of skilled workmen, and miners' wages tended to rise in sympathy with the increased cost of living.

At the Margherita collieries in Assam, 1,650 labourers were recruited by 295 sirdars, whilst by ordinary methods of recruitment 1,028 Nepalese, 117 Mekranis and 47 Chinese were added to the labour force. Between June and October there were 467 deaths from influenza. This severe epidemic alarmed the labourers, and no less than 1,704 persons were repatriated by the Assam Railways and Trading Company, Limited. A shortage of labour resulted.

In the Central Provinces the supply of labour was as usual inadequate in the mining fields, and recruitment from outside areas continued. At certain mines grain was sold at cost price. This is equivalent to a rise in wages. In certain fields wages rose by from 10 to 15 per cent.

At wolfram mines in the Tavoy District, owing to the closing down of many of the mines, labour was plentiful and wages declined by from 30 to 50 per cent. Many miners left the district. Coolies from Hazaribagh and Burmese "ticket-of-leave" labour continued to be imported by Government into the district, but towards the end of the year the majority of the former class was repatriated. The Burmese "ticket-of-leave" labour continued to prove successful.

Section II.—Output of Minerals.

COAL.

The sub-joined statement shows the output of coal in the various provinces, in British India during the year 1919 :—

<i>Province.</i>	<i>Output in Tons.</i>
Assam	291,134
Baluchistan	29,124
Bengal	5,777,632
Bihar and Orissa	15,117,903
Central Provinces	497,021
North West Frontier Province	20
Punjab	46,893
Total	21,759,727

In the year 1918 the output just failed to reach the twenty million mark, but in the year under report this mark was well over passed, the output being 21,759,727 tons. The increase was 1,912,688 tons or 9.64 per cent. as compared with an increase of 14.55 per cent. in the previous year.

The opening stocks were 1,785,510 tons and the closing stocks 4,628,890 tons, or more than 2½ times the closing stocks at the end of 1918. This large figure shows how inadequate was the supply of wagons during the year.

The despatches amounted to 15,886,095 tons, and 2,005,084 tons were consumed on the collieries. This latter figure represents 9.21 per cent. of the output, as compared with 9.82 per cent. in the previous year. The decrease in colliery consumption will, it is hoped, be continued as more and more steam plant is superseded by electrical apparatus using current generated at power stations.

The amount of coal delivered to coking was 1,025,168 tons, and 278,473 tons of hard coke and 308,565 tons of soft coke were made. The larger amount of coke manufactured was chiefly an increase of hard coke, and due to

the exceptional prosperity of the iron and steel trades. Analyses of these figures will be found in Appendix I, Table 2.

By far the largest increase was in Bihar and Orissa where the output increased by nearly one and a half million tons or 10·55 per cent. The Bengal output increased by nearly half a million tons, and there was a small increase in the Central Provinces. There were small decreases in Assam and the Punjab, and the output of Baluchistan decreased from 43,125 tons to 29,124 tons. This latter decrease was probably due to the lesser demand for coal for war purposes.

Of the total output, 20,895,533 tons, or 96·03 per cent., were raised in Bengal and Bihar and Orissa, the percentage of the previous 5 years being 95·78 per cent.

Figures for the two major Coalfields are as follows :—

	Output in Tons.		Percentage of increase.
	1919.	1918.	
Jharia Coalfield ...	12,145,917	10,951,060	10·91
Raniganj Coalfield ...	6,815,126	6,368,519	7·01

During the period under review all coal of good quality remained under requisition, but, owing to the demand for post war purposes being considerably reduced, coal of good quality was available in large quantities for general purposes from the Coal Transportation Officer. With more steamer tonnage afforded, the export of coal for other than Government purposes was revived. As regards the lower grades of coal, the despatches were very limited owing to acute shortage of wagons, and the large stocks at the end of the year were mainly coal of the poorer qualities. Such coal of this quality as was despatched was sold at very high rates as certain customers were prepared to pay any price demanded for supplies.

The coal trade in the Central Provinces depended mainly on the demand from local industries and for railway purposes, as throughout the year the chief outside markets such as Ahmedabad and Bombay appear to have had little difficulty in obtaining their requirements from Bengal, either on special indents or by requisitioned coal, at rates favourable to its purchase by consumers. The local demand was good during the ginning and pressing season from January to April and again from October to December, and although Bengal coal was not excluded from the province, at least during the latter period, it came forward in insufficient quantities to effect the heavy demand created by bumper cotton crops. Between May and September there was a depression in the coal trade, and mine-owners were obliged to restrict output.

The output per person employed during the year was (a) below ground 185 tons and (b) above and below ground 114 tons. The figures for the five years preceding were (a) 178 and (b) 113. Taking each group of coalfields separately, these figures were as follows :—

Bengal and Bihar (a) 190 and 182, (b) 117 and 115; Assam (a) 141 and 156, (b) 91 and 103; Baluchistan (a) 53 and 70, (b) 32 and 43; Central Provinces (a) 119 and 122, (b) 79 and 81; Punjab and North West Frontier Province (a) 71 and 67, (b) 39 and 44.

The output of coal in the United Kingdom in 1918 was 287 tons per person employed below ground and 226 tons per person employed above and below ground. In 1916 the figures were 323 tons and 257 tons, respectively.

MICA.

The output was 41,683 cwt. as compared with 51,572 cwt. in 1918, being a decrease of 19·18 per cent. This decrease occurred in Bihar and Orissa. The Madras and Rajputana fields showed slight increases.

The decrease was due to the lessened demand consequent on the termination of the war. Large sales by auction of war stocks accumulated by the

Department of Munitions brought about a glut in the Home market. The rise in exchange told heavily against an industry which disposes of its product in extra-Indian markets.

There was considerable over-production and little improvement can be expected until Europe has settled down and former customers resume trading. Most firms slowed down their production until such time as prices and exchange are more favourable. Tonnage was not too plentiful, but insurance rates were lower. During the year Government control of the mica industry was given up.

MANGANESE.

There was an increase of 1.16 per cent. in the output, the figures being 420,184 tons, as compared with 415,357 tons in 1918.

After the lull following the signing of the Armistice there was a slight improvement in the demand for manganese ore for general trade purposes, but the demand during the year was on the whole worse than in 1918. Prices declined, but the decrease in ocean freights counterbalanced this and the net result to the exporter was about the same as in the preceding years. The average price during the year was about 28½*d.* per unit and the average ocean freight about 78½*s.* per ton.

WOLFRAM.

The decline in the output was continued, the decrease for the year being 19.50 per cent. The figures were 58,109 cwts., as compared with 72,159 cwts. in 1918.

The production remained normal for the first four months, with the purchase rate fixed by the Ministry of Munitions at 72*s.* per unit. In the middle of May the purchase rate dropped to 30*s.* per unit. Small owners at once closed down. During the first quarter there were 84 producing mines, but by the end of December only 39 mines were at work.

The depression in the industry was due to the same causes as affected the mica industry, *i.e.*, lower prices and the unfavourable rate of exchange. Several large producers retained wolfram in stock and shipped only tin or wolfram and tin concentrates.

GEMS.

The output was 158,577 carats as compared with 164,115 carats in 1918. This is a decrease of 3.37 per cent. The output of rubies was considerably less, but that of sapphires almost restored the balance.

The general condition of the ruby and sapphire markets was distinctly good. There was a steady demand for all qualities except the very lowest, and prices ranged higher.

At the Burma Ruby mines an exceptionally fine ruby, weighing 42 carats, was found and was sold for not less than three lakhs of rupees.

There was more mining by Indians than for years past.

GOLD.

The output again decreased, being 11,191 ounces, as compared with 19,916 ounces in 1918. This is a decrease of 43.81 per cent.

COPPER.

The output of copper ore was 32,756 tons, as compared with 3,619 tons in 1918. The Cape Copper Company Limited completed the erection of the mill and smelter at their Rakha mines in the Singbhum district. The output of copper was 980 tons.

The industry was adversely affected by the unfavourable rate of exchange.

OTHER MINERALS.

There were increases in limestone, salt, slate, magnesite, bauxite, clay, tin, fuller's earth, samarskite, graphite ochre and molybdenite, and decreases in silver, iron ore, chromite, galeua, steatite, barytes, apatite and potash.

Section III.—Accidents.

During the year 1919 at mines regulated by the Indian Mines Act, 1901, there were 252 fatal accidents, being an increase of 43 over the number which occurred in 1918, and an increase of 84 as compared with the average number of the preceding five years.

These accidents involved the loss of 312 lives, which is an increase of 69 over the number of lives lost in 1918. Of these persons 250 were males and 62 were females. It is remarkable that the number of females killed was almost double that of the previous year. In three separate accidents the number of lives lost was 14, 7 and 6, respectively. In two cases 4 lives, in six cases 3, and in 18 cases 2 lives were lost.

The causes of these accidents have been classified as follows :—

(a) Misadventure	...	...	...	...	134
(b) Fault of deceased	...	...	...	...	90
(c) Fault of fellow workman	...	...	...	...	15
(d) Fault of subordinate officials	...	...	...	...	4
(e) Fault of management	...	...	...	...	9

More than half of the accidents were due to falls of roof and sides, which numbered 128 or 18 more than in the previous year. Many of the accidents could have been avoided by closer and more skilled supervision. If the inspections of mine officials were more frequent there would be fewer cases of accident to persons working in unauthorized places.

The number of accidents occurring in shafts was 34, or almost double the number which occurred in the previous year. In one such accident no less than 14 lives were lost. The principal increase was in accidents due to persons falling in shafts and things falling into shafts. It should be remembered that year by year there are fewer mines in which the mineral is brought to the surface through inclines, and the number of shafts is constantly increasing. Most of the accidents were due to carelessness, usually on the part of the deceased.

There was a large increase in the number of accidents occurring on haulage roads. The number of such accidents was 40, as compared with 21 in 1918. Fourteen were caused by tubs running wild on mechanical haulage roads, and sixteen were due to other causes on similar roads. Ten took place where tubs were being pushed by hand. Most of the accidents could have been avoided by ordinary care. The practice of sitting and even sleeping on haulage roads should be more sternly prohibited. At many mines the provision of separate travelling roads and insistence on their use has largely reduced the danger to work-people from accidents of this class.

There was only one fatal explosion of fire-damp, causing one death, but three explosions by which persons were hurt took place. The improvement in respect of this class of accident is directly due to the increased use of safety lamps at mines where fire-damp is known to occur.

Only three accidents, causing three deaths, were due to electrocution, which is the same number as in 1918. In view of the large increase in the use of electrical machinery in mines this is satisfactory.

The death rate per thousand persons employed was 1.25 while that of the preceding 5 years was 1.02. At coal mines only these figures were 1.37 and 1.11, and at mines other than coal 0.88 and 0.74. At mines in the United Kingdom during the 10 years ending with and including 1918 the average death rate per thousand persons employed underground was 1.51.

The death rate per million tons raised at coal mines only was 11.95; while that of the preceding 5 years was 9.80. At coal mines in the United

Kingdom during the 10 years ending with and including 1917 the death rate per million tons raised was 5·08.

The large increase in the death rate from accidents is deplorable. Perhaps the chief reason for the increase was the shortage of skilled mine managers. The great demand for the produce of the mines has called for increased output and more strenuous operation. Under such conditions risks are liable to be taken which would not be considered justifiable at other times.

The deaths occurring in each class of mines were as follows:—260 in coal mines, 19 in wolfram mines, 12 in manganese mines, 10 in mica mines, 4 in copper mines, 3 in limestone mines, 3 in an iron mine and one in a steatite mine.

One person lost his life by an explosion of gas, 95 by falls of roof, 75 by falls of side, 47 in shafts, 7 by explosives, one by falling into water, 41 by haulage, 12 by other accidents underground and 33 on the surface.

A list of these accidents appears in Appendix II, Table 1. In addition to these there were 41 other accidents causing the death of 46 persons. These also appear in Appendix II, Table 1, but are listed separately, reasons being given in each case for their exclusion from the statistical table.

In the Bengal and Bihar and Orissa coal mines, where most of the statistical accidents occurred, there were 233 deaths, compared with 175 in 1918.

Each accident is described briefly in Appendix II, Table 1, but the following are reported at greater length. The numbers refer to the numbers in the Appendix.

EXPLOSIONS OF FIRE-DAMP.

No. 1.—Nodiha Coal Company, Limited's Nodiha coal mine.

This explosion took place in the Dishergarh seam which at this mine is inclined at an angle of 24°. The workings are extensive, and ventilation is induced by a fan capable of producing 40,000 cubic feet of air per minute. No trace of fire-damp had ever been seen since the commencement of the mine, and open lights were in use throughout. At an adjoining colliery, however, a disastrous explosion occurred in 1913 when the ignition of fire-damp by an open light set fire to the mine and caused a loss of 27 lives.

The place in which the present explosion occurred was an unconnected rise gallery 40 feet in length. No work had been done during the night shift. At 7-30 A.M. a coal cutter entered the gallery carrying an open light and ignited an accumulation of gas which exploded with a loud report. The coal cutter was severely burnt and died a week later.

The sirdars were accustomed to carry safety lamps for the purpose of testing for gas, and both the day shift and night shift sirdars deposed that they examined this gallery and found no trace of fire-damp. It transpired, however, that neither of these men had ever actually seen fire-damp or worked in a gassy mine.

The lessons to be learnt from this accident are the importance of appointing trained and competent persons for the purpose of making the examination required under General Rule 4, and the inadvisability of extending unventilated galleries in mines where the presence of fire-damp may be suspected.

Since the accident competent sirdars have been appointed and the coursing of the ventilation in the mine has been improved.

EXPLOSIONS OF FIRE-DAMP.

(Non-fatal accidents.)

Kuardih Coal Company, Limited's Kuardih Colliery.

A coal cutter ignited a small accumulation of fire-damp in his working place, and was slightly burnt. Gas had never been found previously in this particular mine, but in 1915 and again in 1918 slight explosions occurred in other mines at the same colliery, and in the latter case the person who was

burnt died as the result of his injuries. In all three instances the accumulations of gas were due to inadequate ventilation. Since the accident the coursing of the air has been improved by the erection of stoppings and all working places are examined with a safety lamp before each shift commences work.

The Burrakur Coal Company, Limited's Saltore Colliery.

A main gallery driver carrying an open light ignited a small accumulation of fire-damp in the face of a main gallery. He sustained slight burns. The mine in which this occurred has been worked with open lights since its commencement. A daily examination of the workings with a locked safety lamp had been made for several years, but there was no record of any fire-damp having been discovered. Ventilation is afforded by a fan capable of circulating 150,000 c. ft. of air per minute, but the gallery in which the gas exploded was driven a distance of 250 feet ahead of the ventilation. Ventilation outside this point was ample, and had it been directed into the face of the gallery the fire-damp would not have accumulated. The past and present management have always realised that as the workings extended to the dip and the cover became greater fire-damp might be expected. In view of this possibility the agent ordered safety lamps from Europe in 1918, and it was and is his intention to work the mine entirely with safety lamps when they are available.

The Bengal Coal Company, Limited's Sanctoria Colliery.

A curious explosion occurred in the village of Sanctoria which overlies the workings of the Sanctoria seam which were abandoned about 20 years ago. A girl and her parents were returning at night to their house which had been shut up for about 1½ hours. The girl opened the door and went inside carrying a light. An explosion occurred and she was burnt. It was found that fire-damp was issuing from a fissure in the ground running parallel with the outer wall of the house. Subsidence had previously occurred in the village from time to time, but had not affected the surface to any great extent.

FALLS OF ROOF.

No. 5. Lodna Colliery Company, Limited's Sripore coal mine.

Three persons went down an incline early in the morning before the sirdar had made his inspection. Two of them were killed and one was severely injured by the fall of roof coal in a working place. This accident would not have occurred if a gate had been fixed at the entrance to the mine. The absence of this gate was a breach of rules which came into force in August 1918. In view of the fact that the Government of India had informed the Indian Mining Association that managers would have time to introduce these rules, no further action was taken. Since the accident a gate has been provided and a tally system of registering work people entering and leaving the mine introduced.

Nos. 35, 55 and 63. Bengal Nagpur Coal Company, Limited's Bhugyudih coal mine, Nodiha Coal Company, Limited's Nodiha coal mine and Messrs. Tata Iron and Steel Company, Limited's Sijua coal mine.

Two of these accidents were due to miners robbing coal in places abandoned and fenced off. In one case four persons were killed and one injured. All three accidents took place when the officials-in-charge were out of the mine. The first case occurred at the end of the shift, and the sirdar, who had gone out of the mine without waiting for his miners to finish work, was prosecuted and convicted for a breach of Special Rule 49. The other two accidents took place at mid-day when the official-in-charge had gone to the surface to take food. In one of the cases the Manager pleaded ignorance of the fact that it was the custom for officials to leave the mine at meal hours. Such a confession is proof of faulty supervision. The shift worked by subordinate officials is as a rule not less than 12 hours, and few of them bring food into the mine. It is usual for such men to leave the mine for an hour or so in the middle of the shift to eat food. In mines where attention is paid to discipline the practice is recognised and arrangements are made for all such officials to be relieved at meal hours.

No. 42. The Hurriladh Coal Company, Limited's Akhalpur coal mine.

At this Colliery the Seebpore seam, 12 to 14 feet in thickness, and overlain by shale, varying from 6 inches to 2 feet in thickness, was being extracted. An area, approximately 500 feet by 300 feet, and adjacent to a solid coal barrier, had been dispillared. As the shale roof of the seam weathers on exposure to air and becomes unsound it is customary to leave a few feet of roof coal unworked. The unworked coal forms a sound roof to the workings. During goafing operations this roof coal is ripped down as far as possible.

In this particular instance a large area of roof on the edge of a goaf appears to have been standing on 60 timbers and two small "stooks" of coal, about 10 feet by 6 feet. Miners were engaged in dressing down roof coal within 30 to 40 feet of the edge of the goaf when the roof in the goaf commenced to "weight" and finally collapsed, swaying out all the timbers. The deceased was trapped on the edge of the fall and killed. Several other persons narrowly escaped death.

The Inspector of Mines, No. 2 Circle, who enquired into the circumstances of this accident, considered that it was bad practice to get down roof coal on the edge of a goaf under these conditions.

The extraction of roof coal during goafing operations has been the cause of several accidents in the Raniganj and Jharia coalfields. Some of these accidents have been described in the Annual Reports of this Department of previous years, and the lessons to be learnt from them have been pointed out. In most cases agents and managers have appreciated the danger and have either discontinued the practice or insisted on the roof coal being got down in the galleries before the extraction of a pillar is commenced.

No. 58. The Nodiha Coal Company, Limited's Nodiha coal mine.

At very few mines in India has any attempt been made to extract pillars in a steeply inclined coal seam, and the difficulty of such operations is well illustrated by this accident by which seven persons lost their lives owing to a fall of roof. The scene of the accident is illustrated by plan "A."

The Dishergarh seam at this point lies at a depth of 200 feet below the surface, dips at an angle of 1 in 2.25, and is 11 feet in thickness. The roof is of shale. The upper 7'-6" only of the seam is worked. In the first instance pillars, 50 feet square, are formed by galleries from 10 to 12 feet wide. The extraction of the pillars was commenced early in 1918, and at the time of the accident an area, 250 feet \times 200 feet, had been dispillared. The usual method of extracting a pillar is to split the pillar by a narrow road driven on the line of the full dip. The next operation is to remove that half of the pillar next to the goaf by excavating in the level direction and towards the goaf. There is thus always solid coal between the miners at the working faces and the goaf.

In the present case this plan was not followed. The miners had been allowed to rob the upper side of a pillar, and it was then decided to remove this pillar in one operation by driving down towards the dip with the open goaf on one side. According to the evidence of witnesses there were approximately 40 props set on the goaf side of this working place, and a considerable number of props were also set in the working place itself and the road leading thereto.

Whilst work was going on the local roof, 2 feet in thickness, fell in the goaf, and the fall extended half way across the working face and buried 5 men and 3 women who were at work there. Some of these persons were not killed and attempts were made to rescue them, but a second fall of roof, again about 2 feet in thickness, took place, and all attempts to rescue had to be abandoned, as the conditions were too dangerous.

From the fact that the props were not broken by the weight of the roof, but swayed out, it appears probable that the props were not correctly set in relation to the dip, and several props on the edge of the fall were afterwards found to be incorrectly set and liable to be swayed out by horizontal movement of the roof. The unskilful setting of the timber would contribute to the collapse, but the chief error of judgment was the attempt to work the coal towards the dip with an open goaf on one side.

When a roof "weight" occurs in a steep seam it is evident that

certain stresses are set up which are not present when flat seams are being extracted, and it is only by practical experience and a study of local conditions that these difficulties can be overcome. Such work should be continuously supervised by officials of experience and judgment.

Probably the best plan, under such conditions of work, would be to adopt a method of packing the goaf.

FALLS OF SIDE.

No. 104. The Bansra Coal Company, Limited's Toposi coal mine.

Three women went through a fence to load slack coal in some disused workings, and were killed by a fall of coal from the side of a gallery. The following remarks are quoted from the report of Mr. H. Lancaster, Inspector of Mines, who enquired into the circumstances of this accident:—

“This accident raises the question of what is to be done to prevent persons from going into disused and fenced galleries either to rob coal or for some other purpose. Accidents from this cause are almost unknown in collieries worked in Europe. In India they are too common. It is evident that subordinate officials in India have far too many duties thrust upon them. A sirdar, drawing Rs. 12 per mensem, is expected to inspect and be responsible for the safety of the working places in his district. He is often in charge of the traffic, he probably does some recruiting, and he is responsible for keeping water out of his dip galleries. He is more often than not a very ignorant and inexperienced person. I am of opinion that it is quite time to consider what can be done to improve the status of subordinate underground officials. Mining in India grows in danger and difficulty year by year, and unless the question of educating this class of official in practical mining is taken up seriously I fear that an increase in the number of accidents will be the consequence.”

At an informal meeting of colliery agents with members of the Department of Mines held in Calcutta on 31st January 1920, the question of the examination and certification of subordinate officials was thoroughly discussed, and steps are being taken to formulate a scheme to improve the qualifications of subordinate officials employed in coal mines.

No. 127. Bengal Iron Company, Limited's Duisa iron mine.

Whilst a gang of 45 persons was engaged in loading ore from a dump, a mass of 10 tons of ore dust slipped down suddenly and killed two of them. The dump had a vertical height of about 200 feet, and the loose ore lay at an angle of about 45°. Loading from lofty dumps is objectionable, as the workers are exposed to danger from runs of material or stray lumps during the whole time they are at work. It would be quite feasible to erect bins and to load through them. At manganese quarries, where the conditions are similar, the ore is lowered from each bench in wagons by self-acting inclines. The system of loading at this mine is to be changed and machinery is to be ordered for the purpose.

IN SHAFTS.

No. 130. The Ranegunge Coal Association Limited's South Kustore coal mine.

This accident, which caused the loss of 14 lives, was due to the failure of the main shackle from which the cage was suspended in a shaft 525 feet deep. It is illustrated by plan “B” and plates “A” and “B”.

By the orders of the Local Government an inquiry under Section 18 of the Indian Mines Act, was held by the Deputy Commissioner of Manbhum, with the Chief Inspector of Mines in India and Mr. A. Wright, Officiating Colliery Superintendent of the East Indian Railway Company's collieries, as assessors. A reference is made to their findings hereinafter.

The sanctioned load of each cage is 12 persons. The south cage was at the top of the pit, loaded with 9 persons and ready to descend, and the north cage was at the bottom of the pit, loaded with 12 persons ready to ascend. After the usual signals, the south cage was raised a few inches, to allow of the withdrawal of the keps, and was then lowered. But after descending about a foot it suddenly parted from the winding rope at the main shackle, and fell to the bottom of the shaft. Every one in the falling cage and four of those in the cage which was about to ascend were instantly killed, whilst a fifth man in the latter cage was so much injured that he died the next day. Of the remaining men in the bottom cage four ran out before the other cage reached the bottom. One of those who remained in the cage was uninjured and two were slightly injured.

The manner in which the cage was suspended is illustrated in plan "B". The six cage chains were attached to a connecting plate, and this plate was suspended from the main shackle which broke. Between the main shackle and the capel of the winding rope, and connected to each by D links, came the detaching hook. The working load of the cage was $3\frac{1}{2}$ tons, but at the time of the accident the load was about 2 tons.

A ventilating fan is fixed at the shaft, and, with the object of inducing a current of air through the workings of the mine, the top of the shaft is completely covered. To enable the cages to be worked, wooden shutters, running on rope guides, cover the cage openings, and these are raised and lowered by the cages themselves. They are carried on channel iron wings which are attached to the connecting plate. To give play for the winding ropes, holes, 14 inches square, are provided in the centre of the shutters. These holes are closed by wooden covers, pierced by small holes to permit of the passage of the winding ropes. The covers are raised by the winding rope capels.

After the accident it was found that a piece, $3\frac{1}{4}$ inches long, had been broken clean out of the side of the main shackle. This piece was found about 8 feet from the bottom of the shaft. It showed a flaw at the upper fracture which covers from one-fourth to one-third of the surface of the fracture. The metal appeared to be crystalline.

It was considered that the fracture was due to a severe jerk at some time during the winding operations, but there was no evidence as to how and when such a jerk was caused. The jarring effect caused by the lifting of the wooden shutters at the top of the shaft on the completion of each wind may have brought about the crystalline condition of the metal of which the shackle is composed. The shackle appears to have been in use for about 18 months and to have been annealed about $2\frac{1}{2}$ months before the accident took place. It had been made at the colliery from iron of ordinary quality. It has been subjected to critical examination by Mr. W. Saunders, Professor of Technical Chemistry and Metallurgy, Bengal Engineering College, and the following is an extract from his report:—

"Surfaces exposed had to some extent corroded, but from what could be seen they indicated unsound metal, a coarse crystalline structure and a tendency towards "red shortness". (A red short steel is one which will develop cracks during forging.) In addition the fracture showed serious "piping" (*i.e.*, cavities which form at the top of an ingot during solidification. It is customary to reject the top portion of an ingot as being unsound for structural purposes).

"Samples for analysis were taken from different parts of the shackle. The result of the analysis is as follows:—

Carbon	...	...	...	...	0.25 per cent.
Phosphorous	...	...	...	...	0.18 "
Sulphur	...	...	...	...	0.19 "
Manganese	...	...	...	...	0.45 "

"Engineers are of opinion that the limit of phosphorous for structural purposes should be 0.06 per cent. In this shackle there is 0.18 per cent, which is above the danger line,

"A percentage of 0·08 per cent. of sulphur is regarded as the limit for safety in structural steels. This shackle contains 0·19 per cent. of sulphur. The sulphur in a steel is present as sulphide of iron, a compound which is brittle and has a very bad effect on the steel. Manganese is added to assist in the deoxidation of the steel and also to combine with the sulphur, thus preventing the formation of free sulphide of iron. To do this it is necessary for the manganese to be present considerably in excess of the proportion in which it occurs in the sulphide of manganese, *viz.*, 55 parts of manganese to 32 parts of sulphur. In a normal steel containing about 0·02 per cent. of sulphur the manganese should be about 0·4 per cent. In this shackle there is 0·19 per cent. of sulphur and 0·45 per cent. of manganese. This indicates that the manganese proportion is considerably less than usual.

"The conclusion is that the steel is unsound. It has extensive "piping," a dangerously high percentage of sulphur, and a high phosphorous content. It was, therefore, never suitable for use as a shackle."

The findings of the Court of inquiry were that the accident was not due to the fault of any particular persons, but the fact that the iron of the shackle was not of good quality and was flawed; that the Company had not taken sufficient care in the selection of shackles; that no special precautions had been taken to ensure that the iron used for making the shackle was of good quality.

The Court recorded their appreciation of the very great care and trouble which Mr. F. L. G. Simpson, Inspector of Mines, had taken in making the preliminary inquiry. The record which he had prepared had considerably shortened their labours.

This accident emphasises the importance of selecting only the best qualities of iron for the manufacture of shackles, chains, and everything connected with winding apparatus used for lowering and raising persons in shafts. Proper records should be kept of the times when such shackles, etc., are put to work, and when they are annealed. Now that winding shafts are becoming deeper and loads heavier it is only by strict attention to such details that disastrous accidents such as that described above can be avoided.

IN SHAFTS.

No. 131. The Equitable Coal Company, Limited's Dishergarh coal mine.

Deceased and five other persons were descending a shaft, 1,100 feet in depth, when the cage oscillated violently, and deceased fell out of the cage to the shaft bottom, being killed instantly.

An examination of the winding engine subsequent to the accident revealed that everything was in thorough working order. The actual cause of the jerk, therefore, was not brought to light.

Some three months later, when three persons were being raised from the bottom of the same shaft to an intermediate landing, the engineman lost control of the engine and dashed the cage violently on to the shaft bottom. After the accident the engine was again examined and no defect was discovered. The controlling arrangements, however, were found to be inconvenient, as it was necessary for the engineman to hold the handle of the reversing lever in position when the engine was in motion. It was presumed, therefore, that the engineman failed to hold the lever in position at the time of the accident and that the lever in consequence fell over into the reverse motion, causing the cage to dash violently on to the shaft bottom. It was also assumed that the jerk of the cage in the first accident was due to the same cause, and arrangements were made to alter the position and construction of the reversing lever.

The heavy weight to be raised and the speed at which it is necessary to run the winding engine at a deep shaft render it necessary for the control to be as simple and as perfect as possible.

No. 134. Babu Kunja Behary Seal's Kallythan Suratgarh coal mine.

This shaft accident was somewhat unusual in character. A goaf, 135 feet square and 150 feet below the surface, formed by the extraction of a coal seam,

21 feet thick, suddenly collapsed to the surface. The rush of air caused by the collapse blew the cages up in a winding shaft 100 feet distant from the goaf. When the cage fell back its weight broke the winding rope and the cage fell to the bottom of the shaft. The deceased, who was being raised in the cage at the time, was killed on the spot.

Work had been going on at the place on the day shift, but ceased at about 3 P.M. At about 6 P.M. the overman made an inspection and found the goaf "weighting". He fenced off the district and told the night sirdar not to permit any work to be done there during the night. The night shift, 68 persons in all, was employed in two other pillaring districts to the dip of the shaft. About 5 A.M. the deceased, who was the sirdar in charge, found the rise goaf uneasy and was proceeding to the surface to report to the manager when he was killed as described above.

The air blast was anticipated, but its severity was underestimated. The work people in the dip districts had been withdrawn from their working places a few minutes before and instructed to lie down. None of them were injured and they do not appear to have been seriously alarmed. The other cage at the shaft where the accident occurred was damaged and not available, and the landing trolley at No. 2 bucket pit, which was the second outlet, was derailed by the air blast. After about an hour's delay, whilst the trolley was being re-railed, all persons were safely withdrawn *via* No. 2 pit.

It was fortunate that the sirdar in charge did not attempt to withdraw the work people from the mine at once. If he had done so, the loss of life might have been much greater, as the cage will accommodate six persons.

Air blasts due to goaf falls are by no means of infrequent occurrence, and are likely to become still more numerous. The danger from this cause cannot be eliminated until the filling up of goaves by means of dry or wet packing becomes universal. The occurrence of such accidents is another argument in favour of such method of working.

At all mines where air blasts are likely to occur, standing instructions should be given for the officials to withdraw all work persons and make them lie down in the galleries when danger from an air blast is anticipated. Such instructions were given in this case.

No. 163. Messrs. The Tata Iron and Steel Company, Limited's Purusatham-pur coal mine.

This accident was due to the fall of a walling scaffold in a sinking shaft. When it occurred fifteen men were at work on the scaffold. The latter fell a distance of 30 feet to the bottom of the shaft. All the men on the scaffold escaped injury except deceased who was killed instantly.

The inside diameter of the shaft is 16 feet. A lining of brickwork, 2 feet in thickness, was being put in. For this work a scaffold was constructed consisting of a frame built up of four 5" x 7" beams covered with planking and with an aperture, 6' x 8', in the centre. In the first instance the ends of the four timbers forming the frame were placed on the walling curb, and the first length of walling was built up leaving vertical apertures, tapering from about 10 inches at the bottom to 3 feet at the top, to allow the scaffold to be raised vertically. When the first length of walling was completed the scaffold was raised by the winding rope to the necessary height and afterwards moved round horizontally until the ends of the frame rested on the top of the brickwork at a point 2 feet from the edges of the apertures referred to above. The latter were then bricked in and the next length of walling commenced.

The scaffold appears to have been raised on the morning of the day on which the accident occurred and placed on the top of the walling as described above. Fifteen masons and stone-cutters went down to work. Bricks and mortar were lowered and unloaded on the scaffold, when suddenly, 1½ hours after it had been fixed, the scaffold fell to the shaft bottom, a distance of 30 feet. It was afterwards found that the green masonry at the edges of the apertures had collapsed, thus releasing the whole frame.

At the inquiry it transpired that no responsible person had supervised the operation of raising the scaffold. It may, therefore, have been that the collapse was due to the ends of the frame not having been placed sufficiently far from the edges of the apertures. Pillars of green masonry of such dimensions cannot, however, be expected to stand much weight, even if the ends of the frame are placed in the centre of them. Such work should have been properly supervised.

It was considered, however, that the accident was primarily due to the bad design of the scaffold. The frame was not symmetrical, and would, therefore, be unequally supported by the brickwork. After the accident the design of the scaffold was altered, and it was suspended from wire ropes.

BY EXPLOSIVES.

No. 170. The Cape Copper Company, Limited's Rakha Hills copper mine.

An experienced blaster was engaged in charging shot holes with gelatine dynamite in an underground stope. Whilst he was ramming cartridges into a hole by means of a wooden tamping rod an explosion occurred, killing him instantly and injuring two other persons.

The cause of this accident was at first considered to be obscure. An examination, however, of the Company's explosive magazine showed that a large quantity of the gelatine dynamite in stock had deteriorated and was in a dangerous condition. It is probable, therefore, that the accident was due to the defective condition of the explosive, and there was evidence to show that the deceased had used too much force.

Since the accident the Company's stocks of explosive have been largely reduced and the defective explosive has been destroyed.

HAULAGE.

Nos. 186 and 188. The Aldih Coal Company, Limited's Bhutgoria coal mine and His Highness the Maharaja of Kasimbazar's Ekra Khas coal mine.

Both these fatalities were due to the bad practice of employing men at curves on haulage roads to guide the tubs and prevent them from derailment. Such a practice is entirely due to the inefficient manner in which curves are frequently aligned, and to faulty laying of the rails. It is often the case that haulage attendants guide the tubs at curves in this manner of their own accord to save themselves the trouble of re-railment, and managers have sometimes disclaimed knowledge of the practice. Persons engaged on such work are exposed to great danger, and it should be a point of honour with managers to see that the necessity for guiding tubs by hand on curves does not exist.

SUNDRIES UNDERGROUND.

No. 216. Messrs. Hoare Miller and Company's Muktia mica mine.

By this accident three persons were killed by the ignition of petrol vapour at an underground pump driven by a petrol engine. Just a year previously a similar accident took place with the same engine at the Company's Hataria mine. After the first accident the use of naked lights in the vicinity of the pump was prohibited and portable electric lamps were used instead.

When the second accident took place the fitter in charge went down to start the pump, and for some unexplained reason took a candle instead of the electric lamp supplied for the purpose. Petrol vapour had accumulated and become ignited. The fitter and two coolies who accompanied him were so severely burnt that they died within two days.

The use of petrol engines underground is attended with great danger. Since the accident at this mine the engine has been worked by kerosene; a small quantity only of petrol being used for starting purposes.

Section IV.—Prosecutions and Additions to the Act. Prosecutions

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

The Owner and Manager of Gunpat Ram Marwari's Keshubgunj coal mine were prosecuted under Rules 7, 19 and 13 read with Section 22 (3)(b) and (e) for not fencing discontinued galleries in the mine, for not fencing the top of a shaft and for permitting the conveyance of explosives from the magazine to the mine in insecure boxes. The Owner was fined Rs. 200 and the Manager Rs. 25.

The Agent and Manager of Banerjee Santan's Jotejanaki coal mine were prosecuted under Rules 3, 4 and 19 read with Section 22(3)(a) and (3)(c) for permitting miners to cut coal beneath the dangerous and vertical side of a quarry and for not fencing the sides of the quarry. The Agent was fined Rs. 50 and the Manager Rs. 15.

The Owners and Manager of Babus W. C. Bhattacharji and Saroda Prosad De's Egarcoor coal mine were prosecuted under Rule 19, read with Section 22(3)(e) for not securely fencing an air shaft and incline of the mine. The owners were fined Rs. 25 and Rs. 50, respectively, and the Manager Rs. 10, in default two weeks' simple imprisonment.

The Owner of J. Boisogomoff and Company's Dobrana coal mine was prosecuted under Rules 7 and 20 read with Section 22(3)(e) for not securely fencing the moving parts of a winding engine. He was fined Rs. 20.

The Owner of J. Boisogomoff and Company's Dobrana coal mine were prosecuted under Section 13(1) of the Act, and rule 19 read with Section 22(3)(e) for not employing a duly qualified Manager and for not fencing disused galleries in the mine. He was fined Rs. 15.

The Owner of J. Boisogomoff and Company's Radhaballavpur coal mine was prosecuted under Section 13(1) of the Act and Rule 1(a) read with Section 22(3) (e) for not employing a duly qualified Manager and for not providing a second outlet for the safe working of the mine. The Owner was fined Rs. 100 on each count.

The Owner and Manager of the Jalot a Lutchipur Coal Company's North Lutchipur coal mine were prosecuted under Rules 3, 7 and 19 read with Section 22(3) (a) and (e) for not maintaining in a secure condition the sides of a quarry, for not fencing disused galleries and for not fencing the edge of a quarry. He was fined Rs. 100, and the Manager Rs. 30, in default 15 days' simple imprisonment each.

The Owner, Agent and Manager of Babu Prithvi Raj's Gujarama mica mine were prosecuted under Rule 3 of Notification No. 6436-152, dated the 2nd September 1911, read with Section 22(3) (e) for not providing and maintaining the prescribed daily report book at the mine. They were fined Rs. 30 and 10 each, respectively.

The Owner and Agent of Babu Prithvi Raj's Gujarama mica mine were prosecuted under Rule 19 of Notification No. 6436-152, dated the 2nd September 1911, read with Section 22(1) (e) for not keeping the sides of a quarry secure. This case arose out of a fatal accident No. 72. They were fined Rs. 100 each.

The Manager of S. N. Mitra & Brothers' Ranidih coal mine was prosecuted under Rules (1) (b), 7 and 14, read with Section 22(3) (e) for not providing proper arrangements for persons to descend to and ascend from the mine, for not properly fencing disused galleries and for not providing an adequate amount of ventilation in the mine. He was fined Rs. 50, in default 2 weeks' simple imprisonment.

The Owner and Manager of Babu J. P. Lalla's Tundu Khas coal mine were prosecuted under Rules 3, 19 and 22, read with Section 22(3) (e) for not keeping working places secure, not fencing a quarry completely and for not providing ambulance appliances at the mine. They were fined Rs. 25 each, in default 2 weeks' simple imprisonment.

The Owner of Mr. B. Channaya's Tarmee coal mine was prosecuted under Rule 4 of Notification No. 11793-103, dated the 30th December 1908, as subsequently amended, read with Section 22(3) (e) for not submitting the prescribed notice of change of ownership of the mine. He was fined Rs. 10, in default two weeks' simple imprisonment.

The Owner and Manager of Babu S. C. Roy's Kalimati coal mine was prosecuted under Rule 3, read with Section 22 (3) (e) for not keeping the working places of the mine secure. He was fined Rs. 100, in default 2 weeks' simple imprisonment.

The Manager of the Shampur Coal Company, Limited's Shampur coal mine was prosecuted under Rule 19, read with Section 22(1) (e) for not fencing the top of a shaft. The case arose out of a fatal accident which occurred in 1918, and was instituted on the Police report. It was held that the evidence produced was not sufficient to support a conviction, and the accused was acquitted.

The Owners (three) and Manager of Babu W. C. Bhattacharjee & Company's Egarcoor coal mine were prosecuted under Rule 19, read with Section 22(3) (e) for not keeping several old inclines and quarries properly fenced. The Manager was fined Rs. 100, in default one month's simple imprisonment. The case against the owners was withdrawn.

Prosecutions were instituted against the undermentioned persons under Rule 1 of Government of India Notification No. 11793-103, dated the 30th December 1908, as amended by Notification No. 5072-113, dated the 1st July 1916, read with Section 22(2) (b) for failure to submit Annual Returns for the year 1918.

The Owners (two) of Babus Naba Chandra Chatterji and Soorath Nath Banerji's Bhatudih mica mine were fined Rs. 20 each, in default 20 days' rigorous imprisonment.

The Owner of Babu Bhagwandas Agarwalla's Singhocola mica mine was fined Rs. 10. Proceedings against the Manager were dropped, as he could not be traced.

The Owner, Agent and Manager of Mr. Lingamalla Venkataramiah's Kalualainlaya mica mine were fined Rs. 5 each.

The Owners of the Pandra Coal Company's Pandra coal mine were fined Rs. 10.

The Owner of Babu Tinowrie Mukherji's Dhakadi coal mine was fined Rs. 10.

Proceedings against the East Indian Agency, Limited, Owners of Makoli coal mine, were dropped as the company had gone into liquidation.

The Owner of Babu Kusum Kumar Mukherji's Veeratand coal mine was fined Rs. 10, in default 2 weeks' simple imprisonment.

The Owner of Babu Monmohan Ghosh's West Salanpur coal mine was fined Rs. 10.

The Owners of Messrs. E. Meyer & Company, Limited's Kalipahari coal mine were fined Rs. 25.

The Owner of the Tarmee Coal Company's Tarmee coal mine was acquitted.

The Owner of Babu Bhagwandas Agarwalla's Lakthaia mica mine was fined Rs. 10. Proceedings against the Manager were dropped as he could not be traced.

The Owner of Babu Bhagwandas Agarwalla's Mohesmara mica mine was fined Rs. 20, in default 20 days' simple imprisonment. Proceedings against the Manager were dropped as he could not be traced.

The Owner and Manager of Mr. Matat Jugjiwanpuri's Beraghat steatite mine were acquitted.

Proceedings against the Owner of Babu A. K. Chatterji's Mahalakshmi mica mine were dropped as he could not be traced.

The Owner of Babu Bancha Nidhi Praya's Hanuman mica mine was fined Rs. 20, in default 20 days' simple imprisonment.

Proceedings against the owner of Babu Manji Hira's Koradih coal mine were dropped as he could not be traced.

Proceedings against the Owner and Agent of Babu Annada Prosad's Khudika coal mine were withdrawn.

The Owners (two) of the Bihar Mica Mining and Trading Company's Serni mica mine were fined Rs. 20 each, in default 20 days' rigorous imprisonment.

The undermentioned colliery owners were prosecuted under Rule 12, read with Section 22(2) (b) for failure to submit plans of the discontinued workings of their respective mines.

The Owners (two) of Messrs. M. N. Dutt and Gunga Bux Kabra's Chattadanga coal mine were fined Rs. 25 each, in default 2 weeks' simple imprisonment.

The Owner of Mr. B. Channayya's Tarmee coal mine was fined Rs. 10, in default 2 weeks' simple imprisonment.

Information was received regarding the following judgments in prosecutions initiated by Managers against employees for breaches of the Special Rules, made under Section 21 of the Act.

An overman at the Equitable Coal Company Limited's Dishergarh coal mine was prosecuted under Rule 40 read with Section 22(1) (e) for not fencing a disused working place. The case arose out of a fatal accident at the Dishergarh mine by an explosion of fire-damp which occurred in 1918 and was commented upon on page 7 of the Report for that year. He was acquitted.

A shot-firer and a miner at the Pench River Coal Company Limited's Eklehra coal mine were prosecuted under Rules 4 and 5 and 85 and 87, respectively, read with Section 22(1) (e), the former for deputing a miner to do his work thereby endangering his safety, and the latter for abetting the former. The shot-firer was fined Rs. 50 and the miner Rs. 20, in default one month's rigorous imprisonment each.

A banksman at the Upper Pench Coal Company, Limited's Jatachappa coal mine was prosecuted under Rule 78 read with Section 22(1) (e) for failure to place a stop block on a self-acting incline. He was fined Rs. 60 in default one month's rigorous imprisonment.

An overman at Messrs. Abdul Karim & Brothers' Kapasara coal mine was prosecuted for violation of Rules 39, 40 and 41 read with Section 22(3) (e). He was fined Rs. 10, in default two weeks' simple imprisonment.

Two sirdars, at the New Beerbhum Coal Company, Limited's Joyramdanga coal mine were prosecuted for not taking due precautions while work of a dangerous nature was being carried on. The case arose out of fatal accident No. 97. One sirdar was acquitted and the other fined Rs. 6, in default 10 days' simple imprisonment.

An electric mistry at the Bengal Iron and Steel Company, Limited's Noonoodih coal mine was prosecuted under Rule 4 read with Section 22(3) (e) for absenting himself from duty without permission. He was fined Rs. 20, in default one month's simple imprisonment.

A boiler-fireman at the new Beerbhum Coal Company, Limited's Joyramdanga coal mine was prosecuted under Rule 64 read with Section 22(3) (e) for not maintaining the water level in a boiler. He was fined Rs. 13, in default 15 days' simple imprisonment.

Three miners at the Equitable Coal Company, Limited's Dishergarh coal mine were prosecuted under Rules 7, 15 and 21 read with Section 22(3) (e) for passing through a fence into a prohibited area and cutting coal from a pillar without authority. They were fined Rs. 20 each in default one month's simple imprisonment.

Proceedings against a miner at the Bengal Coal Company, Limited's Damodapur coal mine, under Rules 7, 15 and 21, were dropped as the accused could not be traced.

An overman at the Bengal Nagpur Coal Company, Limited's Bhuggutdih coal mine was prosecuted under Rule 49, read with Section 22(3) (e) for permitting persons to remain in the mine at the close of the day's work. He was fined Rs. 15, in default one week's simple imprisonment.

Two miners at Messrs. B. M. Pal & U. M. Pal's Rajpura coal mine were prosecuted under Rule 15 read with Section 22(3) (e) for working in a place in the mine other than the place in which they had been ordered to work. They were fined Rs. 2 each, in default one week's simple imprisonment.

A sirdar and an overman, at Messrs. M. L. and K. D. Laik's Hatnol coal mine were prosecuted under Rule 39 read with Section 22(3) (e), for not maintaining in good condition the fences of several disused galleries. They were fined Rs. 10 each, in default one week's simple imprisonment.

A hooker-on at the Assam Railways and Trading Company, Limited's Namdang coal mine was prosecuted under Section 236 of the Indian Penal Code. The case arose out of fatal accident No. 180. He was sentenced to one month's rigorous imprisonment.

A tub pusher at the Assam Railways and Trading Company, Limited's Ledo Valley coal mine was prosecuted under Section 287 of the Indian Penal Code. The case arose out of fatal accident No. 206. He was sentenced to two months' rigorous imprisonment.

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

ADDITIONS TO THE ACT:

During the year Special Rules under Section 21 of the Act were established at 39 coal mines and 2 manganese mines. Special Rules have now been established at 539 coal mines and 39 manganese mines.

Section V.—General Remarks.

HEALTH AND SANITATION.

The Asansol Mines Board of Health held ten ordinary meetings and one special meeting during the year.

Dr. J. W. Tomb, Chief Sanitary Officer, was on leave from the 14th April till the 11th October, during which period Dr. W. P. O'Connor acted as Chief Sanitary Officer.

Regulation No. 10, of the Regulations for the prevention and control of small-pox in the Asansol Mining Settlement, has been amended, and the mine manager, owner or agent is now liable to notify only those cases which occur in a building in his possession or under his control.

Lectures on sanitation and hygiene in the collieries and villages were continued during the year and were greatly appreciated.

The investigation of hook-worm disease in the Mining Settlement was continued, and the result in the agricultural and colliery areas tallied with that reported last year. In the municipalities of Asansol and Raniganj, the rates of incidence were found to be 9 per cent. and 11 per cent., respectively. The smaller percentage of infection in municipalities is doubtless due to the fact that the people in municipalities are accustomed to the use of latrines.

The anti-malarial investigation commenced last year was continued with an augmented staff, and all tanks and collections of water found to harbour malaria bearing mosquitoes are gradually being drained or cleansed of weeds.

There were 3,511 cases of cholera and 1,863 deaths; the figures of small-pox being 200 cases and 14 deaths; as compared with 442 cases of cholera and 225 deaths and 80 cases of small-pox and 7 deaths in 1918. The number of deaths from influenza was 2,024, as compared with 1,920 deaths during the previous year.

Cholera broke out in epidemic form in the beginning of the year and lasted with gradually decreasing incidence until the middle of October. The epidemic of influenza which affected the settlement during the latter part of the year 1918 gradually diminished as the year advanced and disappeared altogether in the month of November.

The Jharria Mines Board of Health held sixteen ordinary and five special meetings.

There was no change in the non-official members of the Board during the year, but in June Mr. E. S. Hoernle, I.C.S., became Chairman, *vice* Mr T. Luby, I.C.S., resigned.

From the 27th March to the 1st December Dr. G. W. Thompson, Chief Sanitary Officer, was on leave and Dr. J. S. Bradford officiated for him.

The Epidemic Diseases Act remained in force throughout the year and was administered by the Chief Sanitary Officer, who continued to be the authority appointed under the Act.

During the year the Mugma area of the Raniganj coalfield was brought within the jurisdiction of the Jharia Mining Settlement. Previously the Epidemic Diseases Act had been extended to this area, and the authority under the Act was the Additional Deputy Commissioner, Dhanbad.

There were 4,006 cases of cholera with 2,124 deaths and 911 cases of small-pox with 47 deaths, as compared with 639 cases of cholera and 344 deaths and 74 cases of small-pox and 5 deaths in the previous year.

The mortality from epidemic diseases in other mining fields has been reported as follows:—

Sixty-six deaths from cholera and fifteen deaths from small-pox at manganese mines in the Central Provinces; 300 deaths from cholera at coal mines in the Chanda District, Central Provinces, and 91 deaths from cholera at the Mohpani collieries in the same Province; 467 deaths from influenza at the Margherita coal mines in Assam.

The rainfall in the Jharia Coalfield was 47·85 inches, in the Giridih coalfield 68·49 inches, in the Raniganj coalfield 47·90 inches, and at the new Jharia Water Works it was 72·50 inches. The figures for the previous year being 46·63; 35·70; 33·11 and 47·49 inches, respectively.

MINING EDUCATION.

The Professor of Mining at the Bengal Engineering College has reported that in the examination held in March, of the 14 students who entered the senior course, 12 were granted diplomas. In the junior course 24 were enrolled at the beginning of the session, 16 sat for examination and 13 qualified for promotion to the senior course. There were 4 special students. Thirty-three students entered the preliminary class on the mining side, of whom 27 were promoted.

The annual mining camp was pitched at Jharia on a site near the boundary of Bhaga and Jamadoba Collieries. The usual courses of practical work were undertaken and visits of inspection paid to various plants and appliances of technical interest in the vicinity.

The total number of students in the camp was 49, of whom 9 were special survey students.

The Mining Education Advisory Board held five meetings during the year. As the result of the examination of students of the mining classes in the coalfields special mining scholarships, tenable at the Bengal Engineering College, were awarded to Babus Birendra Nath Mitra and Debi Prosad Pal.

The resignation of Mr. H. C. Read, Mining Instructor, led to the creation of two temporary appointments. Mr. C. E. Ashcroft was appointed as Mining Lecturer in Bengal, and Mr. J. E. Phelps was appointed in the same capacity in Bihar and Orissa. Babus Rash Behari Mondal and Hemanta Kumar Nag were appointed as Mining Lecturers in Bengali and Hindi, respectively.

Seven excursions were undertaken in connection with the lectures, all of which were largely attended. The quantity of home work increased, but the quality was poor. This was due to the large number of new students.

The sessional examination was held in May, the examiners being Messrs. H. Lancaster, Inspector of Mines in India, and E. H. Robertson, Professor of Mining, Bengal Engineering College. Of the 220 candidates who qualified to sit for examination, 70 candidates presented themselves for examination, and 46 were successful. The examiners stated that "many of the candidates appeared to avoid making drawings or sketches, preferring rather to cover their answer books with a profusion of words. Such sketches as were made were distinctly inferior to those of students in the preceding year. In only two or three instances could they be called good."

The usual courses of mining lectures in the vernaculars were delivered in the Raniganj and Jharia coalfields.

BOARD OF EXAMINERS FOR COAL MINE MANAGERS' CERTIFICATES.

The personnel of the Board underwent a change towards the close of the year. Mr. T. H. Ward, on proceeding to England, resigned his membership on the 26th December. He was succeeded by Mr. G. C. Leach.

On behalf of the Board I have to record its high appreciation of the valuable service rendered by Mr. Ward for a period of over 4½ years.

The Board held seven meetings during the year.

Seventeen first class Indian certificates of competency were granted to applicants holding English certificates of a similar class, and five first class and four second class certificates of service were granted during the year.

At the examination for colliery managers' certificates of competency held at Dhanbad on the 17th, 18th and 19th February and the 24th, 25th and 26th February, respectively, fifty-five candidates appeared for first class and eighty-seven for second class certificates. Certificates of competency were granted to three first class and twenty-one second class candidates. Two first class candidates who failed to obtain pass marks at the first class examination were awarded second class certificates.

One duplicate second class certificate of service was granted during the year.

The examiners for the first class competency examination were Messrs. J. B. Wardlaw, J. Mackie and R. R. Simpson (official examiner and secretary), and for the second class examination Messrs. L. A. Jacobs, R. Heron and H. Lancaster (official examiner and secretary).

The Regulations made by the Board under Rule 30 of the rules applying to coal mines, made under Section 20 of the Indian Mines Act, 1901, for the conduct of examinations for Colliery Managers' certificates of competency were amended and duly published in the Official Gazettes. These Regulations are reproduced in Appendix IV, Statement 6.

At a meeting of the Board on the 22nd January it was resolved that the General Rules, made under Section 20 of the Indian Mines Act, 1901, governing the grant of certificates of service, had served their purpose, and that the Chief Inspector of Mines (President of the Board) should approach Government with a view to the cancellation of the rules in question. The Government of India were pleased to accept the recommendation of the Board, and a notification (Appendix IV, Statement 8) was published cancelling these rules with effect from the 30th June 1920.

The numbers of certificates of each class granted by the Board since the introduction of the rules in 1906 are shown in the following table :—

YEAR.	INDIAN CERTIFICATES OF COMPETENCY IN LIEU OF ENGLISH CERTIFICATES.		INDIAN CERTIFICATES OF COMPETENCY.		INDIAN CERTIFICATES OF SERVICE.		TOTAL.
	1st Class.	2nd Class.	1st Class.	2nd Class.	1st Class.	2nd Class.	
1906	62	7	...	...	100	84	253
1907	25	3	18	10	24	76	156
1908	47	6	21	26	7	22	129
1909	13	2	14	16	8	4	52
1910	7	1	3	6	1	...	17
1911	8	...	3	8	...	...	17
1912	5	...	4	11	...	2	22
1913	13	...	6	15	1	...	34
1914	10	2	8	20	1	2	43
1915	15	2	5	8	1	..	31
Carried over.	204	23	82	117	138	190	754

YEAR.	INDIAN CERTIFICATES OF COMPETENCY IN LIEU OF ENGLISH CERTIFICATES.		INDIAN CERTIFICATES OF COMPETENCY.		INDIAN CERTIFICATES OF SERVICE.		TOTAL.
	1st Class.	2nd Class.	1st Class.	2nd Class.	1st Class.	2nd Class.	
Brought forward	204	23	82	117	138	190	754
1916	5	...	9	15	2	...	31
1917	1	...	9	11	1	1	23
1918	1	...	10	24	9	7	51
1919	17	...	3	23	5	4	52
1920*	81	1	7	23	3	3	68
TOTAL	259	24	120	213	158†	205†	979

* Up to half year ending 30th June 1920.

† 134 first class and 189 second class certificates of service were granted under Rules 36 and 37, and 24 first class and 15 second class certificates of service were granted under Rule 38. Rules 36, 37 and 38 are now cancelled.

Towards the latter end of the war the shortage of first class certificated managers was severely felt, and the situation was only met by a liberal interpretation of the rules by which a manager may be permitted to manage more than one mine, and by the grant of temporary authorizations in special cases. The low percentage of passes at the examinations for certificates of competency, and the moderate standard of knowledge attained by the candidates emphasize the need for the early extension of educational facilities in the coalfields.

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

The Bengal Mining Board held one meeting during the year when the following subjects were considered :—

- (1) The applicability of the provisions of the draft Bihar and Orissa Mining Settlements Bill, 1918, to Asansol, if a similar bill is framed for Bengal.
- (2) The recommendations of the Royal Commission on the Public Services in India regarding the Indian Mines Department.

The following subjects were considered by circulation to members :—

- (1) Cancellation of Rules 38-40 of the rules made under Section 20 of the Indian Mines Act, 1901;
- (2) Amendment of Rule 35(2) of the Bengal Mining Settlements Act, 1902;
- (3) Amendment of Rules 12, 96(C) and Rule 4(9) of the Indian Explosives Act.

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

The Bihar and Orissa Mining Board held one meeting during the year when the recommendations of the Royal Commission on the Public Services in India regarding the Indian Mines Department were considered. As no other meeting could be held conveniently during the year the questions of the amendment of Rule 23-E., made under the Bengal Mining Settlements Act, and the cancellation of Rules 38-40 of the rules made under Section 20 of the Indian Mines Act, were considered by circulation to members of the Board.

The non-official members were Messrs. T. H. Ward and R. G. M. Bathgate. Mr. Ward resigned his membership on leaving the country towards the end of December.

The Central Provinces Mining Board held no meetings during the year. The non-official members of the Board were Messrs. H. D. Coggan and R. S. Davies.

MINING AND GEOLOGICAL INSTITUTE OF INDIA.

The total membership at the end of the year, including subscribers, was 283. In addition to the annual meeting, two ordinary meetings were held at

which papers were read and discussed, and visits were paid to one coal mine and the Jharia Water Works. Two parts of the Transactions were published, and the geological map of the Jharia coalfield was completed.

The Subsidence Committee continued its work during the year.

The Government prize for the best paper during the year was awarded to Mr. J. Brown for his paper "Quarrying a thick coal seam in India, with notes on haulage and drainage."

The Institute medals were awarded as follows :—

- (a) The gold medal to Mr. J. Brown for his above mentioned paper.
- (b) The silver medal to Mr. C. A. John Hendry for his paper on "Notes regarding proposed sand packing at Ramnagar", and
- (c) The bronze medal to Mr. G. W. Marshall for his paper on "Bye-Product Coke Ovens."

THE ASSOCIATION OF COLLIERY MANAGERS IN INDIA.

The membership of the Association increased from 196 to 200.

The Council was engaged with questions relating to :—

Affiliation with the National Association of Colliery Managers in Great Britain; the granting of certificates of service; representation of the Association on the different Boards in the Mining Settlement area; the Jharia field hospital scheme; the housing of labour in the Jharia coal field; the future of the Indian Defence Force as applied to the mining area; the registration of up country labour in collieries in the Jharia coalfield; the working hours of labourers in the coalfields; the better control of liquor shops, and the report of Mr. Treharne Rees on the methods of coal mining in India. One visit was paid to a large iron works in Calcutta and another to a paper mill at Raniganj.

RULES FOR MINE GATES AND REGISTERS OF WORKERS IN COAL MINES.

In August 1918 the Governments of Bengal and Bihar and Orissa published rules requiring a correct record to be kept of the number of persons entering and leaving coal mines, and also requiring the provision of gates or permanent fences at the entrances of coal mines. As at that time the war was in progress, and it was thought by some that the introduction of these rules might have a prejudicial effect on the output of coal the Government of India were pleased to inform the Indian Mining Association that time would be given to introduce the rules.

Since the close of the war steps have been taken to enforce the rules, and during the year under review enquiries were made as to how the rules were being carried out.

With regard to the method of keeping the record of work people, great variation was found to exist. The most usual method is for the munshis, time-keepers and overmen to hand in lists of the names of workers at the colliery office, where a clerk prepares a register either at the end of the shift or on the following morning. Such a register is of value for the preparation of labour statistics for the statutory annual return, but it is of no use as a record of the number of persons underground at any particular time. At some mines in addition to the register, the hookmen on surface keep a record of the number of persons below ground by means of pegs on a board or rings on a rod. At another mine paper tokens were issued to persons entering the mine, and such persons were required, when leaving the mine, to deposit these tokens in boxes provided at all the mine entrances. Experience has shown that little reliance can be placed on such records. At mines where safety lamps are used throughout an accurate record can be kept up from the registers of lamp issues. At five collieries a system of numbered metal tallies has been introduced, and, in addition, at one of these collieries the names of all persons entering and leaving the mine are recorded in a book. The tally system is the only reliable method of record. It is now being introduced at one of the largest groups of collieries in the Jharia coalfield. The owners are spending no less than Rs. 8,700 for the erection of time-keeper's cabins, and they anticipate a monthly expenditure of Rs. 1,575 for wages alone.

It is to be hoped that the tally system will be generally adopted, as it is the only one which has proved satisfactory.

There have been numerous inquiries as to the types of gates and permanent fences required by the rules. The chief point to remember is that the gates or fences should not prevent egress in case of emergency. One manager has solved this problem by building walls, 8 to 10 feet high, in the cuttings of disused inclines. On the outer side the walls present a smooth face and on the inner side there are steps or foot holds. This is a good plan, but probably a height of 6 feet is sufficient. In another case permanent gates are secured by a chain which is fastened to a hook fixed to the side of the road some four feet or so inside the gate. The chain can be unhooked from the inside, but the hook cannot be reached from the outside. Perhaps the best plan for roads which are in continual use is to provide a simple gate not more than 6 feet high over which persons inside can climb in case of emergency.

TRUE MERIDIAN LINES IN THE COALFIELDS.

In the Annual Report for 1911 plans were published showing the exact location of true north lines which had been laid down by the Surveyor-General of India at six places in the Bengal and Bihar Coalfields. These fixed points have enabled surveyors to check their instruments periodically, and their provision has proved of great benefit to the mining community. The pillars marking two of these lines have since been destroyed by mischievous persons, but those of the other four lines are intact. As the checking of instruments at least once a year will bring about improvement in the accuracy of mine plans, the location plans of the pillars still of service have been reproduced and attached to this report (Plans C and D). Tables have been added showing the magnetic declinations (to the nearest 5 minutes) at Sitarampur, Jharia, and Giridih for each of the years 1900-1920.

LAND ACQUISITION (MINES) ACT, 1885.

The number of original cases disposed of altogether at the end of the year 1919 stood at 352, twenty-five of which were cases dealt with during the year.

OFFICIAL DUTIES, 1919.

Mr. G. F. Adams, C.B.E., was Chief Inspector of Mines in India.

Mr. R. R. Simpson was Inspector of Mines, No. 1 Circle. He was granted combined leave out of India from the 15th April to the 24th December.

Mr. H. Lancaster was Inspector of Mines, No. 2 Circle.

Mr. F. L. G. Simpson was appointed as a temporary Inspector with effect from the 1st March. He held charge of No. 1 Circle from the 16th April to the 24th December.

Mr. J. Coggin Brown, Assistant Superintendent, Geological Survey of India, continued to be an Inspector of Mines for the mines situated in the Tavoy District of Lower Burma, up to the 5th August.

Mr. J. J. Turnbull, Junior Inspector of Mines, was permitted to resign his appointment with effect from the 31st January.

Mr. J. H. Lang was appointed Junior Inspector of Mines on 27th November.

I have the honour to be,

SIR,

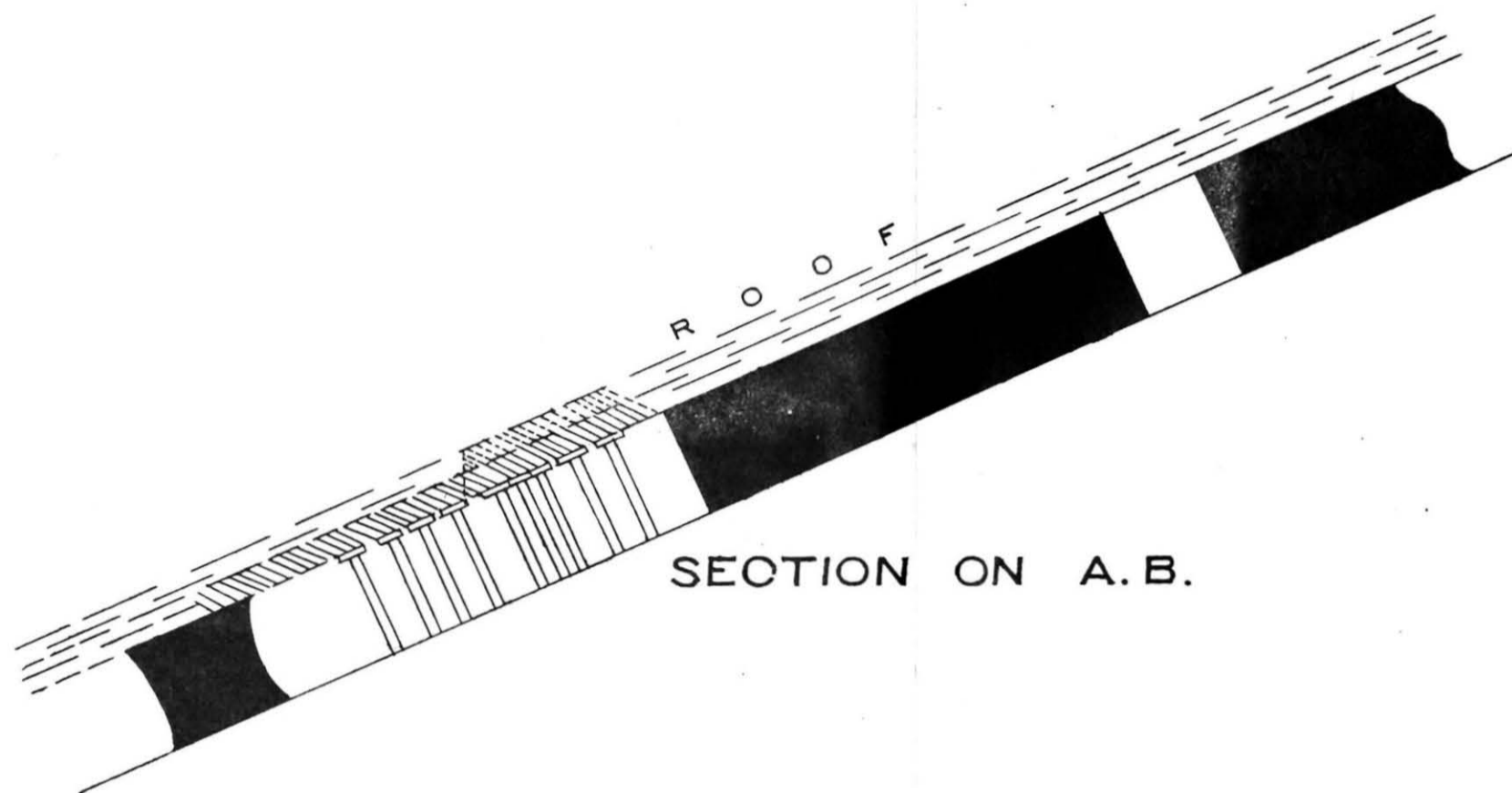
Your most obedient servant,

R. R. SIMPSON,

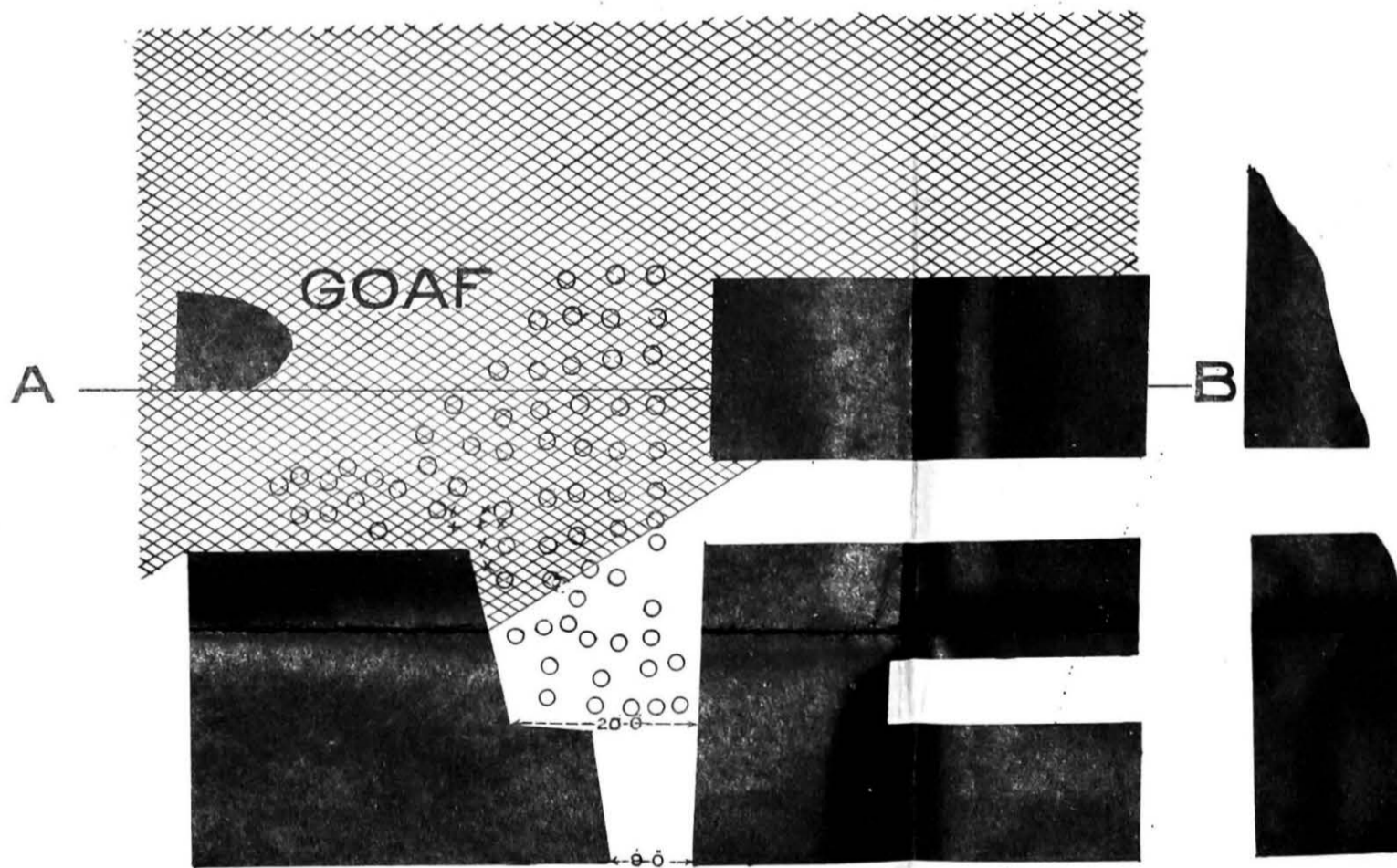
Officiating Chief Inspector of Mines in India.

PLAN AND SECTION ILLUSTRATING REPORT ON
FATAL ACCIDENT BY FALL OF ROOF
AT
THE NODIHA COAL Co., LTD's NODIHA MINE

SCALE 1 INCH = 20 FEET



SECTION ON A.B.



← DIP 1 IN 2·25

REFERENCES

- APPROXIMATE POSITION OF THE DECEASED INDICATED THUS.....X
- 1ST FALL OF ROOF.....
- 2ND FALL OF ROOF, WHICH PREVENTED RESCUE.....

PLAN

JHARIA COAL FIELD.

PLAN SHOWING THE EXACT LOCATION OF TRUE NORTH LINE PILLARS LAID DOWN BY THE SURVEY OF INDIA.

DHANBAD.
SCALE 1/2 INCH = 500 FEET.

JORAPOKHAR
SCALE 1/2 INCH = 800 FEET.

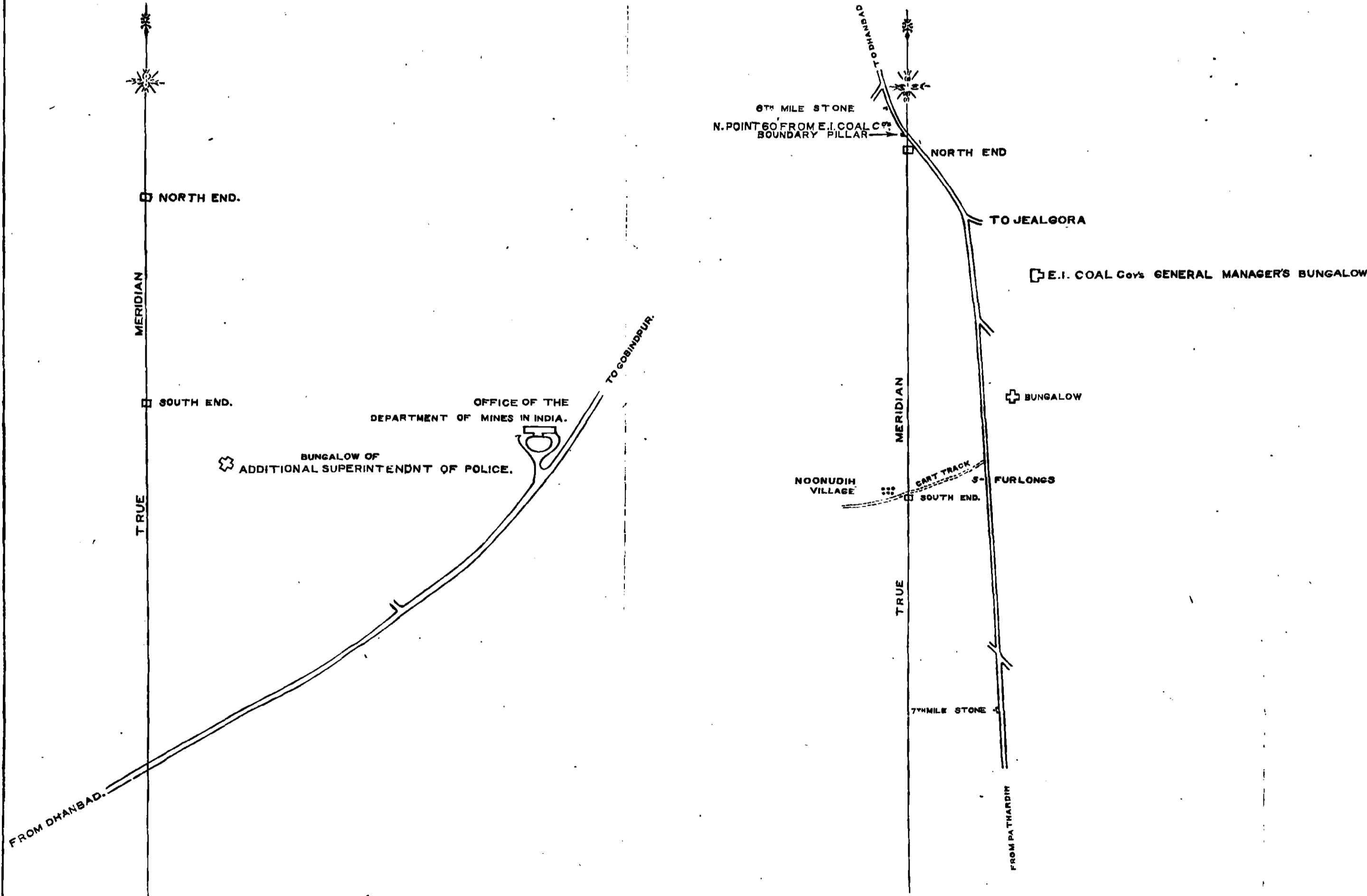


TABLE SHOWING MAGNETIC DECLINATIONS
IN THE JHARIA & GIRIDIH COALFIELDS.

YEAR	DECLINATION
1900	EAST 1 - 45
1901	" 1 - 40
1902	" 1 - 40
1903	" 1 - 35
1904	" 1 - 30
1905	" 1 - 25
1906	" 1 - 20
1907	" 1 - 20
1908	" 1 - 15
1909	" 1 - 10
1910	" 1 - 5
1911	" 1 - 0
1912	" 0 - 55
1913	" 0 - 50
1914	" 0 - 45
1915	" 0 - 40
1916	" 0 - 35
1917	" 0 - 30
1918	" 0 - 25
1919	" 0 - 20
1920	" 0 - 15

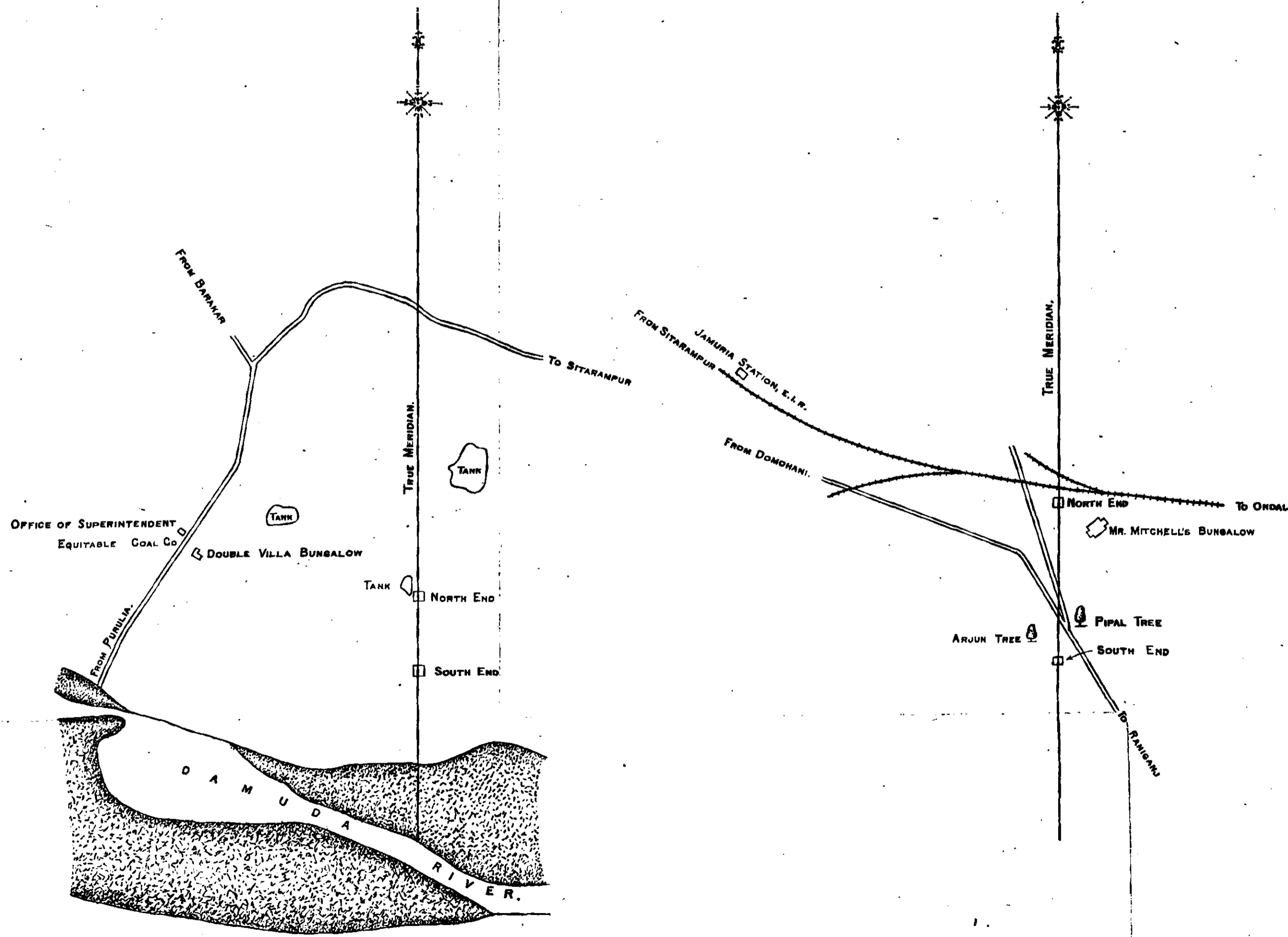
NOTE. When checking their instruments at any of these stations surveyors should remove from their persons all iron & steel such as knives, keys, iron spectacles &c.

RANIGANJ COAL FIELD.

PLAN SHOWING THE EXACT LOCATION OF TRUE NORTH LINE PILLARS LAID DOWN BY THE SURVEY OF INDIA,

DISHARGARH
SCALE 1 INCH=1000 FEET.

NANDI.
SCALE 1 INCH=500 FEET.



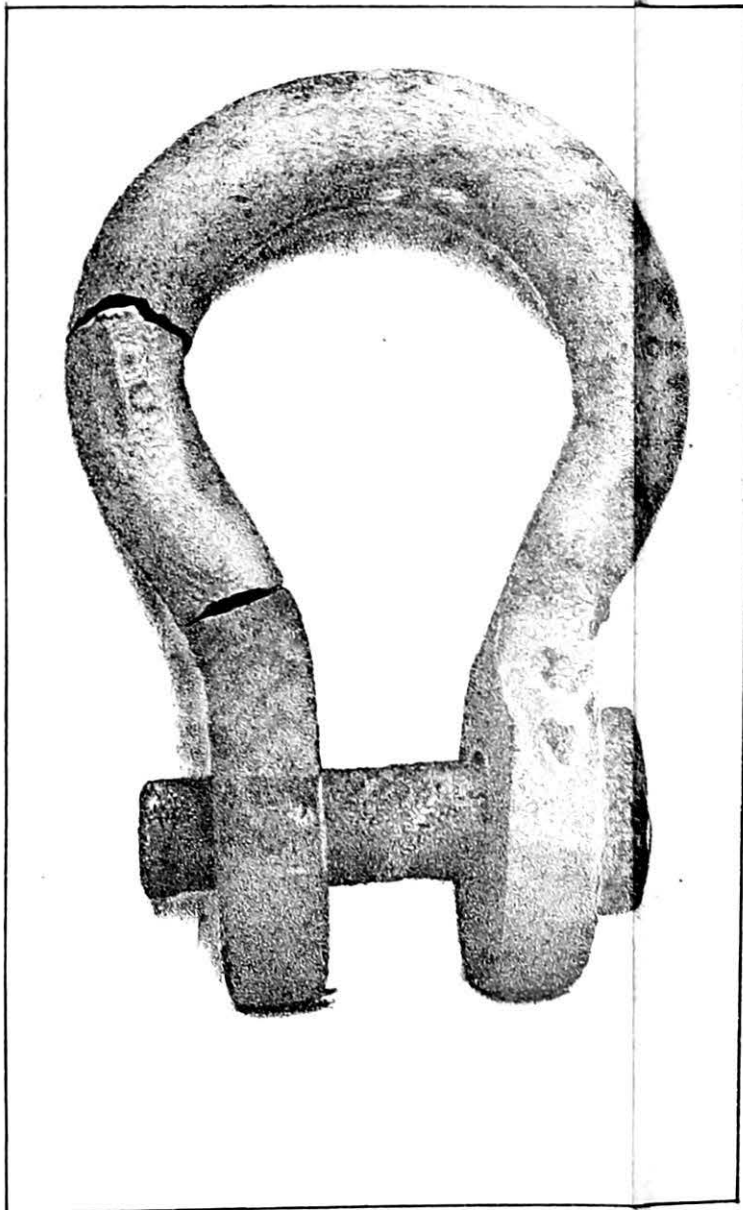
**TABLE SHOWING MAGNETIC DECLINATIONS
IN THE RANIGANJ COAL FIELD.**

YEAR.	DECLINATION.	
1900	EAST	1 - 45'
1901	"	1 - 40'
1902	"	1 - 35'
1903	"	1 - 30'
1904	"	1 - 25'
1905	"	1 - 25'
1906	"	1 - 20'
1907	"	1 - 15'
1908	"	1 - 10'
1909	"	1 - 5'
1910	"	1 - 0'
1911	"	0 - 55'
1912	"	0 - 50'
1913	"	0 - 45'
1914	"	0 - 40'
1915	"	0 - 35'
1916	"	0 - 30'
1917	"	0 - 25'
1918	"	0 - 20'
1919	"	0 - 15'
1920	"	0 - 10'

NOTE:—When checking their instruments at any of these stations surveyors should remove from their persons all iron & steel such as knives, keys, iron spectacles &c.

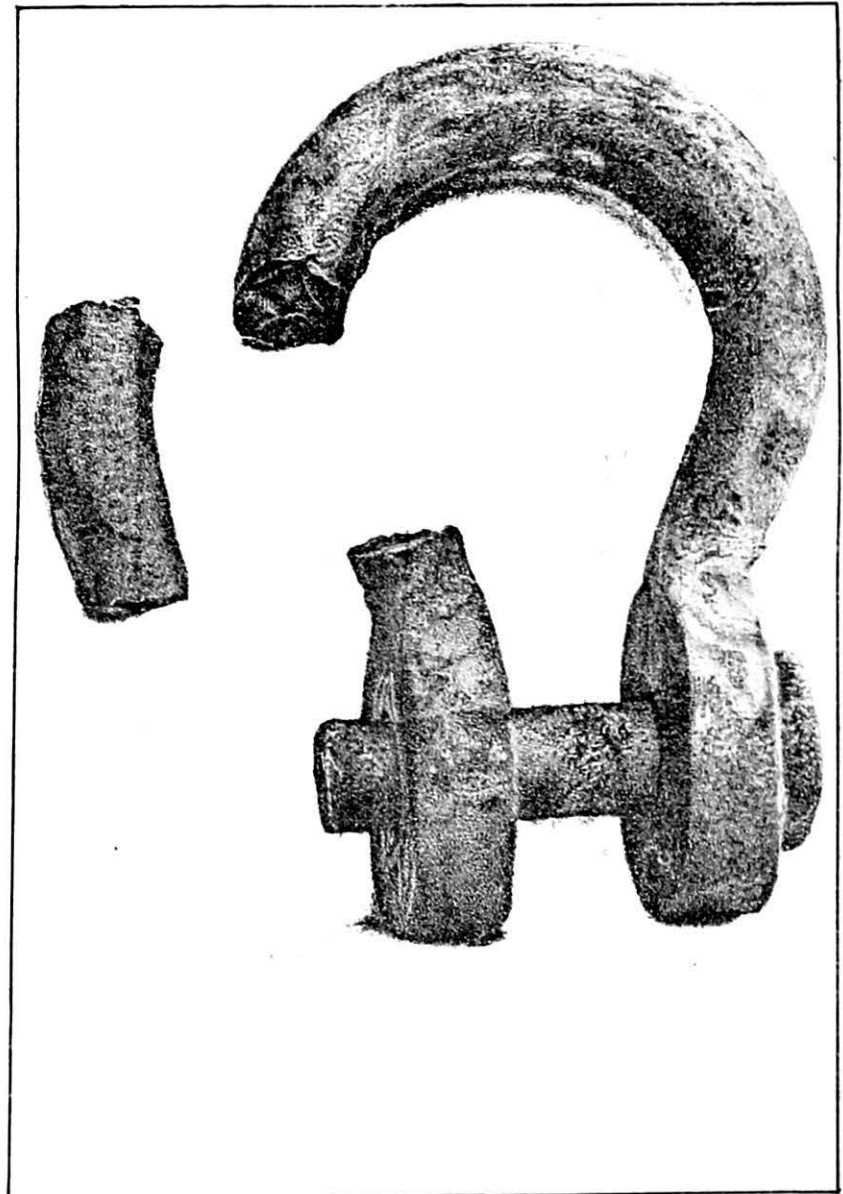
SOUTH KUSTORE CAGE ACCIDENT.

PHOTO 1.



SHACKLE WITH BROKEN PIECE
REPLACED.

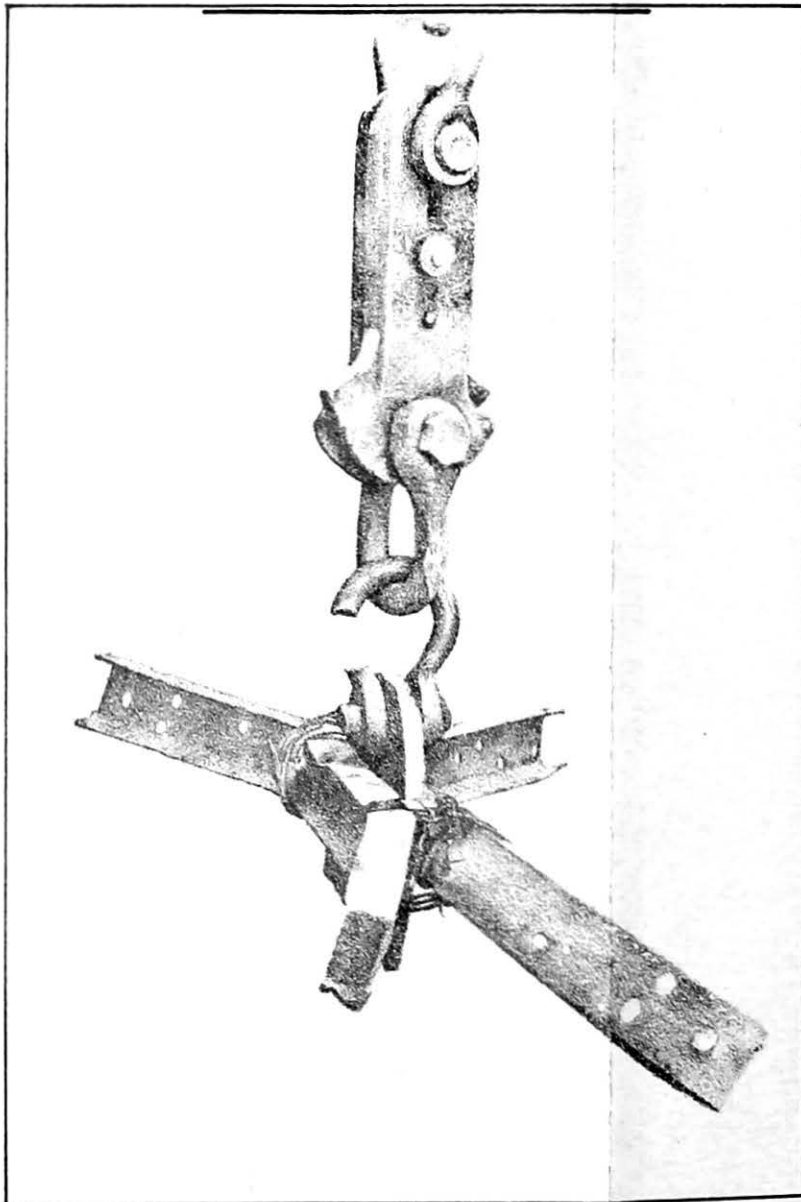
PHOTO 2.



SHACKLE WITH BROKEN PIECE
SHOWN SEPARATELY.

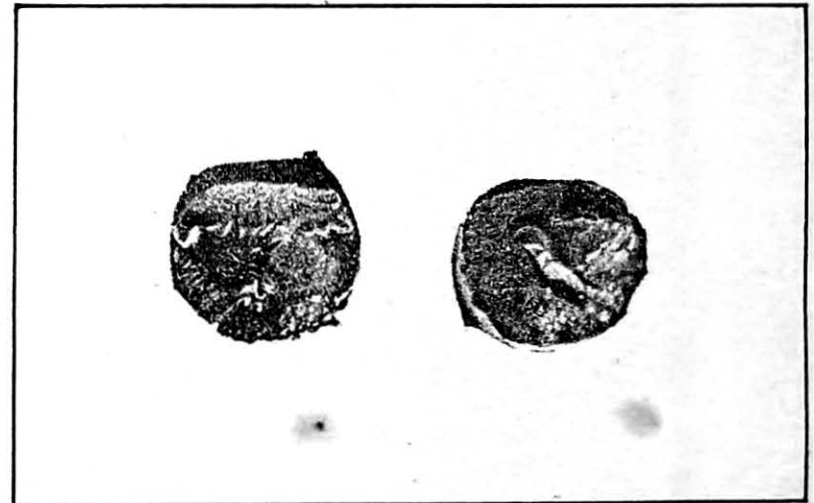
SOUTH KUSTORE CAGE ACCIDENT.

PHOTO 1.



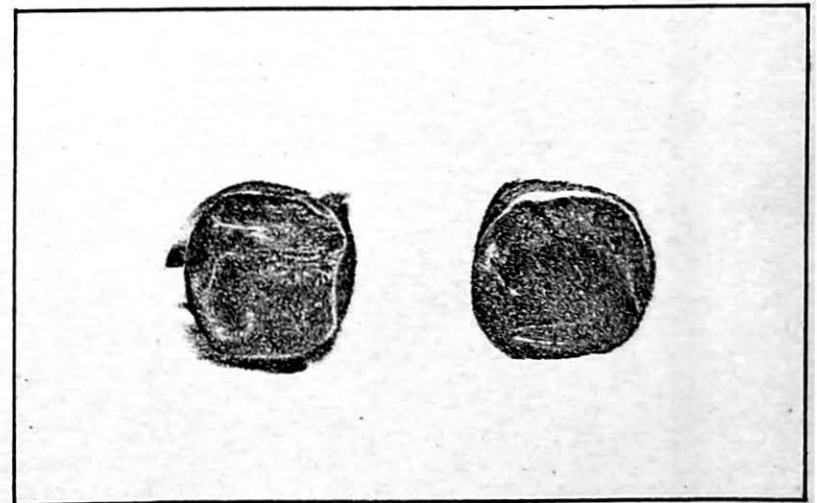
DETACHING HOOK, BROKEN SHACKLE,
CONNECTING PLATE AND WINGS FOR
LIFTING WOODEN SHUTTER

PHOTO 2.



ENDS OF UPPER FRACTURE IN SHACKLE.

PHOTO 3.



ENDS OF LOWER FRACTURE IN SHACKLE.

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 1919.

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES		NUMBER OF MINES INSPECTED DURING THE YEAR.		TOTAL OUTPUT. Tons.	AVERAGE NUMBER OF PERSONS EMPLOYED DAILY IN AND ABOUT THE MINES.								
			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.	
Assam	Lakhimpur	6	4	2	4	8	259,652	1,661	160	...	1,830	638	214	58	908	2,738
	Naga Hills	1	...	1	1	1	29,941	204	2	4	210	179	21	5	205	415
	Sibsagar	1	...	1	...	...	1,541	20	...	...	20	25	...	...	25	45
	TOTAL	8	4	4	5	9	291,134	1,885	171	4	2,060	840	235	63	1,138	3,198
Baluchistan	Lalalai	1	...	1	...	...	165	20	...	...	20	15	...	...	15	35
	Quetta-Pishin	6	...	6	...	...	5,256	114	...	...	114	25	...	...	25	139
	Sibi-Khost	6	2	4	...	...	23,703	368	...	...	368	338	8	14	360	728
	TOTAL	13	2	11	...	...	29,124	502	...	...	502	378	8	14	400	902
Bengal	Bankura, Raniganj	2	...	2	1	1	6,950	34	23	...	57	20	16	1	37	91
	Birbhum "	1	...	1	...	...	1,910	20	25	...	45	6	3	...	9	54
	Burdwan "	213	165	48	101	181	5,768,772	18,707	11,349	215	80,271	11,280	6,598	345	18,223	48,494
	TOTAL	216	165	51	102	182	5,777,632	18,761	11,397	215	30,373	11,306	6,617	346	18,260	48,642

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 1919—contd.

Province.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES		NUMBER OF MINES INSPECTED DURING THE YEAR.		TOTAL OUTPUT.	AVERAGE NUMBER OF PERSONS EMPLOYED DAILY IN AND ABOUT THE MINES.								Grand total below and above ground.	
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		BELOW GROUND.				ABOVE GROUND.					
								Adult males.	Adult females.	Children (under 13).	Total below ground.	Adult males.	Adult females.	Children (under 13).	Total above ground.		
Bihar and Orissa .	A.—COAL—concl'd.																
	Hazaribagh	Bokaro-Ramgarh	6	2	4	1	1	722,682	3,302	2,457	15	5,774	1,025	1,354	43	3,022	8,796
		Giridih	8	4	4	950,045	5,468	2,029	1	8,098	2,002	779	12	2,853	10,951
		Jharia	9	5	4	3	3	176,937	492	439	10	941	402	361	25	788	1,729
	Manbhum	Jharia	335	173	162	123	254	11,968,981	31,097	25,676	297	57,070	23,451	12,137	1,426	37,014	94,084
		Raniganj	97	16	81	37	60	1,033,702	3,640	2,274	33	5,947	2,803	1,823	189	4,815	10,762
	Palamau, Daltonganj	1	1	...	1	2	63,250	265	133	24	422	251	62	35	348	770	
	Sambalpur, Hingir-Rampur	3	1	2	...	...	45,574	360	201	...	561	258	110	...	368	929
	Sonthal Parganas.	Jainty	4	4	...	1	2	152,941	369	494	...	863	509	264	76	849	1,712
		Raniganj	3	...	3	3,792	28	23	...	51	18	6	...	24	75
	TOTAL	466	306	260	166	322	15,117,903	45,021	34,326	980	79,727	31,379	16,896	1,806	50,081	120,808	
Central Provinces	Chanda, Ballarpur	8	6	2	2	4	126,366	789	123	...	912	587	171	17	775	1,637	
	Ohhindwara, Pench Valley	12	8	4	6	6	285,356	1,552	662	56	2,370	445	276	54	774	3,044	
	Narsinghpur, Mohpani	1	1	...	...	...	85,299	601	384	...	985	556	31	...	587	1,672
	Yeotmal	1	1	...	...	...	...	...	...	...	...	3	...	...	3	3
	TOTAL	22	16	6	8	10	497,021	2,942	1,169	56	4,167	1,591	477	71	2,130	6,306	

North-West Frontier Province.	Hazara	1	...	1	...	...	20	5	...	...	5	...	...	...	...	6
Panjab	Jhelum	10	...	10	...	...	35,845	480	26	52	567	341	...	33	370	946
	Mianwali	2	...	2	...	...	5,822	40	...	...	40	63	...	...	63	123
	Shahpur	3	...	3	...	...	5,226	53	...	...	53	69	...	...	69	122
	TOTAL	15	...	15	...	...	46,893	582	96	52	660	493	...	33	531	1,101
GRAND TOTAL (COAL) FOR 1919		741	393	348	281	623	21,759,727	89,698	47,089	707	117,494	45,987	24,233	2,338	72,558	190,052	
	" " OF PRE-CEDEING YEAR	719	367	352	389	724	19,847,039	65,433	43,447	681	109,561	42,857	21,547	2,304	66,708	176,269	
	DIFFERENCE	+22	+26	-4	-108	-201	+1,912,688	+4,265	+3,642	+26	+7,933	+3,130	+2,686	+34	+5,850	+13,783	
Bihar and Orissa	B.-MICA.																
	Gaya	45	...	45	...	...	Cwts. 5,007	630	430	97	1,166	244	225	93	562	1,728
	Hazaribagh	452	61	391	10	24	25,678	6,085	3,052	1,180	10,317	2,376	1,076	1,078	5,130	15,447	
	Manbhum	1	...	1	...	...	10	4	3	...	7	2	2	...	4	11
	Monghyr	27	1	26	...	...	1,580	317	134	4	455	142	117	60	319	774
	Sambalpur	1	...	1	...	...	15	50	25	5	80	21	15	21	60	140
TOTAL	526	62	464	10	24	32,290	7,005	3,644	1,286	12,025	2,785	2,035	1,255	6,075	18,100		
Madras	Kistna	1	...	1	...	...	57	16	16	...	32	1	7	2	10	42
	Nellore	106	18	88	...	...	7,858	1,601	993	117	2,801	410	410	207	1,036	3,837*
	Salem	3	...	3	...	...	323	30	...	...	89	56	71	14	141	180
	TOTAL	110	18	92	...	...	8,238	1,746	1,009	117	2,872	467	407	223	1,187	4,059

* Including figures for Samarakito.

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 1919—contd.

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.		NUMBER OF MINES INSPECTED DURING THE YEAR.		TOTAL OUTPUT.	AVERAGE NUMBER OF PERSONS EMPLOYED DAILY IN AND ABOUT THE MINES.								Grand total below and above ground.	
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		BELOW GROUND.				ABOVE GROUND.					
								Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.		
Rajputana	Ajmer-Merwara	37	...	37	...	...	1,079	284	85	34	403	67	22	...	89	492	
		Nasirabad	1	...	1	...	...	76	7	2	1	10	1	...	...	1	11
	TOTAL	38	...	38	...	...	1,155	291	87	35	413	68	22	...	90	503	
	GRAND TOTAL (MICA FOR 1919.	674	80	594	19	24	41,883	8,132	4,740	1,438	15,310	3,320	2,554	1,478	7,352	22,862	
" " OF PRECEDING YEAR.	623	77	546	58	60	51,572	10,894	4,353	1,567	16,814	3,766	2,925	2,087	8,778	25,592		
DIFFERENCE	+51	+3	+48	-39	-36	-9,889	-1,762	+357	-129	-1,504	-446	-371	-609	-1,426	-2,930		
Bombay	Panch Mahals	2	2	...	...	...	22,510	536	312	118	966	216	53	15	284	1,280	
		Balaghat	26	1	25	2	3	199,089	2,388	2,376	192	4,856	560	475	116	1,151	6,007
		Bhandara	3	...	3	...	...	23,105	244	270	26	512	101	33	4	134	680
		Chhindwara	2	2	...	...	...	52,595	224	280	11	515	191	74	12	257	712
		Nagpur	22	2	20	...	...	112,777	1,119	1,188	21	2,528	619	410	70	1,099	3,427
TOTAL	53	6	48	2	3	387,866	3,875	4,114	252	8,241	1,471	972	202	2,345	10,883		

Madras	Vinagapatam	4	...	4	...	...	2,778	71	46	7	124	74	49	10	133	257
	GRAND TOTAL (MANGANESE) FOR 1919.	59	7	52	2	3	420,184	4,482	4,502	377	9,361	1,761	1,074	227	3,069	12,429
	" " OF PRECEDING YEAR.	58	5	53	...	...	415,357	5,390	5,160	316	10,896	1,731	1,031	193	2,917	13,443
	DIFFERENCE	+1	+2	-1	+2	+3	+4,827	-908	-658	+31	-1,535	+28	+43	+41	+115	-1,420
	D.—LIMESTONE. Tons.															
Central Provinces	Bilaspur	1	...	1	...	-	4,396	29	62	3	94	22	10	...	32	126
	Jabalpur, Katni	29	1	28	...	...	133,016	659	1,130	35	1,824	163	243	19	427	2,251
	TOTAL	30	1	29	...	...	137,412	688	1,192	38	1,918	187	253	19	459	2,377
Panjab	Hoshiarpur	1	...	1	...	...	9,428	23	...	...	23	25	...	2	27	50
	GRAND TOTAL (LIMESTONE) FOR 1919.	31	1	30	...	...	146,840	711	1,192	38	1,941	212	253	21	486	2,427
	" " OF PRECEDING YEAR.	26	1	25	...	...	131,451	573	921	32	1,526	240	260	24	524	3,050
	DIFFERENCE	+5	...	+5	...	...	+15,389	+138	+271	+6	+415	-28	-7	-3	-38	+377
	E.—SALT. Tons.															
Panjab	Jhelum	2	1	1	...	...	151,168	419	325	56	800	72	1	...	73	873
	Mianwali	1	...	1	...	...	5,529	38	...	11	49	...	...	...	...	49
	Shahpur	1	1	...	...	...	15,277	45	31	5	81	...	...	...	...	81
	GRAND TOTAL (SALT) FOR 1919.	4	2	2	...	...	174,974	502	356	72	930	72	1	...	73	1,003
	" " OF PRECEDING YEAR.	4	1	3	3	5	158,513	508	321	80	909	71	...	...	71	980
	DIFFERENCE	...	+1	-1	-3	-5	+16,461	-6	+35	-8	+21	+1	+1	...	+2	+23

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 1919—contd.

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.		NUMBER OF MINES INSPECTED DURING THE YEAR.		TOTAL OUTPUT.	AVERAGE NUMBER OF PERSONS EMPLOYED DAILY IN AND ABOUT THE MINES.											
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		BELOW GROUND.				ABOVE GROUND.				Grand total below and above ground.			
								Adult males.	Adult females.	Children (under 13).	Total below ground.	Adult males.	Adult females.	Children (under 13).	Total above ground.				
Barma	Mogok	4	2	2	F.—GEMS.		Carats. 88,847	850	...	...	850	469	...	...	469	1,319
	Mogok				(a) Rubies.												3	4	47,286
	Mogok				(b) Sapphires.												22,444
	Mogok	(c) Spinels.		...	...	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	4	2	2	3	4	158,577	850	...	...	850	469	...	...	469	1,319
	GRAND TOTAL (GEMS) FOR 1919	4	2	2	3	4	158,577	850	...	...	850	469	...	...	469	1,319
" " OF PRECEDING YEAR	3	2	1	...	...	164,115	778	...	...	778	522	...	...	522	1,800	
DIFFERENCE	+1	...	+1	+3	+4	-5,538	+72	...	...	+72	-53	...	...	-53	+19	
Bihar and Orissa	Monghyr	5	...	5	G.—SLATE.		Tons. 3,033	148	161	29	338	67	...	...	67	405	
				
Panjab	Gerdaspur	1	...	1	...	...	84	6	...	...	6	...	...	...	...	6
	Gurgaon	5	...	5	...	...	2,651	109	...	65	174	35	...	...	43	217
	Kangra	4	...	4	...	...	5,323	112	...	...	112	20	32	16	63	180

TOTAL		10	...	10	...	...	8,038	227	...	65	202	55	33	21	111	403
GRAND TOTAL (SLATE) FOR 1919.		15	...	15	...	...	11,091	375	161	94	680	122	32	24	178	808
" " OF PRECEDING YEAR.		15	...	15	...	...	9,935	343	78	77	498	115	51	26	192	690
DIFFERENCE . . .		...	...	...	...	...	+1,156	+32	+83	+17	+132	+7	-19	-2	-14	+118
H.—GOLD.																
Bihar and Orissa . . .	Singhbhum	1	1	...	...	...	Ozs. 173	59	17	...	76	62	88	7	152	228
Madras	Anantapur	3	3	...	...	...	11,018	114	...	...	114	329	60	51	440	554*
GRAND TOTAL (GOLD) FOR 1919.		4	4	...	...	...	11,191	173	17	...	190	391	143	58	592	762
" " OF PRECEDING YEAR.		4	3	1	...	...	10,916	530	11	...	541	440	140	66	646	1,187
DIFFERENCE . . .		...	+1	-1	...	...	-8,725	-857	+6	...	-351	-49	+3	-8	-51	-405
I.—IRON ORE.																
Bihar and Orissa . . .	Singhbhum	2	1	1	...	...	Tons. 100,210	362	291	73	726	175	80	5	260	986
Central Provinces . . .	Jabalpur	1	...	1	...	...	1,112	20	55	15	90	20	10	10	40	130
Rajputana	Ajmer-Merwara	1	...	1	...	...	...	2	...	...	2	...	...	...	...	2
GRAND TOTAL (IRON) FOR 1919.		4	1	3	...	...	101,322	384	346	88	818	195	90	15	300	1,118
" " OF PRECEDING YEAR.		5	1	4	...	...	115,890	482	358	72	912	523	67	7	327	1,239
DIFFERENCE . . .		-1	...	-1	...	...	-14,568	-98	-12	+16	-94	-328	+23	+8	-27	-121

*Includes figures for silver.

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 1919—contd.

PROVINCES.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.		NUMBER OF MINES INSPECTED DURING THE YEAR.		TOTAL OUTPUT.	AVERAGE NUMBER OF PERSONS EMPLOYED DAILY IN AND ABOUT THE MINES.								
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		BELOW GROUND.				ABOVE GROUND.				Grand total below and above ground.
								Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
Bihar and Orissa	Singbhum	1	...	1	...	...	30	9	2	...	11	8	1	...	9	20
Burma	Mergui	2	...	2	...	...	3,056	224	...	...	224	284	22	...	806	530
	Tavoy	109	4	105	6	7	54,394	4,810	27	8	4,845	3,160	240	92	3,401	8,336
	Thaton	11	1	10	...	...	630	355	75	28	458	215	130	25	370	828
	TOTAL	122	5	117	6	7	58,079	5,389	102	36	5,527	3,668	392	117	4,167	9,694
	GRAND TOTAL (WOLFRAM) FOR 1919.	123	5	118	6	7	58,109	5,398	104	36	5,538	3,666	393	117	4,176	9,714
	" " OF PRECEDING YEAR.	114	5	109	33	81	72,189	5,376	133	50	5,559	4,279	407	133	4,810	10,378
	DIFFERENCE	+9	...	+9	-27	-74	-14,080	+22	-29	-14	-21	-613	-14	-16	-634	-664

		K.—MAGNESITE.														
		Tons.														
Madras	Salem	1	...	1	...	...	13,013	221	169	361	651	60	...	27	87	738
	TOTAL OF PRECEDING YEAR .	1	...	1	1	1	5,773	105	85	131	321	26	...	6	93	355
	DIFFERENCE . . . . .	...	...	...	-1	-1	+7,239	+116	+84	+130	+330	+34	...	+21	+55	+385
		L.—CHROMITE.														
		Cwts.														
Baluchistan	Zhob	22	...	22	...	...	264,467	226	...	...	226	53	...	...	53	279
Bihar and Orissa	Singhbhum	4	-	4	...	...	16,878	42	51	7	100	47	31	15	86	186
	GRAND TOTAL (CHROMITE) FOR 1919,	26	...	26	...	...	281,343	268	51	7	326	93	31	15	139	465
	" " OF PRECEDING YEAR.	27	...	27	...	...	450,590	203	102	10	315	93	4	1	98	413
	DIFFERENCE	-1	...	-1	...	...	-169,247	+65	-51	-3	+11	...	+27	+14	+41	+52

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 1919—contd.

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.		NUMBER OF MINES INSPECTED DURING THE YEAR.		TOTAL OUTPUT. Tons.	AVERAGE NUMBER OF PERSONS EMPLOYED DAILY IN AND ABOUT THE MINES.								Grand total below and above ground.
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		BELOW GROUND.				ABOVE GROUND.				
								Adult males.	Adult females.	Children (under 13).	Total below ground.	Adult males.	Adult females.	Children (under 13).	Total above ground.	
							M.—COPPER ORE.									
Bihar and Orissa	Singbhum	1	1	...	1	3	32,756	642	...	...	642	1,152	782	52	1,986	2,628
Central Provinces	Balaghat	1	...	1	...	...	...	10	12	4	26	4	6	2	12	38
	GRAND TOTAL (COPPER) FOR 1919.	2	1	1	1	8	32,756	652	12	4	668	1,156	788	54	1,998	2,666
	" " OF PRECEDING YEAR.	3	1	2	1	2	3,619	198	9	...	207	794	312	43	1,149	1,356
	DIFFERENCE	-1	...	-1	...	+1	+29,137	+454	+3	+4	+461	+362	+476	+11	+849	+1,310
							N.—BAUXITE.									
Central Provinces	Jabalpur	1	...	1	...	...	33,640	52	68	1	121	4	...	...	4	125
	TOTAL OF PRECEDING YEAR	1	...	1	...	...	23,840	45	70	1	116	4	...	...	4	120
	DIFFERENCE	...	...	...	...	...	+9,800	+7	-2	...	+5	...	...	...	...	+5

		O.—CLAY.					Tons.											
Bihar and Orissa	Bhagalpur	2	...	2	...	...	651	60	31	...	91	78	51	21	153	214
	Mantham	1	1	...	...	...	31,584	72	55	24	152	96	80	48	224	376
	Palamau	1	...	1	...	...	6,274	27	13	11	51	61	31	20	108	159
	TOTAL	4	1	3	...	...	38,409	159	100	35	294	228	168	80	485	779
Central Province	Jabalpur	4	2	2	...	...	60,037	412	571	30	1,025	48	...	...	48	1,073*
Delhi	Delhi	1	...	1	...	...	714	8	...	...	8	8	4	...	12	20
	GRAND TOTAL (CLAY) FOR 1919.	9	3	6	...	...	99,760	579	674	74	1,327	284	172	89	545	1,873
	" " OF PRECEDING YEAR.	9	2	7	...	...	91,392	318	281	53	682	222	181	14	417	1,079
	DIFFERENCE	...	+1	-1	...	...	+8,368	+261	+393	+21	+665	+62	-9	+75	+128	+793
		P.—GALENA.					Cwts.											
Central Provinces	Drug	1	...	1	...	...	50	5	10	...	15	5	10	...	15	30
	TOTAL OF PRECEDING YEAR	1	...	1	...	...	60	4	10	...	14	2	10	...	12	26
	DIFFERENCE	...	...	...	...	...	-10	+1	...	...	+1	+3	...	...	+3	+4
		Q.—TIN.					Cwts.											
Bihar and Orissa	Hazaribagh	1	1	...	...	...	...	34	31	28	93	31	26	22	79	173
Burma	Mergui	2	...	2	...	...	689	37	6	...	43	10	3	...	13	56
	Tavoy	4	1	3	...	...	12,741	47	10	4	61	83	...	...	88	149
	Thaton	1	...	1	...	...	601	15	10	5	30	5	...	...	5	35
	TOTAL	7	1	6	...	...	14,011	99	26	9	134	103	3	...	106	240
	GRAND TOTAL (TIN) FOR 1919.	8	2	6	...	...	14,011	138	57	37	227	134	29	23	185	412
	" " OF PRECEDING YEAR.	4	1	3	...	6	12,023	188	10	...	198	196	24	5	225	423		
	DIFFERENCE	+4	+1	+3	-3	-6	+1,988	-55	+47	+37	+29	-02	+5	+17	-40	-11		

*Includes figures for fuller's earth.

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 1919—contd.

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES		NUMBER OF MINES INSPECTED DURING THE YEAR.		TOTAL OUTPUT.	AVERAGE NUMBER OF PERSONS EMPLOYED DAILY IN AND ABOUT THE MINES.										
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		BELOW GROUND.				ABOVE GROUND.				Grand total below and above ground.		
								Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.			
R.—STEATITE.																		
Central Provinces	Jabalpur	3	...	3	...	...	Cwts. 29,041	64	40	...	110	17	41	11	69	179
Madras	Kurnool	1	...	1	...	...	81	3	7	...	10	4	2	...	6	16
	GRAND TOTAL (STEATITE) FOR 1919	4	...	4	...	...	29,122	67	53	...	120	21	43	11	75	195
	" " OF PRECEDING YEAR.	4	...	4	...	...	61,119	63	46	2	111	24	45	7	76	187
	DIFFERENCE	...	...	...	...	...	-31,997	+4	+7	-2	+9	-3	-2	+4	-1	+8
S.—FULLER'S EARTH.																		
Central Provinces	Jabalpur	Tons. 247	...	(Labour figures included with those for Jabalpur Limestone)								...	
	TOTAL OF PRECEDING YEAR	...	...	...	...	...	218	...	...	...	...	...	...	...	...	...
	DIFFERENCE	...	...	...	...	...	+29	...	...	...	...	...	...	...	...	...

Madras	Anantapur . . . . .	...	...	...	T.—SILVER.			Ozs.	...	(Labour figures included with those for Anantapur gold.)							...
							753	...									
	TOTAL OF PRECEDING YEAR . . . . .	...	...	...	...	...	1,169	...	...	...	...	...	...	...	...	...	...
	DIFFERENCE . . . . .	...	...	...	...	...	-416	...	...	...	...	...	...	...	...	...	...
Madras	Nellore . . . . .	...	...	...	U.—SAMARSKITE.			Cwts.	...	(Labour figures included with those for Nellore mica)							...
							2½	...									
	TOTAL OF PRECEDING YEAR . . . . .	...	...	...	...	...	1½	...	...	...	...	...	...	...	...	...	...
	DIFFERENCE . . . . .	...	...	...	-	...	+1	...	...	...	...	...	...	...	...	...	...
Rajputana	Ajmer-Merwara	4	...	4	V.—GRAPHITE.			Cwts.	12	5	...	17	4	1	...	5	23
							103	...	...	...	...	...	...	...	...	...	...
	TOTAL OF PRECEDING YEAR	2	...	2	...	...	20	8	...	...	8	2	5	3	10	18	
	DIFFERENCE	+2	...	+2	...	...	+83	+4	+5	...	+9	+2	-4	-3	-5	+4	
Bihar and Orissa	Puri	1	1	...	W.—OCHRE.			Tons.	12	...	...	12	18	...	13	31	43
							184	...	...	...	...	...	...	...	...	...
	TOTAL OF PRECEDING YEAR	1	1	...	...	...	93	10	...	...	10	12	...	7	19	29	
	DIFFERENCE . . . . .	...	...	...	...	...	+91	+2	...	...	+2	+6	...	+6	+12	+14	
Burma	Tavoy	1	...	1	X.—MOLYBDENITE.			Cwts.	5	...	...	5	5	...	...	5	10
							4½	...	...	...	...	...	...	...	...	...
	TOTAL OF PRECEDING YEAR	1	...	1	...	...	4	10	...	...	10	5	...	...	5	15	
	DIFFERENCE . . . . .	...	...	...	...	...	+½	-5	...	...	-5	...	...	...	...	-5	

APPENDIX I—*concl'd.*

STATISTICS OF MINES AND MINERALS—*concl'd.*

Table No. 1—*concl'd.*

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1919—*concl'd.*

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES		NUMBER OF MINES INSPECTED DURING THE YEAR.		TOTAL OUTPUT.	AVERAGE NUMBER OF PERSONS EMPLOYED DAILY IN AND ABOUT THE MINES.									
			Worked by mechanical power.	Not worked by mechanical power.	Number of mines inspected.	Number of inspections.		BELOW GROUND.				ABOVE GROUND.				Grand total below and above ground.	
								Adult males.	Adult females.	Children (under 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.		
							Y.—APATITE.										
							Tons.										
Bihar and Orissa	Singhbhum	1	...	1	...	...	500	115	65	...	180	30	40	...	70	250
	TOTAL OF PRECEDING YEAR	1	...	1	...	...	5,100	45	30	4	79	41	25	5	71	150
	DIFFERENCE . . . . .	...	...	...	...	...	-4,600	+70	+35	-4	+101	-11	+15	-5	-1	+100
							Z.—POTASH.										
							Tons.										
Punjab	Jhelum	83	...	<i>(Labour figures included with those for Jhelum salt, see page 27.)</i>								
	TOTAL OF PRECEDING YEAR	...	...	...	...	...	135	...	...	...	...	...	...	...	...	...
	DIFFERENCE . . . . .	...	...	...	...	...	-52	...	...	...	...	...	...	...	...	...

AA.—BARYTES.

							Cwts.										
Madras	Kurnool	1	...	1	...	...	4,610	4	...	6	10	9	7	1	10	20
	TOTAL OF PRECEDING YEAR	1	...	1	...	...	21,000	13	7	...	19	6	16	...	22	41
	DIFFERENCE	...	...	...	...	...	-19,300	-8	-7	+6	-9	-4	-9	+1	-12	-21
	GRAND TOTAL (ALL MINERALS) 1919.	1,719	502	1,217	312	564	Tons. 22,760,680 Cwts. 482,708 Carats. 158,577 Troy ounces. 11,844	93,830	59,671	3,240	156,741	58,011	29,894	4,510	82,415	249,158	
	GRAND TOTAL OF PRECEDING YEAR.	1,627	467	1,160	498	879	Tons. 20,764,515 Cwts. 725,418 Carats. 164,115 Troy ounces. 21,085	91,516	55,442	3,108	150,084	55,703	27,050	4,821	87,874	237,738	
	DIFFERENCE	+92	+35	+57	-186	-316	Tons. +1,976,165 Cwts. -262,710 Carats. -5,538 Troy ounces. -9,141	+2,314	+4,220	+134	+6,677	+2,308	+2,844	-411	+4,741	+11,418	

APPENDIX I—contd.

Table No. 2.

Analyses of figures relating to output of coal.

PROVINCE.	District and mineral field.	OPENING STOCKS.		RAISINGS.		TOTAL.		DESPATCHES.		COLLIERY CONSUMPTION.		COAL DELIVERED TO COKING.		CLOSING STOCKS.		COKE MADE.	
		Steam.	Slack.	Steam.	Slack.	Steam.	Slack.	Steam.	Slack.	Steam.	Slack.	Steam.	Slack.	Steam.	Slack.	Hard coke.	Soft coke.
		Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Assam	Lakhimpur	1,919	...	259,652	...	261,571	...	254,530	..	3,073	...	493	...	3,476	...	164	...
	Naga Hills	411	...	29,941	...	30,352	...	29,221	...	229	...	...	...	902	...	...	...
	Sibsagar . . . . .	...	30	1,541	...	1,541	30	1,541	30	...	...	...	...	...	...	...	...
	TOTAL	2,330	30	291,134	...	293,464	30	285,292	30	3,302	...	493	...	4,377	...	164	...
Baluchistan	Loralai	10	...	165	...	175	...	155	...	...	...	...	...	20	...	...	...
	Quetta-Pishin	446	987	942	4,914	788	5,901	374	4,454	45	26	...	...	369	1,421	...	...
	Sibi-Khost	205	429	6,156	17,547	6,361	17,976	6,277	12,787	20	4,851	...	...	64	338	...	...
	TOTAL	661	1,416	6,663	22,461	7,324	23,877	6,806	17,241	65	4,877	...	...	463	1,759	...	...
Bengal	Bankura-Raniganj . . . . .	...	921	5,024	1,926	5,024	2,347	4,182	13	834	1,084	...	...	8	1,750	...	...
	Birbhum	219	12	1,434	476	1,653	488	1,379	19	174	469	...	...	100	...	...	...
	Burdwan	270,715	44,025	4,819,063	949,709	5,089,778	999,734	4,092,571	390,776	127,656	522,676	89,888	12,372	770,663	67,910	1,556	80,614
	TOTAL	270,934	44,958	4,825,521	952,111	5,096,455	997,069	4,098,132	390,809	128,664	524,220	89,888	12,372	779,771	69,000	1,556	80,614

Bihar and Orissa	Hazaribagh	Bokaro Bangaru	17,339	3,333	59,008	123,019	610,437	137,349	383,233	107,983	1,737	7,586	...	8,819	31,481	3,150	20	5,691
		Giridih	13,522	3,539	726,199	223,816	739,721	227,384	715,503	106,681	1,318	56,498	20	60,199	22,580	4,036	45,862	9
	Manbhum	Jharia	41,692	10,803	150,998	25,933	192,690	36,741	101,636	5,915	8,771	8,183	160	4,627	82,133	18,116	1,765	100
		Raniganj	931,065	151,432	10,007,955	1,931,928	10,983,120	2,116,358	7,441,302	725,105	333,180	709,798	337,441	338,495	2,876,517	342,600	222,347	140,240
	Palamau-Daltonganj	167,810	36,577	854,692	179,020	1,022,492	315,597	510,855	82,949	55,588	69,808	153,308	19,356	302,741	43,583	6,759	101,911	
	Sambelpur-Hingir Rampur	784	956	53,938	9,312	54,722	10,263	49,252	6,380	5,112	3,841	...	...	358	47	...	...
	Santal-Paraganas	...	29	36,650	8,924	36,650	8,953	26,397	4,123	10,262	4,801	...	...	1	29	...	...
	Santal-Paraganas	Jainty	19,030	766	134,727	18,314	153,757	18,950	127,364	4,715	6,658	7,030	19,835	7,175
		Raniganj	1,456	569	3,417	375	4,573	944	3,654	306	184	...	...	1,035	638	...	...
	TOTAL			1,242,748	211,605	12,566,734	2,551,169	13,809,482	2,762,774	9,559,239	1,041,319	422,810	567,605	490,919	431,498	3,336,464	419,353	276,753	247,951
Central Provinces	Chanda	821	1,621	97,741	28,625	98,562	30,246	95,010	13,917	2,546	13,683	...	...	1,006	2,046	...	...
	Chhindwara	909	1,181	243,199	42,157	244,168	43,338	241,136	19,926	1,814	21,123	...	...	1,218	2,289	...	...
	Narsinghpur	311	1,558	58,640	26,659	59,951	28,217	54,915	14,053	4,007	8,540	...	...	29	5,624	...	...
	Yeotmal	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	TOTAL			2,101	4,360	399,580	97,441	401,631	101,801	391,001	47,896	8,367	43,346	2,253	10,559	...
North-West Frontier Province.	Hazara	...	...	20	...	20	...	20	...	...	...	...	...	...	...	...	...
Panjab	Jhelum	...	3,009	2,398	83,447	2,398	36,456	2,138	32,937	260	1,471	...	...	...	2,048	...	...
	Mianwali	...	238	641	5,181	641	5,419	641	4,270	...	...	...	...	...	1,140	...	...
	Shehpur	...	1,120	228	4,996	228	6,118	228	4,997	...	87	...	...	...	1,044	...	...
	TOTAL			...	4,367	3,267	43,026	3,267	47,993	8,007	42,194	200	1,558	4,241
GRAND TOTAL 1919			1,518,774	266,786	18,092,919	3,666,808	19,611,693	3,933,514	14,343,607	1,542,488	563,468	1,441,616	581,300	443,968	4,123,318	505,572	278,473	308,565

APPENDIX I—contd.

Table No. 3,
Number of mines opened and closed during the year ending 31st
December 1919.

Province.	District.	Number of mines opened.	Number of mines closed.	
A.—COAL.				
ASSAM	Sibsagar . . . . .	...	1
BALUCHISTAN	Loralai . . . . .	...	1
	Sibi-Khost . . . . .	...	1
	TOTAL . . . . .	...	2
BENGAL	Bankura . . . . .	...	1
	Burdwan-Raniganj	13	13	
	TOTAL	13	14	
BIHAR AND ORISSA	Hazaribagh {	Jharia	1	1
		Giridih	1	...
	Manbhum {	Jharia	21	30
		Raniganj	9	4
	Sonthal Parganas, Jainty . . . . .	...	1
TOTAL	32	43		
CENTRAL PROVINCES	Chanda	1	1	
	Cbbindwara	1	4	
	TOTAL	2	5	
PANJAB	Jhelum	2	...	
NORTH-WEST FRONTIER PROVINCE	Hazara . . . . .	...	1
TOTAL (COAL)		49	65	

APPENDIX I—*contd.*

Table No. 3—*contd.*
 Number of mines opened and closed during the year ending 31st
 December 1919—*contd.*

Province.	District.	Number of mines opened.	Number of mines closed.
	B.—MICA.		
BIHAR AND ORISSA	Gaya	9	19
	Hazaribagh	109	124
	Monghyr	3	20
	TOTAL	121	163
MADRAS	Nellore	28	13
RAJPUTANA	Ajmer-Merwara	28	0
	TOTAL (MICA)	177	185
	C.—MANGANESE.		
CENTRAL PROVINCES	Balaghat . . . . .	...	5
	Nagpur	1	2
	TOTAL	1	7
MADRAS	Vizagapatam	1	1
	TOTAL (MANGANESE)	2	8
	D.—GEMS.		
BURMA	Māgok	1	...

APPENDIX I—*contd.*

Table No. 3—*contd.*
 Number of mines opened and closed during the year ending 31st
 December 1919—*contd.*

Province.	District.	Number of mines opened.	Number of mines closed.
E.—LIMESTONE.			
CENTRAL PROVINCES	Jabalpur	2	4
F.—WOLFRAM.			
BIHAR AND ORISSA	Singhbhum . . . . .	...	1
BURMA	Tavoy	14	57
	Thaton	2	4
	TOTAL BURMA	16	61
	TOTAL (WOLFRAM)	16	62
G.—GOLD.			
MADRAS	Anantapur . . . . .	...	2
H.—COPPER.			
CENTRAL PROVINCES	Balaghat	1	...
I.—CLAY.			
BIHAR AND ORISSA	Bhagalpur	1	1
J.—APATITE.			
BIHAR AND ORISSA	Singhbhum . . . . .	...	1
K.—BAUXITE.			
CENTRAL PROVINCES	Jabalpur . . . . .	...	1

APPENDIX I—*concl.*

Table No. 3—*concl.*
 Number of mines opened and closed during the year ending 31st
 December 1919—*concl.*

Province.	District.	Number of mines opened.	Number of mines closed.
L.—BARYTES.			
MADRAS	Kurnool	1	1
M.—GALENA.			
CENTRAL PROVINCES	Drug	1	1
N.—TIN.			
BIHAR AND ORISSA	Hazaribagh	1	...
BURMA	Tavoy	1	1
	TOTAL (TIN)	2	1
O.—GRAPHITE.			
RAJPUTANA	Ajmer-Merwara	4	1
GRAND TOTAL (ALL MINES)		257	333

APPENDIX I—concl'd.

Table No. 4.

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

YEAR.	Coal.	Manganese.	Mica.	Limestone.	Salt.	Wolfram.	Gold.	Copper ore.	Iron ore.	Chromite.
	Tons.	Tons.	Cwts.	Tons.	Tons.	Cwts.	Troy ozs.	Tons.	Tons.	Cwts.
1910 .	11,357,716	468,069	21,375	81,258	119,867	18	3,269	864	17,646	6,440
1911 .	12,048,726	441,426	31,686	92,692	124,003	8,394	8,277	2,079	36,801	5,380
1912 .	14,044,368	423,464	41,660	91,784	131,233	25,401	7,269	8,984	79,383	129
1913 .	15,486,918	637,391	43,650	71,259	138,510	27,520	11,019	3,639	98,371	68,280
1914 .	15,727,631	555,672	88,189	146,505	135,518	31,528	19,873	4,400	167,000	60,126
1915 .	16,352,480	378,172	24,063	64,179	144,770	39,432	24,320	8,010	126,617	29,300
1916 .	16,419,082	568,032	35,978	45,290	180,357	59,094	23,235	2,671	142,606	100,980
1917 .	17,326,884	497,052	35,896	82,340	152,542	79,312	22,991	20,108	173,303	345,329
1918 .	19,847,039	415,357	51,572	131,461	158,513	72,189	19,916	3,819	115,890	480,510
1919 .	21,759,727	420,184	41,683	146,840	174,974	58,109	11,191	32,756	101,322	281,343

Table No. 5.

The following table shows the amount of coal raised, the average number of persons working daily and the death-rates during the years 1910 to 1919 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.	
				For 1,000,000 tons raised.	For 1,000 persons working daily below and above ground.
1910 . . .	11,387,716	105,285	169	14.05	1.52
1911 . . .	12,048,726	108,598	148	12.28	1.38
1912 . . .	14,044,368	121,302	157	11.17	1.29
1913 . . .	15,486,918	133,042	185	11.96	1.39
1914 . . .	15,727,631	137,851	145	9.22	1.05
1915 . . .	16,352,480	145,537	166	10.15	1.14
1916 . . .	16,419,082	143,459	169	10.29	1.18
1917 . . .	17,326,884	153,683	163	9.41	1.06
1918 . . .	19,847,039	176,269	197	9.93	1.12
1919 . . .	21,759,727	190,052	260	11.96	1.37

APPENDIX II.
ACCIDENTS IN MINES.

Table No. I.

List of Fatal Accidents in mines regulated by the Indian Mines Act, 1901, during the year 1919.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral wrought.	Cause of accident and remarks.
			EXPLOSION OF FIRE-DAMP (1 death).			
1	4th December, 7-30 A.M.	Nodiha mine, Deshgarih P. O., Bihar and Orissa.	Nodiha Coal Co., Ltd.	Sufal Manjhi, (m.), 35, Coal-cutter.	Coal	Deceased, carrying an open light, ignited a small accumulation of fire damp in an unventilated gallery and was seriously burnt about the body. He died seven days later. Fire-damp had previously never been found at the colliery. Open lights were in use. Inspection and inquiry made. (See Report, page 6.)
			FALLS OF ROOF AND SIDES (170 deaths).			
			(a) Falls of roof (95 deaths).			
2	1st January, 1-30 P.M.	Charki-Khanahie mine, Ganwan P. O., Hazariabagh.	F. F. Chrestien & Co., Ltd.	Kowal Gopo, (m.), 19, Driller.	Mica	Whilst deceased was drilling a shot hole, a mass of schist, weighing about 500 lbs., fell from a height of six feet causing injuries to which he succumbed three days later.
3	1st January, 2-15 A.M.	Craddock mine, Pench P. O., Central Provinces.	Central Pench Coal Co., Ltd.	(1) Anta Gond, (m.), 36, Coal-cutter. (2) Mintoo Gond, (m.), 32, Coolie.	Coal	The two deceased, with another man who was injured, were loading coal in a pillar-cutting area, when a mass of stone, measuring about 3' 6" x 5' x 1' 6", fell from the roof killing them instantly. The injured man sustained a fracture of the leg.
4	11th January, 11-30 A.M.	Hariachak mine, Banajora P. O., Bihar and Orissa.	Jharia Coal Association	Uchab Deswali, (m.), 40, Coal-cutter.	Coal	Deceased passed through a fence, and, whilst cutting coal in the face of a gallery, was killed by a mass of stone, 13' x 7' x 3" to 9" thick, which fell from the roof 8 feet above. Inspection and inquiry made.
5	12th January, 7-45 A.M.	Sripur mine, Kalipahari P. O., Bengal.	Lodua Coal Co., Ltd.	Bhadri Kora, (m.), 19, Bhaju Kora, (m.), 32, Coal-cutters.	Coal	The two deceased and a woman, who was injured, went down an incline early in the morning before the sirdar had made his inspection, and commenced cutting coal from a 'stook' on the edge of a goaf. A piece of coal fell over from the side of the pillar, knocked out three props and released a mass of roof coal, measuring 12' 0" x 4' 0" x 0' 10", which fell from a height of 9 feet. The two deceased were buried under the fall and sustained serious injuries to which they succumbed immediately. The woman sustained a fracture of the left leg. Inspection and inquiry made. (See Report, page 7.)

APPENDIX II—contd.

Fatal Accidents, 1919—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral wrought.	Cause of accidents and remarks.
FALLS OF ROOF AND SIDES—contd.						
<i>(a) Falls of roof—contd.</i>						
6	23rd January, 7 A.M.	Dadkha mine, Asansol P. O., Bengal.	Dadkha Coal Co.	Khagu Roy, (m.), 45, Underground sirdar; Bhudu Kol, (m.), 31, Coal-cutter.	Coal	The deceased persons went into a goaf from which the timbers had been withdrawn. A mass of roof fell without any warning over an area of 3,200 square feet and buried them. Inspection and inquiry made.
7	26th January, 12 midnight.	Chanch mine, Chirkunda P. O., Bihar and Orissa.	Bengal Coal Co., Ltd.	Gonesh Manjhi, (m.), 33, Coal-cutter.	Coal	Deceased was working in the face of a gallery, when a triangular mass of stone, measuring 10' 0" x 4' to 5' x 1' 6", fell away from a concealed "slip" at a height of 6 feet. He was struck down and sustained a fracture of the right thigh, and serious internal injuries to which he succumbed one hour later. Inspection and inquiry made.
8	3rd February, 9 P.M.	Chowrassie mine, Dishegarh P. O., Bihar and Orissa.	Equitable Coal Co., Ltd.	Phalu Bauri, (m.), 24, Coolie.	Coal	Deceased was helping to withdraw timbers from a goaf when some of the props were swayed out. He tripped and fell as he was running to safety and was struck by one of the falling timbers. He sustained serious injuries and died two days later. Inspection and inquiry made.
9	11th February, 4 P.M.	Baraboni mine, Ranigunge P. O., Bengal.	Baraboni Coal Concern, Ltd.	Gopal Bauri, (m.), 60, Coal-cutter.	Coal	Deceased went through a fence and commenced cutting coal from the side of a pillar, when a mass of overhanging coal, measuring 15' 0" x 7' 0" x 2' 6", fell upon him from a height of 7 feet. He was killed instantly. Inspection and inquiry made.
10	16th February, 1-30 A.M.	South Bulliari mine, Kusumda P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Kartic Singh, (m.), 22, Coal-cutter.	Coal	Deceased passed through a fence and robbed coal from the corner of a pillar. He was killed by a mass of about two tons of roof coal which fell from a height of 7 feet. Inspection and inquiry made.
11	1st March, 9-45 A.M.	Chaitodih mine, Katrasgarh P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ltd.	Kuha Manjhi, (m.), 32; Dukhan Manjhi, (m.), 29, Coal-cutters.	Coal	The two deceased broke down a fence and began to cut coal in the face of a gallery at a fault. They were struck down by a mass of stone, weighing about two tons, which fell from between "slips" in the roof, 9 feet above. Kuha was killed on the spot, and Dukhan died in hospital a few hours afterwards. Inspection and inquiry made.
12	3rd March, 3 A.M.	Sodepur mine, Dishegarh P. O., Bengal.	Bengal Coal Co., Ltd.	Ramsai Mahato, (m.), 30, Stone-cutter.	Coal	A gang of stone-cutters were making height for an endless haulage larding. The timbers had been removed and the roof blasted down. While they were making holes in the side for the fresh timbers, a mass of stone, 12' 0" x 7' 0" x 1' 6", fell from the roof at a height of 9 feet, and killed deceased instantly; another person was injured. Inspection and inquiry made.

13	5th March, 4-30 P.M.	North Singaran mine, Toposi P. O., Bengal.	S. Chowdhury	Tusa Mejhian, (f.), 24, Coal-carrier.	Coal	Deceased was killed by a small piece of coal which fell from a height of about 20 feet, shortly after roof coal had been blasted. The stone struck her on the head and caused injuries from which she died five hours later. Inspection and inquiry made.
14	7th March, 5 A.M.	Alkusa (South) mine, Kusunda P. O., Bihar and Orissa.	Raniganj Coal Association, Ltd.	Jata Bhakta, (m.), 26, Coal-cutter.	Coal	Deceased was employed in an area where pillars 20 feet in height were being extracted. He was driving a "split", 6 feet in height, through the lower part of a pillar, and had just holed through into the goaf, when a mass of coal, weighing about 5 cwts., fell from between "slips" in the roof. He was struck on the head and killed instantly. Inspection and inquiry made.
15	10th March, 1 A.M.	Baraboni mine, Ranigunge P. O., Bengal.	Baraboni Coal Concern, Ltd.	Lakhi Manjhi, (m.), 25, Coal-cutter.	Coal	Deceased, who was sleeping on the side of a gallery, was struck by a mass of roof coal, which fell without warning from a height of 12 feet. He was killed instantly. Inspection and inquiry made.
16	27th March, 4 P.M.	Nandi mine, Nandi P. O., Bengal.	Nandi Coal Association	Sambhu Manjhi, (m.), 29, Coal-cutter.	Coal	Deceased went through a fence into a disused gallery for the purpose of recovering some coal brought down by a fall of "local" roof. A further fall occurred, part of which struck him, causing serious injuries to which he succumbed fourteen hours later. Inspection and inquiry made.
17	28th March, 4-30 P.M.	Sutikdih mine, Bhujudih P. O., Bihar and Orissa.	Sutikdih Coal Co., Ltd.	Beni Barri, (m.), 36, Coal-cutter.	Coal	Deceased was withdrawn from a gallery on account of unsound roof. He disobeyed orders and returned to the place. He was killed by a mass of stone, 12' 0" x 2' 0" x 1' 3", which fell from the roof 8 feet above. Inspection and inquiry made.
18	29th March, 2 A.M.	Deoghar mine, Karmatar P. O., Bihar and Orissa.	Deoghar Colliery, Ltd.	Babu Lal Dheba, (m.), 36, Roof-dressing coolie.	Coal	Deceased went over a fencing wall into a disused gallery and lay down to sleep. A mass of shaley roof stone fell from a height of five feet, and a piece of it, measuring 2' 0" x 1' 0" x 0' 6", struck him on the head, inflicting serious injuries to which he succumbed almost immediately. Inspection and inquiry made.
19	29th March, 9-30 P.M.	Gopalichuck West mine, Kusunda P. O., Bihar and Orissa.	Gopalichuck Coal Co., Ltd.	Lakhiram Mahate (m.), 30, Coal-cutter.	Coal	Deceased was employed in cutting side coal in a gallery. A mass of roof coal, measuring 6' 0" x 4' 0" x 2' 0", fell from the roof and killed him. Inspection and inquiry made.
20	31st March, 5-30 A.M.	Bamanband mine, Chora P. O., Bengal.	Bamanband Coal Co., Ltd.	Madhusudan Manjhi, (m.), 36, Coal-cutter.	Coal	Deceased presumably went through a fence into a disused gallery for the purpose of getting some easy coal. His body was found underneath a piece of stone measuring 5' 6" x 1' 6" x 1' 3" which had fallen from a height of eight feet. Death must have been instantaneous. Inspection and inquiry made.
21	4th April, 1 P.M.	Chattadanga mine, Mugna P. O., Bihar and Orissa.	Safya Bhusan Banerjee	Guhiram Korah, (m.), 25, Coal-cutter.	Coal	Deceased was standing on a stool wedging down some roof coal in a gallery 10 feet in height when a piece of coal, measuring 5' 4" x 5' 0" x 2' 4", fell out of a 'pot hole' overhead and killed him instantly. Inspection and inquiry made.
22	7th April, 7-30 P.M.	Binadikatta mine, Samdi P. O., Bengal.	Shew Narayan Marwari	Boul Manjhi, (m.), 36, Sirdar; Suko Manjhi, (m.), 32, Coal-cutter.	Coal	The two deceased went inside a fence into a disused gallery at the edge of a quarry, in order to get some easily won coal from the edge of a pillar. The weakened pillar collapsed and brought down a mass of overlying strata, which killed them instantly. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1919—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral wrought.	Cause of accident and remarks.
FALLS OF ROOF AND SIDES—contd.						
(a) Falls of roof—contd.						
23	12th April, 10-30 A.M.	Jharia Khas mine, Jharia P. O., Bihar and Orissa.	Standard Coal Co., Ltd.	Sukia Karmi, (m.), 30, Coal-cutter.	Coal	Deceased was in the act of setting a ladder for the shot-firer to examine the roof, after a shot had been fired in roof coal. Several small pieces of roof coal fell on his head and his back from a height of 22 feet, causing injuries from which he died two hours later. The shot-firer had ordered deceased not to go back to the place until further orders, as the roof sounded rather heavy. The shot-firer was in another part of the mine when the accident occurred. Inspection and inquiry made.
24	13th April, 10 A.M.	Maung Pok mine, Tavoy P. O., Burma.	The London Burmese Wolfram Co., Ltd.	Law Lee, (m.), 45; Law Loo, (m.), 40, Miners.	Wolfram	The two deceased were overhand stoping, against orders, in a place where work had been suspended, as it was unsafe. They were killed instantly by a heavy fall of roof.
25	17th April, 5 A.M.	Ena mine, Jharia P. O., Bihar and Orissa.	North-West Coal Co., Ltd.	Agnoo Meah, (m.), 40, Coal-cutter.	Coal	Deceased was cutting floor coal with two other men, when a piece of the roof, about 8' 0" x 6' 0" x 4' 6", fell out from a 'slip' at a height of about 12 feet. The overman, who was present at the time, heard the roof crack and shouted a warning. The two other men escaped, but the deceased was caught and was killed on the spot. Inspection and inquiry made.
26	25th April, 10-30 A.M.	Nyadee and North Kusunda mine, Kusunda P. O., Bihar and Orissa.	Kusunda and Nyadee Collieries, Ltd.	Gendia Chamarin, (f.), 43, Coal-carrier.	Coal	A miner was dressing top coal and was standing on a stool about 6 feet high, and deceased was filling coal at the foot of the stool. A piece of coal, weighing about 80 lbs., suddenly came away. It knocked over the stool and fell upon deceased. She died on the following day. The miner was slightly injured. Inspection and inquiry made.
27	28th April, 9 P.M.	Alkusa (South) mine, Kusunda P. O., Bihar and Orissa.	Raniganj Coal Association, Ltd.	Jalis Mosal, (f.), 20, Coal-carrier.	Coal	Deceased went through two fences and up to the edge of a goaf, when a slab of roof coal, 20' x 6' x 8', fell upon her from the roof, 6 feet above. She was killed on the spot. Inspection and inquiry made.
28	29th April, 4-30 A.M.	Bhagrard mine, Salonpur P. O., Bengal.	Borrea Coal Co., Ltd.	Jungi Mejhian, (f.), 21, Coal-carrier.	Coal	Deceased, in the absence of the sirdar, went through a fence for the purpose of filling loose coal on the edge of a goaf. A fall occurred which knocked out a prop on the goaf edge. Deceased was struck on the head by the falling prop and killed instantly. Inspection and inquiry made.
29	30th April, 6 P.M.	Joyrampore mine, Jharia P. O., Bihar and Orissa.	Joyrampore Agarwala. Ramjash	Jhoomak Singh, (m.), 44, Carpenter.	Coal	Deceased was setting a prop when a piece of coal, weighing about 10 lbs., fell on him from a height of 20 feet. He died a few days later. Inspection and inquiry made.

30	2nd May, 12-30 P.M.	West Chandrabad mine, Jharla P. O., Bihar and Orissa.	Ramjash Agarwala	Manu Kora, (m.), 35, Coal-cutter.	Coal	Deceased left his working place and went into a dip gallery, which had been stopped and fenced off for nearly a month on account of bad roof. He went through a fence and was caught by a fall of roof stone, 8' 0" x 3' 6" x 3' 6", which fell from a height of 5 feet. He was killed on the spot. Inspection and inquiry made.
31	6th May, 2 A.M.	Chowrasia mine, Dishergarh P. O., Bihar and Orissa.	Equitable Coal Co., Ld.	Dhanu Manjhi, (m.), 16, Coal-cutter.	Coal	Deceased was filling a basket of coal close to a pillar in course of extraction, when a portion of the roof on the edge of the goaf broke away and swayed out some timbers. One of the falling props struck him on the head. He died two hours later. Inspection and inquiry made.
32	13th May, 11-30 A.M.	Damadapur mine, Nandi P. O., Bengal.	Bengal Coal Co., Ld.	Nathuni Ram, (m.), 42, Stone-cutter.	Coal	Deceased was ordered to dress down a projecting piece of shale on the side of a gallery. He went underneath it in order to examine it prior to getting it down when it fell on to him without warning. He sustained a fractured spine and died a few hours later. Inspection and inquiry made.
33	13th May, 2 P.M.	Damarkunda mine, Chirkunda P. O., Bihar and Orissa.	Bengal Coal Co., Ld.	Makai Mejhian, (f.), 23, Coal-carrier.	Coal	A portion of the roof, close to a pillar under extraction, was found to be unsound. The sirdar fenced the place off, pending the erection of timbers. Whilst the carpenter was preparing props, a stone, measuring 4' 0" x 4' 0" x 1' 4", fell from a height of 7 feet and struck deceased who was standing close to the fence. She was killed instantly. Inspection and inquiry made.
34	16th May, 3-30 P.M.	Choitodih mine, Katrasgarh P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ld.	Dukhu Bauri, (m.), 27, Coal-cutter.	Coal	Whilst deceased was working at the face of a gallery, 12 feet wide and 6 feet high, a mass of roof stone, 80' 0" x 7' 0" x 3' 0", fell from between two parallel 'slips.' He was killed instantly. Inspection and inquiry made.
35	17th May, 6 A.M.	Bhuggatdih mine, Jharla P. O., Bihar and Orissa.	Bengal Nagpur Coal Co., Ld.	1. Krija Mahata, (m.), 24, 2. Fngoo Meah, (m.), 24, 3. Bonary Meah, (m.), 25, Coal-cutters; 4. Koodia Mahatan, (f.), 25, Coal-carrier.	Coal	A gang of eight persons, entered a goaf which had been abandoned and fenced off four days before. They passed through a fence and whilst engaged in loading fallen coal, a mass of roof coal, 20' 0" x 20' 0" x 3' 6", fell upon them. The four deceased were killed instantly and one other man was seriously injured. Inspection and inquiry made. (See Report, page 7.)
36	22nd May, 5 P.M.	West Tetturiya mine, Katrasgarh P. O., Bihar and Orissa.	West Tetturiya Collieries, Ld.	Budloo Meah, (m.), 37, Mining Sirdar.	Coal	Deceased was drawing timber from a place which had just been stopped on account of bad roof. He withdrew safely all the props except one, upon which a great deal of weight was thrown, but which he persisted in trying to draw in spite of warnings from his assistant. The roof suddenly came down breaking the prop and killing deceased on the spot. Inspection and inquiry made.
37	23rd May, 10 P.M.	Craddock mine, Pench P. O., Central Provinces.	Central Pench Coal Co., Ld.	Hirjoo Gond, (m.), 35, Timber Mistry.	Coal	Whilst deceased was drawing timber from a goaf, a piece of stone, measuring 14' 0" x 5' 0" x 0' 5", fell from a height of 6 feet. A portion broke away from the main stone and struck deceased, fracturing his skull and killing him instantly.
38	30th May, 10 A.M.	Joyramdanga mine, Asansol P. O., Bengal.	New Beerbhumi Coal Co., Ld.	1. Ramsi Bhoorian, (m.), 15, Coal-carrier; 2. Mogal Bhoorian, (m.), 26, Coal-cutter.	Coal	The roof coal in a working place in a goafing district was found to be unsafe and orders were given for timbers to be set underneath it before allowing miners to work. Several props were set and in the absence of the sirdar, who was measuring others, the deceased contrary to orders commenced to cut down a portion of the unsound roof. A mass of coal, measuring, 10' 0" x 7' 0" x 1' 3", fell from a height of 12 feet on to them killing one of them outright and severely injuring the other who died within a few hours. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1919—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral wrought.	Cause of accident and remarks.
FALLS OF ROOFS AND SIDE—contd.						
(a) Falls of roof—contd.						
39	30th May, 1-45 P.M.	Barelia mine, Chora P. O., Bengal.	Burrakar Coal Co., Ld.	Joy Kumar Roy, (m.), 38, Propping carpenter.	Coal	Deceased was engaged in getting down a slab of stone, measuring 3' 0" x 4' 0" x 0' 7", from the roof of an underground pump room. The stone broke away, fell from a height of 7 feet to the ground and rolled over pinning his left foot against the pump seating. He died of tetanus thirteen days later. Inspection and inquiry made.
40	3rd June, 3-40 P.M.	Tikak mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Gheraw Musalman, (m.), 85, Sirdar.	Coal	Deceased was killed by a mass of 6 tons of coal which fell suddenly from the roof at a cross road. Inspection and inquiry made.
41	11th June, 8-30 P.M.	Jamuria mine, Nandi P. O., Bengal.	Equitable Coal Co., Ld.	Jota Manjhi, (m.), 30, Coal-cutter.	Coal	Deceased, when in the act of loading a basket with coal, was struck by a mass of roof coal, measuring 8' 0" x 3' 0" x 3' 0", which fell without warning from a 'slip' at a height of 9 feet. He was killed instantly. Inspection and inquiry made.
42	13th June, 3-31 A.M.	Akhalpur mine, Nandi P. O., Bengal.	Hurriladih Coal Company, Ld.	Lakhi Mejhian, (f.), 30, Coal-carrier.	Coal	Some minors were engaged in cutting roof coal on the edge of a large goaf. The roof in the goaf came on 'weight', swayed out sixty props, and released a mass of roof stone. Deceased was trapped under the fall before she could escape and was suffocated. Inspection and inquiry made. (See Report, page 8.)
43	16th June, 11 A.M.	Bhutgoria mine, Jamadoba P. O., Bihar and Orissa.	Aldih Coal Company, Ld.	Jhagroo Mahato, (m.), 35, Prop setter; Sukhoo Manjhi, (m.), 21, Coal-cutter.	Coal	The deceased Jhagroo, a prop setter, although warned not to do so, was sitting under some bad roof stone, preparing timber and the deceased Sukhoo, a coal cutter, was sitting near him. A slab of stone, about 18' 0" x 5' 0" x 0' 8", fell suddenly from a height of 7 feet, killing both the deceased instantly. Another man was injured. Inspection and inquiry made.
44	17th June, 4-30 P.M.	Jamdiha mine, Mohoda P. O., Bihar and Orissa.	Jamdiha Coal Company	Ali Baurin, (f.), 30, Coal-carrier.	Coal	Deceased removed a fence and entered a gallery which had been stopped and fenced on account of bad roof. Whilst she was loading slack coal, a piece of stone 6' 0" x 3' 0" x 1' 6" fell from a height of 7 feet, killing her instantly. Inspection and inquiry made.
45	23rd June, 10 P.M.	Tikak mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Amaram Gharty, (m.), 25, Coal-carrier.	Coal	Whilst carrying a basket of coal from a "chamber", 30' 0" x 20' 0" x 7' 0", deceased was killed by the sudden fall of about 2 tons of coal from the roof.
46	2nd July, 1 A.M.	Narsamuda mine, Asansol P. O., Bengal.	Sitarampur Coal Company, Ld.	Tini Bantir, (f.), 13, Bailer.	Coal	Deceased was one of six women who were bailing water out of a dip gallery. A mass of shale, measuring 10' 0" x 6' 0" x 0' 8", broke away from the roof at the entrance to the gallery and struck deceased killing her instantly. Inspection and inquiry made.

47	3rd July, 12 midnight.	Central Kurkend mine, Kusunda P. O., Bihar and Orissa.	Central Kurkend Coal Company, Ld.	Chuni Kaharin, (f.), 43, Coal-carrier.	Coal	Deceased entered a working place whilst it was temporarily stopped for timbering, and, whilst the miners and their loaders, of whom she was one, were sitting in a gallery near by, waiting for the carpenter to put up timber, some roof and stone, about 5' 0" x 2' 6" x 1' 0", fell out at some 'slips' from a height of about 7 feet. She sustained injuries to which she succumbed 5 days later. Inspection and inquiry made.
48	4th July, 6 A.M.	Kirkend mine, Kusunda P. O., Bihar and Orissa.	Motiram Coal Company	Manarath Roy, (m.), 40, Coal-cutter.	Coal	Deceased was standing on a stool, 8 feet high, cutting an ironstone nodule out of roof coal when his pick glanced off and he over balanced himself and fell off the stool. The nodule which he had released also fell a moment afterwards and struck him on the back of his head killing him instantly. The nodule was 2' 0" x 1' 6" x 1' 3" and weighed about 400 lbs. It fell from a height of 14 feet. Inspection and inquiry made.
40	11th July, 12 noon.	Sodepur (Outerop) mine, Sitarampur P. O., Bengal.	Bengal Coal Company, Ld.	Duli Mejhian, (f.), 28, Coal-carrier.	Coal	Deceased, whilst carrying a basket of coal along a travelling road, was struck by a piece of coal, 4' 0" x 2' 0" x 0' 10", which fell from the side of a pillar at a height of 14 feet. She was killed instantly. Inspection and inquiry made.
50	12th July, 5-30 P.M.	Damudapur mine, Nandi P. O., Bengal.	Bengal Coal Company, Ld.	Jagu Meah, (m.), 42, Coal-cutter,	Coal	Deceased, contrary to orders, went through a fence and commenced to rob coal from a wedge shaped 'stook', 8' 6" x 1' 6" x 11 feet high. The 'stook' collapsed and deceased was struck by the falling coal before he could escape. He died from his injuries three days later. Inspection and inquiry made.
51	30th July, 8-30 A.M.	Baraboni mine, Asansol P. O., Bengal.	New Beerbhum Coal Co., Ld.	Dhona Manjhi, (m.), 40, Coal-cutter.	Coal	Deceased was loading into a basket some coal, robbed from the bottom of a pillar, when a nodular piece of coal, weighing about 30 lbs., fell from the roof at a height of 13 feet and struck him on the back fracturing his spine. He died shortly after. Inspection and inquiry made.
52	6th August, 11-30 P.M.	Chatabar mine, Nagma P. O., Bihar and Orissa.	Chatabar Colliery, Ld.	Noni Mejhian, (f.), 18, Coal-carrier.	Coal	Deceased was picking up coal in the face of a gallery, when a piece of shale, measuring 6' 0" x 5' 0" x 2' 0", fell without warning from the roof at a height of 7 feet and struck her, killing her instantly. Inspection and inquiry made.
53	11th August, 2-30 P.M.	Chanck mine, Chirkunda P. O., Bihar and Orissa.	Bengal Coal Company, Ld.	Bhakta Manjhi, (m.), 27; Hopna Manjhi, (m.), 28, Coal-cutters.	Coal	The deceased were instructed to dress down some overhanging coal in a gallery. One of them, contrary to orders, commenced undercutting at the side of a pillar, beneath the overhanging coal. He thus released a mass of roof coal, measuring 5' 0" x 0' 0" x 3' 0", which fell on to him from a height of 6 feet, killing him instantly. His companion, on hearing the coal breaking away, attempted to drag him into safety and was himself struck by the fall and sustained serious injuries to which he succumbed two hours later. Inspection and inquiry made.
54	1st September, 10 A.M.	New Tetturiya mine, Katraagarh P. O., Bihar and Orissa.	New Tetturiya Coal Co., Ld.	Munshi Dosadh, (m.), 26, Lino coolie. Gan too Teli, (m.), 45, Bailing coolie.	Coal	Whilst tubs were being pushed in a gallery, 12 feet wide and 8 feet high, one of the tubs knocked out a prop and brought about a fall of roof stone, 1' 6" thick over an area 20 feet long and 8 feet wide. The two deceased were killed instantly, one other man was seriously injured and two others were slightly injured. Inspection and inquiry made.
55	2nd September, 1 P.M.	Nodiha mine, Dishegarh P. O., Bihar and Orissa.	Nodiha Coal Co., Ld.	Budhon Manjhi, (m.), 12, Coal-carrier.	Coal	Deceased was filling a basket of coal close to a pillar in course of extraction when a piece of overhanging shale, measuring 2' 6" x 1' 6" x 0' 4", fell from a height of 6 feet and struck him. He sustained serious injuries and died on the following day. Inspection and inquiry made. (See Report, page 7.)

APPENDIX II—contd.

Fatal Accidents, 1919—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral wrought.	Cause of accident and remarks.
FALLS OF ROOF AND SIDES—contd.						
(a) Falls of roof—contd.						
56	7th September, 12-30 P.M.	Dishergarh mine, Dishergarh P. O., Bengal.	Equitable Coal Co., Ltd.	Patu Maharaj, (m.), 48, <i>Underground Sirdar</i> ; Megna Napit, (m.), 38, <i>Line mistry.</i>	Coal .	The deceased were engaged in erecting a timber cog on a haulage incline when a mass of roof coal, about one ton in weight, fell without warning from a height of 14 feet. They were struck by the falling coal and sustained serious injuries to which they subsequently succumbed. Inspection and inquiry made.
57	10th September, 1 A.M.	Nandi mine, Nandi P. O., Bengal.	Adjai Coal Company, Ltd.	Choti Suki Mejhian, (f.), 12, <i>Coal-carrier.</i>	Coal .	Deceased and four other women were loading fallen roof coal in a gallery when a mass of shale, measuring 14' 0" x 6' 0" x 0' 8", fell on to them from the roof at a height of 11 feet. Deceased died one hour later as a result of her injuries. The others escaped with minor injuries. Inspection and inquiry made.
58	25th September, 2-15 P.M.	Nodhia mine, Dishergarh P. O., Bihar and Orissa.	Nodhia Coal Co., Ltd.	Holu Bauri, (m.), 36, Protap Bauri, (m.), 28, Panu Bauri, (m.), 30, Kangal Mullick, (m.), 40, <i>Coal-cutters</i> ; Purna Mullickain, (f.), 35, Kumoda Mullickain, (f.), 16, Nani Mullickain, (f.), 48, <i>Coal-carriers.</i>	Coal .	The last pillar of a panel was being extracted in a seam having an inclination of 24°. Five miners and three coal-carriers were at work in the place. A mass of 'local' roof, 2 feet in thickness, broke away without warning from a height of 7 feet, completely swayed out the timbers, and buried the deceased. Subsequently a further fall occurred which prevented the rescue party from saving those who were not killed outright by the first fall. Inspection and inquiry made. (<i>See Report, page 8.</i>)
59	30th September, 11-30 A.M.	Murolidih mine, Mohuda P. O., Bihar and Orissa.	Bengal Coal Co., Ltd.	Harkoo Napit, (m.), 22, <i>Timbering coolie.</i>	Coal .	Deceased was cutting a hole for a prop to be set under some shaley coal when some of this band, about 8' x 4' x 3" thick, suddenly fell off at a 'slip' from a height of 6 feet. Some of the pieces struck him on the head and fractured his skull, killing him instantly. Inspection and inquiry made.
60	7th October, 5-30 P.M.	Rampur mine, Jharsaguda P. O., Bihar and Orissa.	Hingir Rampur Co., Ltd.	Birato Gandain, (f.), 35, <i>Tub loader.</i>	Coal .	Deceased entered a gallery immediately after a shot had been fired. She was struck by a fall of roof, 6' 0" x 3' 0" x 1' 0", and succumbed to her injuries two hours later. She was one of a gang of loaders that had been warned by the shotfirer not to enter this gallery until the roof had been

61	8th October, 3-30 A.M.	Kendwadih mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Ram Manjhi, (m.), 20, Coal-cutter.	Coal .	Deceased and another coal-cutter were employed in cutting roof coal in a gallery 11 feet high. Whilst they were filling coal into baskets, a mass of coal and shale, weighing about 1½ cwt., fell upon them. Deceased died a few hours later. The other man was seriously injured. Inspection and inquiry made.
62	17th October, 8 A.M.	Rajhara mine, Rajhara P. O., Bihar and Orissa.	Bengal Coal Co., Ltd.	Jhouria Noonja, (m.), 16, Coal-cutter.	Coal .	Deceased left his proper working place, and, breaking down two fences, went into an area of pillars which had been fenced off some months before. He began cutting coal from the side of an old pillar and brought about a fall of roof stone and side coal from a height of 9 feet. A portion of this fell upon him and killed him instantly. Inspection and inquiry made.
63	20th October, 1 P.M.	Sijua mine, Sijua P. O., Bihar and Orissa.	Tata Iron & Steel Co., Ltd.	Badar Ali, (m.), 45, Coal-cutter.	Coal .	Deceased passed through a fence and was robbing coal from the corner of a pillar. This brought about a fall of roof stone, nearly a ton in weight, from a height of 9 feet. He was killed instantly. Inspection and inquiry made. (See Report, page 7.)
64	1st November, 12-30 P.M.	Sudamdih mine, Bhujudih P. O., Bihar and Orissa.	Sudamdih Coal Co., Ltd.	Kurjoo Roy, (m.), 36, Coal-cutter.	Coal .	Deceased left his working place and, passing through a fence, entered an area of disused workings. Whilst he was robbing coal from a pillar, an area of roof stone, measuring 12' 0" x 12' 0" x 1' 6", fell upon him from a height of 15 feet. He died shortly after. Inspection and inquiry made.
65	4th November, 7 A.M.	Nandi mine, Nandi P. O., Bengal.	Adjai Coal Co., Ltd.	Lafar Mahato, (m.), 32, Carpenters' Coolie.	Coal .	Timbers were being withdrawn on the edge of a goaf when a fall of roof occurred inside the goaf. A piece of stone rolled down and knocked out one of the props which struck the injured man before he withdrew to safety. He sustained serious injuries to the skull from which he died two days afterwards. Inspection and inquiry made.
66	6th November, 9-45 A.M.	Lodna mine, Jharia P. O., Bihar and Orissa.	Lodna Colliery Co., Ltd.	Gonesh Turi, (m.), 48, Timber-man.	Coal .	Whilst deceased was taking out timber, preparatory to dropping roof coal, he was partly buried by a mass of roof coal, which fell upon him from a height of 6 feet. He succumbed to his injuries a few hours later. Inspection and inquiry made.
67	12th November, 9 A.M.	Khas Jayrampur mine, Jharia P. O., Bihar and Orissa.	Khengarji Trikoo and Co.	Ram Manjhi, (m.), 45, Miner's Sirdar; Bejnath Kamar, (m.), 35, Coal-cutter; Rasmi Kamin, (f.), 20, Mani Manjhan, (f.), 25, Coal-carriers; Sona Manjhi, (m.), 45, Sirdar; Kadru Manjhi, (m.), 20, Coal-cutter.	Coal .	A miners' sirdar, with two coal-cutters and two coal-carriers, entered a fenced off goaf, from which the timber had been drawn the day before, in order to steal some fallen coal. An overman and a sirdar finding them there, went to call them out. A fall of roof coal and stone, about 30' 0" x 30' 0" x 3' 0" thick occurred, killing four of these persons and seriously injuring two others, one of whom died the next day. Inspection and inquiry made.
68	21st November, 9-30 A.M.	South Bulliari mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Kub Lal Mosal (m.), 40, Head fitter.	Coal .	Deceased was levelling an iron girder at the inset at the bottom of a shaft, when a piece of roof stone and coal, 7' 0" x 1' 6" x 5' 6" thick, fell from the lip of the shaft, 8 feet above, and killed him instantly. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1919—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral wrought.	Cause of accidents and remarks.
FALLS OF ROOF AND SIDES—contd.						
<i>(a) Falls of roof—concl'd.</i>						
69	6th December, 7-30 A.M.	Salarwal mine, Pind Dadan Khan P. O., Punjab.	Ishar Das Kapur and C. Bevan Petman.	Babadur, (m.), 28, Carpenter.	Coal .	Whilst engaged in timbering, deceased was struck by stone falling from the roof at a 'slip'. He sustained injuries which terminated fatally three months later.
70	17th December, 2-30 A.M.	New Kessurgurah mine, Nowgarh P. O., Bihar and Orissa.	New Kessurgurah Coal Co., Ltd.	Chandi Manjhi, (m.), 35, Coal-cutter.	Coal .	Whilst two coal-cutters were sitting down at rest near their working galleries, a slab of shale, 2' x 1' 6" x 6" thick, fell upon them from the roof, at a height of 6 feet. Deceased sustained injuries to the leg and thigh which resulted in death two days later. The other man escaped with a severe cut on the thigh. Inspection and inquiry made.
71	28th December, 2 P.M.	Thitkado mine, Tavoy P. O., Burma.	Osman Mustikhan & Co.	Bijar, (m.), 50, Coolie.	Wolfram .	Deceased was killed by the collapse of a tunnel while he was examining the vein.
<i>(b) Falls of side (75 deaths).</i>						
72	1st January, 2-30 P.M.	Gajarmara mine, Hazariabagh P. O., Bihar and Orissa.	Prithir Raj	Sheikh Tanu, (m.), 35, Minor; Sakra Bhuiya, (m.), 16, Sugia Jolabin, (f.), 24, Stone-carriers.	Mica .	Whilst twelve persons were at work in the bottom of a small quarry, 28 feet deep, a mass of soft schist, 14' 0" x 8' 0" x 3' 6", fell upon them from the overhanging side. They were killed on the spot. Inspection and inquiry made.
73	3rd January, 8-15 A.M.	Tirap mine, Margherita P. O., Assam.	Assam Railways and Trad- ing Co., Ltd.	Eee Hin Fat, (m.), 42, Baska Wallah.	Coal .	Deceased was killed by a fall of side coal in an opening. About two tons fell from an unseen 'slip'.
74	10th January, 12-15 P.M.	Chandametta mine, Pench P. O., Central Provinces.	Pench Valley Coal Co., Ltd.	Harilal Mansa, (m.), 22, Stone-cutter.	Coal .	Deceased was killed by a mass of 1½ cwts. of shale, which fell from the side of a sinking shaft, at a height of 8 feet from the bottom.
75	18th January, 3 A.M.	Fularibad mine, Jharia P. O., Bihar and Orissa.	Khas Jharia Coal Co. .	Guru Charan Kora, (m.), 42, Coal-cutter.	Coal .	Deceased was one of a gang of coal-cutters engaged in extracting a pillar 1½ feet in height. Hearing a slight noise he looked upwards, and a piece of coal, about one pound in weight, fell from the top of the pillar and struck him on the nose. He became unconscious, but recovered and was able to walk out of the mine unaided. He died some 12 hours later. Inspection and inquiry made.

76	25th January, 11 A.M.	Wilnos mine, Tavoy P. O., Burma.	High Speed Steel Alloys Mining Co., Ltd.	Ah. Chu., (m.), 20, Coolie.	Wolfram	Deceased was killed by a fall of side, 3' 6" x 10" x 6' 6" (deep), which fell from the overhanging wall of a lode and broke his back.
77	26th January, 5 A.M.	Sudreadih mine, Nowagarh P. O., Bihar and Orissa.	Jainarain Ramjash, Agarwalla.	Jangli Roy, (m.), 35, Sirdar.	Coal	Deceased broke down a fence and, whilst engaged in robbing coal from a pillar was struck down by a mass of coal, weighing some 10 tons, which fell from the roof and side at a height of 10 feet. His skull was fractured and he died 5 hours later. Inspection and inquiry made.
78	1st February, 5 P.M.	New Kessurgurah mine, Nowagarh P. O., Bihar and Orissa.	New Kessurgurah Coal Co., Ltd.	Charan Manjhi, (m.), 34, Coal-carrier.	Coal	Deceased was employed in carrying coal cut from a bench of roof coal, 7 feet thick, in a gallery already 8' high. Whilst the miner was cutting coal, the deceased, unknown to him, began to load a basket below. About 1 cwt. of coal fell upon deceased causing injuries to which he succumbed six hours later. Inspection and inquiry made.
79	5th February, 9 P.M.	Bullnari mine, Jainadoba P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Kharu Ghatwal, (m.), 16, Coal-loader.	Coal	Deceased and another coal-cutter were employed in cutting a bench of roof coal, 9 feet thick, in a gallery 9 feet high. About 6 cwts. of coal fell from the side at a height of 10 feet. Deceased sustained an injury to the spine which proved fatal within two hours. Inspection and inquiry made.
80	14th February, 8 A.M.	Hpaungdaw mine, Tavoy P. O., Burma.	The High Speed Steel Alloys Mining Co., Ltd.	Yup Chan, (m.), 34, Tributer.	Wolfram	Deceased, who was a tributer, was working in an open cut, against the express orders of his foreman. During a heavy shower of rain, which loosened the ground, about a ton of earth fell on him from the side of the open cut. He was killed on the spot. Inquiry held.
81	22nd February, 4 P.M.	Tagu Mine, Tagu mine P. O., Morgul, Burma.	E. Ahmed	Lock Tannag, (m.), 60, Miner.	Wolfram	Deceased was killed by a fall of side in an open cut.
82	22nd February, 4-15 P.M.	Fularibad mine, Jharra P. O., Bihar and Orissa.	Khas Jharra Coal Co.	Balo Korn, (m.), 34, Coal-cutter.	Coal	Four coal-cutters were engaged in extracting a pillar in a coal seam, 14 feet thick. A rib of coal had been left unworked to keep back fallen stones lying in the "goaf." A massive slab of roof stone rolled down against the rib, broke through it, and knocked out three props. One of the props struck deceased on the head and killed him on the spot. Inspection and inquiry made.
83	23rd February, 12-30 P.M.	Ramnagar mine, Kulti P. O., Bengal.	Bengal Iron & Steel Co., Ltd.	Jitoo Kol, (m.), 48, Amoya Kol, (m.), 35, Coal-cutters; Sujjiya Kolia, (f.), 40, Coal-carrier.	Coal	The three deceased left their working place in a quarry and went to cut in another place. They were killed by a fall of side coal, 9' 0" x 6' 0" x 2' 0", which fell from a height of 10 feet. Inspection and inquiry made.
84	20th February, 9 P.M.	Bhalgora mine, Jharra P. O., Bihar and Orissa.	Bhalgora Coal Co., Ltd.	Radha Kannu, (m.), 40, Coal-carrier.	Coal	A pillar of coal, 30 feet square and 25 feet high, was under extraction. The first cut was being taken from a platform fixed near the roof. Some of the coal-cutters, however, commenced to rob coal from another side of the pillar near the floor. A mass of 8 tons of coal fell from the side, at a height of 10 feet. Deceased was struck by the coal and killed on the spot. Inspection and inquiry made.
85	11th March, 4 P.M.	Tikak mine, Mergherita P. O., Assam.	Assam Railways & Trad- ing Co., Ltd.	Lanting Chainman, (m.), 38, Tub filler.	Coal	Whilst loading a tub deceased was struck by a fall of clay band. He succumbed to an attack of pneumonia 11 days later.

APPENDIX II—contd.

Fatal Accidents, 1919—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral wrought.	Cause of accident and remarks.
FALLS OF ROOFS AND SIDE—contd.						
(b) Falls of side—contd.						
86	27th March, 6-30 A.M.	Joyrampur mine, Jharua P. O., Bihar and Orissa.	Jainarain Ramjash Agar- walla.	Sadbram Chamar, (m.), 40, Coal-cutter ; Jhilat Chamarin, (f.), 35, Coal-carrier.	Coal	Deceased were employed in a mine where pillars, 22 feet in height, were being extracted. They passed through a fence and whilst cutting and loading coal there, were struck down by a mass of some 4 tons of coal, which fell from a height of 18 feet. They were killed instantly. Inspection and inquiry made.
87	29th March, 9 A.M.	Khas Jharua mine, Jharua P. O., Bihar and Orissa.	Jagannath Ramjash Agar- walla.	Nando Lal Chamar, (m.), 36, Miner's Sirdar.	Coal	Deceased went through a fence into an unused gallery, and whilst he was there a mass of some 18 tons of coal fell from the corner of a pillar, 35 feet high. He sustained injuries to which he succumbed about an hour later. Inspection and inquiry made.
88	24th April, 1 P.M.	Wagon mine, Tavoy P. O., Burma.	Wagon Pachang Wol- fram Mines, Ltd.	Ah Yon, (m.), 29, Miner.	Wolfram	Deceased was killed instantly by a fall of earth from the side of an excavation, from a point fifteen feet above where he was working.
89	9th May, 11-30 A.M.	Derichoung mine, Tavoy P. O., Burma.	Messrs. Tata Sons, Ltd.	Bigan, (m.), 35, Mine Coolie.	Wolfram	Deceased was instructed to dislodge a large boulder which was hanging from the lode. He appears to have seen some wolfram in the lode, below the boulder, and attempted to get it. In doing so, the boulder fell on him, from a height of 6 feet and killed him.
90	11th May, 1 P. M.	Het Kantra mine, Bhojudih P. O., Bihar and Orissa.	Govinda Chandra Bose	Kenti Mallik, (f.), 25, Coal-carrier.	Coal	Deceased was employed in a quarry. She passed through a fence and entered a disused part of the quarry. A large fall of side occurred and she was buried beneath it. Her body was recovered a month later. Inspection and inquiry made.
91	13th May, 1-45 P.M.	Aulajhari mines, Bharweli P. O., Central Provinces.	Khan Bahadur Byramji Pestunji.	1. Chotoo Koli, (m.), 15, 2. Lachman Lohar, (m.), 25, Earth-cutters ; 3. Sonu Lohar, (f.), 23, 4. Goneshi Gond, (f.), 30, Carriers.	Manganese	The four deceased and two other persons were ordered to dress down a dangerous overhanging portion of the foot-wall in an open cast mine. In the absence of the mate, they went underneath it and were engaged in getting ore when a portion of the foot-wall, 6 feet in height, broke away and fell over on to them. Lachman Lohar and Sena Lohar were killed on the spot and Chotoo Koli and Goneshi Gond died on their way to Hospital. The two other persons were injured. Inspection and inquiry made.
92	14th May, 6 P.M.	Benahir mine, Jharua P. O., Bihar and Orissa.	Standard Coal Co., Ltd.	Ramdhari Misir, (m.), 36, Coal-cutter.	Coal	Deceased was standing on a ladder and dressing the side of a pillar, 27 feet in height. Some of the coal which he dislodged fell upon and broke the ladder. He fell to the ground and was killed instantly. Inspection and inquiry made.

93	10th May, 2 P.M.	Fadauk mine, Tavoy P. O., Burma.	Tata Sons, Ltd.	Balli, (m.), 35, Coolie.	Wolfram	Deceased was killed in an open cast working by a fall of boulders, which were probably loosened by heavy rain. Another man sustained injuries which necessitated the amputation of his leg.
94	23rd May, 10 A.M.	Kalonta mine, Tavoy P. O., Burma.	Tavoy Concessions, Ltd.	Sardar Khaut, (m.), 45, Coolie.	Wolfram	Deceased was killed by a fall of half a ton of earth from the side of an open-cut, 5 feet above him.
95	24th May, 2-30 P.M.	Merwara (Plots Nos. 11-47 and 1150) mine, Katni P. O., Central Provinces.	Thakur Ramaiwas Sinha	Kusee, (m.), 65, Labourer.	Limestone	Deceased was sitting by the side of a quarry where blasting operations had previously been carried out. About 4 cwts. of earth, which had apparently been loosened during the blasting, came away, from a height of 3 or 4 feet, and killed him.
96	29th May, 11 A.M.	Loyabad mine, Bansjora P. O., Bihar and Orissa.	Barakar Coal Co., Ltd.	Jito Bauri, (m.), 30, Sinker.	Coal	Deceased, with nine other sinkers, was engaged in dressing the sides of a sinking shaft. A piece of stone, weighing about 10 lbs., fell from the side of the shaft and struck him on the head, killing him instantly. Inspection and inquiry made.
97	31st May, 8-30 A.M.	Bamboni mine, Asansol P. O., Bengal.	New Beerbhum Coal Co., Ltd.	Birdhan Manjhi, (m.), 27, Coal-cutter.	Coal	Deceased under cut the side of a pillar. A mass of coal, measuring 10' 8" x 8' 4" x 3' 3", broke away from a 'slip' and fell over on to him, killing him instantly. Inspection and inquiry made.
98	4th June, 8-30 A.M.	Kurhurbareo mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Company.	Tilki Kolin, (f.), 14, Coal-carrier.	Coal	Deceased passed through a fence into an area of disused workings. She was struck by coal falling from the side of a pillar, and sustained injuries to which she succumbed shortly afterwards.
99	4th June, 1-30 P.M.	Jamaldi mine, Kulti P. O., Bengal.	New Beerbhum Coal Co., Ltd.	Chandra Bauri, (m.), 35, Trammer.	Coal	Deceased with a companion was sitting down, sheltering from the sun, at the bottom of a quarry when a portion of the side, which overhung slightly, broke away and fell upon him, from a height of 5 feet, killing him instantly. His companion escaped with a few minor injuries. Inspection and inquiry made.
100	8th June, 4 A.M.	Sitalpur mine, Sitarampur P. O., Bengal.	Bengal Coal Co., Ltd.	Gopal Manjhi, (m.), 30, Coal-cutter.	Coal	Deceased was found lying under a fall of 2½ tons of side coal which occurred in a disused and forced gallery. He sustained serious injuries to the left arm and foot and died five days later. Coal had been robbed from the side of the pillar where the fall occurred. Inspection and inquiry made.
101	0th June, 2 P.M.	Paonin mine, Dongri P. O., Central Provinces.	Central Provinces Pros- pecting Syndicate, Ltd.	1. Assee, (f.), 20; 2. Mathri, (f.), 12; 3. Sumathri, (f.), 8; Coolies.	Manganese	While coolies were removing an old dump of boulder earth, a portion of the dump, measuring 14' 0" x 6' 0" x 8' 6", fell away. The three deceased were buried under the fallen earth and killed.
102	11th June, 7 P.M.	Alkusa South mine, Kusunda P. O., Bihar & Orissa.	Raneegango Coal Associa- tion, Ltd.	Bhatto Rayani, (m.), 30, Coal-cutter.	Coal	Deceased left his working place and passing through a fence, began to rob coal from the corner of a pillar. A mass of coal, 9' 0" x 6' 0" x 2' 6", fell from the corner of a pillar, 20 feet high, and killed him on the spot. Inspection and inquiry made.
103	22nd June, 8 A.M.	Jambad (East) mine, Chora P. O., Bengal.	East Jambad Coal Concern	Muchiram Manjhi, (m.), 35, Coal-cutter.	Coal	Deceased broke down a fence and went into a disused gallery to rob coal from the side of a pillar. A mass of side coal, weighing about 2 tons, fell over and a portion of it struck him. He died eighteen hours later of heart failure. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1919—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral wrought.	Cause of accidents and remarks.
FALLS OF ROOFS AND SIDE—contd.						
(b) Falls of side—contd.						
104	27th June, 3 A.M.	Toposi mine, Toposi P. O., Bengal.	Bansara Coal Co., Ltd.	Mohuri Baurin, (f.), 19, Kusami Baurin, (f.) 20, Mohini Baurin, (f.) 25, Coal-carriers.	Coal .	The three deceased went through a fence to collect slack coal in some disused workings. A piece of coal, about 2 tons in weight, fell on to them from the side of a pillar, at a height of 25 feet, killing them instantly. Inspection and inquiry made. (See Report, page 9.)
105	28th June, 3 A.M.	Karmatand mine, Nowagarh P. O., Bihar & Orissa.	Sriram Coal Company	Jiton Mahato, (m.), 20, Coal-cutter.	Coal .	Deceased, accompanied by his carrier, went through a fence and began to cut coal from the side of a pillar, 20 feet in height. He was killed by a mass of coal, weighing about 10 tons, which fell from the side, at a height of 12 feet. His carrier was seriously injured. Inspection and inquiry made.
106	30th June	Palauk mine, Palauk, Mergui, Burma.	E. Ahmed	Nga Tun Shwe, (m.), 30, Mining Coolie.	Wolfram .	Deceased was killed by a fall of earth from the side of a hill which was being hydraulically sluiced.
107	6th July, 9 A.M.	Kanbank mine, Tavoy P. O., Burma.	Kanbank (Burma) Wolfram Mines, Limited.	Lee Ngoo, (m.), 32, Miner.	Wolfram .	Deceased whilst at work in an open cut, was killed by a fall of boulders and earth, weighing about half a ton.
108	8th July, 2-30 P.M.	Seetalpore mine, Disbergarh P. O., Bengal.	Bengal Coal Co., Ltd.	Sunia Mejhian, (f.), 14, Coal-carrier.	Coal .	Deceased was loading coal which had been robbed from the corner of a pillar, when a mass of overhanging coal, weighing about 2 tons, broke away from the side of the pillar and fell on to her, killing her instantly. Inspection and inquiry made.
109	11th July, 2 P.M.	Kendwadih mine, Kusunda P. O., Bihar & Orissa.	East Indian Coal Co., Ltd.	Taju Bhuia, (m.), 30, Coal-cutter.	Coal .	Deceased, with two other miners, was dressing overhanging coal on the side of a pillar. Directly against orders, he went under the overhang to throw out some of the fallon coal. About 3 cwts. of coal fell upon him from a height of 15 feet. He was killed on the spot. Inspection and inquiry made.
110	12th July, 2 A.M.	Chanck mine, Chirkunda P. O., Bihar & Orissa.	Bengal Coal Co., Ltd.	Borka Manjhi, (m.), 45, Coal-cutter.	Coal .	Deceased broke down a fence and was robbing coal from the bottom of a pillar, when a mass of side coal, about 2 tons in weight, broke away from a 'slip' and fell upon him. He sustained a fracture of the spine and died five hours later. Inspection and inquiry made.

111	1st August, 2 A.M.	Dhadka mine, Asansol P. O., Bengal.	Dhadka Coal Co.	Bhima Kol, (m.), 32, Coal-cutter.	Coal	Deceased, in spite of being warned not to do so, undercut the coal at the base of a pillar. A piece of coal, measuring 3' 0" x 2' 6" x 1' 0", fell over from a concealed 'slip' and struck him on the head. He died half an hour later. Inspection and inquiry made.
112	3rd August, 3 P.M.	Thingandon mine, Tavoy P. O., Burma.	The Tavoy Concessions, Ltd.	Maung U Kin, (m.), 30, Tributor.	Wolfram	Deceased was killed by a fall of side in an open cut.
113	9th August, 4 A.M.	Dishergarh mine, Dishergarh P. O., Bengal.	Equitable Coal Co., Ltd.	Matabhik, (m.), 42, Coal-cutter.	Coal	Deceased broke down a fence and went into a disused gallery to rob coal. A piece of coal, measuring 5' 0" x 5' 0" x 4", broke away from the side and struck him. He sustained a fracture of the spine and died 20 hours later. Inspection and inquiry made.
114	24th August, 4 A.M.	Jharis Khas mine, Jharis P. O., Bihar & Orissa.	Standard Coal Co., Ltd.	Dubraj Singh, (m.), 32, Coal-cutter.	Coal	Deceased was sleeping at the entrance to his working place whilst a coal cutter, with whom he worked, was sitting near him. A piece of coal, weighing about 2 cwt., fell off the side of the gallery, from a height of about 10 feet injuring deceased so severely that he died 3 or 4 hours later. Inspection and inquiry made.
115	16th September, 11-30 A.M.	Satikdih mine, Bhojudih P. O., Bihar and Orissa.	Satikdih Coal Co., Ltd.	Lakhiram Kahl, (m.), 24, Coal-cutter.	Coal	Deceased undercut the corner of a pillar 9 feet from the face of the gallery in which he worked. A mass of coal, about 1 ton in weight, fell upon him and killed him instantly. The gallery was 10 feet high. Inspection and inquiry made.
116	20th September, 4-15 P.M.	Chapui mine, Kulipahari P. O., Bengal.	Maharaja M. C. Nandi	Laln Mahato, (m.), 37, Stone-cutters' Sirdar.	Coal	Deceased was standing at the bottom of a sinking shaft, 143 feet in depth, when a piece of stone, measuring 0' 10" x 0' 5" x 0' 5", fell from the side of the shaft and struck him on the head. He died fifteen minutes later. Inspection and inquiry made.
117	28th September, 6-15 P.M.	Chanoh mine, Barnkar P. O., Bihar and Orissa.	Bengal Coal Co., Ltd.	Bhaugot Manjhi, (m.), 25; Sukn Manjhi, (m.), 33, Coal-cutters.	Coal	The deceased, in the absence of the sirdar, broke down a fence and were robbing coal from the side of a pillar, when a triangular shaped mass of coal, measuring 7' 0" x 2' 0" x 1' 6", fell over upon them killing them instantly. Inspection and inquiry made.
118	30th September, 7-30 P.M.	Jamadoba mine, (No. 1 Division), Jamadoba P. O., Bihar and Orissa.	Tata Iron & Steel Co., Ltd.	Sukhada Kora, (f.), 30; Dhani Kora, (f.), 14; Sori Kora, (f.), 20, Coal-carriers.	Coal	The three deceased women were employed in carrying coal in a pillaring district in a coal seam 7 feet thick. They went through a fence and whilst loading loose coal, a mass of overhanging side coal, 10' 0" x 3' 0" x 2' 0", fell upon them and killed them instantly. Inspection and inquiry made.
119	2nd October, 3 A.M.	Jenlogora mine, Jamadoba P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Chatoo Manjhi, (m.), 30, Coal-cutter.	Coal	Deceased left his working place and began to rob coal from the side of a gallery. A slab of iron stone band, weighing about 3 cwt., fell upon him, from a height of 4 feet, killing him instantly. Inspection and inquiry made.
120	7th October, 11 A.M.	Bhelafand mine, Sijun P. O., Bihar and Orissa.	Tata Iron & Steel Co., Ltd.	Bistu Towari, (m.), 36, Sinkers.	Coal	Deceased was working in a pit bottom with 16 other sinkers and a chargeman, when a piece of stone, weighing about 8 lbs., fell from a 'slip' in the side of the shaft, about 120 feet from the bottom. He was struck on the head and killed instantly. Inspection and inquiry made.

APPENDIX II—*contd.*

Fatal Accidents, 1919—*contd.*

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral wrought.	Cause of accident and remarks.
FALLS OF ROOFS AND SIDE—<i>concl'd.</i>						
(b) Falls of side—<i>concl'd.</i>						
121	11th October, 2 P.M.	Pathariachuck mine, Nowgarh P. O., Bihar and Orissa.	Sheo Persan Tewary	Bhiku Rajwar, (m.), 40, Coal-cutter.	Coal	Deceased left his working place in a quarry and undercut the side in a disused part of the quarry. A mass of coal, weighing about 1½ cwts., fell upon him from a height of 5 feet. He sustained injuries to which he succumbed a few hours later. Inspection and inquiry made.
122	18th October, 11 P.M.	Bhulanbararee mine, Jharra P. O., Bihar and Orissa.	Bhulanbararee Coal Co., Ltd.	Sufal Manjhi, (m.), 42, Coal-cutter; Mangli Manjhian, (f.), 16, Coal-carrier.	Coal	The two deceased left their proper working place and, crossing a fence, entered a disused gallery, from the side of which they commenced to undercut some coal. About 2 tons of coal fell suddenly from the side, at a height of 12 feet, near the roof and killed them both on the spot. Inspection and inquiry made.
123	19th October, 1 P.M.	Rakha Hills mine, Rakha Mines P. O., Chota-Nagpur.	Cape Copper Co., Ltd.	Moonusawmy Naidu, (m.), 40, Underground Timber mistry.	Copper	Deceased, who was an experienced timberman, was ordered to take down unsound rock from the hanging wall of a level. Instead of standing in a place of safety he stood underneath the stone. A slab, measuring 4' 0" × 5' 0" × 1½" to 6", fell upon him from the side at a height of 4 feet. He sustained injuries which resulted in death four days later. Inspection and inquiry made.
124	28th October, 10 A.M.	Taungpila mine, Tavoy P. O., Burma.	Quah Cheng Guan	Wong San, (m.), 38, Miner.	Wolfram	Deceased was killed by a fall of earth in an adit in which he was working.
125	22nd November, 5 A.M.	Khas Joyrampur P. O., Jharra P. O., Bihar and Orissa.	Jainarain Ramjash Agar- walla.	Gamari Pankar, (m.), 35, Coal-cutter.	Coal	Deceased passed through a fence into an area of disused workings and began to rob coal from the corner of a pillar, 25 feet high. A mass of coal, weighing about 7 tons, fell from the side at the top of the pillar. He was struck by some of the falling coal and killed instantly. Inspection and inquiry made.
126	30th November, 6-30 A.M.	Dhemo Main mine, Sitarampur P. O., Bengal.	Dhemo Main Collieries, Ld.	Damraj Koiri, (m.), 19, Stone-cutter.	Coal	Deceased was working in the sump of a sinking shaft, 1,150 feet in depth, when a small piece of stone struck him on the head, causing serious injuries to which he succumbed a few minutes later. Inspection and inquiry made.

127	9th December, 9 P.M.	Duis mine, Manharpur P. O., Bihar and Orissa.	Bengal Iron & Steel Co., Ltd.	Maki Kolin, (f.), 30; Jingi Kolin (f.), 23;	Iron ore	Whilst a gang of 45 persons were engaged in loading ore from a dump, a mass of some 10 tons of ore dust slipped down suddenly and buried the two deceased. Death was due to suffocation. Inspection and inquiry made. (See Report, page 9.)
128	30th December, 2 P.M.	Duis mine, Manharpur P. O., Bihar and Orissa.	Bengal Iron and Steel Co., Ltd.	Roibari Tanti, (f.), 22, Loaders.	Iron ore	Deceased was one of a gang of 27 women, employed in loading iron ore from a dump. She fell down and was found to have sustained a fracture of the skull which caused death within a few minutes. It was presumed that a lump of ore rolled down the dump and struck her, but no one saw this happen. Inspection and inquiry made.
129	31st December, 7 A.M.	New Kendah mine, Jamuria P. O., Bengal.	New Kendah Coal Co., Ltd.	Ram Saran Gope, (m.), 32, Coal-cutter.	Coal	Deceased was robbing coal from the side of a pillar when a mass of coal, weighing about 6 cwt., fell over on to him, killing him instantly. Inspection and inquiry made.

IN SHAFTS, ROPES AND CHAINS BREAKING
—(14 deaths).

130	24th November, 8 A.M.	Kusore South mine, Kusunda P. O., Bihar and Orissa.	Raniganj Coal Association, Ltd.	1. Raghunath Chamar, (m.), 30; 2. Nanoo Dhikai, (m.), 30; 3. Beesan Pankha, (m.), 28; 4. Jungloo Gara, (m.), 25; 5. Bultoo Gara, (m.), 30; 6. Lochan Gara, (m.), 20; Coal-cutters. 7. Majid (m.), 30; Line Khalassies. 8. Ram Varas Gola, (m.), 40; 9. Budan Bauri, (m.), 40; Pump Khalassies. 10. Sarali Moah, (m.), 28; Overman. 11. Sukar Manjhi, (m.), 12; Underground Gate Boy. 12. Lahn Singh, (m.), 25; Tindal. 13. Faguni Moosa, (m.), 32; Trolleyman. 14. Foolkunnari, (f.) 20; Coal-carrier.	Coal	Whilst nine persons were being lowered and twelve persons were being raised in the cages at a shaft, 525 feet deep, the main shackle broke. The cage near the top of the shaft fell to the bottom and struck the other cage. All those in the top cage and four of those in the other cage were killed instantly. Another man succumbed to his injuries on the next day. Two men were slightly injured and five others escaped without injury. Inspection and inquiry made. (See Report, page 9.)
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APPENDIX II—contd.

Fatal Accidents, 1919—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral wrought.	Cause of accident and remarks.
IN SHAFTS—WHILE ASCENDING OR DESCENDING BY MACHINERY—(8 deaths).						
131	10th January, 7-30 P.M.	Dishergarh mine, Dishergarh P. O., Bengal.	Equitable Coal Co., Ltd.	Budhu Manjhi, (m.), 24, Coal-cutter.	Coal	Deceased, with five other persons, was in a cage descending a shaft, 1,100 feet deep, when the engineman caused the cage to shake violently. Deceased fell out of the cage to the shaft bottom, and was killed instantly. Inspection and inquiry made. (See Report, page 11.)
132	24th February, 9-30 A.M.	Nigavalley mine, Kalipahari P. O., Bengal.	The Nigavalley Collieries, Ltd.	Gobinda Bauri, (m.), 24, Khalassie.	Coal	Deceased was descending a shaft in a bucket, and, fearing the ascending bucket was going to collide with it, he attempted to push it away. In doing so he fell to the bottom of the shaft 40 feet below. He was injured internally and died about 6 hours afterwards. Inspection and inquiry made.
133	2nd March; 1 P.M.	South Bulliaree mine, Kuzunda P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Dayem Meah, (m.), 28, Pump Khalassie.	Coal	Whilst deceased and another man were being lowered in a bucket at a sinking shaft, 500 feet deep, the winding engineman lost control of the engine. The bucket was dashed violently into water at the shaft bottom. Deceased was struck on the head by the rope capping, and was killed instantly. The other man was slightly injured. Inspection and inquiry made.
134	19th March, 5 A.M.	Kalithan Surataud mine, Jharia P. O., Bihar and Orissa.	Kunjo Behari Seal	Rupan Turi, (m.), 35, Sirdar.	Coal	A goaf, 135 feet square, 21 feet high and 150 feet below the surface, collapsed suddenly to surface. The rush of air caused by the collapse blew the cages up in a winding shaft, 100 feet distant from the goaf. When the cage fell back it broke the winding rope, and the cage fell to the shaft bottom. Deceased, who was being raised in the cage at the time, was killed on the spot. (See Report, page 11.)
135	1st August, 8-30 P.M.	Choitodih mine, Katrasgarh P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ltd.	Sukram Manjhi, (m.), 35, Coal-cutter.	Coal	Whilst being lowered in a cage in a winding shaft, 333 feet deep, deceased thinking the cage had reached the bottom, unhooked the safety chain and stepped out. He fell to the bottom 6 feet below and the cage came down upon him killing him instantly. A child who was with him in the cage also fell out and was slightly injured. Inspection and inquiry made.
136	2nd August, 8-30 A.M.	Kirkend mine, Kuzunda P. O., Bihar and Orissa.	R. B. Sircar and Sons	Mahi Mejbhan, (f.), 40, Coal-carrier.	Coal	Deceased, who was being lowered in a shaft, 276 feet deep, stepped out of the cage and fell to the bottom four or five feet below. The cage came down upon her and caused injuries to which she succumbed on the following day. The cage was fitted with safety chains. Inspection and inquiry made.
137	22nd October, 11-30 P.M.	Lutchipore mine, Sitarampur P. O., Bengal.	Lutchipore Coal Co., Ltd.	Pemi Mahata, (f.), 22, Coal-Carrier.	Coal	In the temporary absence of the winding engine man, an unauthorised person attempted to lower a cage, containing five persons, down a shaft over 300 feet in depth. The engine got out of control and the descending cage was dashed violently to the shaft bottom. The deceased sustained injuries to which she succumbed two months later. Inspection and inquiry made.

138	11th December, 10-45 A.M.	Bansjora mine, Bansjora P. O., Bihar and Orissa.	Bansjora Coal Co., Ltd.	Balak Manjhi, (m.), 34, <i>Sinking Sirdar.</i>	Coal	Deceased, whilst being lowered in a sinking shaft, 67 feet deep, lost hold of the rope and fell to the bottom of the shaft, 67 feet below. He was killed instantly. Inspection and inquiry made.
IN SHAFTS—FALLING INTO THE SHAFT FROM THE SURFACE.—(9 deaths).						
139	24th January, 10 P.M.	Borrea mine, Sitarampur P. O., Bengal.	New Beerbhun Coal Co., Ltd.	Kadir Khan, (m.), 35, <i>Coolie.</i>	Coal	Deceased was assisting a carpenter to nail down new flooring planks on the top of a shaft. When in the act of stepping from the planks to 'terra firma', he missed his footing and fell a distance of 235 feet to the bottom of the shaft, and was killed instantly. Inspection and inquiry made.
140	4th February, About 11 A.M.	Burelia mine, Panuria P. O., Bengal.	Burelia Coal Co., Ltd.	Mohamad Ismail, (m.), 25, <i>Chaprassi.</i>	Coal	The body of deceased was found in the sump of an upcast shaft, 290 feet deep. It was presumed that he fell from the fan drift into the shaft.
141	15th February, 6 A.M.	South Baraboni mine, Charanpur P. O., Bengal.	South Baraboni Coal Co.	Dhanu Bauri, (m.), 40, <i>Line Mistry.</i>	Coal	Deceased fell down a shaft, 126 feet in depth, and was killed instantly. The shaft was securely fenced. He was seen leaning over the fence and probably over-balanced. Inspection and inquiry made.
142	26th March, 8 P.M.	East Jambad mine, Ranigunge P. O., Bengal.	East Jambad Coal Concern	Aku Bauri, (m.), 40, <i>Banksman.</i>	Coal	Deceased, when in the act of landing a bucket of water on a platform at the top of a shaft containing 50 feet of water, over-balanced, fell into the shaft and was drowned. Inspection and inquiry made.
143	1st June, 2 P.M.	Jamgram mine, Panuria P. O., Bengal.	Burrakar Coal Co., Ltd.	Hari Pada Singh, (m.), 25, <i>Depot peon.</i>	Coal	The body of deceased was found in the water at the bottom of a discontinued shaft, 430 feet deep. The shaft was securely fenced. Inspection and inquiry made.
144	23rd June, 2-30 P.M.	Central Kenda mine, Toposi P. O., Bengal.	Bajjnath Ram Kumar Marwari.	Khukhi Baurin, (f.), 23, <i>Coal-carrier.</i>	Coal	Deceased fell from the top to the bottom of a shaft, 80 feet deep, and was killed instantly. The shaft was fenced. Inspection and inquiry made.
145	30th July, 12-30 P.M.	Pandaveswar Mine, Pandaveswar P. O., Bengal.	Jainty West Coal Co., Ltd.	Posu Bauri, (m.), 35, <i>Stone-cutter.</i>	Coal	Deceased was standing at the top of a sinking shaft, 90 feet in depth, waiting to descend. The trolley was drawn back from the shaft but the temporary fence appears to have been fixed. Deceased went within the temporary fence in order to converse with some one on the opposite side of the pit, lost his footing and fell to the bottom of the shaft. He sustained serious injuries and died half an hour later. Inspection and inquiry made.
146	26th August, 8-30 P.M.	Bhowra Mine, Jamadoba P. O., Bihar and Orissa.	Eastern Coal Co., Ltd.	Sabrou Mahato, (m.), 22, <i>Banksman.</i>	Coal	Deceased left open the gate at the top of a shaft and on bringing forward another empty tub pushed the tub into the shaft and fell with it to the bottom, 356 feet below. He was killed instantly. It was presumed that he either pushed it further than he intended or was under the impression that the cage had come up again. Inspection and inquiry made.
147	27th October, 7 P.M.	Barareo Mine, Jamadoba P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Kabal Kumar, (m.), 18, <i>Sinker.</i>	Coal	Deceased was raised in the bucket in a sinking shaft and, whilst the banksman were pushing the trolley over the mouth of the shaft, he attempted to jump from the bucket to the trolley. He slipped and fell to the bottom of the shaft 80 feet below. He was killed instantly. He fell upon one of a gang of twelve men who were working in the shaft bottom. This man was injured but recovered. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1919—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age, and occupation of person killed.	Name of mineral wrought.	Cause of accidents and remarks.
IN SHAFTS—FALLING INTO SHAFT FROM PART OF THE WAY DOWN—(5 deaths).						
148	3rd February, 9 A.M.	Bhelatand mine, Sijua P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ltd.	Basu Manjhi, (m.), 25, <i>Sinker.</i>	Coal .	Deceased with three other sinkers and a European assistant were lowered in a bucket in a sinking shaft to a depth of 360 feet, where there was a suspended scaffold from which they intended to work. One of the sinkers got out of the bucket and on to the scaffold, and deceased, in attempting to do so, slipped between the bucket and the scaffold and fell to the shaft bottom 95 feet below. He was instantly killed. Inspection and inquiry made.
149	7th February, 9-30 A.M.	Malkera mine, Katrasgarh P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ltd.	Ugni Turin, (f.), 32, <i>Coal-carrier.</i>	Coal .	Six persons entered a cage and were lowered in a shaft, 530 feet deep. The cage was stopped at a pump station about half way down where a fitter got out. Deceased, presumably thinking that the cage had reached the bottom of the shaft, stepped out, fell to the bottom of the shaft, and was killed instantly. Inspection and inquiry made.
150	3rd March, 4-30 A.M.	Hatgarooie mine, Sitarampur P. O., Bengal.	Lutchipore Coal Co., Ltd.	Hiron Kolo, (m.), 23, <i>Coal-cutter.</i>	Coal .	Deceased fell out of a cage while descending a shaft at night. It is not known why he fell out, but the evidence points to the fact that he had been asleep and was probably half asleep when he fell. Inspection and inquiry made.
151	22nd March, 8-20 A.M.	Jamodaba mine, Jamadoba P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ltd.	Sonar Ram Mahato, (m.), 20, <i>Surveyor's Khalassie.</i>	Coal .	Deceased, whilst attempting to enter the cage at a mid inset in a shaft, 306 feet deep, slipped between the cage and the platform, and, falling to the bottom of the shaft, was killed instantly. Inspection and inquiry made.
152	26th July, 9 P.M.	Bhalgora mine, Jharia P. O., Bihar and Orissa.	Bhalgora Coal Co., Ltd.	Jungli Bhuian, (m.), 41, <i>Miner's Sirdar.</i>	Coal .	Deceased, whilst being lowered in a shaft, 165 feet deep, fell from the cage to the shaft bottom and sustained injuries to which he succumbed three hours later. By mistake a loaded tub had been placed in the ascending cage but as the catch had not been placed in position the tub fell from the cage, the resulting jerk caused deceased to fall from the descending cage. Inspection and inquiry made.
IN SHAFTS—THINGS FALLING FROM THE SURFACE—(2 deaths).						
168	24th February, 11-0 A.M.	Kustore (North) mine, Kusunda P. O., Bihar and Orissa.	Raniganj Coal Association, Ltd.	Raju Bauri, (m.), 35, <i>Sinker.</i>	Coal .	A blasting sirdar, whilst preparing fuses at the top of a sinking pit, allowed his knife to slip through a crevice, 4" wide, in the planking covering the top of the shaft. Seventeen men were at work in the shaft bottom, 230 feet below. Deceased, who was one of these men, was pierced to the heart by the knife and was killed on the spot. Inspection and inquiry made.

154	20th December, 5 P.M.	West Dohalia mine, Kalipahari P. O., Bengal.	West Dohalia Coal Co.	Gonesh Manjhi, (m.), 34, Coal-cutter.	Coal .	A bucket of coal was being raised from a shaft, 97 feet in depth. Deceased, in spite of being warned not to do so, attempted to put some coal into the empty bucket on the other rope, before the trolley was pushed over the shaft. A piece of coal, weighing about 2 lbs., fell from the loaded bucket and struck him on the head killing him instantly. Inspection and inquiry made.
IN SHAFTS—THINGS FALLING FROM PART OF THE WAY DOWN—(3 deaths).						
155	15th January, 11 P.M.	Bokaro-Jharia mine, Nawagarh P. O., Bihar and Orissa.	Bokaro-Jharia Coalfields, Ld.	Mangal Micah, (m.), 25, Shaft-sinker.	Coal .	Deceased was at work at the bottom of a sinking shaft, 53 feet in depth. Whilst a basket of debris was being raised to the surface, a piece of stone fell from it and struck him on the head. He was killed instantly. Inspection and inquiry made.
156	11th March, 5 A.M.	Lutchipore mine, Sitarampore P. O., Bengal.	Lutchipore Coal Co., Ld.	Radhoo Kumar, (m.), 35, Sinker.	Coal .	Deceased was killed by a piece of stone falling from a bucket in a sinking pit. The bucket was probably overloaded. Inspection and inquiry made.
157	15th April, 10 P.M.	Amlabad mine, Jumadoba P. O., Bihar and Orissa.	Eastern Coal Co., Ld.	Bhim Ray, (m.), 34, Hookman.	Coal .	Deceased was a hookman at the bottom of a sinking shaft, 47 feet deep. In sending up a basketful of shale, he slung it slightly crooked and a small piece of shale fell from the basket, struck him on the head and killed him instantly. Inspection and inquiry made.

IN SHAFTS—MISCELLANEOUS—(6 deaths).

158	21st March, 3-30 P.M.	Bhatdih mine, Mahuda P. O., Bihar and Orissa.	Bengal Bhatdih Coal Co., Ld.	Madhu Teli, (m.), 30, Coal-cutter.	Coal .	Deceased, whilst walking across a pit bottom, was crushed by the descending cage. He sustained injuries to which he succumbed a month later. A proper pass-by was provided. Inspection and inquiry made.
159	31st March, 6-0 A.M.	Bhelatand mine, Sijua P. O., Bihar and Orissa.	Tata Iron & Steel Co., Ld.	Usman Khan, (m.), 25, Pump khalassie.	Coal .	Deceased attended to a steam pump in a sinking shaft, at a depth of 540 feet. He was found lying unconscious in the bottom of the bucket and he died two hours later. The cause of death was obscure. Inspection and inquiry made.
160	15th April, 12 noon.	Lutchipore mine, Sitarampur P. O., Bengal.	Dumuda Coal Co., Ld.	Sukaram Gope, (m.), 30, Coolie.	Coal .	Deceased was found under the cage at the bottom of a shaft, 370 feet deep. It was presumed that he walked under the cage as it was being lowered to the bottom. Inspection and inquiry made.
161	11th July, 11 A.M.	Victoria mine, Kulti P. O., Bengal.	New Beerbhum Coal Co., Ld.	Mohan Meah, (m.), 30, Onsetter.	Coal .	Deceased walked under the descending cage in a shaft. The cage came down upon him and killed him instantly. A proper travelling road was provided around the shaft. Inspection and inquiry made.
162	19th July, 1-30 P.M.	Chapui mine, Kalipahari P. O., Bengal.	Maharaja H. C. Nandi	Baboo Jal Muehi, (m.), 42, Stone-cutter.	Coal .	A bucket was being lowered down a sinking shaft. Deceased, who was working at the shaft bottom, was warned to get out of the way. He delayed doing so and the bucket struck a crow bar in his hand and swung against him. He sustained serious injuries to which he succumbed fourteen hours later. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1919—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral wrought.	Cause of accident and remarks.
IN SHAFTS—MISCELLANEOUS—concl'd.						
163	15th August, 12 noon.	Purusathampur, Paudaveswar P. O., Bengal.	Tata Iron & Steel Co., Ltd.	Bishnu Manjhi, (m.), 34, Stone-cutter.	Coal .	The walling scaffold in a sinking shaft was raised and placed on the top of the last length of walling so as to enable another length to be built up. The ends of the main timbers of the scaffold were evidently placed too near the apertures through which they were raised before being placed on the top of the walling and they therefore broke down the newly constructed brickwork, and the scaffold, upon which fifteen men were at work, fell a distance of 90 feet to the bottom of the shaft. All the men on the scaffold escaped injuries excepting deceased who was killed instantly. Inspection and inquiry made. (See Report, page 12).
BY EXPLOSIVES—(7 deaths).						
104	27th January, 1 P.M.	Serampur mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Company.	Tribhuban Teli, (m.), 20, Stone-cutter.	Coal .	Deceased was drilling a shot hole near another hole in which a shot had misfired. The misfired charge exploded causing serious injuries from which he died six weeks later.
165	10th February, 3-30 P.M.	Tellabada mine, Sydapuram, P. O., Madras.	W. A. Beardsell & Co., Ltd.	C. Penchitgadu, (m.), 35, Coolie.	Mica .	Deceased, with two other men, was ordered to drill a hole near a misfire. He disobeyed orders and attempted to extract the misfired charge which exploded causing injuries which resulted in death nine days later. The other two men received minor injuries.
166	29th May, 1 A.M.	Sor-Range mine, Quetta P. O., Baluchistan.	North-Western Railway .	Ismail, (m.), 40, Coal-cutter.	Coal .	Deceased without waiting for the prescribed period of time, returned to a working in which a misfire had occurred. The charge exploded and he sustained injuries which caused death eleven days later.
167	9th June, 4 A.M.	Bangabari mine, Hazaribagh P. O., Bihar and Orissa.	Rup Narain Ram .	Salai Manjhi, (m.), 30, Coolie.	Mica .	Deceased was drilling a shot hole near an unexploded charge. The misfired charge exploded causing serious bodily injuries to which he succumbed soon after.
168	2nd July, 11-30 A.M.	Borra mine, Kulti P. O., Bengal.	New Beerbhun Coal Co., Ltd.	Mohomed, (m.), 30, Stone-cutter.	Coal .	Four shot holes were charged, primed and lit by a shot-firer. Three of them exploded, but the fourth hung fire. The shot-firer went away to drink water, and in his absence, deceased, who had previously been warned not to do so, went to examine the shot which had not exploded. The charge went off as he was examining it and killed him instantly. Inspection and inquiry made.
169	8th October, 9 A.M.	Jamadoba mine, Jamadoba P. O., Bihar and Orissa.	Tata Iron & Steel Co., Ltd.	Sib Charan Passi, (m.), 47, Coal-cutter.	Coal .	Deceased was blasting coal with gunpowder and, after lighting two shots, retired to the next gallery to await the explosions. He heard only one explosion but thought that both charges had exploded together and, after waiting about an half hour, he returned to the place. The second shot exploded hurling about 6 cwt. of coal against him and killing him on the spot. Inspection

170	25th December, 3 P.M.	Rakha Hills mine, Rakha Mines P. O., Bihar and Orissa.	Cape Copper Co., Ltd.	Pirani Nair, (m.), 33, Blaster.	Copper	Deceased, who was an experienced blaster, was engaged in charging shot holes with gelignite in an underground stope. After placing gelignite in six of the nine holes, he was ramming the first two cartridges into the seventh hole by means of a wooden tamping rod, when an explosion occurred. The deceased was killed on the spot. A driller and his labourer were severely injured, and another labourer was slightly hurt. Deceased was using too much force, and the gelignite was probably defective. Inspection and inquiry made. (See Report, page 13).
IRRUPTIONS OF WATER OR FALLING INTO WATER—(1 death).						
171	10th November, 10-30 A.M.	Kalichedu mine, Nellore P. O. Madras.	F. F. Chrestien & Co., Ltd.	Natakarani China Abbi- Gadu, (m.), 40, Coolie.	Mica	Deceased whilst engaged in cleaning the suction pipe of an underground pump, fell into the water and was drowned.
HAULAGE—(41 deaths).						
172	8th January, 9-46 A.M.	Bagdiggi mine, Jharia P. O., Bihar and Orissa.	C. J. Smith	Chota Shambu Gorla, (m.), 20, Tub-pusher.	Coal	Deceased was employed in pushing tubs on a tramming level. Whilst a loaded tub was running down a slight grade he rode on its frame. Derailment occurred, and he was thrown off. His head struck the side of a pillar, and his skull was fractured. Death was instantaneous. Riding on tubs is forbidden at the colliery. Inspection and inquiry made.
173	10th January, 9-30 A.M.	Bhugband mine, Jharia P. O., Bihar and Orissa.	Borren Coal Co., Ltd.	Bhutni Mejhian, (f.), 18, Coal-carrier.	Coal	Whilst a train of ten empty tubs was being lowered on a haulage slope, the front tub became uncoupled and ran wild as far as the landing station. Deceased, who was walking along the landing at the time, was struck by the tub and sustained injuries to the head which caused her death twelve hours later. Inspection and inquiry made.
174	4th February, 1 A.M.	Lodna mine, Jharia P. O., Bihar and Orissa.	Lodna Colliery Co., Ltd.	Maki Mejhian, (f.), 20, Coal-carrier.	Coal	Whilst a train of seven tubs was descending a haulage slope a coupling link fell off and the leading tub ran wild. Deceased was lying asleep at the corner of a landing 130 feet further down the slope. A coal-cutter named Mahanando ran across the road, and whilst trying to awaken the deceased, the tub ran into them. Deceased was killed outright, and the coal cutter sustained a fracture of the thigh. Inspection and inquiry made.
175	5th March, 1 P.M.	Koradih (East) mine, Samdi P. O., Bihar and Orissa.	Koradih Colliery, Ltd.	Bhukhi Deswali, (f.), 14, Coal-carrier.	Coal	Four empty tubs were hauled out of a level and lowered down a main haulage road dipping at 1 in 4. A coupling fell off, and three of the tubs ran wild. Deceased, who was landing a tub at a buffer, about 60 feet below, was struck by the tubs and killed on the spot. Inspection and inquiry made.
176	10th March, 7-15 A.M.	Ledo Valley mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Robi Pahari, (m.), 30, Tub-filler.	Coal	Deceased attempted to jump on to a train of moving tubs on a haulage road. He fell and was crushed between the tubs and sides of the incline. He sustained injuries to which he succumbed a few hours later. Inspection and inquiry made.
177	12th March, 0-15 A.M.	South East Baraboni Khas mine, Baraboni P. O., Bengal.	Maharaja M. C. Nandi	Lokhi Mejhian, (f.), 14, Coal-carrier.	Coal	Deceased crossed the line in front of a set of tubs which was being lowered into a branch road. Two of the tubs became derailed and struck deceased inflicting serious internal injuries to which she succumbed two hours later. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1919—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral wrought.	Cause of accidents and remarks.
HAULAGE—contd.						
178	13th March, 3-30 A.M.	Barkui mine, Pench P. O., Central Provinces.	Pench Valley Coal Co., Ld.	Pachia Gondui, (f.), 20, Coal-filler.	Coal .	Three full tubs, which had not been properly spragged, began to move on a loading level underground. Deceased got frightened and crossed in front of them. She was knocked down and killed.
179	13th March, 8-30 P.M.	Choitodih mine, Sijua P. O., Bihar and Orissa.	Lutchipur Coal Co., Ld.	Sarup Dosadh, (m.), 32, Lisman.	Coal	Deceased, during the temporary absence of the hauling engine-driver, attempted to lower a train of empty tubs on a dip haulage road, but lost control of the engine. The tubs derailed at the cut-rail, and the rope end became detached from the tub. He then reversed the engine, and the rope was wound up rapidly. The capping of the rope struck him on the head, and fractured his skull. He died within a few minutes. Inspection and inquiry made.
180	11th April, 1 P.M.	Namdang mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Dhanjoo Teli, (m.), 26, Tub-pusher.	Coal	Deceased was sitting at the foot of an incline. He was struck by a full tub which had run wild because the empty tub had not been properly coupled. He died shortly after. Inspection and inquiry made.
181	17th April, 2 A.M.	Serampur mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Company.	Bodni Jollin, (f.), 14, Coal-carrier.	Coal	Deceased was pushing a tub on an underground tram line when she slipped and was run over by a following tub which was being pushed by other trammers. She sustained a compound fracture of the right leg and died in hospital two days later. Death was said to have been due to influenza and not to the accident.
182	1st May, 9 P.M.	Khost mine, Khost P. O., Baluchistan.	North-Western Railway	(1) Hussain, (m.), 32, Assistant Banksman. (2) Dhaniram, (m.), 30, Carpenter.	Coal	Deceased and another man after rerailing a train of two trams on a haulage plane, dipping at 45°, were following up the train when it suddenly ran back and into them. Hussain was killed instantly and Dhaniram sustained injuries to which he succumbed a month later.
183	16th May, 3-30 A.M.	Mohpani mine, Mohpani P. O., Central Provinces.	Great Indian Peninsula Railway Co.	Sandaria Badhain, (f.), 33, Coal-carrier.	Coal	Deceased, in spite of being warned, went into the landing of a haulage plane and was caught by an incoming train of tubs. She received injuries from which she died a few hours later.
184	26th May, 10 P.M.	Ballarpur mine, Ballarpur P. O., Central Provinces.	Sir Kas'urchand Daga and M. B. Dadabhoi.	Sadhoo, (m.), 35, Trammer.	Coal	Deceased was struck by coal which fell from loaded tubs in collision with a run-away tub. He received injuries to which he succumbed five days later.
185	17th June, 12 noon.	Chowrassie mine, Dishegarb P. O., Bihar and Orissa.	Equitable Coal Co., Ld.	Obilass Bauri, (m.), 26, Hookman.	Coal	A set of loaded tubs was being raised up an incline when the two leading tubs became derailed. Deceased, who was evidently riding on the front coupling, was thrown off and dragged some distance before the engine could be stopped. He sustained serious injuries and died twenty-six hours later. Inspection and inquiry made.

186	19th June, 0-16 A.M.	Bhutgoria mine, Jamadoba P. O., Bihar and Orissa.	Aldih Coal Co., Ltd.	Meghna Gope, (m.), 24, <i>Looseman at curve.</i>	Coal	Deceased was standing at a curve and guiding the first tub of a train of tubs. His foot slipped under the wheel and he sustained an injury which necessitated amputation of the foot. He died in hospital eight days later. Inspection and inquiry made. (See Report, page 13).
187	22nd June, 1 A.M.	Jamadoba mine, Jamadoba P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ld.	Dakoo, (m.), 35, <i>Trolleyman.</i>	Coal	Deceased was standing at a curve to receive a set of empty tubs coming down an incline, when the first three tubs became uncoupled and were thrown off the line at the curve. Deceased was pinned against the side of the gallery and died the same day as a result of the injuries received. Inspection and inquiry made.
188	5th July, 6 A.M.	Ekra Khas mine, Bansjora P. O., Bihar and Orissa.	Maharaja M. C. Nandi	Punia Mahato, (m.), 22, <i>Trolleyman.</i>	Coal	Deceased was standing at a curve in readiness to guide a train of nine tubs round the curve. A coupling chain fell off and seven tubs ran wild. Deceased was run over and killed instantly. Inspection and inquiry made. (See Report, page 13).
189	13th July, 3 A.M.	South-East Baraboni or Yanora Khas mine, Charanpur P. O., Bengal.	Maharaja M. C. Nandi.	Gondoria Ghatwal, (m.), 25, <i>Trammer.</i>	Coal	A hookman unhooked the rope of an empty tub on a main incline, having previously put one sprag in the wheel. This failed to hold the tub, which ran wild, killing deceased at the bottom of the haulage plane. Inspection and inquiry made.
190	7th August, 2 P.M.	Ledo Valley mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Narathom Makrani, (m.), 35, <i>Tub-pusher.</i>	Coal	After helping to release a tub which had jammed in a narrow gallery, deceased stepped aside to let it pass. He apparently miscalculated the clearance between the side of the road and the tub. His head was crushed between the tub and the side of the road and he was killed instantly. Inspection and inquiry made.
191	7th August, 5 P.M.	Bhulanbararee mine, Jharia P. O., Bihar and Orissa.	Bhulanbararee Coal Co., Ld.	Babu Lall Banis, (m.), 32, <i>Trolleyman.</i>	Coal	Deceased, whilst crossing an underground haulage slope, was struck by a runaway tub. He succumbed to his injuries three hours later. Inspection and inquiry made.
192	21st August, 6 A.M.	Baraboni mine, Asansol P. O., Bengal.	New Beerblum Coal Co., Ld.	Lokhu Mejhian, (f.), 20, <i>Slack-carrier.</i>	Coal	Deceased was sleeping on the side of a main haulage road. A set of loaded tubs, being raised from a lower level, came into contact with an empty tub which was lying on its side on the curve of an upper level. The two front tubs were derailed and deceased was pinned under one of them. She sustained serious internal injuries and died eight days later. Inspection and inquiry made.
193	21st August, 6-30 A.M.	Bagdigi mine, Jharia P. O., Bihar and Orissa.	C. J. Smith	Ghendi Bhumij, (f.), 49, <i>Coal-carrier.</i>	Coal	Deceased was walking up a haulage incline whilst the rope was in motion. She was struck by it and thrown against the side of the gallery, sustaining injuries to which she succumbed a fortnight later. Inspection and inquiry made.
194	23rd August, 3 A.M.	Khost mine, Khost P. O., Baluchistan.	North-Western Railway	Shadman, (m.), 20, <i>Bellman.</i>	Coal	Whilst deceased was taking a full tub to attach it to a train, he was caught by a following tub, his head being crushed against roof timber. He died on the next day.
195	24th August, 5 A.M.	Mohpani mine, Mohpani P. O., Central Provinces.	Great Indian Peninsula Railway Co.	Munshi Musalman, (m.), 22, <i>Banksman.</i>	Coal	Deceased signalled from the in-by end of an engine plane for a set of tubs to be sent into the mine. He then appears to have sat down on the rails and fallen asleep. He was run over by the set when it arrived and killed.
196	24th September, 6 P.M.	Khas Joyrampur mine, Jharia P. O., Bihar and Orissa.	Khengorji Triku and Co.	Hanuman Show, (m.), 35, <i>Hookman.</i>	Coal	Owing to a fracture of the pinion of a hauling engine, five loaded tubs ran wild on a haulage slope. Deceased was run over and killed instantly. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1919—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral wrought.	Cause of accidents and remarks.
HAULAGE—concl'd.						
107	26th September, 6 P.M.	Jharia Khas mine, Jharia P. O., Bihar and Orissa.	Standard Coal Co., Ltd.	Arjoon Chamar, (m.), 55, Sirdar.	Coal .	Deceased, whilst walking up a haulage incline upon which travelling was not allowed, was struck by run-away tubs and sustained injuries which resulted in death four hours later. Inspection and inquiry made.
108	30th September, 5 A.M.	Sodepur mine, Sitarampur P. O., Bengal.	Bengal Coal Co., Ltd.	Bimala Mahalin, (f.), 24, Coal-carrier.	Coal .	The tubs on a self-acting haulage plane were being balanced so as to work the load from an intermediate level. In order to make the rope move, the brake was released and men were jerking the rope up and down. The rope moved suddenly and the brakeman lost control, consequently an empty tub was carried towards the wheel at the top of the incline. Deceased, who was sitting down on the top level, was struck by the empty tub and flung against the side of a pillar. She sustained serious injuries and died twelve hours later. Inspection and inquiry made.
199	10th October, 8 A.M.	Jamadoba mine, Jamadoba P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ltd.	Jamadha Turi, (m.), 80, Trolleyman.	Coal .	Deceased was walking up a haulage incline where travelling was prohibited. A train of tubs, which was being lowered, became derailed and struck the side of the road causing a mass of coal, weighing about one ton, to fall. The coal fell upon deceased killing him instantly. Inspection and inquiry made.
200	15th October, 11-30 P.M.	Charapur mine, Charanpur P. O., Bengal.	Apcar Collieries, Limited	Srimati Mejhian, (f.), 50, Dust-carrier.	Coal .	Deceased failed to get out of the way of a tub of slack which was being trammed down a gradient of 1 in 23 into a siding. Her right arm was pinned between a tub which she was pushing and the second tub. She died in hospital ten hours later. Inspection and inquiry made.
201	18th October, 2 A.M.	Bhagaband Mine, Jharia P. O., Bihar and Orissa.	Bores Coal Co., Ltd.	Jhalka Manjhi, (m.), 35, Coal-cutter.	Coal	Deceased was sleeping near the curve of a haulage level and, upon being warned that the trams were coming, attempted to cross the tram line. He was run over by full trams which were being run down from the workings by gravity. He was killed on the spot. Inspection and inquiry made.
202	24th October, 8 A.M.	Rajhara mine, Rajhara P. O., Bihar and Orissa.	Bengal Coal Co., Ltd.	Simarbasia Noonian, (f.), 12, Coal-carrier.	Coal .	Deceased, whilst loading a tub on a level, was run over by empty tubs which were being shunted by miners contrary to orders. She sustained injuries which caused death four hours later. Inspection and inquiry made.
203	5th November, 9 A.M.	Ledo mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Sarada Bhumij, (f.), 26, Tub-pusher.	Coal .	Whilst deceased and others were working at an in-by siding, the haulage rope slipped off a roller and caught both deceased and a fellow worker, inflicting injuries to their legs. Deceased died from gangrene twenty-two days later. Inspection and inquiry made.
204	6th November, 1-30 P.M.	(Nunidih) Bhulanbararee mine, Jharia P. O., Bihar and Orissa.	Bhulanbararee Coal Co., Ltd.	Doman Mahato, (m.), 18, Filler markman.	Coal .	Whilst a train of empty tubs was being lowered over the brow of an incline the leading tub ran wild and was derailed at the run-away switch. Deceased and another man, who were walking up the incline, whilst attempting to get into a manhole, were struck by the derailed tub. Deceased died on the way to hospital and the other man was seriously injured. Inspection and inquiry made.

205	8th November, 9-30 P.M.	Bhowra mine, Jamadoba P. O., Bihar and Orissa.	Eastern Coal Co., Ltd.	Ram Sumar Misser, (m.), 15, Coolie.	Coal .	Owing to the fracture of a draw bar, three loaded trams ran wild on a haulage slope. Deceased was run over and died a few hours after. Inspection and inquiry made.
206	11th November, 8-30 A.M.	Ledo Valley mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Mohamad Hossein, (m.), 36, Contractor.	Coal .	While ascending a self-acting incline, deceased was killed by a tub which had run wild owing to the trammer at the top not fixing the stop block properly. Inspection and inquiry made.
207	20th November, 2 A.M.	Chanch mine, Chirkunda P. O., Bihar and Orissa.	Bengal Coal Co., Ltd.	Lakhi Bhuian, (f.), 60, Dust-carrier.	Coal .	A set of five loaded tubs was being trammed along an underground level. Deceased got confused and went in front of them. The wheels of the front tub passed over her thigh and fractured it. She died fourteen hours later, after the limb had been amputated. Inspection and inquiry made.
208	23rd December, 10-30 A.M.	Jainty Central mine, Karmatar P. O., Bihar and Orissa.	Jainty Central Colliery, Ltd.	Mahabir Meah, (m.), 20, Trammer.	Coal .	Deceased was evidently riding on the front of an empty tub which was being hauled out of an incline. The tub became derailed at the entrance to the mine and he fell off and was run over, being killed instantly. Inspection and inquiry made.
209	24th December, 2 A.M.	Tikak mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Monbharan Rai, (m.), 34, Hooker on.	Coal .	Deceased, who was working at the bottom of a brake, omitted to attach the empty tub to the rope. In consequence the full tub ran wild and caught deceased. He died from his injuries two weeks later. Inspection and inquiry made.
210	24th December, 11 A.M.	Dishergarh mine, Dishergarh P. O., Bengal.	Equitable Coal Co., Ltd.	Chand Manjhi, (m.), 38, Coal-cutter.	Coal .	A train of six loaded and four empty tubs was being raised up an underground haulage road. The rope broke and the tubs ran back. Deceased, who was sitting on the side of the haulage road, ran down to the dip and was overtaken by the run-away tubs. He died from his injuries five days later. Inspection and inquiry made.
211	27th December, 3 A.M.	Ghusick mine, Kalipahari P. O., Bengal.	Ghusick and Musila, Collieries, Ltd.	Bisco Kol, (m.), 20, Coal-cutter.	Coal .	Four loaded tubs were being moved by gravity out of the face of a level. The centre coupling was not fastened and the two front tubs ran ahead and came to a standstill. Deceased walked on to the line and was caught by the rear tubs and crushed between them and the stationary tubs. He was killed instantly. Inspection and inquiry made.

BY UNDERGROUND MACHINERY.—(1 death).

212	14th May, 12 midnight.	Murwara mine No. 1162, Katni P. O., Central Provinces.	D. A. David Bros.	Bhura, (m.), 45, Coolie.	Limestone .	A wooden trestle, supporting a suction pipe, suddenly collapsed. The pipe, in falling, struck deceased and killed him.
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SUNDRIES UNDERGROUND. (11 deaths).

213	15th February, 5 A.M.	Loyabad mine, Bansjora P. O., Bihar and Orissa.	Barakar Coal Co., Ltd.	Budhan Manli, (m.), 45, Coal-cutter.	Coal .	Deceased was employed in a pillar cutting area. Whilst he and other miners were extracting a pillar, a loud noise was heard in the goaf. Every one ran out of the place. Deceased, whilst running, fell down and expired within half an hour. In the absence of injuries of any kind, death was attributed to heart failure. Inspection and inquiry made.
214	10th February, 9-30 P.M.	Sorampur mine, Giridih P. O., Hazaribagh.	East Indian Railway Co.	Uban Mallah, (m.), 33, Coal-cutter.	Coal .	Deceased was killed by the fall of a prop which was displaced by a piece of coal rolling against it.

APPENDIX II—contd.

Fatal Accidents, 1919—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral wrought.	Cause of accident and remarks.
SUNDRIES UNDERGROUND—contd.						
216	29th May, 2 P.M.	Tikak mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Sreepoti Lama, (m.), 25, Tub-filler.	Coal	Whilst walking towards a tub, deceased fell and sustained slight injuries to his leg. He died from blood poisoning three and a half months later. Inspection and inquiry made.
216	22nd June, 10 A.M.	Muktia mine (Sq. No. D-35), Inzaribagh P. O., Bihar and Orissa.	Hqare Miller & Co.	(1) Raj Bullav Singh, (m.), 32, Fitter; (2) Sukar Musoher, (m.), 20, (3) Pancha Chamar, (m.), 25, Coolies.	Mica	The deceased fitter, accompanied by two coolies, went underground to start a petrol pump and took with him a naked light instead of the electric lamp supplied for the purpose. The feed cock from the petrol tank had been left open and the vapour ignited. They were burnt so severely that all died within two days. Inspection and inquiry made. (See Report, page 13).
217	9th July, 2-45 A.M.	Namdang mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Dalsing Lama, (m.), 30, Air-way man (Road-cleaner.)	Coal	Whilst carrying shovels down an incline, deceased fell and injured his knee-joint. He contracted pneumonia and died 16 days after the accident. Inspection and inquiry made.
218	1st August, 6-30 P.M.	Ranadanga mine, Charanpur P. O., Bengal.	Economic Coal Co., Ltd.	Kousla Kol, (f.) 13, Coal-carrier.	Coal	A derailed side-tipping tub was being lifted on to the tram line when, owing to the stop catch being open, the upper portion tilted and swung over. Deceased, who was standing on the lower side of the tub, was struck on the head and body by the tipping portion of the tub and sustained serious injuries to which she succumbed three and a half hours later. Inspection and inquiry made.
219	10th August, 4 A.M.	Chasnala mine, Bhujudih P. O., Bihar and Orissa.	Lodna Colliery Co., Ltd.	Basoo Manjhi, (m.), 35, Coal-cutter.	Coal	Deceased, having cut a quantity of coal in a level, pushed most of it over a ledge to the next level and then went down to that level to load it up. He had left some of the coal close to the edge of the 'drop' on the upper level and a portion of it fell, about 15 to 20 feet, on to his head, killing him on the spot. Inspection and inquiry made.
220	20th November, 12 midnight.	Kutehidbana mine, Raukona P. O., Central Provinces.	The Indian Manganese Co., Ltd.	Baloo, (m.), 18, Coolie.	Manganese	Deceased was removing overburden in a quarry. He slipped and fell a distance of 10 feet sustaining internal injuries which caused death two days later.
221	27th December, 8-30 P.M.	Loyabad mine, Banejora P. O., Bihar and Orissa.	Burrakar Coal Co., Ltd.	Jhari Hajjam, (m.), 10, Coolie.	Coal	Deceased was employed as companion to a pump minder. Whilst lying asleep near a pump, his clothes caught fire from an open lamp and he was severely burned. He died in hospital two months later. Inspection and inquiry made.

222	9th February, 6 A.M.	Rakha Hills mine, Rakha Mines P. O., Bihar and Orissa.	Cape Copper Co., Ltd.	Nabi Bux, (m.), 20, <i>Electric Hoist Driver.</i>	Copper	Deceased, contrary to orders, was riding in an electric hoist. He lost control and an overwind occurred, causing the wire ropes to break. The cage fell a distance of 60 feet. He was killed instantly. Inspection and inquiry made.
223	30th May, 10 A.M.	Ghugna mine, Ballarpur P. O., Central Provinces.	Sir Kusturchand Daga and M. B. Dadabhoj.	Vistari Zitroo Kunbi, (m.), 50, <i>Coolie.</i>	Coal	A fan was being erected, and the fan shaft was lifted off the journals. The shaft swung round and pinned deceased against another part of the machinery, causing wounds from which he died three hours afterwards.
224	30th June, 12-30 P.M.	Central Dharmaband mine, Katrasgarh P. O., Bihar and Orissa.	Central Dharmaband Coal Co., Ltd.	Tagoo Mahato, (m.), 22, <i>Engine driver.</i>	Coal	Deceased was driving a small hauling winch and it is supposed that, for some reason, he put his hand on the incoming rope. He was dragged under the rope and carried round on the drum, being killed instantly. Inspection and inquiry made.
225	1st December, 1-30 P.M.	Bharraghat mine, Katni P. O., Central Provinces.	Katni Cement and Indus- trial Co., Ltd.	Hussaini, (m.), 26, <i>Fitter.</i>	Steatite	Whilst a vertical boiler was being placed in position by means of a derrick, one of the legs of the derrick slipped. The boiler fell upon deceased causing injuries to which he succumbed on the same day. Inspection and inquiry made.

**ON SURFACE RAILWAYS AND TRAMWAYS
BELONGING TO THE MINE—(4 deaths).**

226	11th May, 6 A.M.	Kondwadih (Kirkond), Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Dhuba Roy, (m.), 20, <i>Trolleyman.</i>	Coal	Deceased, with two other men, was pushing a side-tipping tub on a surface tram line. The tub became derailed and tipped over on to deceased. He died almost immediately. Inspection and inquiry made.
227	23rd May, 3 A.M.	Simlabahal mine, Jharia P. O., Bihar and Orissa.	Bhargora Coal Co., Ltd.	Brihaspat Dasadh, (m.), 45, <i>Trolleyman.</i>	Coal	Deceased was pushing an empty coal tub up a slight grade on a stock heap when, owing to carelessness of fellow-workmen, a full tub ran down the grade, and collided with the empty tub. He sustained injuries which caused death ten days later. Inspection and inquiry made.
228	8th July, 6 P.M.	Namdang mine, Margherita P. O., Assam.	Assam Railways and Trad- ing Co., Ltd.	Pashupati (m.), 35, <i>Tub-filler.</i>	Coal	Deceased was walking up a self-acting incline on surface. He was knocked down and killed by a loaded tram. Inspection and inquiry made.
229	9th August, 4 P.M.	Balughat mine, Balughat P. O., Central Provinces.	Central Provinces Pros- pecting Syndicate, Ltd.	Hagha, (m.), 25, <i>Mate.</i>	Manganese	Deceased slipped off the frame of a moving tub. In doing so he fell against the tub and received internal injuries, which resulted in death on the following day.

MISCELLANEOUS ON SURFACE—(23 deaths).

230	29th January, 9-35 A.M.	Loyaband mine, Sijma P. O., Bihar and Orissa.	Burrakar Coal Co., Ltd.	Sakhawat Mistri, (m.), 38, <i>Mason.</i>	Coal	Deceased was employed in plastering the wall of an electric winding engine house. The platform on which he worked was about 8 feet from the transmission wires carrying electricity at 550 volts. He left the platform and climbed along the scaffolding poles over the top of the wires. In doing so, he touched the wires, fell upon them and was electrocuted. Inspection and inquiry made.
231	11th February, 9-30 A.M.	Taungpilla mine, Tavoy P. O., Burma.	Tavoy Wolfram, Ltd.	Ngá Pu, (m.), 30, <i>Coolie.</i>	Wolfram	Whilst a tree was being felled, deceased was struck on the head by a falling branch. He sustained concussion of the brain and expired a few hours later. Inspection and inquiry made.
232	22nd February, 6 A.M.	Dishergarh mine, Dishergarh P. O., Bengal.	Equitable Coal Co., Ltd.	Poorní Chamar, (m.), 36, <i>Coolie.</i>	Coal	Deceased was found drowned in a large boiler tank which was properly fenced all round. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1919—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral wrought.	Cause of accidents and remarks.
MISCELLANEOUS ON SURFACE—contd.						
233	20th March, 11 A.M.	Hpaungdaw mine, Tavoy P. O., Burma.	High Speed Steel Alloys Mining Co., Ltd.	Harr Dutt, (m.), 30, Coolie.	Wolframi	Deceased and another man were sawing a log on the slope of a hill. Another log slid end-on down the hill-side and struck the log being sawn. The impact moved the log. Deceased was crushed between the log being sawn and a third log. He died in hospital an hour afterwards. Inquiry held.
234	28th March, 6 P.M.	Widnes mine, Tavoy P. O., Burma.	The High Speed Steel Alloys Mining Co., Ltd.	Maung Tak, (m.), 58, Sawyer.	Wolfram	Whilst employed in moving logs, deceased fell and fractured his ribs. He succumbed to his injuries later.
235	25th April	Kurhurbaree mine, Guridih P. O., Bihar and Orissa.	East Indian Railway Com- pany.	Bhatni Kolin, (f.) 13, Coal-carrier.	Coal	Deceased was found drowned in a fouled boiler tank.
236	28th May, 3 P.M.	Central Jharlia mine, Jharlia P. O., Bihar and Orissa.	Jairam Shivjee & Co.	Rajoni Bauri, (m.), 20, Coolie.	Coal	Whilst a boiler shed was being erected the ridge pole fell accidentally from a height of 11 feet. Deceased was struck on the head and killed instantly. Inspection and inquiry made.
237	20th June, 3 A.M.	Phalaritand mine, Katrasgarh P. O., Bihar and Orissa.	Phalaritand Coal Co., Ltd.	Akloo Kahar, (m.), 30, Pump Khalasie.	Coal	Owing to heavy rain a shelter shed on surface collapsed. Deceased, who was sleeping in the shed, was crushed by the falling timbers and killed instantly. Inspection and inquiry made.
238	23rd June, 10-55 A.M.	Sodepur mine, Dishergarh P. O., Bengal.	Bengal Coal Co., Ltd.	Futteh Mohammad, (m.), 35, Coolie.	Coal	Deceased, who was helping to erect the head-gear at a shaft, lost his footing and fell to the ground from a height of 50 feet. He sustained a fractured skull and died soon afterwards. Inspection and inquiry made.
239	10th July, 8-0 A.M.	Tikuri mine, Katni P. O., Central Provinces.	Katni Cement and Indus- trial Co., Ltd.	Hansi Korin, (f.), 22, Coolie.	Limestone	Some person unknown removed a length of 300 feet of wire from an aerial transmission line. Subsequently the current was switched on. Deceased came in contact with the trailing wire and was killed. Inspection and inquiry made by the Electric Inspector.
240	14th July, 9 A.M.	Rakha Hills mine, Rakha Mines P. O., Bihar and Orissa.	Cape Copper Co., Ltd.	Nursing Bhomij, (m.), 30, Fireman.	Copper	Deceased was carrying an iron rake, 10 feet long, which came in contact with overhead electric transmission wires. The electric current passed through his body, killing him instantly. Inspection and inquiry made by Electric Inspector.
241	30th July, 4 P.M.	Kustore South mine, Kusunda P. O., Bihar and Orissa.	Raniganj Coal Association, Ltd.	Mushau Dary, (m.), 32, Trolleyman.	Coal	An empty tub had been over turned on a covered opening in the floor of a heapstead. The cover consisted of an iron sheet and planks. While deceased and another man were turning the tub upright, the cover gave way and the two men with the tub fell to the ground, 18 feet below. Deceased was killed instantly and the other man was slightly hurt. Inspection and inquiry made.

242	24th August, 1 P.M.	Khas Joyrampur mine, Jharia P. O., Bihar and Orissa.	Jainarain Ramjash Agar- wala.	Jhurar Bauri, (m.), 13, Coolie.	Coal .	Deceased was drowned in a boiler feed tank which was properly walled round. Washing in the tank was not allowed, but deceased disregarded the prohibition. Inspection and inquiry made.
243	26th August, 3 P.M.	Jamadoba mine, Jamadoba P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ld.	Dinoo Roy, (m.), 30, Coal-cutter.	Coal .	Deceased passed through a fence, and, whilst trying to dig coal for his own purposes from a subsided coal working, was killed instantly by the fall of overburden weighing about one ton. Inspection and enquiry made.
244	6th September, 3 P.M.	Shivrajpur mine, Shivrajpur P. O., Bombay.	Shivrajpur Limited. Syndicate,	1. Sundha Mangla, (m.), 34, 2. Chhotu Gulla, (m.), 21, Coolies.	Manganese .	The two deceased whilst bathing in a water-logged quarry, were drowned.
245	10th June, 10-16 A.M.	Phuletto mine, Tavoy P. O., Burma.	Phuletto Mining Syndicate.	Leong Chiao, (m.), 26, Tributor.	Wolfram .	Whilst engaged in ground sluicing, deceased was struck by a tree blown down by high wind. He was killed instantly.
246	0th September, 11 A.M.	South Barora mine, Nowagarh P. O., Bihar and Orissa.	Messrs. Chunder and Dass.	Haricharan Beldar, (m.), 30, Earth-cutter.	Coal .	Deceased and other coolies were engaged in throwing up an embankment, 12 feet high. Owing to the weight of the embankment, the surface overlying an old mine broke down. Deceased fell into the subsidence and was buried by the earth. When his body was recovered about an hour afterwards, life was found to be extinct.
247	27th September, 1 P.M.	Taungonll mine, Tavoy P. O., Burma.	Tavoy Wolfram, Limited	Mg Tha Nyni, (m.), 18, Tributor.	Wolfram .	Deceased and another man, whilst working against orders in an abandoned open-cut, brought about a fall of overburden. Deceased was killed instantly and the other man slightly injured.
248	13th October, 5 A.M.	Sijua mine, Sijua P. O., Bihar and Orissa.	Tata Iron & Steel Co., Ld.	Gonga Singh, (m.), 20, Coolie.	Coal .	Whilst a guide rope was being fixed in a shaft, the chain, by which it was suspended, broke and the rope fell down the shaft. The loose end struck deceased on the head inflicting injuries from which he died on the next day. Inspection and inquiry made.
249	18th October, 9 A.M.	Lakurka mine, Katraagarh P. O., Bihar and Orissa.	Lakurka Coal Co., Ld.	Ramdin Gwala, (m.), 30, Coolie.	Coal .	Deceased and another coolie were carrying a prop, 13 feet long. Deceased failed to let the prop fall at the same time as the other man. The weight of the prop came upon him and fractured his collar bone. He died three days later. Inspection and inquiry made.
250	6th November, (unknown.)	Purusathampur mine, Pandavapur P. O., Bengal.	Tata Iron & Steel Co., Ld.	Rampadarat Singh, (m.), 30, Store Peon.	Coal .	Deceased went to sleep in an unventilated room, connected with a colliery store godown, in which a coal fire was burning and in consequence died of suffocation. Inspection and inquiry made.
251	24th November, 11 A.M.	Ukwa mine, Balighat P. O., Central Provinces.	Carnegie Steel Co.	Talsi, (m.), 45, Coolie.	Manganese	Deceased whilst working with a crowbar on the edge of an excavation, overbalanced and fell a distance of 7 feet. He sustained internal injuries and expired five hours later.
252	23rd December, 12-5 A.M.	Fargali mine, Bokaro P. O., Bihar and Orissa.	Great Indian Peninsular Railway Co.	(1) Badal Khan, (m.), 26, Pump Khalasi. (2) Thanu Meah, (m.), 40, Boiler Fireman.	Coal .	The two deceased attempted to steal oil from a pressure fed oil lamp used for illuminating a coal quarry. The lamp caught fire and they were severely burnt. Badal Khan succumbed on the following day and Thanu Meah a month later. Inspection and inquiry made.

APPENDIX II—*contd.*

Fatal Accidents, 1919—*contd.*

Serial number.	Date and hour of acc. dent.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral wrought.	Reason for exclusion.	Cause of accident and remarks.
DEATHS NOT INCLUDED IN THE STATISTICS—(46 deaths).							
1	4th January, 5 A.M.	Kalikapur mine, Mejia P. O., Bengal.	Reghunath Banerjee & others.	Sabitri Goalini, (f.), 80.	Coal	Not employed.	Owing to the collapse of mine workings, a subsidence of the surface took place. Deceased, who was sleeping in a hut on the surface, was engulfed before she could escape. Inspection and inquiry made.
2	20th January, 2 P.M.	Joyrampur mine, Jharis P. O., Bihar and Orissa.	B. R. & Co.	Pattu Bhuiyan, (f.), 13, Coal loader.	Coal	Not a mining accident.	Whilst bathing in an abandoned quarry deceased got out of her depth, and was drowned. Inspection and inquiry made.
3	12th February, 8 A.M.	South Kujama mine, Jharis P. O., Bihar and Orissa.	Bagliggi Kujama Col- lieries, Ld.	Digam Deswali, (m.), 10.	Coal	Not employed	Deceased climbed on to the top of a wall, 4 feet high, fencing a reservoir, and fell into water 7' 0" deep. He was drowned. Inspection and inquiry made.
4	12th February, 10 A.M.	Jogta mine, Sijua P. O., Bihar and Orissa.	Agabeg Brothers	Delchand Turi, (m.), 3,	Coal	Not employed	Deceased fell into a surface reservoir and was drowned. Inspection and inquiry made.
5	28th February, 2-30 P.M.	South Govindpur mine, Katrasgarh P. O., Bihar and Orissa.	South Gobindpur Colliery, Ld.	Bandia Gowalin, (f.), 7.	Coal	Not employed	Deceased, who was deaf and dumb and partly blind, was run over by a tub on a surface tram line. She was so severely injured that she died in hospital ten days later. Inspection and inquiry made.
6	9th April, between 6 and 7 A.M.	Kusunda and Nyadeo mine, Kusunda P. O., Bihar and Orissa.	Kusunda and Nayada Collieries, Limited.	Name not known, (m.), about 30 to 35.	Coal	Not employed.	Deceased, jumped into a well and was drowned. The well was surrounded by a wall 5 feet high. Inspection and inquiry made.
7	15th April, about 6 A.M.	Khas Jharis mine, Jharis P. O., Bihar and Orissa.	Jagarnath Ramjash Agarwalla.	Names not known, (1) (m.), 26; (2) (m.), 23.	Coal	Not employed.	The two deceased were unknown in the district. They appear to have jumped at night, over a wall surrounding the cutting of an incline, thinking they were jumping on the solid ground on the other side. In the morning they were found at the bottom of the cutting, one was dead and the other died about 15 minutes later without making any statement. They fell about 70 feet. Inspection and inquiry made.
8	20th April, 3-15 P.M.	Tectulmuri mine, Sijua P. O., Bihar and Orissa.	Tectulmuri Collieries, Limi- ted.	Footia Bhnia, (m.), 13, Shal-picker.	Coal	Not a mining accident.	Deceased was struck by lightning and killed.

9	23rd April, 3 P.M.	Mohpani mine, Mohpani P. O., Central Provinces.	Great Indian Peninsular Railway Co.	Binia Darzan, (f.), 8, Water-carrier.	Coal	Not a mining accident.	Deceased, with several other women, took shelter under a railway wagon during a storm. The high wind set another wagon in motion and when they saw it approaching they attempted to run out from under the wagon. Deceased was run over and killed; one of the other women was severely injured.
10	26th April, 12 midnight.	Gopalichuck mine, Bansjora P. O., Bihar and Orissa.	Gopalichuck Coal Co., Ltd.	Nishi Baurin, (f.), 30.	Coal	Not employed.	The body of deceased was found in the sump at the bottom of the shaft, 288 feet deep. The shaft was fenced and it was presumed that she had jumped into the shaft. Inspection and inquiry made.
11	29th April, 8 P.M.	Madhobpur mine, Ranigunge P. O., Bergal.	Imperial Coal Co., Ltd.	Khadi Bagdi, (f.), 30, Coolie.	Coal	Not a mining accident.	Deceased, whilst cooking food on the verandah of a hut, set the roof on fire. She was severely burnt and died a week later. Inspection and inquiry made.
12	1st May, 3 P.M.	Bansdeopur mine, Kusunda P. O., Bihar and Orissa.	Bansdeopur Coal Co., Ltd.	Ajinashia (f.), 50, Loading Coolie.	Coal	Not a mining accident.	Whilst sheltering behind a railway wagon, which moved under the impulse of the wind, deceased attempted to run out but was run over and injured so severely that she died 16 days later. Inspection and inquiry made.
13	1st May, 3-15 P.M.	Gopalichuck West mine, Kusunda P. O., Bihar and Orissa.	Gopalichuck Coal Co., Ltd.	Sohagi Dosadhin, (f.), 23, Wagon loader.	Coal	Not a mining accident.	During a storm, deceased took shelter behind railway wagons. The wind moved the wagons and she was crushed between the buffers, being killed instantly. Inspection and inquiry made.
14	19th May, 11-30 P.M.	Badjna mine, Mugma P. O., Bihar and Orissa.	Western Coal Co., Ltd.	Mahadeb Keot, (m.), 35.	Coal	Not employed.	Deceased threw himself down a shaft, 264 feet deep, and was killed instantly. The shaft was adequately fenced. Inspection and inquiry made.
15	17th May, 9 A.M.	Shivrajpur mine, Shivrajpur P. O., Bombay.	Shivrajpur Syndicate, Ltd.	Ruti Dewa, (f.), 2.	Manganese	Not employed	Deceased was run over by a loaded tub, at a bend, and succumbed thirteen days later.
16	22nd May, 6 P.M.	Jharia Khas (Angrapathra) mine, Sijua P. O., Bihar and Orissa.	Trigunait Brothers	Tribeni Bhuia, (m.), 21.	Coal	Not employed.	Deceased was found drowned in a bathing tank. The tank was properly fenced. Inspection and inquiry made.
17	3rd June, 1 P.M.	Khudia mine, Mugma P. O., Bihar and Orissa.	Khudia Coal Co., Ltd.	Rajani Roy, (m.), 5.	Coal	Not employed	Deceased fell into a boiler tank and was drowned. There was a wire fence around the tank. Inspection and inquiry made.
18	16th June, about 7-30 A.M.	(Widnes), Hpaungdaw mine, Tavoy P. O., Burma.	High Speed Steel Alloys Mining Co., Ltd.	(1) Kasi Ram, (m.), 18. (2) Tek Bahadur, (m.), 30. (3) Patima, (f.), 25. (4) Tilla, (f.), 21. Tributors.	Wolfram	Not a mining accident.	During a severe storm, a tree was blown over and fell on the hut occupied by the four deceased. They were killed on the spot. Inquiry held.
19	22nd July,	Nudkurkee mine, Nowagarh P. O., Bihar and Orissa.	Ganendra Nath Ghose	Kunia Jolani, (f.), 10.	Coal	Not employed	Whilst picking leaves inside the walling of a cutting for an inoline, deceased slipped into water and was drowned.

APPENDIX II—contd.

Fatal Accidents, 1919—contd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral wrought.	Reason for exclusion.	Cause of accident and remarks.
DEATH NOT INCLUDED IN THE STATISTICS.							
20	26th July, 11-30 A.M.	Jogta mine, Sijua P. O., Bihar and Orissa.	Agabeg Brothers	Rampal Bhuiya, (m.), 2.	Coal	Not employed	Whilst at play near a soft coke depot, deceased fell into a small water hole, 2 feet deep, and was drowned.
21	31st July, 5 P.M.	North Mudidih mine, Sijua P. O., Bihar and Orissa.	Reliance Coal Co., Ltd.	Dewarka Gossai, (m.), 5.	Coal	Not employed	Deceased was found drowned in a boiler feed tank. The tank was walled but there was a small opening at one corner of the walling. Inspection and inquiry made.
22	1st August, 7 A.M.	Nimoha mine, Ranigunj P. O., Bengal.	Baraboni Coal Concern, Ltd.	Makhu Mejhian, (f.), 8.	Coal	Not employed	Deceased fell into a boiler tank, 7 feet deep, and was drowned. The tank was fenced. Inspection and inquiry made.
23	13th August, 11 A.M.	Bhalgora mine, Jharia P. O., Bihar and Orissa.	Bhalgora Coal Co., Ltd.	Suran Sing, (m.), 33.	Coal	Not employed	Deceased jumped down a shaft, 165 feet deep, and was killed instantly.
24	26th August, 8 A.M.	Madhabpur mine, Ranigunge P. O., Bengal.	Imperial Coal Co., Ltd.	Koka Kora, (m.), 4.	Coal	Not employed	Deceased was found drowned in a brick-makers' excavation, containing 3 feet of water.
25	20th September, 4 P.M.	Pootkee mine, Bansjora P. O., Bihar and Orissa.	Eastern Coal Co., Ltd.	Muchiram Kora, (m.), 2.	Coal	Not employed	Deceased was found drowned in an excavation made by brick-makers. The depth of water was only 1½ inches. Inspection and inquiry made.
26	23rd September, between 2 and 6 P.M.	Gopalichuck West mine, Kusanda P. O., Bihar and Orissa.	Gopalichuck Coal Co., Ltd.	Alkee Dasnd, (f.), 9.	Coal	Not employed	Deceased was found drowned in a boiler feed tank which was properly fenced. Inspection and inquiry made.
27	24th September, 1 P.M.	Basudev mine, Jharia P. O., Bihar and Orissa.	Basudev Colliery Company	Daskhora, (m.), 4.	Coal	Not employed	Deceased fell into a water-logged quarry and was drowned. A wall was being built round the quarry, but deceased, during the temporary absence of the masons, passed through a gap. Inspection and inquiry made.
28	8th October, 9 A.M.	Deshergarh mine, Deshergarh P. O., Bengal.	Equitable Coal Co., Ltd.	Debisaran Pasi, (m.), 8.	Coal	Not employed	Deceased attempted to ride on an empty tub on a surface haulage driven by an endless rope. He slipped and fell in front of the moving tub, which passed over and fractured his leg. He died three days later. Inspection and inquiry made.

29	10th October, 12-30 P.M.	Ehuggudih mine, Jharia P. O., Bihar and Orissa.	Bengal-Nagpur Coal Co., Ltd.	Nathu Beldar, (m.), 4.	Coal	Not employed	A cutting had been made for a road in a new earth bank, 30 feet wide by 10 feet high. Deceased's mother, who had been carrying earth from a cutting, sat down at the side of the cutting, with the child, to eat food. About a cubic yard of earth fell upon them from the side of the cutting. The woman was unhurt but the child was killed instantly. Inspection and inquiry made.
30	10th October, 1 P.M.	Lachipur mine, Sitarampur P. O., Bengal.	Jalota Lachipur Coal Co.	(1) Name not known, (f.), 5; (2) Name not known, (f.), 7.	Coal	Not employed	The bodies of the deceased were found floating in an old shaft containing water. The water in the shaft was used for drinking purposes, and the shaft was adequately fenced. Inspection and inquiry made.
31	11th October, 4-30 P.M.	Bansjora mine, Bansjora P. O., Bihar and Orissa.	Bansjora Coal Co., Ltd.	Mongar Pashi, (m.), 30, <i>Trolleyman.</i>	Coal	Not a mining accident.	Deceased, with a number of other persons, took shelter in a surface engine house during a thunderstorm. The house was struck by lightning, and deceased was killed instantly and another man was slightly burnt. Inspection and inquiry made.
32	18th October	Nandi mine, Nandi P. O., Bengal.	Adjai Coal Co., Ltd.	Name not known, (m.), 60.	Coal	Not employed	The body of deceased was found in water at the bottom of a shaft, 100 feet in depth. The shaft was adequately fenced. Inspection and inquiry made.
33	19th October, 8 P.M.	Widnes Hpaungadaw mine, Tavoy P. O., Burma.	High Speed Steel Alloys Mining Co., Ltd.	Lee Quine, (m.), 25, <i>Tributor.</i>	Wolfram	Not a mining accident.	Deceased was cooking food in a coolie lines. Stolon explosives had been buried there. His fire caused them to explode. He was killed instantly.
34	22nd October, 8 P.M.	Pootkee mine, Bansjora P. O., Bihar and Orissa.	Eastern Coal Co., Ltd.	Mahi Ali Saheikh, (m.), 65.	Coal	Not employed	Deceased was crossing a surface tramway at night and was run over by a train of loaded trams. He was killed instantly. Inspection and inquiry made.
35	18th November, 12 (noon).	Ghnaick mine, Kalipahari P. O., Bengal.	Ghnaick Coal Co.	Sobu Bauri, (m.), 43.	Coal	Not employed	Deceased, a person of unsound mind, fell from the surface into a shaft, 112 feet in depth, and was killed instantly. The shaft was fenced. Inspection and inquiry made.
36	28th November, 1 P.M.	Deoli mine, Deshergarh P. O., Bihar and Orissa.	Deoli Coal Co., Ltd.	Belas Bauri, (m.), 15.	Coal	Not employed	Deceased was riding on the front tub of a set of six loaded tubs on an endless haulage. The set rider warned him to get off. When doing so he slipped and fell in front of the moving tubs and was dragged along by them. He sustained serious injuries and died three hours later. Inspection and inquiry made.
37	28th November, 6-30 A.M.	New Kessurgurah mine, Nowagarh P. O., Bihar and Orissa.	New Kessurgurah Coal Co., Ltd.	Ramdhani Mejhian, (f.), 13, <i>Coal-carrier.</i>	Coal	Not a mining accident.	Whilst drawing water from a disused well, the deceased over-balanced and was drowned. Inspection and inquiry made.
38	4th November, 11 P.M.	Raghunathbati mine, Sitarampur P. O., Bengal.	Raghunathbati Coal Co., Ltd.	Tribhanga Bauri, (m.), 18, <i>Coolie.</i>	Coal	Not a mining accident.	A basket of debris was being raised from a well, 50 feet in depth. A piece of stone, weighing about 2 lbs., fell out of the basket and struck deceased, who was at the bottom of the well. He sustained a fracture of the skull and died twenty-two days later. Inspection and inquiry made.
39	11th December, 9-30 P.M.	South Bulliari mine, Knsunda P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Ratni Ghosain, (f.), 18, <i>Mason's Coolie.</i>	Coal	Not a mining accident.	Deceased was burnt to death in a hut which caught fire.

APPENDIX II—concl'd.

Fatal Accidents, 1919—concl'd.

Serial number.	Date and hour of accident.	Name and situation of mine.	Name of owner.	Name, sex, age and occupation of person killed.	Name of mineral wrought.	Reason for exclusion.	Cause of accident and remarks.
DEATHS NOT INCLUDED IN THE STATISTICS—concl'd.							
40	23rd December, 9-30 P.M.	Jamadoba mine, Jamadoba P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ltd.	Prasadi Rana, (m.), 24, Sinker.	Coal	Not a mining accident.	Whilst sleeping near a fire in a hut, the clothes of deceased became ignited and he was burnt to death.
41	26th December, 9-30 A.M.	Duis mine, Monharpur P. O., Bihar and Orissa.	Bengal Iron Co., Ltd.	Guru Charan Tanti, (m.), 35, Shop-keeper.	Iron	Not a mining accident.	Deceased was not an employé of the Company. Whilst attempting to jump on a moving train of ore wagons, he slipped and fell under the wheels. His leg was almost covered and he died from the resulting hamorrhage, within a few hours. Inspection and inquiry made.

APPENDIX II.

Table No. 2.

Statement of fatal and serious accidents in and about mines regulated by the Indian Mines Act, 1901, during the year 1919.

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.		Total number of persons injured.	Below ground.	Above ground.	Below and above ground.		
				Below ground.	Above ground.		Total deaths.	Below ground.					Above ground.	
A.—COAL.														
Assam	Lakhimpur	2,738	13	12	1	13	90	65	0	91	6.56	1.10	4.75	
	Naga Hills	415	...	...	...	...	...	...	...	...	...	...	...
	Sibsagar	45	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	3,198	13	12	1	13	90	65	0	91	6.33	.88	4.07	
Baluchistan	Loralai	35	...	...	...	...	...	...	...	...	...	...	...
	Quetta-Pishin	139	1	1	...	1	1	...	1	8.77	...	7.11		
	Sibi-Khoet	728	2	3	...	3	1	...	1	8.15	...	4.12		
	TOTAL	902	3	4	...	4	2	1	1	7.97	...	4.43		
Bengal	Bankura, Raniganj	94	...	...	...	...	...	...	...	...	...	...	...
	Dinbhram "	54	...	...	...	...	...	...	...	...	...	...	...
	Burdwan "	48,494	63	69	3	72	59	45	17	62	2.28	.16	1.43	
	TOTAL	48,642	63	69	3	72	59	45	17	62	2.27	.16	1.48	
Bihar and Orissa	Hazaribagh {	Bokaro	8,796	1	...	2	2	7	1	6	766	.23
		Ranigarh	10,951	5	4	1	5	13	13	1	14	.49	.35	.46
		Giridih	1,729	2	2	...	2	2	1	1	2	2.13	...	1.16
	Maubhum, Jharis	94,384	97	113	12	125	98	72	26	100	1.98	.32	1.33	
	" Raniganj	10,562	14	22	...	22	5	3	2	5	3.70	...	2.04	
	Palamanu, Daltonganj	770	2	2	...	2	...	...	...	...	4.74	...	2.60
	Sambalpur, Hingir-Rampur	929	1	1	...	1	...	...	...	...	1.78	...	1.08
	Sonthal Parganas, Jainty	1,712	2	2	...	2	2	1	1	2	2.32	...	1.17	
	" Raniganj	75	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	129,808	124	146	15	161	127	91	39	130	1.83	.50	1.44	
Central Provinces	Chanda, Ballarpur	1,687	2	1	1	2	5	3	3	6	1.10	1.29	1.19	
	Chhindwara, Pech Valley	3,044	4	5	...	5	5	7	...	7	2.20	...	1.04	
	Narsinghpur, Mohpani	1,572	2	2	...	2	9	5	8	13	2.03	...	1.27	
	Yeotmal	3	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	6,306	8	8	1	9	19	15	11	26	1.02	.47	1.13	
North-West Province.	Frontier	Hazara	5	...	...	...	...	...	...	...	...	...	...
Panjab	Jhelum	946	...	...	...	...	1	2	...	3	...	...	...
	Minnowali	123	1	1	...	1	...	...	...	25.00	...	...	...
	Shahpur	122	...	...	...	...	...	...	...	...	...	...	8.13
	TOTAL	1,191	1	1	...	1	1	2	...	3	1.52	...	.84
GRAND TOTAL (COAL)		190,052	212	240	20	260	209	238	70	314	2.04	.28	1.37	

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 1919—contd.

PROVINCE.	District and mineral field.	Total average number of persons employed daily.	FATAL ACCIDENTS.			SERIOUS ACCIDENTS.			DEATH-RATE PER 1,000 PERSONS EMPLOYED.				
			Number of separate fatal accidents.	NUMBER OF DEATHS.		Number of serious non-fatal accidents.	NUMBER OF PERSONS SERIOUSLY INJURED.		Below ground.	Above ground.	Below and above ground.		
				Below ground.	Above ground.		Total deaths.	Below ground.				Above ground.	Total number of persons injured.
			E.—SALT.										
Punjab	Jhelum	873	...	...	...	...	6	6	...	6	...	...	...
	Mianwali	49	...	...	...	...	...	...	...	...	...	...	...
	Shahpur	81	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (SALT)	1,003	...	...	...	...	6	6	...	6	...	...	...
			F.—GEMS.										
Burma	Mogok (Rubies, etc.)	1,319	...	...	...	...	1	...	1	1	...	...	...
			G.—SLATE.										
Bihar and Orissa	Monghyr	405	...	...	...	...	...	...	...	...	...	...	...
Punjab	Gurdaspur	6	...	...	...	...	...	...	...	...	...	...	...
	Gurgoon	217	...	...	...	...	...	...	...	...	...	...	...
	Kangra	160	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	43	...	...	...	...	...	...	...	...	...	...	...
			GRAND TOTAL (SLATE)										
			H.—GOLD.										
Bihar and Orissa	Singhbhum	228	...	...	...	...	1	...	1	1	...	...	...
Madras	Anantapur	554	...	...	...	...	2	3	1	4	...	...	...
			GRAND TOTAL (GOLD)										
			I.—IRON ORE.										
Bihar and Orissa	Singhbhum	986	2	3	...	3	...	...	...	...	4.13	...	3.04
Central Provinces	Jabalpur	130	...	...	...	...	...	...	...	...	...	...	...
Rajputana	Ajmer-Merwara	2	...	...	...	...	...	...	...	...	...	...	...
			GRAND TOTAL (IRON ORE)										
			J.—WOLFRAM.										
Bihar and Orissa	Singhbhum	20	...	...	...	...	1	1	...	1	...	...	...
Madras	Mergui	530	2	2	...	2	1	...	1	1	8.93	...	3.77
	Tavoy	8,136	16	12	5	17	7	3	5	8	2.48	1.43	2.04
	Thaou	828	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	9,604	18	14	5	19	8	3	6	9	2.53	1.20	1.96
			GRAND TOTAL (WOLFRAM).										
			GRAND TOTAL (WOLFRAM).										
			GRAND TOTAL (WOLFRAM).										

APPENDIX II—*contd.*Table No. 2—*concl.*

Statement of fatal and serious accidents in and about mines regulated by the Indian Mines Act, 1901, during the year 1919—*concl.*

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 death.	Below ground.				Above ground.	Total number of persons injured.
R.—STEATITE.													
Central Provinces	Jabalpur	179	1	...	1	1	...	...	...	...	...	13.49	5.59
Madras	Kurnool	16	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (STEATITE).	195	1	...	1	1	...	...	...	...	...	13.33	5.13
S.—OCHRE.													
Bihar and Orissa	Puri	43	...	...	...	...	...	...	...	...	...	...	...
T.—GRAPHITE.													
Rajputana	Ajmer-Merwara	22	...	...	...	...	...	...	...	...	...	...	...
U.—APATITE.													
Bihar and Orissa	Singhbhum	250	...	...	...	...	...	...	...	...	...	...	...
V.—MOLYBDENITE.													
Burma	Favoy	10	...	...	...	...	...	...	...	...	...	...	...
W.—BARYTES.													
Madras	Kurnool	20	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (ALL MINES)	219,156	262	279	33	312	350	272	100	372	1.78	.86	1.25

APPENDIX II—contd.

Table No. 3.

Statement of fatal accidents in mines regulated by the Indian Mines Act, 1901, during the year 1919, 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.	
	Assam, Lakhimpur	13	11	1	...	12	1	...	...	1	13
	Baluchistan { Quetta Pishin	1	1	...	...	1	...	...	...	...	1
	{ Sibi, Khost	2	3	...	...	3	...	...	...	...	3
	TOTAL BALUCHISTAN	3	4	...	...	4	...	...	...	...	4
	Bengal, Raniganj	63	51	18	...	69	3	...	...	3	72
	Hazaribagh { Bokaro, Ramgarh	1	...	...	...	...	2	...	...	2	2
	{ Giridih	5	2	2	...	4	...	...	...	1	5
	{ Jharia	2	2	...	...	2	...	...	...	...	2
	Bihar and Orissa { Manbhum, Jharia	97	92	20	1	113	12	...	...	12	125
	{ Manbhum, Raniganj	14	16	6	...	22	...	...	...	...	22
	{ Palamau, Daltonganj	2	1	1	...	2	...	...	...	...	2
	{ Sonbhal Parganas, Jainty	2	2	...	...	2	...	...	...	...	2
	{ Sambalpur-Hingir Rampur	1	...	1	...	1	...	...	...	...	1
	TOTAL BIHAR AND ORISSA	124	115	30	1	146	14	1	...	15	161
	Central Provinces { Chanda	2	1	...	...	1	1	...	...	1	2
	{ Chhindwara	4	4	1	...	5	...	...	...	...	5
	{ Narsinghpur	2	1	1	...	2	...	...	...	...	2
	TOTAL CENTRAL PROVINCES	8	6	2	...	8	1	...	...	1	9
	Punjab, Mianwali	1	1	...	...	1	...	...	...	...	1
	TOTAL COAL	212	183	51	1	240	19	1	...	20	260

APPENDIX II—*concl.*Table No. 3—*concl.*

Statement of fatal accidents in mines regulated by the Indian Mines Act, 1901, during the year 1919, classified according to the age and sex of the workers—*concl.*

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 12).	TOTAL.	Adult males.	Adult females.	Children (under 12).	TOTAL.	
MICA	Bihar and Orissa, Hazaribagh	4	7	1	...	8	..	...	...	...	8
	Madras, Nellore	2	2	...	...	2	...	...	...	...	2
	TOTAL MICA	6	9	1	....	10	...	...	...	...	10
MANGANESE	Central Provinces { Balaghat Chhindwara	4	2	4	1	7	2	...	...	2	9
		1	1	...	...	1	...	...	...	...	1
	TOTAL CENTRAL PROVINCES	5	3	4	1	8	2	...	...	2	10
	Bombay, Panchmahals	1	...	...	...	...	2	...	...	2	2
	TOTAL MANGANESE	6	3	4	1	8	4	...	...	4	12
LIMESTONE	Central Provinces, Jabalpur	3	2	...	...	2	...	1	...	1	3
STEATITE	Central Provinces, Jabalpur	1	...	...	...	...	1	...	...	1	1
IRON ORE	Bihar and Orissa, Singhbhum	2	...	3	...	3	...	...	...	...	3
WOLFRAM	Burma { Mergui Tavoy	2	2	...	...	2	...	...	...	...	2
		16	12	...	...	12	6	...	...	5	17
	TOTAL WOLFRAM	18	14	...	...	14	6	...	...	5	19
COPPER	Bihar and Orissa, Singhbhum	4	2	...	...	2	2	...	...	2	4
GRAND TOTAL (ALL MINERALS)		252	215	59	2	279	31	2	...	33	312

APPENDIX II—concl'd.

Table No. 4.

Statement of fatal accidents in mines regulated by the Indian Mines Act, 1901, during the year 1919, classified according to cause of accident.

MINERAL WORKED.	Number of separate fatal accidents.	NUMBER OF PERSONS KILLED.											DEATH-RATE PER 1,000 PERSONS EMPLOYED.		
		Explosions of fire-damp.	Falls of roof.	Falls of side.	In shafts.	Suffocation by gases.	By explosives.	Irruptions of water or falling into water.	Haulage.	Miscellaneous below ground.	Surface.	Total deaths.	Below ground.	Above ground.	Below and above ground.
Coal	212	1	91	49	47	...	4	...	41	7	21	260	2.04	.28	1.37
Copper	4	...	...	1	...	...	1	...	...	...	2	4	2.99	1.00	1.50
Iron	2	...	...	3	...	...	...	...	...	...	...	3	3.67	...	2.68
Limestone	3	...	...	1	...	...	...	...	...	1	1	3	1.63	2.06	1.24
Manganese	6	...	...	7	...	...	...	...	...	1	4	12	.85	1.31	.97
Mica	6	...	1	3	...	...	2	1	...	3	...	10	.65	...	.44
Steatite	1	...	...	...	...	...	...	...	...	...	1	1	...	13.33	5.13
Wolfram	18	...	3	11	...	...	...	...	...	...	5	19	2.53	1.20	1.96
TOTAL 1919	252	1	95	75	47	...	7	1	41	12	33	312	1.78	.36	1.25
TOTAL PRECEDING YEAR.	209	12	70	56	21	...	9	6	22	16	31	243	1.37	.42	1.02
DIFFERENCE	+43	-11	+25	+19	+26	...	-2	-5	+19	-4	+2	+69	+.41	-.06	+.23

APPENDIX III.

PROSECUTIONS UNDER THE INDIAN MINES ACT, 1901.

Statement of prosecutions instituted under the Indian Mines Act, 1901, during the year 1919.

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	2	2	Section 20, Rule 12 of Notification No. 864-68-20, dated 10th March 1904.	Acquitted.
	Do.	1	2	2	Section 20, Rules 3, 19 and 22 of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	1	1	Section 20, Rule 3 of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	3	3	Section 20, Rule 19 of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	1	1	Section 20, Rules 1(2), 7 and 14 of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	4	1	Section 20, Rule 19 of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	1	...		
	Do.	1	1	1	Section 20, Rule 12 of Notification No. 864-68-20, dated 10th March 1904.	
	Hazaribagh	1	2	2	Section 20, Rule 19 of Notification No. 6436-152, dated 2nd September 1911.	
	Do.	1	1	1	Section 20, Rule 4 of Notification No. 11793-103, dated 30th December 1908 as amended by Notification No. 5072-113, dated 1st July 1916.	
	Do.	1	3	3	Section 20, Rule 3 of Notification No. 8436-152, dated 2nd September 1911.	
	Manbhum	1	1	1		Withdrawn. Accused not traceable.
	Do.	1	1	1		
	Do.	1	1	1		
	Do.	1	1	...		
	Hazaribagh	1	2	2		Withdrawn. Accused not traceable.
	Do.	1	1	1		
	Do.	1	1	...		
	Do.	1	2	1		Section 20, Rule 1 of Notification No. 11793-103, dated 30th December 1908, as amended by Notification No. 5072-113, dated 1st July 1916.
	Do.	1	1	...		
Do.	1	2	1			
Do.	1	1	1			
Do.	1	2	1			
Do.	1	2	2			
Do.	1	1	...	Acquitted.		

APPENDIX III—concl'd.

PROSECUTIONS UNDER THE INDIAN MINES ACT, 1901—concl'd.

Statement of prosecutions instituted under the Indian Mines Act, 1901, during the year 1919—concl'd.

PROVINCE.	District.	Number of prosecutions.	Number of persons prosecuted.	Number convicted.	Numbers of rules and sections of the Act contravened.	REMARKS.
Bengal	Burdwan	1	2	2	Section 20, Rules 3, 4 and 19 of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	1	1	Section 13 (1), and Rule 19 of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	1	1	Section 13 (1), and Rule 1(a) of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	2	2	Section 20, Rules 3, 7 and 10 of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	2	2	Section 20, Rules 7, 13 and 19 of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	1	1	Section 20, Rules 7 and 20 of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	1	1		
	Do.	1	2	...	Section 20, Rule 1 of Notification No. 11793-103, dated 30th December 1908, as amended by Notification No. 5072-113, dated 1st July 1916.	Withdrawn.
Central Provinces	Jabalpur	1	2	...		Acquitted.
Madras	Nellore	1	3	3		

APPENDIX IV.
MISCELLANEOUS.

Statement No. 1.

List of Inspection Circles.

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

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.
Provan, Joseph Chapman	212	22nd January 1919	2348	13th January 1904.
Curley, James	213	Ditto	1522	16th June 1899.
Ford, Leo Dorey	214	Ditto	16	30th January 1913.
Potter, Robert	215	17th February 1919	364	24th January 1917.
Robb, William David	216	7th July 1919	427	27th July 1917.
Weir, Walter	217	Ditto	1732	19th June 1900.
Cox, John William	218	26th July 1919	163	26th January 1915.
Prentice, John Robertson	219	Ditto	485	24th January 1918.
Brown, Hugh	220	Ditto	401	27th July 1917.
Brady, Hugh	221	13th October 1919	4	30th January 1913.
Hanson, William Brooks	222	Ditto	411	27th July 1917.
Spray, William Alfred	223	Ditto	561	26th July 1918.
Bryan, Robert	224	Ditto	373	27th July 1917.
Smillie, James	225	Ditto	4070	10th June 1912.
Wilcox, William, H.	226	Ditto	3644	9th June 1910.
Semple, Francis Bernard	227	Ditto	180	26th January 1915.
Cunningham, Andrew Mitchell	228	Ditto	4033	10th June 1912.

APPENDIX IV—*contd.*MISCELLANEOUS—*contd.*Statement No. 2—*contd.*List of holders of certificates as managers of coal mines in British India—*contd.*

(b) Certificates of competency.

FIRST CLASS.

NAME.	No. of certificate.	Date of certificate.	REMARKS.
Adamson, Bertie	111	7th July 1919.	
Mukherji, Indu Bhusan	112	Ditto.	
Ward, Wesley Ashbury	113	Ditto.	

SECOND CLASS.

Gibson, Albert	168	15th July 1919	} 1st class candidates recommended for 2nd class certificates.
Allan, Herbert Durham	169	Ditto	
Connolly, William John	170	Ditto.	
Sleehan, Frederick George	171	Ditto.	
Banerji, Jotindra Nath	172	Ditto.	
Caddy, Douglas George	173	Ditto.	
Durham, Vivian Clyde	174	Ditto.	
Roy, Ram Gobinda	175	Ditto.	
Simon, Cyril Paul	176	Ditto.	
Chatterji, Aroon Kinkar	177	Ditto.	
Mitra, Birendra Nath	178	Ditto.	
Mukherji, Pataki Charan	179	Ditto.	
Mazumdar, Pravakar	180	Ditto.	
Chatterji, Kshetra Mohan	181	Ditto.	
Samanta, Satya Kinkar	182	Ditto.	
Mahata, Jyotish Chandra	183	Ditto.	
Chatterji, Hrishikesh	184	Ditto.	
Mukherji, Dharendra Nath	185	Ditto.	
Varma, D. R.	186	Ditto.	
Roy, Asita Bhusan	187	Ditto.	
Banerji, Aditya Chandra	188	Ditto.	
Chatterji, Nritya Gopal	189	Ditto.	
Ganguly, Bhola Nath	190	Ditto.	

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

(c) Certificates of service.

FIRST CLASS.

NAME.	No. of certificate.	Date of certificate.	REMARKS.
Tyore, John Emanuel	151	22nd January 1919.	
Hyde, Joseph	152	15th July 1919.	
Biddle, Leonard Alexander	153	Ditto.	
Mondol, Upendra Nath	154	Ditto.	
Griffiths, James	155	Ditto.	

(d) Certificates of service.

SECOND CLASS.

NAME.	No. of certificate.	Date of certificate.	REMARKS.
Parsons, Issachar	199	15th July 1919.	
York, Benjamin	200	26th July 1919.	
While, Benjamin	201	Ditto.	
Ahmad, Qurban	202	Ditto.	

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

Statement No. 3.

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

Name of Institution and Degree or Diploma.	Date.
University of Birmingham in respect of its Degree of B.Sc. in Mining and Diploma in Mining.	11th June 1904.
University College of Bristol in respect of its Senior Diploma in Mining.	16th September 1904.
University of Cambridge in respect of its Diploma in Mining Engineering.	6th June 1905.
University of Durham in respect of its Degree of B.Sc. in Mining.	21st December 1903.
Durham College of Science in respect of its Diploma in Mining.	29th June 1904.
University of Glasgow in respect of its Degree and Diploma in Mining.	28th September 1904.
Glasgow and West of Scotland Technical College in respect of its Diploma in Mining.	28th June 1904.
University of Leeds in respect of its Degree of B.Sc. in Mining and Diploma in Mining.	21st November 1904.
University of London in respect of its B.Sc. Degree in Mining for Internal Students, subject to the Degree being endorsed by the University with a certificate of four months' practical experience in a mine.	9th June 1905.
University of London in respect of its B.Sc. Degree in Mining for External Students, subject to the Degree being endorsed by the University with a certificate of four months' practical experience in a mine.	7th August 1906.
Royal School of Mines in respect of its Associateship in Mining.	24th March 1904.
University of Oxford in respect of its Diploma B. for Colliery Engineers (in Scientific Engineering and Mining subjects).	11th February 1905.
University College of Sheffield in respect of its Diploma in Mining.	15th July 1904.
University College of South Wales and Monmouthshire in respect of its Diploma in Mining.	19th April 1904.
Wigan Mining and Technical College in respect of its Diploma in Mining.	26th August 1904.
Bengal 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 1909.
Calcutta University in respect of its Degree of Bachelor of Engineering in the Branch of Mining Engineering.	24th September 1910.
Harvard University, Cambridge, Massachusetts, in respect of its Diploma in Mining Engineering.	22nd February 1913.
Columbia University, New York, in respect of its Degree of Engineer of Mines.	13th March 1915.
California University, United States of America, in respect of its Degree of Mining Engineer.	19th February 1916.
Pittsburg University, United States of America, in respect of its Degree of Engineer of Mines.	19th February 1916.
Leland Stanford Junior University, California, in respect of its Degree of Bachelor of Arts in Geology and Mining.	10th August 1918.

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

Statement No. 4.

BENGAL ENGINEERING COLLEGE.

THE MINING CLASSES.

Admissions to the Diploma Course in Mining at the Civil Engineering College, Sibpur.

The Diploma Course covers two sessions, commencing yearly in April, and lasting till the examinations in the following March. (There is a vacation of about three months in August, September and October.) Six weeks of each session is spent at a camp of mine surveying in the colliery districts.

Two classes of students are admitted—

Regular—who need have no experience of Mining.

Special—who have had about two years' previous experience of coal-mining (under ground.)

Admissions are made as follows :—

Regular students.—Age may not exceed 20 on January 1st of the year of admission—

A.—Through a special preparatory course of one year's duration at the Civil Engineering College. Admissions at the beginning of February.

B.—Through the Sub-Overseer classes (a two years' course) at Dacca, Burdwan, Rajshahi and Pabna in Bengal; Bankipore and Ranchi in Bihar and Orissa.

Special students—

C.—Direct from the mines to the Mining classes without passing through either A or B. Admissions at the beginning of April. Applications must be made by 1st March accompanied by certificates from the colliery managers under whom the candidate has served, showing the period and nature of his employment underground.

Admission qualifications to A, B and C—

The passing of the Matriculation Examination, the Junior Cambridge Examination, the Examination held at the end of the supplementary course for elementary European schools, or equivalent.

The number that can be admitted is limited. The selection of candidates rests with the Principal who, all other things being equal, will prefer the younger of two candidates.

Scholarships awarded by the Bengal Government—

For Regular students—

Scholarships of the following number and value are available for Regular students admitted under A, these are awarded on the result of the examination held at the end of the preparatory course A :—

Two of Rs. 12 monthly.

Three „ 6 „

Stipends awarded by the Bihar and Orissa Government—

Two Boarding stipends of Rs. 15 monthly tenable for three years by poor and capable students of that Province. These are available in either the Mining or Mechanical and Electrical Engineering classes.

For special students.—Awarded by the Bengal Government—

Awarded on the result of the examination held at the end of the lectures given in the colliery districts by the Instructor in Mining—

One of Rs. 50 for Europeans.

One or two of Rs. 25 for Indians.

These amounts should be sufficient to maintain a special student resident at the college.

For further particulars apply for the Apprentice Department Circular.

B. HEATON,

Principal, Bengal Engineering College, Sibpur.

APPENDIX IV—contd.

MISCELLANEOUS—contd.

Statement No. 5.

MINING INSTRUCTION IN BENGAL AND BIHAR AND ORISSA.

[The Mining Education 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.]

The full course comprises two parts, the lectures in which are delivered in alternate years as follows:—

The principles of Coal Mining 1920-21, 1922-23, etc.

The principles of Mechanical Engineering of Coal Mines 1919-20, 1921-22, etc.

A fee of Rs. 5 (five rupees) payable to the Mining Instructor on the first registration of his name is charged to each student for each year's series of lectures. This fee is non-returnable.

Programme for Session 1919-20.

LECTURES on the Principles of Mechanical Engineering of Coal Mines will be delivered in English by Mr. H. C. Read, Mining Instructor, as follows:—

JHARIA COAL-FIELD.

Jharia	...	Lecture-room near Club	...	Mondays	...	5-30 P.M.
Sijua	...	Lecture-room near Station	...	Tuesdays	...	5-0 "

RANIGANJ COAL-FIELD.

Deshergarh	...	Lecture-room near Club	...	Wednesdays	...	5-30 P.M.
Raniganj	...	Old Railway Institute	...	Thursdays	...	5-0 "
Jamuria	...	Chief Mining Engineer's office, Sibpur Colliery	...	Fridays	...	5-30 "

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

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

The following Local Committees have been appointed:—

RANIGANJ COAL-FIELD.

<i>Deshergarh Centre.</i>	<i>Jamuria Centre.</i>	<i>Raniganj Centre.</i>
Mr. H. Lancaster, <i>Chairman.</i>	Mr. H. Lancaster, <i>Chairman.</i>	Mr. H. Lancaster, <i>Chairman.</i>
" J. B. Wardlaw (Deshergarh).	" P. S. Keelan (Charanpur).	" P. S. Keelan (Charanpur).
" Geo. Miller (Sitarampur).	" T. Samson (Charanpur).	" A. T. Creet (Kalipahari).
" F. Owen (Deshergarh).	" H. L. Wilkinson (Sibpur).	" W. J. Rees (Raniganj).
Babu M. N. Roy (Begunia).	" W. S. Elphinstone (Asansol).	Babu Promotho Nath Hazra (Toposi).
" P. C. Tarafdar (Mugma).	Babu Atul Shashi Mitra (Asansol).	" Kali Kumar Misra (Searsole Raj Estate).
" S. N. Ghosh (Barakar).		" S. Chaudhuri (Jamehari, Raniganj).

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

JHARIA COAL-FIELD.

Jharia Centre.

Mr. F. L. G. Simpson, *Chairman.*
 „ R. G. M. Bathgate (Jamadoba).
 „ J. Kirk (Kuatore).
 „ J. B. Argyte (Lodna).
 „ R. Barrowman (Standard Coal Company,
 Jharia).
 Babu Goburdhan Das Manishankar (Jharia).
 „ Narendra Nath Sarkar (South Kujama,
 Jharia).

Sijua Centre.

Mr. F. L. G. Simpson, *Chairman.*
 „ A. A. Agabeg (Sijua).
 „ R. Heron (Ekra, Bansjora).
 „ H. M. Bull (Bansjora).
 „ G. C. Leach (Sijua P. O.)
 Babu Trikundas Doyal (Bansjora).
 „ Basanta Kumar Roy (Kirkend).

B. HEATON,

*Secretary, Mining Education Advisory Board,
 B. E. College, Sibpur Botanic Garden, P. O. Howrah.*

SYLLABUS OF THE COURSE OF INSTRUCTION.

The lectures in the following courses are delivered in alternate years:—

THE PRINCIPLES OF COAL MINING.

1. *Geology.*—General structure of the earth's crust: igneous and aqueous rocks; definitions of outcrop, dip, strike, fault, roll, wash-out and dyke, etc.; recording geological observations, reading a geological map; description of the Indian coal bearing rocks; composition and properties of coal. Commercial values of coal.

2. *Exploration.*—Prospecting, trial shafts and trenching; advantages of boring; methods of boring; driving through faults, uses of borcholes in mines, etc.

3. *Breaking ground.*—Common tools; storage and use of explosives; electric fuses; machine drills; coal-cutting machines.

4. *Sinking.*—Site of colliery; position of inclines and shafts, their excavation and shape, apparatus used in sinking; lining shafts; arrangements at top of sinking shaft; brief mention of special methods of sinking.

5. *Methods of working.*—Quarrying, advantages of bench work, disposal of soil; shaft pillars; pillar and gallery method, working thick seams in stages, extraction of pillars, panels; brief description of longwall and chambering methods.

6. *Supporting.*—Props and lids, bars, chocks or cogs, square sets, special timbering of loose ground; arching; steel girders; packing; dry and hydraulic stowing.

7. *Mine gases.*—Their experimental preparation by chemicals, and illustration of their physical and physiological properties; their chemical composition; methods of detecting; explosions; spontaneous combustion of coal; dangers of coal dust.

8. *Ventilation.*—Ascensional currents, currents induced by the heat of steam or furnace; mine fans; friction of air in mines; theory of splitting the air; calculations of ventilating pressure, etc.; coursing the air; measurement of quantity of air; use of anemometer, watergauge, thermometer and barometer; reversing the air current.

9. *Safety lamps.*—Principle of the safety lamps; Sir Humphrey Davy's experiment; types of safety lamps; firedamp detectors.

THE PRINCIPLES OF MECHANICAL ENGINEERING OF COAL MINES.

1. *Applied Mechanics.*—Mensuration; definitions of force, motion, friction, work and energy; the simple machines; mechanical and electrical units; hydrostatics; the siphon; pressure of gases; Boyle's law.

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

2. *Steam, Electricity and Compressed air.*—Theory of steam boilers and their fittings; the steam engine; the dynamo; the electric motor; the air compressor.

3. *Winding.*—Types of winding engines and description of parts; calculation of the dimensions of winding engines; strength of ropes and chains; detaching hooks; over-winding prevention devices; rope cappings; care and examination of ropes, buckets, cages, guide ropes.

4. *Pumping.*—The lift pump; the force pump; sinking pumps; pumps with positive valve motion; the pulsometer; turbine pumps; calculations of the dimensions of pumps; methods of supporting pumps and pipes; strength of pipes; pipe joints; dams to hold back water.

5. *Hauling.*—Tramways; tubs; hand tramping; horse haulage; self-acting inclines; locomotives; single rope haulage; main and tail rope haulage; endless rope or chain haulage; calculations of the dimensions of hauling engines, ropes, etc.; capping of haulage ropes; couplings; haulage clips, etc.; signalling.

6. *Surface arrangements.*—Headframes and pulleys; receiving frames; keps; arrangements of roads on pit bank; tipplers; simple screening and sizing; railway sidings; aerial ropeways.

7. Simple treatment of coking and bye-product ovens.

Adopted by the Mining Education Advisory Board at their meeting of 27th January 1917. Copies of this circular may be obtained from the Secretary or from the Instructor.

B. HEATON,
Secretary.

BENGAL ENGINEERING COLLEGE, SIBPUR;
The 6th August 1919.

Statement No. 6.

Regulations made by the Board of Examiners under Rule 30 of the rules applying to coal-mines made under Section 20 of the Indian Mines Act, 1901, for the conduct of examinations for Colliery Managers' certificates of competency.

(1) No member of the Board of Examiners shall act as a local examiner, except in emergent cases.

(2) When possible one or more members of the Board of Examiners shall attend every examination on at least one of the days.

(3) So far as is practicable, the local examiners shall be:—

(a) An Inspector of Mines, who shall be Secretary to the local examiners.

(b) Two Mining Engineers or Colliery Managers who must be the holders of first class certificates. Provided that a Mining Professor may be appointed instead of one of the Mining Engineers or Managers.

(4) The remuneration of each local non-official examiner shall be Rs. 150 for each examination, and a capitation fee of Rs. 2 for each first class candidate and Re. 1 for each second class candidate examined, and travelling expenses and halting allowances on the first class scale under the Civil Service Regulations; but an Inspector of Mines, acting as a local examiner, shall not be entitled to any fee or remuneration whatsoever, beyond the travelling expenses and halting allowances due to him in his official capacity.

(5) The examinations will be advertised at least four months before the date of the examinations and applications, supported by original certificates, as to experience and character and fees will be received up to a date, duly advertised, one month prior to the examinations. No application which is not supported by the certificates and fees referred

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

to above will be considered by the Board if submitted after the advertised date for receiving such applications and fees.

(6) The subjects for examination shall be:—

(a) *Arithmetic and handwriting.*

(b) *Practical and theoretical coal-mining*, including surface and underground arrangements, sinking, timbering, ventilation, gases met with in coal-mines, a knowledge of plans, surveying and levelling, and of the various instruments used in mining. Questions may also be asked upon geology, sanitation, hydraulics, explosives, safety lamps and similar subjects. The candidates may also be required to show how to arrange the ventilation and haulage of a mine on a given plan.

(c) *Practical mechanics*, including steam, steam-engines, steam-boilers, pumps and strength of materials; and questions may be asked upon electricity and compressed air as applied to coal-mining.

(d) *The Indian Mines Act, 1901, and rules made under the Act.*

(7) The examination shall be both written and oral and the subjects and conditions shall be the same for candidates for both classes of certificates; but the examination questions shall be made suitable for each class of certificate.

The examiners shall have power to eliminate the oral examination in the case of candidates who do not reach a standard in the written examination to be prescribed by the Board of Examiners.

(8) The following should be the maximum number of marks given for each subject:—

Subject.	FIRST CLASS.			SECOND CLASS.		
	Papers.	Viva voce.	Total.	Papers.	Viva voce.	Total.
1	2	3	4	5	6	7
(a) Arithmetic and handwriting	50	...	50	50	...	50
(b) Mining	160	60	220	140	80	220
(c) Mechanics	110	40	150	100	50	150
(d) Indian Mines Act	60	20	80	60	30	80
TOTAL	380	120	500	340	160	500

(9) No candidate who fails to obtain 66 per cent. of the total number of marks or 33 per cent. in either of the subjects of mining or mechanics, shall be passed by the examiners, and if a candidate fails to obtain 33 per cent. of the marks given for either of the subjects of Arithmetic and handwriting or the Indian Mines Act, any marks he may have obtained in such subjects shall not be included when the total is determined.

(10) Before each examination each candidate shall declare whether he presents himself for a first or second class certificate. No candidate for a second class certificate shall be eligible at that examination for a first class certificate, but a candidate for a first class certificate, who does not reach the necessary standard, may, nevertheless, at the discretion of the local examiners, be recommended, to the Board of Examiners for a second class certificate, if, in their opinion, he has done sufficiently well to deserve it.

(11) The Secretary to the local examiners shall report, by registered post, the result of the examination giving the number of marks obtained by each candidate in each subject, to the President of the Board of Examiners within one month of the close of the examination.

(12) The questions which the local examiners intend to put in the examination papers shall be submitted in draft to the Board of Examiners, for approval, at least six weeks before the date of the examination. Answers to questions on Arithmetic and those involving calculations and all plottings and levellings must be submitted to the Board of Examiners along with the question papers.

(13) At least one examination for first class candidates and at least one examination for second class candidates shall be held annually in one of the Bengal or Bihar and Orissa

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

coal-fields; and in other parts of India examinations will be held whenever, in the opinion of the Board of Examiners, the number of candidates in a coal-mining centre justifies the holding of an examination.

(14) No candidate will be allowed to take part in the examination until he has produced an authorization from the Board of Examiners.

(15) Every candidate before taking his seat must sign a register, in which he will be given a definite number. He must sign his name and write his registered number at the top of every page of the paper on which he writes the answers to the questions.

(16) The number of the question must be given in bold figures before the answer to each question.

(17) The calculations and work by which a result is obtained must be clearly shown in immediate connection with the answer to each question.

(18) Answers must be strictly confined to the questions asked.

(19) Sketches may be made to make answers clear.

(20) When sketches are asked for, it should be understood that, unless otherwise stated, frechand sketches, with dimensions, are all that is necessary, and candidates should not spend time in making finished drawings.

(21) Any candidate speaking to any other candidate during the examination, or using any book, notes or private paper, or acting in any manner which the examiners consider improper will be liable to be disqualified at their discretion. The Board of Examiners may in such a case use their discretion as to allowing the candidate to sit at any future examination.

(22) When a candidate has completed the answers to the questions, or when the time allowed for answering the questions has elapsed, or he has been disqualified, he must hand the paper of questions and his answers to the examiners, and at once leave the examination room.

(23) A time table will be supplied to each candidate at the commencement of the first day's examination.

(24) The oral examination will be held at a subsequent date. Only those candidates who obtain a certain degree of proficiency in the written examination will be examined orally. Due notice of time and place will be sent to each candidate required by the examiners for oral examination.

(25) The number of marks given for each question will be shown in brackets at the end of the question.

(26) Ink and paper will be provided, and no paper other than the official paper provided may be used. Candidates must bring their own pens and pencils, drawing pens and drawing instruments, including a protractor.

All previous Regulations are hereby cancelled.

G. F. ADAMS,

*Chief Inspector of Mines in India and ex-officio
President of the Board of Examiners.*

DHANBAD, }
The 24th February 1919. }

Statement No. 7.

No. 219-D.

GOVERNMENT OF INDIA.

DEPARTMENT OF COMMERCE AND INDUSTRY.

Delhi, the 17th January 1920.

NOTIFICATION.

(MINES REGULATIONS.)

In exercise of the power conferred by section 20 of the Indian Mines Act, 1901 (VIII of 1901), Governor-General in Council is pleased to direct that in the rules regarding Mines

APPENDIX IV—*contd.*MISCELLANEOUS—*contd.***Statement No. 7—*concl'd.***

Managers and their certificates published with the notification of the Government of India in the Department of Commerce and Industry, No. 2968-82 (G. & M.), dated the 21st April 1906, as subsequently amended, the following amendments shall be made, namely :—

(1) For rule 29 of the said rules the following shall be substituted, namely :—

“ 29. Certificates of competency under these rules shall be granted by the Board of Examiners and their decision regarding the grant of such certificates shall be final. Certificates granted by the Board shall hold good throughout British India, and shall be of two classes, namely, first and second class.”

(2) Rules 38, 39 and 40 of the said rules are hereby cancelled.

2. The amendments shall take effect from the 30th June 1920.

A. H. LEY,

Secretary to the Government of India.

Statement No. 8.

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.