

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 1920

BY

R. R. SIMPSON, M.Sc.

Chief Inspector of Mines in India



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FROM

R. R. SIMPSON, Esq., M.Sc.,
Chief Inspector of Mines in India,

TO

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

Dated Dhanbad, the 11th June 1921.

SIR,

I have the honour to submit the report upon the inspection of mines in British India for the year ending 31st December 1920.

INTRODUCTION.

It is with great regret that I have to record the death of the late Chief Inspector of Mines, Mr. George Francis Adams, C.B.E., M.I.C.E., which took place on 10th January 1921. Mr. Adams, after serving as an Assistant Inspector of Mines in Great Britain for eight years, joined the Indian Mines Department in 1902, and subsequently held the post of Chief Inspector with distinction for 10 years. He was acknowledged as a mining engineer of unusual sagacity, and his opinion was eagerly sought for on matters pertaining to the mining industry in India. His urbanity of manner and ready tact had endeared him to all those with whom he came into contact. His fine sense of justice, loyalty and sympathetic consideration were fully displayed in his dealings with his staff, the members of which deeply deplore his untimely death.

It may be explained that this report relates entirely to the administration of the Indian Mines Act, 1901. The Act applies to British India only and not to the Indian States. Mines which are less than 20 feet deep are excluded from its scope. For the complete figures of production of all minerals raised from excavations of all depths in British India and the Indian States reference may be made to the statements of the "Mineral Production of India" published annually in the records of the Geological Survey of India, and to the "Quinquennial Review of the Mineral Production of India" published every five years by the same Department. Mysore, where the Kolar goldfield is situated, and Hyderabad (Nizam's Dominions) have their own Departments of Mines. Detailed information of the mineral industries of those States is given in the annual reports of their respective Chief Inspectors of Mines.

SECTION I.—Persons employed.

During the year 1920 the daily average number of persons working in and about the mines regulated by the Indian Mines Act was 234,199, as compared with 249,156 in the previous year. This is a decrease of 14,957 persons or 6.00 per cent. Of these persons 141,029 worked underground and 93,170 on the surface.

One hundred and forty thousand four hundred and eighty were adult males, 85,635 were adult females and 8,084 were children under 12 years of age.

Those employed in coal mines numbered 175,943 which is 14,109 less than those employed in 1919. This decrease accounts for nearly the whole of the

total decrease for all mines. The decrease in the labour employed in coal mines was not due to lack of employment. There was an acute scarcity of coal mining labour in the Bengal and Bihar and Orissa coalfields. In the previous year famine conditions in the recruiting areas had augmented the labour supply. During the year under review crops were more favourable and those driven by necessity to labour in the coalfields in the previous year remained at home. The rise in the cost of living was exploited by agitators, and there was considerable labour unrest. At many collieries there were strikes, but in no case was the stoppage longer than a day or two. From the 1st December the contract rate for coal getting was increased by 25 per cent. whilst those receiving a daily wage of 6½ annas were granted an increase of 30 per cent. Those receiving higher rates of pay were granted increases on a scale varying from 2½ to 5 per cent., the latter being the increase granted to those in receipt of a wage of Rs. 60 per month. The ultimate effect of these increased rates of pay was not apparent at the end of the year, but the labourers were apparently satisfied and there were no more strikes. The general health of the labour force in the major coalfields was good and there was not much epidemic disease.

At the Margherita collieries in Assam there was a shortage of labour. There were 1,642 recruitments and 801 repatriations. The total labour population was 6,999 persons, of whom 4,252 were adult workers. The wages of mine coolies were increased by 35 per cent.

In the Central Provinces the local labour was insufficient, and labourers were imported from Jubbulpur and Chattisgarh. There were no serious epidemic diseases or strikes during the year.

In the Tavoy district, Lower Burma, the number of persons employed was 5,170 less than in 1919, a decrease of more than one-half. This was due to the closing down of many of the mines consequent on the lessened demand for wolfram.

At the lead-silver and iron mines in the Northern Shan States, Upper Burma, there was a considerable shortage of labour. Two or three attempts at strikes came to nothing. There were no epidemics of any kind, and the general health of the labour force was good. A maximum of some 12,000 persons is employed by the Burma Corporation, Limited, but the majority of these are employed at the Company's smelter and on railways.

In the Anantapur goldfield, Madras, wages were increased. There was a local famine, and villages in the vicinity of the mine would have suffered considerably had the mines not been in existence.

In view of the proposed limitation of the hours of labour in India it is of interest to note that in the majority of metal mines in India work is already carried on in eight hours shifts and the mines are closed down on Sundays.

SECTION II.—Output of Minerals.

COAL.

The statement given below shows the output of coal in the various provinces in British India during the years 1919 and 1920.

Provinces.	Output in Tons.	
	1920.	1919.
Assam	324,965	291,134
Baluchistan	27,672	29,124
Bengal	4,207,452	5,777,632
Bihar and Orissa	11,973,339	15,117,903
Central Provinces	491,205	497,021
North-West Frontier Province	...	20
Punjab	58,078	46,893
TOTAL	17,082,711	21,759,727

For the third time only during a period of 40 years a decrease in the annual output of coal took place. The first occasion was in 1885, and the second in 1909. The output in 1920 was 17,082,711 tons. The decrease was 4,677,016 tons or 21.49 per cent., as compared with an increase of 9.64 per cent. in the previous year. The successive increases of output in the last three years have been wiped out, the output in 1920 being less than in 1917.

In the following table the percentage variations in the output of coal* since 1909 are shown :—

Per cent.	Per cent.	Per cent.
1909. Decrease 7	1913. Increase 10.27	1917. Increase 5.53
1910. Increase 0.83	1914. Increase 1.56	1918. Increase 14.55
1911. Increase 5.80	1915. Increase 3.97	1919. Increase 9.64
1912. Increase 16.56	1916. Increase 0.41	1920. Decrease 21.49

The opening stocks in 1920 were 4,626,460 tons and the closing stocks 2,409,283 tons or just about one half of the closing stocks at the end of 1919. Even this reduced quantity of closing stocks is considerably higher than that recorded in any year prior to 1919. The large closing stocks may be taken as a measure of the inadequacy of the supply of railway wagons during the year.

The despatches amounted to 16,417,631 tons, and 2,278,327 tons were consumed on the collieries. The latter figure represents 13.34 per cent. of the output, as compared with 9.21 per cent. in the previous year. The increase in the percentage of coal consumed at the collieries is regrettable. It may be explained by the fact that for the greatly reduced raisings of coal the same or probably a larger quantity of water had to be pumped from the mines, and, the number of winding and other engines and boilers being the same, if not greater than in the previous year for a larger output, the wastage of steam (*i.e.*, coal) would be greater. The increase in colliery consumption would be even more marked were it not that electrical apparatus is rapidly superseding steam plant.

The amount of coal used for coking was 603,930 tons and 178,162 tons of hard coke and 181,530 tons of soft coke were made. As the iron and steel trades continued in full activity during the year the large decrease in the manufacture of coke is somewhat remarkable. It was probably due to the fact that there were large stocks of coke on hand at the beginning of the year.

Analyses of the figures relating to the output of coal and the manufacture of coke will be found in Appendix I, Table II on page 38.

Practically the whole of the decrease was in Bihar and Orissa and Bengal. Figures for the two major coalfields are as follows :—

	Output in tons.		Percentage of decrease.
	1920.	1919.	
Jharia coalfield	9,294,040	12,115,918	23.48
Raniganj coalfield	4,997,679	6,815,126	26.67

The decrease in Bihar and Orissa was more than three million tons, and in Bengal more than one and a half million tons. There were considerable increases in Assam and the Punjab, and small decreases in the Central Provinces and Baluchistan. The continued decrease in Baluchistan is probably due to the disturbed conditions on the frontier, whilst the increase from 46,893 tons to 58,078 tons in the Punjab is the indirect result of high prices in the Bengal coalfields.

On 31st March 1920 the Government requisition on coal was removed. Later in the year as it was evident that the internal demand for coal exceeded the supply, exports were restricted by Government. There was a great shortage of labour at the collieries, and as a consequence raisings were exceptionally low. Shortage of wagons accentuated the deficiency. Another adverse factor was the decreased output per person employed, which in Bengal and Bihar fell from 117 tons in 1919 to 100 tons in 1920. The large stocks which were held at the beginning of the year were greatly reduced and at the close of the year

* For tonnages *vide* page 44 in the appendix.

there was very little coal of first class quality in stock. Prices for all coal improved very considerably towards the end of the year, specially high rates being paid for small quantities of coal not under contract.

During the first half of the year the coal trade in the Central Provinces was depressed, local demand being somewhat limited and there being little demand from the chief consuming centres such as Bombay and Ahmedabad. In the latter half of the year the trade improved and both demand and prices continued to increase until the end of the year. Full advantage could not, however, be taken of the improved demand as raisings could not be increased to the desired extent owing to shortage of labour.

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

	Tons per person employed.			
	Below ground.		Above and below ground.	
	1920.	1915-1919.	1920.	1915-1919.
British India	166	180	97	113
Bengal and Bihar	171	184	100	116
Assam	161	153	103	100
Baluchistan	59	67	32	40
Central Provinces	100	123	58	81
Punjab	76	68	44	43

The output of coal in the United Kingdom in 1919 was 242 tons per person employed below ground and 193 tons per person employed above and below ground.

MICA.

The output was 44,667 cwts., as compared with 41,683 cwts. in 1919, being an increase of 7.16 per cent. The increase was in Madras and Rajputana, Bihar and Orissa showing a small decrease.

The demand for good qualities of mica was steady throughout the year and prices were good. Owing, however, to the uncertain Exchange and general financial depression the output was again restricted. During the last quarter of the year the local market was greatly depressed. Both in England and America the markets were over stocked owing to the lack of Continental buying.

In the Madras (Nellore) mica field the Kalichedu, Tellabodu and Palamani mines are conspicuous for improved methods of working. In the last-named mine systematic development is perhaps the most marked. The vein is blocked out by levels and winzes driven at regular intervals. It is noteworthy that in practically every drive payable deposits of mica have been proved, and consequently there is now a large amount of "mica in sight" which can be got at any time. It is to be remembered, however, that in these three mines the mica is distributed more or less homogeneously throughout the veins. In the Kalichedu mine some of the more valuable pillars are being extracted and replaced by masonry columns. How these will stand when excavations are made at lower levels remains to be seen.

MANGANESE.

There was a substantial increase in the output of manganese, the figures being 582,636 tons, as compared with 420,184 tons in 1919. This is an increase of 38.66 per cent. The demand for manganese ore during the year was greatly improved and ocean freights were easier. Mineowners, however,

were not able to take full advantage of these favourable conditions owing to the inability of the railways to supply sufficient wagons to carry ore to ports.

The average price during the year was about 10½*d.* per unit f. o. b. Bombay or Calcutta, which represented a slight increase on the average for the preceding year.

LEAD AND SILVER.

Until the end of the year 1919 the output of lead and silver ores in British India was practically negligible. In January 1920, however, mines in the Northern Shan States, Burma, where the great Bawdwin lead-silver mine is situated, were brought under the operation of the Indian Mines Act.

The output of lead and silver ores from the Bawdwin mine in 1920 was 128,908 tons. The production of refined lead was 23,821.14 tons, and of refined silver 2,869,727 ounces. The average prices obtained were Rs. 409-9-0 per ton of refined lead and Rs. 2-14-6 per ounce of refined silver.

The Bawdwin mines* were worked by the Chinese for centuries, but finally abandoned by them about 1868. The old miners worked the mines for silver, and left behind huge dumps containing hundreds of thousands of tons of rich lead and zinc slags. In 1910 mining operations were resumed by a European Company whose efforts were rewarded by the proving of an ore body of great size and value. The ore channel runs through hilly country, and the mine is at an elevation of 3,200 feet, but a main adit (Tiger tunnel, 7,000 feet in length) connects with the 600 feet level and forms the main outlet for mineral and water. The ore in the Chinaman lode averages 31 per cent. of lead, 29 per cent. of zinc and 30 ounces of silver per ton. In places the zinc is replaced by copper. The proved ore reserves of this remarkable mine are not less than several millions of tons. The method of mining adopted is that known as the square set "rill" system, by which the excavation is temporarily supported by square sets of timber and subsequently completely filled by waste material which descends by gravity through shoots from "gloryholes" on the surface. Power for working the mine is generated at a hydro-electric station and transmitted for 50 miles to the mine at a pressure of 33,000 volts.

WOLFRAM AND TIN.

The decline in the output of wolfram was still further continued, the decrease for the year being 40.34 per cent. The figures were 1,733 tons, as compared with 2,905 tons in 1919. On the other hand there was a large increase in the output of tin ore, the figures being 1,056 tons, as compared with 701 tons in the previous year, the increase being 50.64 per cent.

Purely wolfram mines were practically unworked, and for the latter half of the year about three-fourths of the output of the Tavoy district, Lower Burma, was mixed ore, i.e., wolfram and tin. The number of mixed ore mines at work in December was thirteen. No purely wolfram mines were then being worked, and tin ore was being obtained from eleven mines.

Prices of wolfram dropped from 27*s.* per unit in January to 16*s.* per unit at the end of the year, when the ore became practically unsaleable. There are said to be large stocks of wolfram in Tavoy and Rangoon. The price of tin was at the end of the year £207 per ton.

GEMS.

The output of gems decreased by 1.56 per cent., the figures being 156,108 carats as compared with 158,577 carats in 1919. The output of rubies for 1920, if we leave out the exceptional three lakh stone found last year, was very much the same as that for 1919, but there was a great falling off in sapphires both in quantity and value. In spinels there was a great increase in quantity and a 10 per cent. decrease in value.

* *Vide* Records, Geological Survey of India, XLVIII, 3, pp. 121-178.

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The output was 44,667 cwts., as compared with 41,683 cwts. in 1919, being an increase of 7.16 per cent. The increase was in Madras and Rajputana, Bihar and Orissa showing a small decrease.

The demand for good qualities of mica was steady throughout the year and prices were good. Owing, however, to the uncertain Exchange and general financial depression the output was again restricted. During the last quarter of the year the local market was greatly depressed. Both in England and America the markets were over stocked owing to the lack of Continental buying.

In the Madras (Nellore) mica field the Kalichedu, Tellabodu and Palamani mines are conspicuous for improved methods of working. In the last-named mine systematic development is perhaps the most marked. The vein is blocked out by levels and winzes driven at regular intervals. It is noteworthy that in practically every drive payable deposits of mica have been proved, and consequently there is now a large amount of "mica in sight" which can be got at any time. It is to be remembered, however, that in these three mines the mica is distributed more or less homogeneously throughout the veins. In the Kalichedu mine some of the more valuable pillars are being extracted and replaced by masonry columns. How these will stand when excavations are made at lower levels remains to be seen.

MANGANESE.

There was a substantial increase in the output of manganese, the figures being 582,636 tons, as compared with 420,184 tons in 1919. This is an increase of 38.66 per cent. The demand for manganese ore during the year was greatly improved and ocean freights were easier. Mineowners, however,

were not able to take full advantage of these favourable conditions owing to the inability of the railways to supply sufficient wagons to carry ore to ports.

The average price during the year was about 10½*d.* per unit f. o. b. Bombay or Calcutta, which represented a slight increase on the average for the preceding year.

LEAD AND SILVER.

Until the end of the year 1919 the output of lead and silver ores in British India was practically negligible. In January 1920, however, mines in the Northern Shan States, Burma, where the great Bawdwin lead-silver mine is situated, were brought under the operation of the Indian Mines Act.

The output of lead and silver ores from the Bawdwin mine in 1920 was 128,908 tons. The production of refined lead was 23,821.14 tons, and of refined silver 2,869,727 ounces. The average prices obtained were Rs. 409-9-0 per ton of refined lead and Rs. 2-14-6 per ounce of refined silver.

The Bawdwin mines* were worked by the Chinese for centuries, but finally abandoned by them about 1868. The old miners worked the mines for silver, and left behind huge dumps containing hundreds of thousands of tons of rich lead and zinc slags. In 1910 mining operations were resumed by a European Company whose efforts were rewarded by the proving of an ore body of great size and value. The ore channel runs through hilly country, and the mine is at an elevation of 3,200 feet, but a main adit (Tiger tunnel, 7,000 feet in length) connects with the 600 feet level and forms the main outlet for mineral and water. The ore in the Chinaman lode averages 31 per cent. of lead, 29 per cent. of zinc and 30 ounces of silver per ton. In places the zinc is replaced by copper. The proved ore reserves of this remarkable mine are not less than several millions of tons. The method of mining adopted is that known as the square set "rill" system, by which the excavation is temporarily supported by square sets of timber and subsequently completely filled by waste material which descends by gravity through shoots from "gloryholes" on the surface. Power for working the mine is generated at a hydro-electric station and transmitted for 50 miles to the mine at a pressure of 33,000 volts.

WOLFRAM AND TIN.

The decline in the output of wolfram was still further continued, the decrease for the year being 40.34 per cent. The figures were 1,733 tons, as compared with 2,905 tons in 1919. On the other hand there was a large increase in the output of tin ore, the figures being 1,056 tons, as compared with 701 tons in the previous year, the increase being 50.64 per cent.

Purely wolfram mines were practically unworked, and for the latter half of the year about three-fourths of the output of the Tavoy district, Lower Burma, was mixed ore, i.e., wolfram and tin. The number of mixed ore mines at work in December was thirteen. No purely wolfram mines were then being worked, and tin ore was being obtained from eleven mines.

Prices of wolfram dropped from 27*s.* per unit in January to 16*s.* per unit at the end of the year, when the ore became practically unsaleable. There are said to be large stocks of wolfram in Tavoy and Rangoon. The price of tin was at the end of the year £207 per ton.

GEMS.

The output of gems decreased by 1.56 per cent., the figures being 156,108 carats as compared with 158,577 carats in 1919. The output of rubies for 1920, if we leave out the exceptional three lakh stone found last year, was very much the same as that for 1919, but there was a great falling off in sapphires both in quantity and value. In spinels there was a great increase in quantity and a 10 per cent. decrease in value.

* *Fide* Records, Geological Survey of India, XLVIII, 3, pp. 121-178.

The gem market on the whole was rather unsettled. In the early part of the year the high Exchange upset all dealings with London and Paris. The market was also adversely affected by the French restrictions on the import of precious stones. In the autumn the general stagnation of trade in Europe extended to dealers of precious stones in India, and there was a marked decline in purchases.

In the Burma ruby mining area the number of "native miners" who paid license fees fell from 19,843 in 1919 to 12,559 in 1920. The mines worked by these men are, however, exempted from the scope of the Indian Mines Act.

The production of gem beryl is reported for the first time.

GOLD.

The output of gold increased by 21.93 per cent. The quantity was 13,645 ounces, as compared with 11,191 ounces in 1919. The whole of the gold was obtained from a single mine in the Anantapur goldfield, Madras.

The price obtained averaged from £5-4-4½ to £5-19-2 per fine ounce. The premium on gold has been largely offset by the increased cost of production.

COPPER.

The output of copper ore was 28,167 tons, as compared with 32,756 tons in 1919, the decrease being 14 per cent. The whole of the output came from a single mine in the Singhbhum district, Bihar and Orissa. Production at this mine was seriously affected by a flood which carried away a railway bridge between the mine and the reduction works. In consequence of this the total output of refined copper from the mine was only 512.22 tons. In addition to this about 800 tons of copper were produced from matte shipped from South Africa. The industry was hampered by a shortage of coal and fluxes. During the year the price of copper steadily declined all over the world, and in India it was sold at prices lower than those quoted on the London market. The average price received was Rs. 1,072 per ton f. o. r.

IRON ORE.

The production of iron ore increased from 101,322 tons to 148,472 tons, an increase of 46.53 per cent. The bulk of this increase came from mines in the Northern Shan States, Burma, which have recently come within the scope of the Indian Mines Act. The iron ore mined in Burma is used entirely as a flux in the smelting of lead-silver ores.

It may be mentioned that the whole of the iron ore used at Messrs. Tata and Sons' iron and steel works at Jamshelpur is obtained from mines in an Indian State, and that such mines not coming within the scope of the Indian Mines Act their figures of production are not recorded here.

CHROMITE.

The output of chromite was 23,123 tons, as compared with 14,067 tons in 1919. The increase was 64.38 per cent. The production was, however, slightly less than in 1918.

OTHER MINERALS.

There were increases in limestone, salt, steatite, samarskite, graphite and ochre, and decreases in slate, barytes, magnesite, potash, clay, fuller's earth and molybdenite.

SECTION III.—Accidents.

During the year 1920 at mines regulated by the Indian Mines Act, 1901, there were 177 fatal accidents, being a decrease of 75 under the number which occurred in 1919, and a decrease of 11 as compared with the average number of the preceding five years.

These accidents involved the loss of 225 lives, which is a decrease of 87 under the number of lives lost in 1919. Of these persons 195 were males and 30 were females. In three separate accidents the number of lives lost was 11, 8 and 5, respectively. In three cases 4 lives, in three cases 3 lives and in twelve cases 2 lives were lost.

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

	No. of accidents.	Percentage of total number of accidents.
(a) Misadventure	98	55.4
(b) Fault of deceased	54	30.5
(c) Fault of fellow workmen	12	6.8
(d) Fault of subordinate officials ..	3	1.7
(e) Fault of management	10	5.6
	177	100

The proportion of the accidents due to falls of roof and sides was very much smaller than in the preceding year. There were 72 such accidents, as compared with 128 in 1919.

The number of accidents which occurred in shafts was 29, or 5 less than the number which occurred in the previous year. In one such accident 11 persons lost their lives in a falling cage. Ten of the accidents were due to miscellaneous causes, and of these four were due to persons being crushed by the descending cage whilst attempting to cross the bottom of a shaft. Pass-byes at shaft bottoms are frequently somewhat circuitous, and persons are inclined to run the risk of crossing the open shaft instead of using the pass-bye. If it can be conveniently arranged it is preferable to provide a protected road round the shaft close to the bottom of the shaft.

There was a satisfactory decrease in the number of accidents which occurred on haulage roads. The number of such accidents was 16 as compared with 40 in 1919.

There were three fatal explosions of firedamp causing five deaths. They were due to the ignition of small accumulations of firedamp in narrow galleries driven in advance of the workings of the mine and without sufficient, if any, means of conducting the air current into the ends of such galleries. The usual excuse offered in such cases is that gas had never been encountered in the workings before. The existing rules under the Indian Mines Act in regard to ventilation and safety lamps are deplorably weak. In the new draft code of revised rules they have been strengthened with a view to the avoidance of such accidents as these, which are clearly preventable.

There were nine accidents due to explosives causing the loss of 12 lives. Several of these accidents were due to the improper arrangements for the custody and handling of small quantities of gunpowder on the surface. Such matters are beyond the control of the Mines Department, but certain mine Superintendents have made rules which, if observed, would prevent such accidents. Such rules, however, have no legal force, and the attention of the Chief Inspector of Explosives has been drawn to the matter with a view to the strengthening of the rules regulating such matters under the Indian Explosives Act, if such is deemed to be advisable.

There were three accidents due to suffocation by gases, causing 8 deaths. Seven of these deaths took place in mica mines. All were due to misadventure. They would have been avoided had the victims possessed a simple knowledge of the habit of mine gases.

There was only one accident due to irruption of water, and by it eight persons lost their lives. The accident was due to an error of judgment.

The death rate per thousand persons employed was 0.96, while that of the preceding five years was 1.07. At coal mines only these figures were 0.98 and 1.18 and at mines other than coal 0.90 and 0.73. At coal mines in the United Kingdom during the ten years ending with and including 1919 the average death rate per thousand persons employed underground was 1.46, as compared with 1.74 for Indian coal mines.

The death rate per million tons raised at coal mines was 10·07, while that of the preceding five years was 10·41. At coal mines in the United Kingdom during the ten years ending with and including 1918 the death rate per million tons raised was 5·18.

The substantial decrease in the death rate from accidents is gratifying. It was probably largely due to the lessened intensity of the operation of coal mines consequent on the greatly reduced output.

Deaths occurring in each class of mines were as follows:—172 in coal mines, 17 in mica mines, 14 in silver-lead mines, 8 in wolfram mines, 5 in limestone mines, 3 in manganese mines, 2 in iron mines, 2 in tin mines, 1 in a clay mine, and 1 in a salt mine.

Five persons lost their lives by explosions of gas, 48 by falls of roof, 40 by falls of side, 44 in shafts, 8 by suffocation by gases, 12 by explosives, 8 by irruption of water, 16 by haulage, 11 by other accidents underground, and 33 on the surface.

A list of these accidents appears in Appendix II, Table I. In addition to these there were 33 other accidents causing the death of 37 persons. These also appear in Appendix II, Table I, but are listed separately, reasons being given in each case for their exclusion from the statistical table.

Each fatal accident is described briefly in Appendix II, Table I, but the following are reported at greater length.

Details of certain non-fatal accidents are also given:

EXPLOSION OF FIRE-DAMP.

The Tata Iron and Steel Company, Limited's Malhera coal mine.

No. 2.* The circumstances attending this accident are somewhat unusual. A miner carrying an open light entered a narrow main gallery in a coal seam and ignited an accumulation of gas. He sustained fatal injuries. The workings were small in extent and were ventilated by a fan, whilst the air current was conducted by brattice to within 57 feet of the face. The face of the gallery was only 210 feet from the shaft and almost immediately above a point in a lower seam where two men were burnt by an ignition of gas in 1917. The accident happened on a Monday morning after a cessation of work of some 27 hours. A sirdar deposed that he examined the gallery with a locked safety lamp some 3½ hours before the explosion took place. If he did so the inspection must have been perfunctory, as there was probably an accumulation of gas at the time. It is possible, however, although unlikely, that deceased, by cutting coal in the face, tapped a blower of gas. There was a recess or cavity, 4" long × 3½" wide × 7" deep, in the coal face about one foot from the roof. This may have been a natural cavity. It could not have been made with a pick, but might have been the result of a shot. In the face of an adjacent gallery there was a similar cavity which was undoubtedly the back of an exploded shot hole. It was concluded, therefore, that a shot had been fired, but whether it was fired that morning or during the previous shift it was difficult to say. Dynamite was used for coal getting in a lower seam, but in this seam it was only issued for roof ripping purposes, and apparently the management had no knowledge of its use for blasting in the coal.

Only six months before this accident took place two men were killed by an ignition of fire-damp in the same seam at the Company's Choitodih colliery which is adjacent.

After the accident instructions were issued that no lights other than safety lamps should be used in the workings, and that no explosive should be used other than a "permitted" explosive on the British Home Office list.

FALLS OF ROOF.

Messrs. N. M. Chowdhury and Company's Goluckdih coal mine.

No. 19.* By this accident a coal cutter engaged in cutting floor coal in a gallery, 11 feet in height, was killed by a fall of roof coal. The Inspector who

* The number refers to the number in Appendix II, Table I.

enquired into the circumstances of this fatality considered that if the roof had been properly tested by sounding its insecurity would have been detected. He found that the overman in charge was required to inspect working places occupied by no less than 85 coal cutters and 130 coal carriers, and he considered that it was impossible for the overman to make a thorough examination of so large an area of workings. The supervising staff was subsequently increased.

Mineowners and managers may be reminded that, under Section 14 of the Act, they may be called on to prove that they have done all in their power to prevent non-compliance with the rules. In the draft code of revised rules for coal mines provision has been made for the appointment of an adequate and competent supervising staff.

The Burrakur Coal Company, Limited's Loyabad coal mine.

No. 28.* In this mine the dangerous operation of extracting small pillars of coal in two seams only 3 feet apart was going on. The danger was enhanced by the fact that the pillars under extraction were situated between two old goaves. The roof overlying the seam was of a strong character and remained standing unsupported over a large area after the coal had been extracted. The effect of this large area of unsupported roof was to throw a heavy "weight" on the small pillars of coal which still awaited extraction. These pillars were severely crushed and began to show signs of collapse, and it was considered advisable to remove the rails and coal tubs from the dangerous area at once. A number of persons under two European overmen were engaged in this work when the crush became greater in severity and finally resulted in collapse. The two overmen were completely buried, but their workmen escaped except for one man who was thrown down and killed near the mine entrance by the severe air blast which resulted from the collapse.

It was considered that the deceased overmen had been over zealous in attempting to save property, and that they had relied too much on their own judgment of the time when collapse would take place. Their commendable action in being the last to retire from the danger zone should, however, not be forgotten, and it is fitting to place on record the fact that they did not shirk the danger and leave their men in the lurch.

The lesson to be learnt from this accident is that when a roof does not break within a reasonable period after the extraction of the pillars and the withdrawal of the timber, it should be regarded as an ever present danger, especially in a mine where the pillars are irregular and of small size.

The Sudamdih Coal Company, Limited's Sudamdih coal mine.

No. 32.* By this accident two persons were killed and two injured in a quarry. It appears that the dressing or reduction of pillars of coal, 18 feet square and 22 feet high, had been going on at the bottom of a quarry where the coal seam dips at a high angle and is overlain by some 30 feet of overburden, and that the only precaution taken against falls of roof was the setting of three props under the lip of the quarry. The reduction of pillars under such conditions was a highly dangerous operation and should not have been attempted without a plentiful use of timber. No prosecution was instituted in this case as it was stated by witnesses that at the time of the accident the quarry was fenced off, and that no work had been done there for three days owing to insufficiency of timber. As the work had been going on for a few days only and, as came out in the evidence, only three props were available it was a grave error of judgment to commence the work at all.

FALLS OF SIDE.

F. F. Chrestien & Company, Limited's Singho-Buria mica mine.

No. 54.* By this accident a life was lost in a foolish and reprehensible manner. The deceased was one of a gang of workers engaged in picking out mica from a dump. He had excavated a narrow pit to a considerable depth in loose debris. The sides of the pit collapsed and he was suffocated. The instruc-

* The number refers to the number in Appendix II, Table I.

tions of the mine superintendent were that no small holes were to be excavated in the dump, but that large excavations were to be made with properly sloped sides. Several such excavations, about 30 feet wide, had been made, and these were safe. The deceased, however, was permitted to work in a dangerous place and lost his life. Closer supervision would have prevented the accident.

The Bengal Coal Company, Limited's Parbelia coal mine and The Dhemo Main Collieries, Limited's Dhemo Main coal mine.

Nos. 62 & 74.* By the first of these two accidents an European overman, and by the second an Indian Assistant Manager were killed by small pieces of stone falling from the sides of deep sinking shafts. The shafts were 1,440 feet and 1,146 feet in depth, respectively.

In the first case a round of shots had been fired two days before the accident, and subsequently an examination of the sides of the shaft which occupied about nine hours had been made. Deceased was at the bottom of the shaft superintending the removal of the broken stone. He and his men were wearing light sheet iron helmets. A piece of stone fell from above, struck his helmet and knocked it off, and before he could recover and replace it upon his head another piece of stone fell and struck him on the bare head, fracturing his skull. This was the third accident of the kind which had occurred during the sinking of this shaft and a companion shaft. The sides of both shafts had given trouble ever since sinking was commenced.

Some sixteen hours prior to the accident and subsequent to the examination of the sides of the shaft a round of shots had been fired in the companion shaft. The shafts are 70 feet apart. Although a daily examination is made of each shaft such examination can only be a cursory one. A thorough examination of each shaft is made only after each round of shots has been fired. It is possible, therefore, that the detonation of the shots fired in the other shaft loosened the stone which caused the accident.

After the accident the agent decided to suspend all development until the shaft sides had been made safe by lining or otherwise.

In the second case the shaft had reached coal, and main galleries were being driven out in the coal seam. Deceased, when in the act of getting into the bucket at the bottom of the shaft, was struck on the head and killed by a piece of stone which fell from the side of the shaft. This was the second accident of the kind to occur at this mine. In neither case was it possible to trace from whence the stone fell. The sides of the shaft were exceptionally well dressed and practically all the shale beds had been secured by rings of walling, but at one point below an upper seam this precaution had not been taken.

Accidents from falls of sides in shafts appear to be increasing in proportion to the depth of the shafts, and it is reasonable to state that it is almost impossible to examine minutely shafts of large dimensions and over one thousand feet in depth. The most careful examination would occupy many hours and even then could not be described as thorough. Shafts of this depth should be lined from top to bottom when the strata passed through is at all doubtful.

In the code of rules for coal mines it is laid down that "where the natural strata are not safe, every working or pumping shaft shall be securely cased, lined or otherwise made secure." In the new draft code of revised rules this rule has been considerably strengthened with a view to avoidance of accidents such as those described above.

IN SHAFTS (ASCENDING AND DESCENDING BY MACHINERY).

The New Beerbhun Coal Company, Limited's Chinchuria coal mine.

No. 80.* In this case a workman was being lowered in a shaft 400 feet in depth. The cage in which he was descending collided with the ascending cage.

* The number refers to the number in Appendix II, Table I.

He was thrown out and fell to the bottom, being killed instantly. From the fact that there is a clearance of twelve inches at the point where the cages pass in the shaft it was assumed that (1) either the guide ropes were exceptionally slack or (2) that the engineman lowered the cage too suddenly and caused it to swing in the shaft. There were only three guides on each cage, and any undue slackness in the guides or oscillation of the cages would cause the cages to touch. It is probable that the collision would not have occurred if each cage had been fitted with four guides. The loss of life would probably have been avoided if the cages had been fitted with gates.

Many fatalities have occurred in Indian mines by persons falling from cages. In the new draft code of revised rules for coal mines a provision has been included making gates on cages compulsory.

The Burma Corporation, Limited's Bawdwin lead-silver mine.

No. 81.* This accident caused the largest loss of life by any single accident in an Indian mine during the year. It is illustrated by plan A and plate I.

Ten persons were being lowered in a cage in a vertical shaft, 543 feet deep, when the cage jammed in the wooden guides. The engineman continued to lower the rope, and loose coils of it were paid out on to the top of the cage and projected into the adjacent compartment of the shaft, where they were caught by the ascending cage. The contact was sufficient to release the jammed cage, and it fell to the limit of the slack rope. The resulting jerk broke the clamps of the thimble capping by which the rope was attached to the cage. The cage fell to the shaft bottom, killing all its occupants and another man who happened to be looking up the shaft from an intermediate level. Safety catches were attached to the cage, but they failed to come into action.

In connection with this accident the following points are of importance:—

(1) After the accident a fibre rope, used for slinging timber, was found wrapped round the levers of the safety appliance. It is possible that this rope caused the initial jamming of the cage or prevented the safety appliance from coming into action. Had a proper examination of the cage been made before winding commenced, the presence of the rope would have been detected, and presumably it would have been removed.

(2) The shaft is a blind one and it is sunk from a point in the workings about 100 feet below the natural surface of the ground. The hoist drivers, from their position on the driving platform, could not see the shaft brace. Had they been able to do so they would probably have noticed the slack rope and ceased lowering the cage, thus avoiding the accident.

(3) Only two of the four cagemen were on duty, and they had worked as cagemen for only one month and five days, respectively. The cageman on duty actually noticed the slack rope in the shaft. He failed to realize its significance and did not signal "stop" to the hoistman. He was evidently incompetent to perform his duties.

The cause of the accident is somewhat obscure, but it appears to have been due to a combination of defects any one of which might have caused the accident.

The mine is situated in the Northern Shan States, Burma, where mines have only recently been brought under the Indian Mines Act. A code of rules for such mines has since been drafted and is at present under consideration.

IN SHAFTS (FALLING INTO THE SHAFT FROM THE SURFACE).

Villiers Limited's Pandaveswar coal mine.

No. 84.* By this accident a hookman at the top of a sinking shaft lost his life. It was the first time that he had acted in the capacity of hookman. At the

* The number refers to the number in Appendix II, Table I.

time of the accident the sinking trolley had been pushed over the shaft, and deceased was standing on it and engaged in landing a bucket which had been raised from the shaft. He was unskilful in performing this work, and the bucket struck the back of the trolley and pushed it forward, leaving an opening between it and the side of the shaft. Deceased, in attempting to recover his balance, stepped backwards and fell down the shaft. After the accident stops were fitted on the rails to prevent the trolley from being pushed forward so as to uncover the shaft.

The over-elaboration of codes of rules is to be deprecated, but it is a matter for consideration whether a rule for the prevention of accidents of this kind should not be included in the revised code of rules which has been drafted.

IN SHAFTS (FALLING FROM PART OF THE WAY DOWN).

The Burma Corporation, Limited's Bawdwin lead-silver mine.

No. 87.* In this case a miner, carrying a shovel in one hand and a candle lantern in the other, was climbing a ladderway underground. He fell from an upper ladder through an opening in an intermediate platform to the foot of a lower ladder, and was killed.

Carrying tools on ladders is permitted at the mines. It is dangerous both to the climber, who requires the use of his hands, and to those who may be climbing a lower ladder, and on whom a dropped tool may fall.

Openings in platforms should be behind the upper ladder and not to one side, as in this case.

These defects have been dealt with in the draft code of rules for mines in the Northern Shan States.

IN SHAFTS (THINGS FALLING FROM THE SURFACE).

The Tata Iron and Steel Company, Limited's Purusathampur coal mine.

No. 89.* At the time when this accident occurred eighteen persons were at work at the bottom of a sinking shaft, 270 feet in depth. A bucket of debris had been raised from the shaft, and by means of a short chain it was swung out towards the tipping shoot. The catches were opened for the bucket to be emptied. Before it was emptied, however, the winding engineman raised the bucket, and, as the catches were open, the contents of the bucket were tipped into the shaft. It is somewhat remarkable that of the eighteen men at work at the bottom of the shaft all except one, who was killed, escaped injury.

The engineman deposed that he received a signal to raise the bucket. The banksman on the other hand denied that he gave any such signal. The fact of the debris falling into the shaft, however, proves that the trolley had not been pushed completely over the shaft. Proceedings were instituted against the banksman for violation of Special Rules 3 and 5, and he was convicted and punished as detailed on page 18 under "Prosecutions."

The arrangement for handling debris at the top of this shaft, although a fairly common one in the coalfields, leaves much to be desired. The bucket on arrival at the surface should either be lowered on to a subsidiary trolley, which can then be pushed clear of and well away from the shaft before it is emptied, or otherwise sloping sinking doors should be provided.

The Burrakur Coal Company, Limited's North Mudidih coal mine.

No. 90.* An over-wind took place at a sinking shaft. The impact of the bucket dislodged a steel girder which was insufficiently secured in the headgear. The girder fell and killed one of seven men at the bottom of the shaft.

Investigation of this accident disclosed great laxity in the arrangements for the appointment of winding enginemen. It was the first shift that the wind-

* The number refers to the number in Appendix II, Table I.

ing engineman concerned had worked the engine. He was grossly incompetent and should not have been permitted to handle the engine.

The manager, being fully acquainted, both by personal inspection and by reports from the engineer and fitter, with the unskilful manner in which the girders were secured, should not have permitted persons to work or to be lowered and raised in the shaft. The facts were explained to the District Magistrate, but he did not consider that the defects referred to above involved any clear breach of the law. Proceedings were, however, instituted against the manager for failure to fence the top of the shaft properly, and to appoint a winding engineman, and he was convicted as detailed on page 16.

IN SHAFTS (MISCELLANEOUS).

The Gopalichuck Coal Company, Limited's Gopalichuck West coal mine.

No. 103.* A pump minder was lowered down a shaft, 365 feet deep, in a bucket to adjust a pump slung in the shaft. The shaft was unventilated, hot and steamy. He was overcome by the heat, dropped into the water, and was drowned. Shortly after the accident a temperature of 110° F. was registered in the shaft. Such a temperature in a saturated atmosphere is beyond endurance, and no man should have been required to work under such conditions. After the accident the steam pump was replaced by an electric pump.

It would be possible to introduce rules limiting the temperature allowable in working places, but emergencies arise in mining and it has not been thought advisable in other countries to regulate this matter by rule.

SUFFOCATION BY GASES.

Mr. C. J. Smith's Bagdiggi coal mine.

No. 107.* By this accident an earth cutter was asphyxiated at the bottom of an old shaft which was being cleaned out. Mention may be made of the heroic effort made by a sirdar, named Amoo Mia, to save the life of the deceased. He descended four times into the foul atmosphere and eventually brought deceased to the surface, but unfortunately too late to save his life. For this gallant action he has been recommended for an award of the Edward medal, second class.

BY EXPLOSIVES.

The Ranegunge Coal Association, Limited's Alkusa South coal mine and The Tata Iron and Steel Company, Limited's Jamadoba (No. 1 Division) coal mine.

Nos. 114* and 120.† Both these accidents were caused by inadvertent explosions of country gunpowder which had been spread out to dry. In the first case three persons were killed and three injured, and in the second a small child lost his life.

In former Annual Reports attention has been drawn to the haphazard manner in which country gunpowder is manufactured and stored on the surface. The regulation of such matters comes under the Indian Explosives Act, as rules for the use of explosives in mines take effect only after the explosive has actually been taken inside a mine. As no action has been taken under the Explosives Act in these and other similar cases, it appears that no contravention of the Indian Explosives Act is involved. The Agent of the two collieries referred to above, however, is fully alive to the danger and he proposed to introduce improvements as follows:—

- (1) to arrange for the manufacture of all loose gunpowder into cartridges before issue.

* The number refers to the number in Appendix II, Table I.

† See page 69.

- (2) to build a sub-magazine at each mine, and to place a responsible man in charge of it.
- (3) to require all gunpowder after issue to be stored in the sub-magazine until such time as it is taken underground.
- (4) to require all unused gunpowder to be returned to the sub-magazine as soon as it is brought out of the mine.

The enforcement of these rules would prevent accidents of this kind, and it is to be hoped that they or similar rules will be adopted at other mines where country gunpowder is used.

The New Beerbhum Coal Company, Limited's Victoria coal mine.

(Non-fatal accident.)

In this case a stone cutter was drilling a shot hole at the bottom of a sinking shaft. His drill came into contact with the unexploded charge of a mis-fired shot. The charge exploded and he was seriously injured. The explosive used was gelignite fired electrically, and the shots were fired in series. Low tension detonators were being used. These are never satisfactory for exploding charges connected in series and fired simultaneously, as if any one fuse is more sensitive than the others it will explode first, break the circuit and leave the other charge or charges unexploded. As it was considered that this was the cause of the misfire in this instance, the use of low tension detonators was discontinued and orders given for high tension detonators only to be used in future.

IRRUPTION OF WATER.

The Burma Corporation, Limited's Namma Coal Mine.

*No. 117.** This accident took place in a steeply inclined shaft situated in a ravine in hilly ground. During heavy rain an irruption of water took place *via* an abandoned tunnel which connected with the shaft near the surface. Eight persons who were in the shaft at the time were drowned. The circumstances of this accident are illustrated by plan B.

The danger of an irruption of water was foreseen, and a dam had been built in the tunnel. This dam was 6 feet high and 8 feet wide, and constructed of some seven or eight round timbers, 8" diameter and 6" apart, set vertically in grooves, 12" deep, in the coal roof and floor of the tunnel. These were backed by flush jointed planks, 8" wide and 2" thick, also set in grooves, 12" deep, in the coal sides of the tunnel. Behind this timber frame the tunnel was filled with rammed clay to a distance of 10 feet, and between this and the entrance, a distance of 40 feet, the tunnel was filled with clay.

During a rain storm of unusual severity the surface drains became choked by the slipping of the hill sides, and the ground above the mouth of the tunnel became inundated. The timber dam and filling were carried away, and the shaft was filled with water (500,000 gallons) to the surface within 15 minutes.

The manager had relied on the clay filling keeping back the water, and did not anticipate that the full hydrostatic head would take effect. He did not look upon the timber frame as a dam, but merely as a retaining medium for the filling. In the event, however, the filling probably became so completely saturated as to communicate the full hydrostatic head to the timber dam. The vertical height of water was ordinarily 35 feet, and probably it was no less than 40 feet at the time of the accident. The pressure on the dam would, therefore, be 16 lbs. per square inch, or a total pressure of 50 tons. Owing to the greater specific gravity of the mixture of clay and water, the pressure on the dam was probably much greater, perhaps 80 or 100 tons. Such a pressure it was not intended to stand and would be unable to bear. It, therefore, collapsed.

* The number refers to the number in Appendix II, Table I.

Although this accident must be classed as due to "fault of management", it does not appear that the manager can be blamed for more than an error of judgment.

Since the accident two substantial dams, 5 feet thick, have been built in the tunnel. These are recessed 4 feet into the roof and floor, and 6 to 8 feet into the sides. They are constructed of concrete reinforced by steel rails. The space above the dams has been filled into the surface. No further danger of inundation *via* this tunnel need be feared. Work in the shaft has been suspended, and before it is resumed the collar of the shaft will be protected by a reinforced concrete wall.

SURFACE BOILERS OR PIPES BURSTING.

The Samla-Kendra Collieries, Limited's Kendra coal mine.

No. 146.* In this case a blacksmith, who was assisting to caulk a joint in a range of pipes containing steam under pressure, was killed by the blowing out of a bend pipe. The steam pressure was 100 lbs. per square inch. The assistant-fitter, who was responsible for the failure to shut off the pressure, was fined one month's salary.

The steam range was six inches in diameter, and the bend pipe which blew out had screwed joints. It is preferable where large pipes are subjected to a high steam pressure to connect them by suitable flanged joints. Screwed joints corrode and are always a source of danger. After the accident flanged joints were fitted to the steam range.

MISCELLANEOUS ON SURFACE.

Messrs. D. N. Ghosh and Brothers' Dharmaband coal mine.

No. 3 on page 68. By this accident a child, whilst at play, fell into an unfenced boiler feed tank, 4 feet deep, and was drowned. In previous Annual Reports attention has frequently been drawn to this class of accident, which is clearly avoidable. In June 1918 the attention of the Agent of this mine was drawn to the danger of insufficiently fenced boiler tanks at a neighbouring colliery under his control. Three months later he was again reminded of the danger. The occurrence of this accident proves that he had not realized the importance of the matter. Subsequent to this accident, all boiler feed tanks at mines under his control were fenced, and unused tanks were filled up. Provision for the fencing of such tanks has been included in the draft codes of revised rules.

The Great Indian Peninsular Railway Company's Kargali coal mine.

No. 158.* A coal cutter was getting coal with a hammer and wedge in a quarry. A small piece of the top of the wedge flew off and struck him on the leg, severing the femoral artery. He died from loss of blood within half an hour. A large number of persons were at work in the quarry, but no one knew how to stop the bleeding. Prompt aid would have saved this life.

Some years ago, under the auspices of the St. John Ambulance Association, classes in "First Aid" were held in the coalfields, and a large number of persons became qualified to render first aid to the injured. Owing to preoccupation caused by the war, the movement languished, and nothing has been done for several years. Funds are, however, still in hand and, now that the Honorary Secretary and Treasurer (Mr. G. C. Leach) has returned from England, it is hoped that the beneficent activities of the Association will be resumed.

* The number refers to the number in Appendix II, Table I.

The New Kessururah Coal Company, Limited's New Kessururah coal mine.

No. 18 on page 69. In this case a child went to a well and, whilst drawing water therefrom, overbalanced, fell in and was drowned. The well is only 10 feet deep. It is brick lined, and the walling is carried up to a height of two feet above the ground level. There was no appliance for raising the bucket, and persons were accustomed to stand on the walling whilst drawing water.

Fatalities of this class are only too common in the coalfields. They could be avoided if the tops of wells were properly protected and appliances for raising water provided. In plan C drawings of such an arrangement are given. The well curb illustrated is designed in accordance with sanitary principles. No waste or contaminated water can flow directly back into the well. A cemented drain leads such water to a distance of at least 25 feet from the well. The illustration is an approved type plan which was issued by the Jharia Mines Board of Health some time ago. Had the well in this case been provided with such a curb it would have been impossible for anyone to fall into the water. After the accident a curb of approved type was provided at this well.

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. 864-6:—20, dated the 10th March 1904, being rules for the working of coal mines.

The agent and manager of the East Bagdiggi Colliery Company's East Bagdiggi coal mine were prosecuted under Rule 3 for not keeping the sides of working places secure. The agent was fined Rs. 200, in default one month's simple imprisonment. The manager was acquitted.

The manager, under-manager and sirdar of Babu J. B. Agarwalla's Sudreadih coal mine were prosecuted as follows :—

The manager, under Rule 3, for not keeping the sides of the working places secure. He was fined Rs. 10, in default one day's simple imprisonment. The manager was further convicted for a breach of Special Rule 27 for failing to have had working places inspected by properly appointed subordinates. He was fined Re. 1, in default one day's simple imprisonment.

The under-manager was fined Rs. 5 or in default one day's simple imprisonment for a breach of Rule 3, and the sirdar was fined Re. 1 in default one day's simple imprisonment for a breach of special Rule 4.

The agent, manager and surveyor of Babu B. B. Trigunait's Khas Angarpathra colliery were prosecuted for not having maintained accurate plans of the underground workings of the colliery. A subsidence which seriously endangered the stability of the District Board road took place. The subsidence was due to the excessive robbing of pillars in the mine. Enquiry showed that the plans of the workings did not show the extent to which the pillars had been robbed. The case against the Agent was not pressed and he was acquitted. The manager and the surveyor were convicted and sentenced to pay fines of Rs. 60 and Rs. 25, respectively, in default one week's simple imprisonment. In delivering judgment the Magistrate said :—

"Clearly if a manager orders a surveyor to make a survey, and the survey subsequently proves inaccurate in detail which the manager cannot be expected to notice, the fault is the surveyor's. Conversely the manager might be solely responsible if he failed or refused to give the surveyor any facilities for survey. In this case the plan is so plainly inaccurate that any care or consideration on the part of either the manager or surveyor might have made them realize its inaccuracy. * * * * *"

"I would further remark that any inaccuracy may be a mere inaccuracy or it may have serious consequence. Remedial measures have had to be ordered to save the District Board road, and it might apparently have collapsed. Had an accurate survey been made the necessity for such measures would have been foreseen instead of being left till now."

The manager of the Burrakur Coal Company, Limited's North Mudidih coal mine was prosecuted under Rule 19 read with Special Rule 22 for not properly fencing the top of a shaft, and for permitting an engine man to be in charge of a winding engine who had not been appointed by him in writing. He was fined Rs. 25 and Rs. 50, respectively, on each count, in default one day's simple imprisonment.

The late owners of Messrs. Tejpal Bose and Company's Khas Tundu coal mine were prosecuted under Rule 12 for failure to submit a plan of the abandoned workings of the mine in due time. They were fined Rs. 10.

The owner and manager of the Angarpatra Coal Syndicate's Kesalpur coal mine were prosecuted under Rule 47 of Notification No. 2968-82, dated the 21st April 1906, the former for not appointing a duly qualified manager, and the latter for acting as manager of the mine without a 'permit.' They were fined Rs. 15 each, in default one day's simple imprisonment.

The owner of Adam Jusab's Kapasara coal mine was prosecuted under Rules 1 and 3 for permitting persons to work in a mine in which there was no second outlet, and for not keeping working places secure. He was fined Rs. 25.

The owner of Adam Jusab's Kapasara coal mine was prosecuted under Rules 3 and 19 for employing women in the mine in disobedience of an order issued to him under Section 15(2) of the Act. He was fined Rs. 25.

The owners (three) and manager of W. O. Bhattacharji and Company's Egaroor coal mine were prosecuted under Rule 19 for not securely fencing the quarry and incline of the mine. The owners were fined Rs. 50 each and the manager Rs. 25, in default two weeks' simple imprisonment.

The owners (two) of Messrs. Sashi Bhusan Haldar and Rakhal Das Chatterji's Pathlia mica mine were prosecuted for not submitting a notice of discontinuance of the mine. They were fined Rs. 5 each.

The owner and agent of Messrs. Gopi Chand Seth and Deoki Nandan Seth's Meru mica mine were prosecuted, under Rule 4 of Notification No. 11793-103, dated the 30th December 1908, and Rules 3 and 19 of Notification No. 6436-152, dated the 2nd September 1911, for failure to report the change in the name of the owner and manager of the mine, for not recording reports of the daily inspections of the mine, and for not keeping the sides of the quarry secure. They were fined Rs. 25 each, in default one week's rigorous imprisonment. They had already paid Rs. 200 as compensation to relatives of persons killed by a fall of ground.

The manager of Babu B. N. Sanyal's Bharatchack coal mine was prosecuted, under Rule 7, for not fencing entrances to discontinued galleries in the mine. He was fined Rs. 50.

The owner of the Jalota Lachipur Coal Company's Lachipur coal mine was prosecuted under Rules 3, 7 and 19, for not keeping working places in the mine secure, not fencing entrances to the mine, and disregarding an order issued to him under Section 15(2) of the Act. He was fined Rs. 25.

The owner of Babu S. C. Mitra's North Muslia coal mine was prosecuted under Rule 7, for not fencing inclines and shafts at the mine. As the mine was under attachment pending decision of possession it was not possible to fix responsibility on any one. The accused was accordingly acquitted.

Twenty-six prosecutions were instituted for non-submission of Annual Returns for the year 1919 on the prescribed date. Six cases were subsequently withdrawn and in three cases the accused were acquitted. In the other seventeen cases fines, aggregating Rs. 941, were imposed.

Babu Dharendra Nath Roy and Mr. J. V. Maughan, late owners of Ramkanali colliery, were prosecuted for failure to submit an Annual Return for the period during which they worked the colliery, i.e., from January 1st to August 27th, 1919, when they transferred the colliery to a new owner. They were acquitted as it was held that the Annual Return should be submitted by the person who is the owner of the mine at the time when the Annual Return falls due, i.e., at the end of the year, and not by a person who was owner at

some past date during the year. In the course of his judgment the Magistrate said :—

“It is not ordinarily the duty of a Court to say what rules should be, but, as this is a test case, I will briefly indicate my views. If any value attaches to these returns it is clearly desirable that the Department of Mines should be able to obtain the complete statistics for the year. As pointed out above when a mine is transferred in the middle of the year there is no rule to compel him (an owner) to submit a return then. I have held that he cannot be made to put in an Annual Return when he has ceased to be an owner. From the strictly legal point of view I believe that the present owner could be held responsible for putting in a complete and accurate return for the whole year, but it would clearly be unfair to require him to put in a return for the period prior to the date on which he took over the mine when he might not be in possession of the necessary books and registers to compile such a return. There is thus a real danger that a complete return will not be submitted. In my opinion what is plainly required is a rule making it imperative that an owner who transfers his property should, at the time of transfer, put in a return on the lines of the Annual Return giving the figures for that period of the year during which he was the owner, and a proviso in the present rule to the effect that when an owner has come into possession of a mine during the year for which the Annual Return is due, he shall be held responsible for putting in the return only for the period subsequent to transfer.”

In the draft codes of revised rules for coal mines and for mines other than coal mines rules have been inserted on the lines suggested by the Magistrate in this case.

Information was received of the following prosecutions instituted by colliery managers against their subordinates under the Special Rules made under Section 21 of the Act :—

The manager of the Damaghuria Coal Company, Limited's, Damaghuria coal mine prosecuted a pointsman, under Rule 95, for not giving the necessary warning while shunting operations were in progress. The case was filed as accused was not traceable.

The manager of the Sibpur Coal Company, Limited's Pretoria coal mine prosecuted a fitter, under Rule 4, for absenting himself from duty without permission. He was fined Rs. 3, in default 3 days' simple imprisonment.

The manager of the Sibpur Coal Company, Limited's Pretoria coal mine prosecuted a mistri, under Rule 4, for absenting himself from duty without permission. He was fined Rs. 3, in default 3 days' simple imprisonment.

The manager of the Upper Pench Coal Company Limited's Jatachapa coal mine prosecuted a sirdar, under Rules 3 and 5, for failure to comply with orders issued by him in respect of precautions to be taken when persons are ascending or descending the shaft. He was fined Rs. 12, in default one month's rigorous imprisonment.

The manager of the Bengal Coal Company, Limited's Parbelia coal mine prosecuted a winding engineman, under Rule 62, for leaving the handles of the brake while the engine was in motion and while persons were suspended in a bucket by the rope attached to the engine. Accused was convicted, under Section 304-A, Indian Penal Code, and sentenced to four months' rigorous imprisonment.

The manager of the Burrakur Coal Company, Limited's Latchipur coal mine prosecuted an engineman, under Rule 60, for permitting an unauthorised person to interfere with the engine of which he was in charge. He was fined Re. 1, in default one day's simple imprisonment.

The manager of the Tata Iron and Steel Company, Limited's, Purshotampur coal mine prosecuted a hookman under Rules 3 and 5, for not complying with an order of the manager to keep the

mouth of the shaft closed. He was fined Rs. 50, in default two weeks' simple imprisonment.

The manager of the Central Kurkend Coal Company, Limited's Central Kurkend coal mine prosecuted an onsetter, under Rule 78, for failure to see that the tubs about to descend the mine were properly coupled. He was fined Rs. 25, in default two weeks' rigorous imprisonment.

ADDITIONS TO THE ACT.

The Government of India cancelled General Rules 38, 39 and 40, and amended Rule 29 relating to the grant of certificates of service to managers of coal mines, and extended to all mines the application of the rule which requires that a copy of the rules made under Section 20 of the Act shall be kept at every mine.

Rules 45, 43 and 47 of the rules applying to coal mines were amended so as to permit a manager holding a second class certificate to manage a mine the average output of which does not exceed 2,500 tons per month. The Government Notifications under reference are reproduced in Appendix IV, Statement Nos. 7 and 8.

During the year Special Rules, under Section 21 of the Act, were established at 22 coal mines. Special Rules have now been established at 561 coal mines and 39 manganese mines.

Section V.—General Remarks.

HEALTH AND SANITATION.

The Asansol Mines Board of Health held nine ordinary meetings and five special meetings during the year.

Dr. J. W. Tomb was Chief Sanitary Officer throughout the whole period.

There were 368 cases of cholera with 170 deaths, and 795 cases of small-pox with 65 deaths, as compared with 3,511 cases of cholera with 1,863 deaths, and 200 cases of small-pox with 14 deaths in 1919. The number of deaths from influenza was 748, as against 2,024 during the previous year.

The investigation into the existence of hook-worm disease was discontinued by the Board early in February 1920, and the work taken up by Government under the supervision of the Chief Sanitary Officer. The percentage of infection amongst mining labour was found to be 69.90. The underground water of 79 pits and inclines in 29 collieries was examined for living larvae, and of these pits 75 were found to be infective. With a view to the prevention of hook-worm infection the Chief Sanitary Officer intends to submit to the Board proposals for the provision of underground latrines in coal mines.

Anti-malarial investigations were systematically conducted throughout the the year, and in the case of collections of water within a radius of a quarter of a mile of each village or colliery found to be infested with malaria bearing mosquitoes, representations were made to the owners with a view to such collection being drained or cleansed of weeds. The response was not satisfactory. The public has not yet begun to appreciate the value of anti-malarial works, and at present there is no legislation to enable the Board to do such work itself or compel owners to do it.

Lectures on sanitation and hygiene in the village schools of the Settlement were continued, and the Board's newly issued primer on "Elementary Hygiene" was distributed to the scholars, free of charge.

The Jharia Mines Board of Health held sixteen ordinary meetings and six special meetings.

Dr. G. W. Thompson was Medical Officer of Health during the whole period.

The Epidemic Diseases Act remained in force throughout the year, and the Medical Officer of Health continued to be the authority appointed under the Act.

The new Bihar and Orissa Mining Settlements Act became law in August, but up to the end of the year the Local Government had not prescribed the rules or approved the bye-laws under the Act.

There were 191 cases of cholera with 58 deaths and 1,363 cases of small-pox with 75 deaths, as compared with 4,006 cases of cholera with 2,124 deaths and 911 cases of small-pox with 47 deaths in the previous year. The general health of the mining community was good.

The rainfall in the Jharia coalfield was 44.91 inches, in the Giridih coalfield 49.13 inches, in the Raniganj coalfield 44.55 inches, and at the New Jharia Water Works near Topchanchi it was 61.32 inches, the figures for the previous year being 47.85, 68.49, 47.90 and 72.50 inches, respectively.

MINING EDUCATION.

The Principal of the Bengal Engineering College has reported that in the examination for the Diploma in the principles of mining held in March, of the fourteen students who entered the senior course ten were granted Diplomas; in the junior course twenty-seven were enrolled at the beginning of the session, twenty-one sat for examination, and fourteen qualified for promotion to the senior course. There was one special student. Twenty-six students entered the preliminary or preparatory class on the mining side, of whom sixteen were promoted.

The annual mining camp was pitched at Dishergarh on a site near the Equitable Coal Company's office. 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 39, of whom 8 were special survey students.

The Mining Education Advisory Board held two meetings during the year. As a result of the sessional examination of the students of the Evening Mining classes in the coalfields, special mining scholarships, tenable at the Bengal Engineering College, were awarded to Babus Indo Bhusan Bhattacharjee and Dinanath Das, who joined in April 1920. The vacancy in the post of whole time Mining Instructor led to the creation of four temporary appointments. Mr. James McArthur was appointed as mining lecturer in Bihar and Orissa, and in Bengal three lecturers were appointed at different centres, i.e., Mr. James Wilson at Dishergarh, Mr. David Jones at Raniganj, and Mr. P. W. Woodhead at Jamuria.

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 168 candidates who qualified to sit for examination, 63 candidates presented themselves for examination and 34 were successful.

Babus Rash Behari Mondal and Bhupendra Kumar Bose were appointed as mining lecturers in Bengali and Hindi, respectively, and delivered the usual courses of lectures in the Raniganj and Jharia coalfields.

In extension of a scheme, initiated by the late Sir William Allen Ironside on behalf of Messrs. Bird & Company, for training European and Anglo-Indian boys in mechanical engineering and in the manufacture of refractories at Kumardhubi in the Raniganj coalfield, a hostel to accommodate sixteen apprentices to be trained in mining engineering was opened by the firm at Sijua in the Jharia coalfield in March 1920. The apprenticeship covers a period of five years during which the boys are given a thorough practical and theoretical training in all branches of coal mining engineering. Candidates for apprenticeship must have passed an examination equivalent to the Sixth Standard or Junior Cambridge Local, and must have an elementary knowledge of mathematics, drawing, physics and chemistry. They must not be less than 17 or more than 19 years of age. No premium is required, and

pocket money is given on a scale rising to Rs. 100 per month in the fifth year. Apprentices who have done well will be encouraged to prosecute their studies in England at the Firm's expense.

BOARD OF EXAMINERS FOR COAL MINE MANAGERS' CERTIFICATES.

The following changes occurred in the personnel of the Board:—Mr. R. R. Simpson, officiated as President from the 1st May 1920, the date on which Mr. G. F. Adams proceeded on furlough out of India. Mr. G. C. Leach resigned on the 14th May 1920. He was succeeded by Mr. J. B. Wardlaw.

Six meetings were held during the year.

Thirty-one first class and one second class certificates of competency were granted in lieu of English certificates, and three first class and three second class certificates of service were granted during the year.

At the examinations for colliery managers' certificates of competency held at Dhanbad on the 16th, 17th, 18th and 23rd, 24th and 25th February 1920, sixty-three candidates sat for first class and one hundred and forty-seven for second class certificates. Certificates of competency were granted to seven first class and twenty-three second class candidates.

The examiners for the first class examination were Messrs. J. B. Wardlaw, J. Mackie and R. R. Simpson, Inspector of Mines in India, No. 1 Circle (official Examiner and Secretary), and for the second class examination Messrs. L. A. Jacobs, R. Heron and H. Lancaster, Inspector of Mines in India, No. 2 Circle (official Examiner and Secretary).

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

The Bengal Mining Board held no meetings during the year. The questions of the cancellation of Rules 38, 39 and 40 and the amendment of Rule 29 of the General Rules for coal mines, an addition to the rules applicable to all mines in British India, additions and amendments to rules under the Indian Explosives Act, proposals for the limitation of the hours of mine workers, and amendments of the rules framed under the Bengal Mining Settlements Act were considered by circulation to members of the Board.

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

The Bihar and Orissa Mining Board held no meetings during the year. The question of amendments of the rules issued under the Mining Settlements Act was considered by circulation to members of the Board.

The non-official members were Messrs. R. G. M. Bathgate and J. Mackie.

The Central Provinces Mining Board held no meetings during the year. The non-official members 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 302. In addition to the annual meeting, three ordinary meetings were held at which papers were read and discussed. A visit was paid to a coal mine, and there was a geological field excursion. Two parts of the Transactions were published. The geological map of the Jharia coalfield, which is the outcome of the work of the Jharia Map Committee, was published. The map is complete in eight sheets on a scale of 4" to the mile. The price is Rs. 36 per set or Rs. 6 per single sheet.

The Subsidence Committee continued its observations during the year.

The Government prize for the best paper contributed during the year was divided equally between Messrs. E. H. Robertson and H. M. Tarlton for their papers entitled "Proposed method of working a highly inclined thick seam of coal" and "Hydraulic packing in thick coal seams," respectively. To these two authors the Institute's gold and silver medals were awarded. The bronze

medal was awarded to Mr. R. R. Simpson for his paper entitled "Accidents in Indian mines, and mining legislation."

THE ASSOCIATION OF COLLIERY MANAGERS IN INDIA.

The membership of the Association increased from 200 to 222. During the year the Council was engaged with questions relating to affiliation with the National Association of Colliery Managers in Great Britain, regulation of grog shops, receivers of stolen property, certificates of mining sirdars and surveyors, second class certificates of competency, unrest in the coalfields, the Bengal Mining Settlements Act, the Auxiliary Force, and other matters.

LAND ACQUISITION (MINES) ACT, 1886.

The number of original cases disposed of altogether at the end of 1920 stood at 412, thirty-one of which were cases disposed of during the year.

OFFICIAL DUTIES, 1920.

Mr. G. F. Adams, C.B.E., was Chief Inspector of Mines. From 1st May he took combined leave for 18 months, *i.e.*, privilege leave for 5 months and 27 days and the remaining period on furlough.

Mr. R. R. Simpson was Inspector of Mines, No. 1 Circle, from 1st January to 30th April. He took over charge of the office of the Chief Inspector of Mines from 1st May and officiated as Chief Inspector up to the end of the year.

Mr. H. Lancaster was Inspector of Mines, No. 2 Circle. In addition he had charge of No. 1 Circle from 1st to 14th May.

Mr. F. L. G. Simpson was a temporary Inspector of Mines throughout the year. He held charge of No. 1 Circle from 14th May until 31st December. He was granted privilege leave for one month from the 15th April to 14th May.

Mr. J. H. Lang was a Junior Inspector of Mines throughout the year.

Messrs. J. G. Harding and W. H. Goldsworthy were appointed Junior Inspectors of Mines on 28th January and 4th April, respectively.

I have the honour to be,

Sir,

Your most obedient Servant,

R. R. SIMPSON,

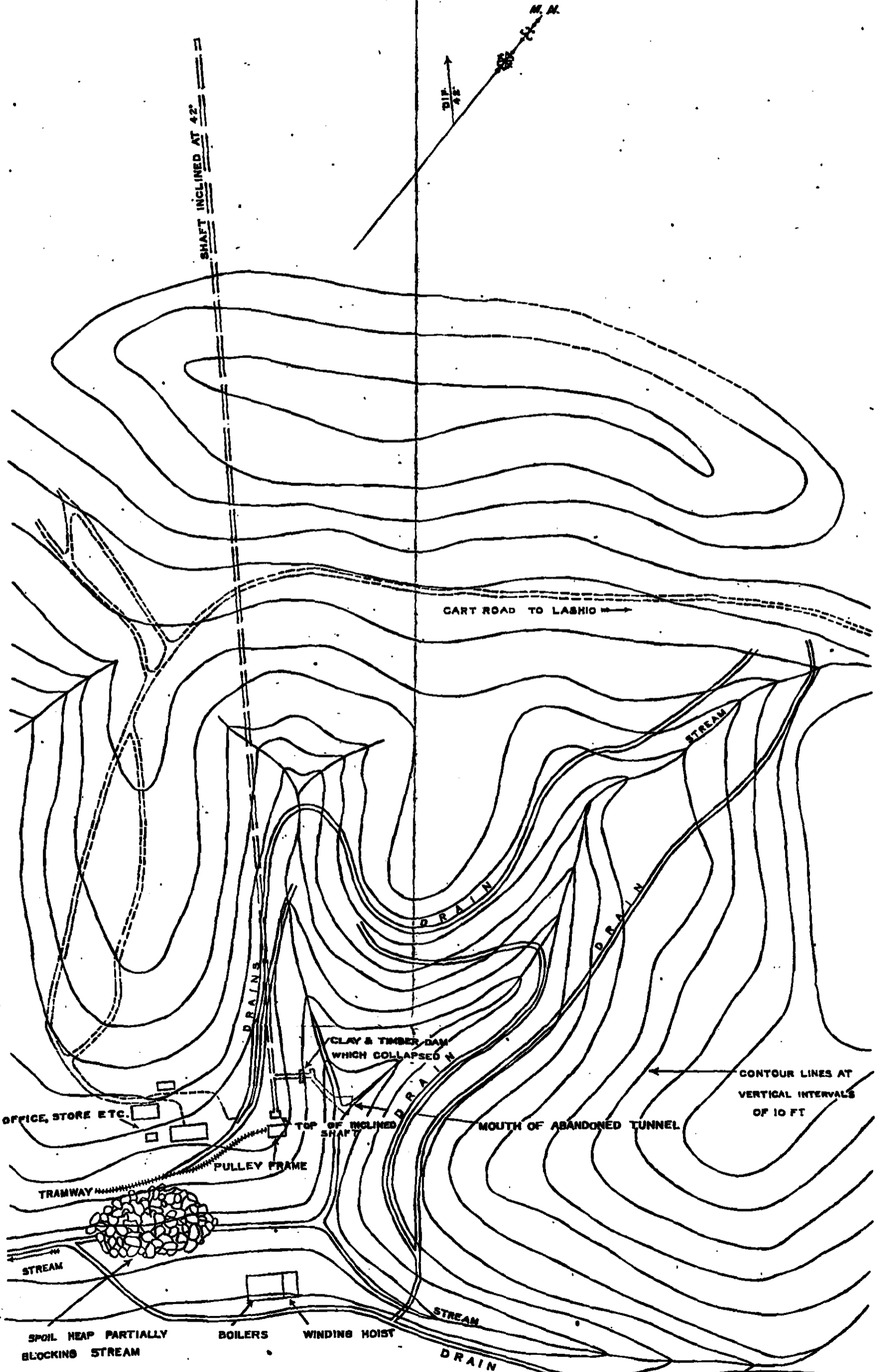
Chief Inspector of Mines in India.

PLAN ILLUSTRATING REPORT ON FATAL ACCIDENT BY IRRUPTION OF WATER

AT

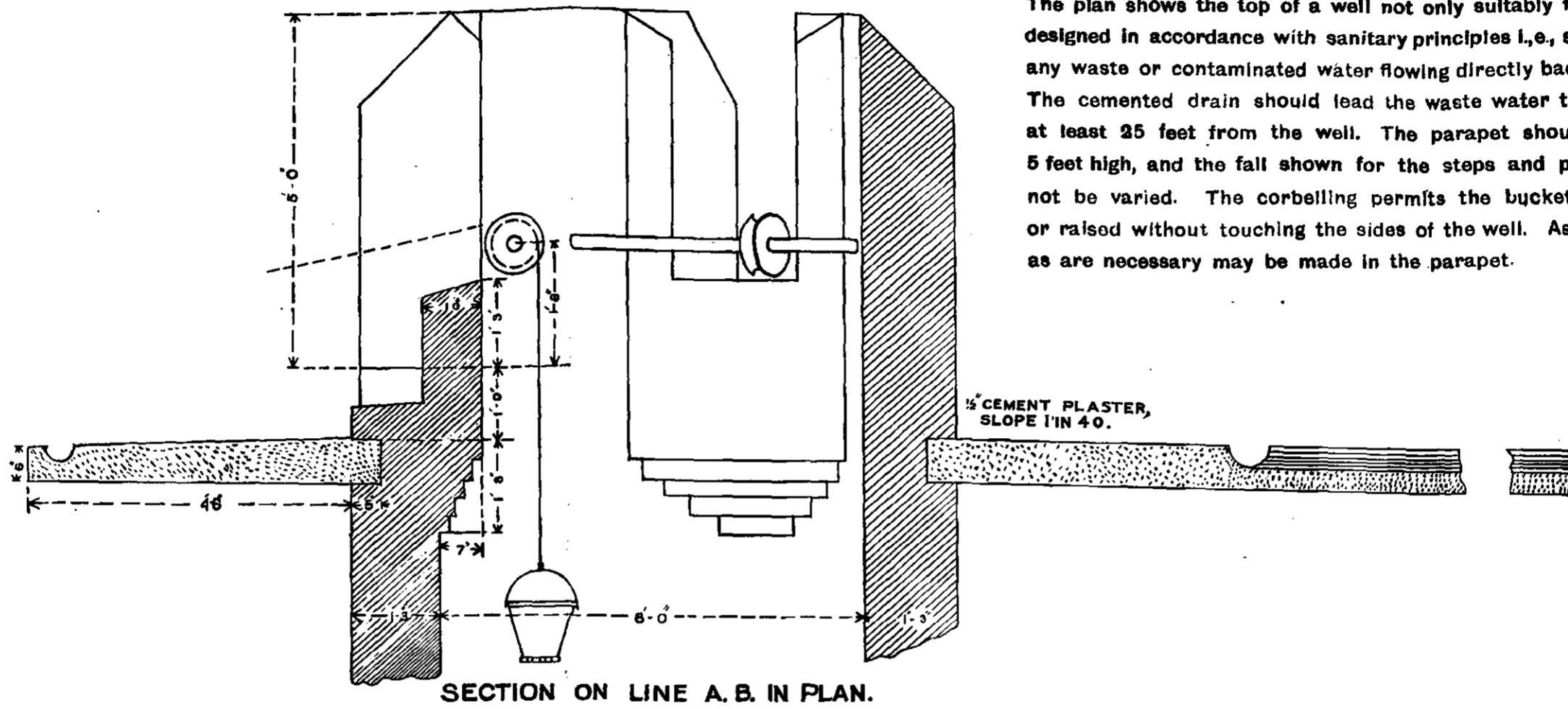
MESSRS. THE BURMA CORPORATION LTD'S. NAMMA COAL MINE

Scale 1 Inch = 100 Feet.



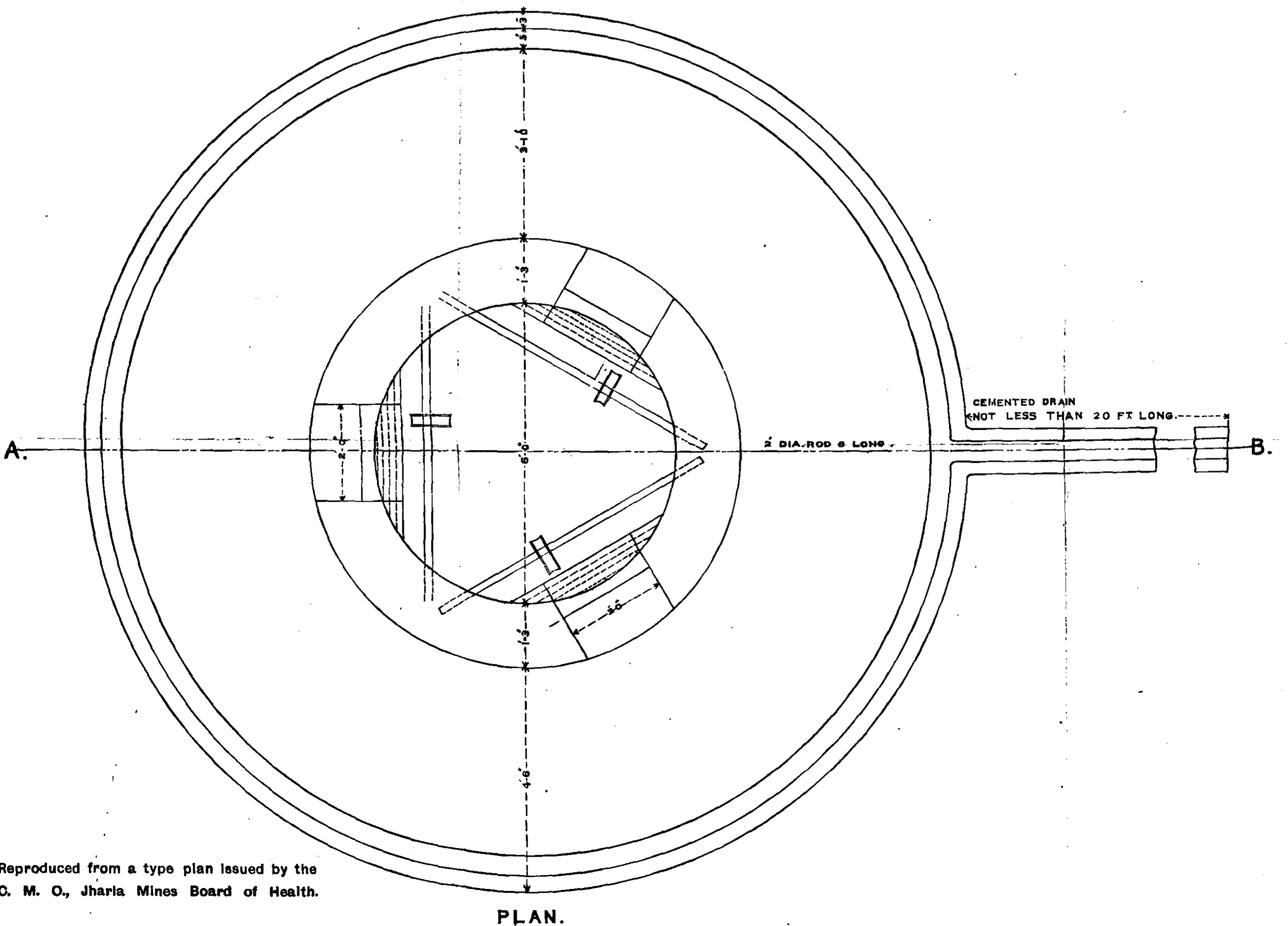
PLAN OF A WELL CURB WHICH FORMS A SATISFACTORY FENCE,
 PROVIDES A MEANS OF RAISING WATER
 AND PREVENTS WASTE WATER FROM FLOWING BACK INTO THE WELL.

Scale 1 Inch = 2 Feet.



The plan shows the top of a well not only suitably fenced but also designed in accordance with sanitary principles i.e., so as to prevent any waste or contaminated water flowing directly back into the well. The cemented drain should lead the waste water to a distance of at least 25 feet from the well. The parapet should be at least 5 feet high, and the fall shown for the steps and platform should not be varied. The corbelling permits the bucket to be lowered or raised without touching the sides of the well. As many openings as are necessary may be made in the parapet.

1/2 CEMENT PLASTER,
 SLOPE 1" IN 40.



CEMENTED DRAIN
 NOT LESS THAN 20 FT LONG.

2" DIA. ROD 6 LONG.

Reproduced from a type plan issued by the
 C. M. O., Jharia Mines Board of Health.

PLATE ILLUSTRATING REPORT
ON CAGE ACCIDENT
AT
THE BURMA CORPORATION LTD'S
BAWDWIN MINE.

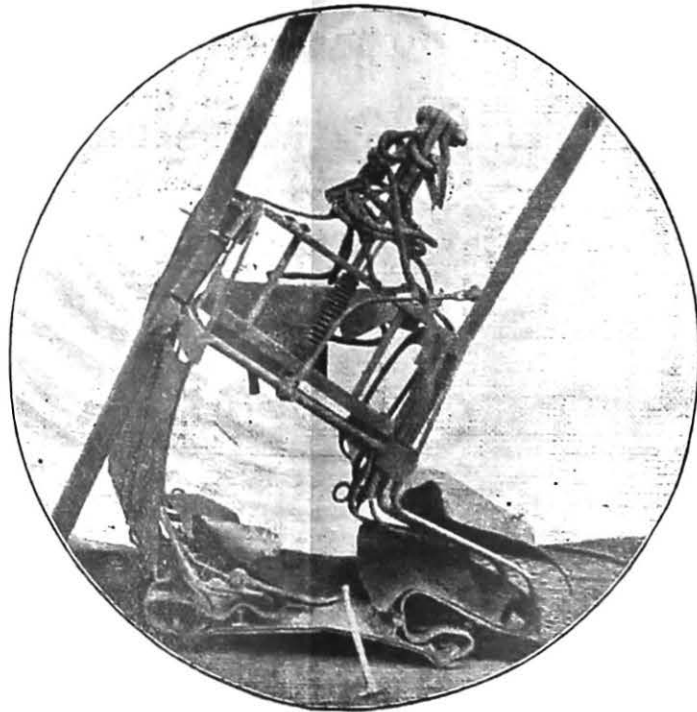


Photo of wrecked cage, showing wooden guides, safety appliance, and fibre rope which had been used for slinging timber sent underground. The shaft attendants had failed to remove the rope.

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 1920.

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.	
Assam	Lakhimpur	6	4	2	6	11	Tons. 236,974	1,634	176	...	1,810	630	217	68	915	2,725
	Naga Hills	1	...	1	1	1	38,991	205	1	2	208	189	17	5	211	419
	TOTAL	7	4	3	7	12	324,965	1,839	177	2	2,018	819	234	73	1,126	3,144
Baluchistan	Quetta-Pishin	7	...	7	...	...	5,137	50	...	...	50	36	...	...	36	86
	Sibi-Khost	7	1	6	...	...	22,535	420	...	...	420	343	...	16	359	779
	TOTAL	14	1	13	...	...	27,672	470	...	...	470	379	...	16	395	865
Bengal	Bankura, Raniganj	2	...	2	...	...	7,711	33	25	...	58	21	13	1	35	93
	Birbhum "	4	1	3	1	1	2,642	106	16	...	122	106	122	10	238	360
	Burdwan "	234	180	54	169	299	4,197,099	15,425	9,206	186	24,817	11,566	6,548	398	18,512	43,329
TOTAL	240	181	59	170	300	4,207,452	15,564	9,247	186	24,997	11,693	6,683	409	18,785	43,783	

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 1920—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.		
A.—COAL—contd.																	
Bihar and Orissa .	Hazaribagh {	Bokaro-Ramgarh	5	2	3	3	4	863,028	3,417	3,437	6	6,860	2,026	1,623	66	3,715	10,575
		Giridih .	9	4	5	9	14	891,293	4,546	1,056	1	6,503	2,218	695	14	2,927	9,430
		Jharia .	10	5	5	134,808	451	420	18	889	406	204	33	733	1,622
	Manbhum {	Jharia .	332	180	152	160	464	9,150,232	26,947	21,363	277	48,587	21,563	11,789	1,581	34,932	83,519
		Raniganj .	103	21	88	80	129	783,795	3,243	2,038	39	5,320	2,745	1,921	210	4,876	10,196
	Palamau, Daltonganj .	1	1	...	1	2	39,113	146	95	33	274	168	44	10	163	436	
	Sambalpur, Hingir-Rampur	1	1	...	2	3	36,987	248	156	...	404	120	16	...	136	540	
	Santal Parganas. {	Jainty .	3	3	...	1	3	118,651	430	339	...	769	460	180	85	725	1,404
		Raniganj .	6	1	5	6,432	50	41	...	91	149	136	...	284	378
		TOTAL	476	218	255	265	619	11,973,339	39,478	29,845	374	69,697	29,795	16,696	1,900	38,490	118,187
Central Provinces	Betul .	1	...	1	...	...	...	3	0	...	9	7	4	1	12	31
	Chanda, Ballarpur .	8	7	1	...	...	128,102	830	151	1	991	538	171	57	761	1,752
	Ohhindwara, Pench Valley	17	8	9	7	11	279,483	1,443	1,264	135	2,842	1,030	852	176	2,058	4,900	
	Narsunghpur, Mohpani .	1	1	...	1	4	83,335	709	354	...	1,063	564	70	...	644	1,697	
	Yeotmal .	2	...	2	...	...	223	4	6	5	15	8	10	...	18	33
	TOTAL	29	16	13	8	15	491,205	2,998	1,781	141	4,920	2,142	1,107	234	3,483	8,403	

Burma	Northern Shan States	1	1	...	1	3	...	54	...	...	54	170	18	...	198	242
Panjab	Jhelum	13	...	13	6	8	47,803	680	3	9	691	408	...	14	62	1,113
	Mianwali	1	...	1	...	...	6,835	41	...	1	42	68	...	1	69	111
	Shalpur	2	...	2	2	2	3,440	33	...	...	33	63	...	...	63	96
	TOTAL	16	...	16	8	10	58,078	754	3	10	766	539	...	15	554	1,320
GRAND TOTAL (COAL) FOR 1920		783	421	362	459	985	17,082,711	61,157	41,052	713	102,922	45,537	24,738	2,746	73,021	175,943
" " OF PRE-CELENG YEAR		741	393	348	281	523	21,759,727	69,898	47,089	707	117,494	45,987	24,233	2,338	72,558	180,052
DIFFERENCE		+42	+28	+14	+178	+442	-4,677,016	-8,541	-6,037	+6	-14,572	-450	+505	+408	+463	-14,109
		B.—MICA.														
Bihar and Orissa	Manbhum	1	...	1	...	...	Cwts.	4	3	...	7	8	1	...	4	11
	Gaya	35	...	35	4	4	4,822	482	376	95	953	285	346	98	620	1,582
	Hazaribagh	437	48	389	106	112	25,095	4,867	2,693	915	8,475	2,348	1,751	1,114	5,213	13,888
	Monghyr	18	1	17	...	...	1,069	299	178	42	519	233	122	106	461	930
	Sambalpur	1	...	1	1	1	8	40	45	5	90	...	...	...	...	10
	TOTAL	492	49	443	111	117	30,994	5,682	3,205	1,057	10,044	2,869	2,120	1,318	6,307	10,351
Madras	Kistna	1	...	1	...	...	83	18	15	...	33	1	2	...	3	36
	Nellore	110	19	91	59	59	11,155	1,759	1,128	144	3,031	462	461	199	1,122	4,153
	Salem	8	...	8	...	...	500	31	...	...	31	115	120	24	259	299
	Trichinopoly	1	...	1	...	...	...	6	5	1	12	6	4	1	8	20
	TOTAL	115	19	96	59	59	11,747	1,814	1,148	145	3,107	581	587	224	1,802	4,400
Central Provinces	Balaghat	1	...	1	...	...	1	4	1	...	5	...	...	...	...	5

APPENDIX 1—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 1920—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	66	...	69	11	11	1,925	473	148	53	674	264	133	35	432	1,106
					B.—MICA—contd. Cwts.											
	GRAND TOTAL (Mica) FOR 1920.	674	68	606	161	167	44,666½	7,983	4,592	1,255	13,830	3,714	2,840	1,577	8,131	21,961
	" " OF PRECEDING YEAR.	674	80	594	19	24	41,683	9,132	4,740	1,438	15,310	3,320	2,554	1,478	7,352	22,662
	DIFFERENCE	...	-12	+12	+162	+163	+2,983½	-1,149	-148	-183	-1,480	+394	+286	+99	+779	-701
					C.—MANGANESE. ORE. Tons.											
Bombay	Panch Mahals	2	2	...	...	...	31,166	498	363	146	1,007	180	69	30	279	1,286
	Balaghat	24	1	23	23	24	211,789	1,919	2,234	190	4,313	448	397	106	951	5,394
	Bhandara	4	...	4	4	5	76,674	367	718	40	1,125	97	38	1	136	1,261
	Chhindwara	1	1	...	2	2	48,567	185	184	4	373	169	57	26	254	627
	Nagpur	21	3	18	11	12	204,054	1,400	1,463	36	2,899	664	563	82	1,309	4,208
	TOTAL	50	5	45	40	42	541,034	3,871	4,599	270	8,740	1,378	1,055	217	2,652	11,300

Madras	Vizagapatam	6	...	6	2	2	7,386	276	182	23	481	54	33	15	107	588
	GRAND TOTAL (MANGANESE) FOR 1920.	58	7	51	42	45	582,636	4,645	5,144	439	10,228	1,612	1,162	262	3,036	13,264
	" " OF PRECEDING YEAR.	59	7	52	2	3	420,184	4,482	4,502	377	9,361	1,761	1,074	297	3,062	12,423
	DIFFERENCE	-1	...	-1	+40	+42	+162,452	+163	+642	+62	+867	-149	+88	+35	-26	+841
					D.—LIMESTONE.											
							Tons.									
Purma	Northern Shan States	1	...	1	1	1	27,623	162	...	...	152	...	...	...	...	152
Central Provinces	Bilaspur	2	...	2	...	...	13,686	72	50	10	132	91	177	92	300	422
	Jabalpur, Katni	20	1	19	18	17	120,082	1,104	1,576	119	2,799	242	566	94	903	3,701
	TOTAL	22	1	21	16	17	133,718	1,176	1,626	129	2,931	333	743	126	1,203	4,133
	GRAND TOTAL (LIMESTONE) FOR 1920.	23	1	22	17	18	161,340	1,838	1,626	129	3,063	333	743	126	1,202	4,285
	TOTAL OF PRECEDING YEAR.	31	1	30	...	...	146,840	711	1,192	38	1,941	212	253	21	486	3,427
	DIFFERENCE	-8	...	-8	+17	+18	+14,500	+617	+434	+91	+1,122	+121	+490	+105	+716	+1,858
					E.—SALT.											
							Tons.									
Panjab	Jhelum	2	1	1	1	2	165,082	424	311	53	788	67	1	...	68	856
	Mianwali	1	...	1	...	...	5,190	40	...	11	51	...	...	...	...	51
	Shahpur	1	...	1	...	...	10,820	35	22	5	62	...	...	...	...	62
	GRAND TOTAL (SALT) FOR 1920.	4	1	3	...	2	181,092	499	333	69	901	67	1	...	68	969
	" " OF PRECEDING YEAR.	4	2	2	...	...	174,974	502	358	72	930	72	1	...	73	1,003
	DIFFERENCE	...	-1	+1	+1	+2	+6,118	-3	-23	-3	-29	-5	...	...	-5	-34

APPENDIX I—contd.

STATISTICS OF MINES AND MINERALS—cont

Table No. 1—contd.

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1920—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.			
Punjab	Jhalum . . . . .	...	...	...	...	...	60	Labour	figures	included	with those	for Salt.					
	Total of preceding year . . . . .	...	...	...	...	...	83										
	Difference . . . . .	...	...	...	...	...	-33										
Burma	Mogok	4	2	2	G.—GEMS.		34,098	778	...	...	778	429	...	...	429	1,207	
					(a) Rubies.	...											Carats. 88,491	
	Mogok				(b) Sapphires.	3											5	33,015
	Mogok				(c) Spinels.	34,098
	TOTAL	4	2	2	3	5	155,604	778	...	...	778	429	...	...	429	1,207	

Rajputana	Ajmer-Merwara	2	...	2	...	...	504	11	1	...	19	...	...	...	...	19
	GRAND TOTAL (GEMS) FOR 1920	6	2	4	3	5	158,108	789	1	...	790	429	...	...	429	1,219
	" " OF PRECEDING YEAR	4	2	2	3	4	158,577	850	...	...	850	469	...	...	469	1,319
	DIFFERENCE	+2	...	+2	...	+1	-2,469	-61	+1	...	-60	-40	...	...	-40	-100
Bihar and Orissa	Monghyr	7	...	7	...	...	Tons. 2,978	139	184	1	324	114	4	2	120	444
Panjab	Gurgaon	6	...	6	4	4	2,008	117	...	71	188	37	...	...	37	225
	Kangra	5	...	5	1	1	5,359	114	2	2	118	30	26	18	74	192
	TOTAL	11	...	11	5	5	7,367	231	2	73	306	67	26	18	111	417
	GRAND TOTAL (SLATE) FOR 1920.	18	...	18	5	5	10,345	370	186	74	630	181	30	20	231	661
	" " OF PRECEDING YEAR.	15	...	15	...	...	11,091	375	161	94	630	122	32	24	178	608
	DIFFERENCE	+3	...	+3	+5	+5	-746	-5	+25	-20	...	+60	-2	-4	+53	+53
Bihar and Orissa	Singhbhum	1	1	...	...	...	Ozs. ...	27	15	...	42	26	28	...	54	96
Madras	Anantapur	3	3	...	1	2	13,615	77	...	...	77	224	15	22	261	338
	GRAND TOTAL (GOLD) FOR 1920.	4	4	...	1	2	13,645	104	15	...	119	250	43	22	315	434
	" " OF PRECEDING YEAR.	4	4	...	...	...	11,191	173	17	...	190	391	143	58	592	782
	DIFFERENCE	...	...	...	+1	+2	+2,454	-69	-2	...	-71	-141	-100	-36	-277	-348

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 1921—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 12).	Total below ground.	Adult males.	Adult females.	Children (under 12).	Total above ground.	
J. — IRON ORE.																
Bihar and Orissa . . .	Singhbhum . . .	4	1	3	1	2	109,638	378	253	45	676	333	213	31	577	1,253
Rajputana . . .	Ajmer-Merwara . . .	2	1	1	...	...	4	3	...	...	3	9	...	...	9	12
Burma . . .	Mandalay . . .	2	...	2	...	...	19,104	159	4	...	163	372	73	...	445	608
	Northern Shan States . . .	2	...	2	1	1	18,279	150	...	...	150	340	21	...	370	520
	TOTAL	4	...	4	1	1	37,383	309	4	...	313	721	94	...	815	1,128
Central Provinces . . .	Jabalpur . . .	1	...	1	1	1	1,452	24	50	18	92	75	20	10	105	197
	GRAND TOTAL (Iron) FOR 1920.	11	2	9	3	4	148,472	714	307	63	1,084	1,138	327	41	1,506	2,590
	" " OF PRECEDING YEAR.	4	1	3	...	...	101,322	384	348	88	818	195	80	15	300	1,118
	DIFFERENCE . . .	+7	+1	+6	+3	+4	+47,150	+330	-39	-25	+266	+943	+237	+26	+1,206	+1,472

		K.—WOLFRAM.															
		Tons.															
Burma	Mergui	2	...	2	...	...	60	93	...	...	93	213	17	13	243	336
	Tatoy	47	4	43	...	...	1,672	2,751	130	19	2,900	1,137	69	31	1,277	4,177
	Thabein	3	...	3	...	...	1½	26	5	...	31	...	...	...	...	31
	TOTAL	52	4	48	...	...	1,733½	2,870	135	19	3,024	1,400	76	44	1,520	4,544
GRAND TOTAL (WOLFRAM) FOR 1920.		52	4	48	...	...	1,733½	2,870	135	19	3,024	1,400	76	44	1,520	4,544
" " OF PRECEDING YEAR.		123	5	118	6	7	2,905	5,398	104	36	5,538	3,668	393	117	4,178	9,714	
DIFFERENCE		-71	-1	-70	-6	-7	-1,171½	-2,528	+31	-17	-2,514	-2,268	-317	-73	-2,658	-5,170	
		L.—MAGNESITE.															
Madras	Salem	2	...	2	1	1	Tons. 11,301	201	146	218	598	105	...	29	134	332	
	TOTAL OF PRECEDING YEAR	1	...	1	...	...	13,012	221	169	281	651	60	...	27	87	736
	DIFFERENCE	+1	...	+1	+1	+1	-1,712	-17	-23	-18	-53	+45	...	+2	+47	-6	
		M.—CHROMITE.															
Baluchistan.	Zhob	22	...	22	...	...	Tons. 20,577	276	...	...	276	100	...	...	100	376
Bihar and Orissa	Singhbhum	2	...	2	...	...	2,546	101	188	2	290	174	347	18	530	820
GRAND TOTAL (CHROMITE) FOR 1920.		24	...	24	...	...	23,123	376	188	2	566	274	347	18	639	1,205
TOTAL OF PRECEDING YEAR.		26	...	26	...	...	14,067	268	51	7	326	93	31	15	139	465
DIFFERENCE		-2	...	-2	...	...	+9,056	+108	+137	-5	+240	+181	+316	+3	+500	+740

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 1920—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.	
N.—COPPER ORE.																
							Tons.									
Bihar and Orissa	Singhbhum	2	1	1	1	3	28,167	486	...	...	486	938	622	48	1,608	2,094
Central Provinces	Balaghat	1	...	1	...	...	...	20	6	...	26	17	15	4	36	62
	GRAND TOTAL (COPPER ORE) FOR 1920.	3	1	2	1	3	28,167	506	6	...	512	955	637	52	1,644	2,156
	TOTAL OF PRECEDING YEAR.	2	1	1	1	3	32,756	652	12	4	668	1,156	788	54	1,998	2,666
	DIFFERENCE	+1	...	+1	...	...	-4,589	-146	-6	-4	-156	-201	-161	-2	-354	-510
O.—BAUXITE.																
							Cwts.									
Bombay	Kaira	1	1	...	...	...	78,630	45	35	11	91	6	...	...	6	97
	TOTAL OF PRECEDING YEAR	1	...	1	...	...	33,640	52	68	1	121	4	...	...	4	125
	DIFFERENCE . . . . .	...	+1	-1	...	...	+44,990	-7	-33	+10	-30	+2	...	...	+2	-28

		P.—CLAY.														
Bihar and Orissa	Bhagalpur	3	...	3	...	...	Tons. 1,326	30	30	...	60	76	97	29	195	255
	Manbhum	1	...	1	1	5	18,066	55	33	...	133	36	16	...	51	174
	Palamau	1	...	1	...	...	5,888	18	12	6	36	31	6	4	43	70
	TOTAL	5	...	5	1	5	25,280	133	80	6	219	145	118	26	289	508
Central Provinces	Jabalpur	4	2	2	1	1	57,233	364	465	46	875	41	...	...	41	916
Delhi	Delhi	3	...	3	...	...	8,025	23	...	...	23	18	5	...	23	46
GRAND TOTAL (CLAY) FOR 1920.		12	2	10	2	6	90,538	520	545	52	1,117	204	123	26	353	1,470
TOTAL OF PRECEDING YEAR.		9	3	6	...	...	99,760	579	674	74	1,327	284	172	89	545	1,872
DIFFERENCE		+3	-1	+4	+2	+6	-9,222	-59	-139	-22	-210	-80	-49	-63	-192	-402
		Q.—LEAD ORE.														
Burma	Northern Shan States	1	1	...	1	5	Tons.* 128,008	612	...	...	612	338	...	...	338	950
Central Provinces	Drug	1	...	1	...	...	1/20	5	12	...	17	5	12	...	17	34
GRAND TOTAL (LEAD ORE) FOR 1920.		2	1	1	1	5	128,908 1/20	617	12	...	629	343	12	...	355	984
TOTAL OF PRECEDING YEAR		1	...	1	...	...	2 1/2	5	10	...	15	5	10	...	15	30
DIFFERENCE		+1	+1	...	+1	+5	+128,905 1/20	+612	+2	...	+614	+338	+2	...	+340	+954
		R.—TIN ORE.														
Bihar and Orissa	Hazaribagh	1	1	...	1	1	Tons. 1 1/2	55	25	...	80	31	17	12	60	140
Burma	Mergui	10	...	10	...	...	110	279	14	8	301	140	4	...	144	445
	Tavoy	12	1	11	...	...	936	287	8	...	295	108	9	1	208	503
	Thaton	2	...	2	...	...	8	18	12	...	30	4	6	...	10	40
TOTAL		24	1	23	...	...	1,054	584	34	8	626	342	19	1	362	988
GRAND TOTAL (TIN ORE) FOR 1920.		25	2	23	1	1	1,055 1/2	639	59	8	708	373	86	13	422	1,128
TOTAL OF PRECEDING YEAR		8	2	6	...	...	701	133	57	37	227	134	29	22	185	412
DIFFERENCE		+17	...	+17	+1	+1	+354 1/2	+506	+2	-29	+479	+239	+7	-9	+237	+716

* 2,809,727 oz. of silver extracted. See page 35.

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 1920—contd.

PROVINCE.	District and mineral field.	Number of mines under the scope of the Act.	NUMBER OF MINES.		NUMBERS 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.			
S.—STEATITE.																		
Central Provinces	Jabalpur	3	...	3	3	3	Cwts. 45,910	70	48	...	118	26	49	17	92	210		
Madras	Kurnool	1	...	1	...	...	...	4	3	...	7	...	...	...	...	7
	GRAND TOTAL (STEATITE) FOR 1920.	4	...	4	3	3	45,910	74	51	...	125	26	49	17	92	17		
	" " OF PRECEDING YEAR.	4	...	4	...	...	29,122	67	53	...	120	21	43	11	75	195
	DIFFERENCE	...	...	...	+3	+3	+16,788	+7	-2	...	+5	+5	+6	+6	+17	+22
T.—FULLER'S EARTH.																		
Central Provinces	Jabalpur	...	...	...	...	...	Tons. 107									
	TOTAL OF PRECEDING YEAR	...	...	...	...	...	247									
	DIFFERENCE	...	...	...	...	...	-50									

(Labour figures included with those for Limestone)

						U.—SILVER.											
						Ozs.*											
Burma	Northern Shan States	2,869,727	Labour figures included with those for Lead Ore.					
Madras	Anantapur	268	Labour figures included with those for Gold.					
GRAND TOTAL (SILVER) FOR 1920.		...	...	...	...	...	2,870,595	...	...	...	...	...	...	...	...
TOTAL OF PRECEDING YEAR		...	...	...	...	...	753	...	...	...	...	...	...	...	...
DIFFERENCE		...	...	...	...	...	+2,870,842	...	...	...	...	...	...	...	...
						V.—SAMARSKITE.											
Madras	Nellore	Cwts. 3	Labour figures included with those for Mica.					
TOTAL OF PRECEDING YEAR		...	...	...	...	...	21	...	...	...	...	...	...	...	...
DIFFERENCE		...	...	...	...	...	+1	...	...	...	...	...	...	...	...
						W.—GRAPHITE.											
Bihar and Orissa	Singhbhum	1	...	1	...	...	Cwts. 5	0	16	...	25	2	2	...	4	29
Rajputana	Ajmer-Morwara	5	...	5	...	...	337	26	5	...	31	6	2	...	8	39
Central Provinces	Betul	1	...	1	...	...	380	2	3	...	5	3	3	...	5	10
GRAND TOTAL (GRAPHITE) FOR 1920.		7	...	7	...	...	702	37	24	...	61	10	7	...	17	78
TOTAL OF PRECEDING YEAR		4	...	4	...	...	103	13	5	...	17	4	1	...	5	22
DIFFERENCE		+3	...	+3	...	...	+599	+25	+19	...	+44	+6	+6	...	+12	+56
						X.—OCHRE.											
Bihar and Orissa	Puri	1	1	...	...	...	Tons. 400	8	...	...	8	29	...	...	29	37
TOTAL OF PRECEDING YEAR		1	1	...	...	...	184	12	...	...	12	18	...	13	31	43
DIFFERENCE		...	...	...	...	...	+216	-4	...	...	-4	+11	...	-13	-2	-6

* Extracted from 128,906 tons of Lead Ore. See page 88.

APPENDIX I—contd.

STATISTICS OF MINES AND MINERALS—concl'd.

Table No. 1—concl'd.

Number of mines regulated by the Indian Mines Act, 1901, number of workers and output of minerals, during the year 1920—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.								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.		
					Y.—MOLYBDENITE.												
							Cwts.										
Burma	Tavoy	1	...	1	1	...	<i>Labour figures included with those for Wolfram</i>								...
	TOTAL OF PRECEDING YEAR	1	...	1	...	...	4½	5	...	...	6	5	...	...	5	10
	DIFFERENCE	...	...	...	...	...	-3½	-5	...	...	-6	-5	...	...	-5	-10
							Z.—BARYTES.										
							Cwts.										
Madras	Kurnool	1	...	1	...	...	4,260	5	...	...	5	4	7	9	20	25
	TOTAL OF PRECEDING YEAR	1	...	1	...	...	4,640	4	...	6	10	2	7	1	10	20
	DIFFERENCE	...	...	...	...	...	-380	+1	...	-6	-5	+2	...	...	+10	+5

GRAND TOTAL (ALL MINERALS) 1920.	1,718	518	1,198	702	1,228	Tons. 18,452,068 ¹ / ₅ Cwts. 174,172 ³ / ₄ Carats. 156,108 Troy ounces. 2,884,240	\$3,490	54,457	3,082	141,029	56,980	31,178	5,002	93,170	234,199
GRAND TOTAL OF PRECEDING YEAR.	1,719	502	1,217	312	564	Tons. 22,776,356 ³ / ₄ Cwts. 109,195 Carats. 158,577 Troy ounces. 11,944	93,830	59,671	3,240	156,741	58,011	29,894	4,510	92,415	249,156
DIFFERENCE	-3	+16	-19	+390	+664	Tons. -4,326,287 ³ / ₅ Cwts. +64,977 ¹ / ₄ Carats. -2,469 Troy ounces. +2,872,296	-10,340	-5,214	-158	-15,712	-1,021	+1,284	+492	+755	-14,957

APPENDIX I—contd.

Table No. 3.
Number of mines opened and closed during the year ending 31st
December 1920.

Province.	District.	Number of mines opened.	Number of mines closed.	
COAL.				
ASSAM	Lakhimpur . . . . .	...	1
PUNJAB	Jhelum	3	...	
BALUCHISTAN	Sibi-Khost	2	...	
BENGAL	Bardwan-Raniganj	24	7.	
BURMA	Northern Shan States	1	1	
BIHAR AND ORISSA	Hazaribagh {	Bokaro-Ramgarh	1	2
		Jheria	2	...
	Manbhum {	Giridih	2	...
		Jheria	37	7
	Raniganj	10	13	
	Sonthal Parganas, Raniganj	2	...	
TOTAL		54	22	
CENTRAL PROVINCES	Betul	1	...	
	Chanda . . . . .	...	2
	Chhindwara	6	...	
	Yectmal	1	...	
TOTAL		8	2	
TOTAL (COAL)		92	33	
MICA.				
BIHAR AND ORISSA	Gaya	13	10	
	Hazaribagh	113	115	
	Monghyr	12	7	
	Manbhum	1	...	
TOTAL		138	132	

APPENDIX I—*contd.*

Table No. 3—*contd.*
 Number of mines opened and closed during the year ending 31st
 December 1920—*contd.*

Province.	District.	Number of mines opened.	Number of mines closed.
MICA—<i>contd.</i>			
CENTRAL PROVINCES	Balaghat	1	...
MADRAS	Nellore	18	21
	Salem . . . . .	...	1
	Trichinopoly	1	1
	TOTAL	19	23
RAJPUTANA	Ajmer-Merwara	37	21
	TOTAL (MICA)	195	176
MOLYBDENITE.			
BURMA	Tavoy . . . . .	...	1
MANGANESE ORE.			
CENTRAL PROVINCES	Balaghat	5	...
MAGNESITE.			
MADRAS	Salem	1	...
LIMESTONE.			
MADRAS	Bilaspur	1	...
	Jabalpur	4	4
	TOTAL	5	4
BURMA	Northern Shan States	1	...
	TOTAL (LIMESTONE)	6	4
IRON ORE.			
BIHAR AND ORISSA	Singbhum	2	...

APPENDIX I—*contd.*

Table No. 3—*contd.*
 Number of mines opened and closed during the year ending 31st
 December 1920—*contd.*

Province.	District.	Number of mines opened.	Number of mines closed.
	IRON ORE—<i>contd.</i>		
BURMA	Mandalay	2	1
	Northern Shan States	2	1
	TOTAL	4	2
CENTRAL PROVINCES	Jabalpur	1	...
RAJPUTANA	Ajmer-Merwara	1	1
	TOTAL (IRON)	8	3
	WOLFGRAM.		
BURMA	Mergui . . . . .	...	1
	Tavoy	5	24
	Thaton	1	...
	TOTAL (WOLFGRAM)	6	25
	GOLD.		
BIHAR AND ORISSA	Singhbhum . . . . .	...	1
	COPPER ORE.		
BIHAR AND ORISSA	Singhbhum	1	...
	CLAY.		
BIHAR AND ORISSA	Bhagalpur	1	1
DELHI	Delhi	2	...
	TOTAL (CLAY)	3	1

APPENDIX I—*concl.*

Table No. 3—*concl.*
 Number of mines opened and closed during the year ending 31st
 December 1920—*concl.*

Province.	District.	Number of mines opened.	Number of mines closed.
LEAD ORE.			
BURMA	Northern Shan States	1	...
CENTRAL PROVINCES	Drug	1	1
	TOTAL (LEAD ORE)	2	1
TIN ORE.			
BURMA	Mergui	4	3
	Tavoy	3	2
	TOTAL (TIN ORE)	6	5
SLATE.			
BIHAR AND ORISSA	Monghyr	2	...
PUNJAB	Gurgaon	1	...
	TOTAL (SLATE)	3	...
GRAPHITE.			
BIHAR AND ORISSA	Bhagalpur	1	...
CENTRAL PROVINCES	Betul	1	...
RAJPUTANA	Ajmer-Merwara	3	3
	TOTAL (GRAPHITE)	5	3
BERYL.			
RAJPUTANA	Ajmer-Merwara	2	...
	GRAND TOTAL (ALL MINES)	335	253

APPENDIX I—*contd.*

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, steatite, clay, bauxite, fuller's earth, graphite, molybdenite, ochre, samarskite and barytes.

YEAR.	Coal.	Manga- nese ore.	Mica.	Limestone	Salt.	Gold.	Copper ore.	Wol- fram.	Iron ore.	Chro- mitic.	Tin ore.	Lead ore.	Silver.
	Tons.	Tons.	Owts.	Tons.	Tons.	Troy ozs.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Ozs.
1911	12,048,726	441,426	21,686	62,693	124,603	8,277	2,079	420	56,601	269	14	1	...
1912	14,044,368	423,464	41,060	61,784	131,233	7,260	8,981	1,270	79,383	6	63	8	...
1913	15,486,318	637,691	48,650	71,250	138,540	11,019	3,639	1,376	98,371	3,414	67	14	...
1914	16,727,631	665,672	38,169	140,505	135,818	19,673	4,400	1,576	167,600	3,006	48	34	...
1915	16,352,480	376,172	24,063	64,179	144,770	24,320	8,010	1,972	126,617	1,468	14	7	612
1916	16,419,082	564,032	36,678	46,200	160,357	23,236	2,671	3,955	142,006	5,004	89	7	1,322
1917	17,326,384	497,052	36,896	69,840	162,642	21,991	20,108	3,966	178,309	17,380	182	...	1,361
1918	19,347,039	415,387	51,572	181,451	158,813	19,016	3,610	3,809	115,690	24,030	602	3	1,169
1919	21,769,727	430,164	41,088	146,810	174,074	11,191	32,730	3,008	101,322	14,007	701	24	753
1920	17,082,711	582,638	44,068	161,340	161,092	13,645	28,167	1,733	148,472	23,123	1,056	128,008	2,670,666

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 1911 to 1920 in respect of coal mines under the Indian Mines Act, 1901 :—

YEAR.	Amount of coal raised.	Average number of persons working daily below and above ground.	Number of deaths below and above ground.	DEATH-RATES	
				Per 1,000,000 tons raised.	Per 1,000 per- sons working daily below and above ground.
1911	12,048,726	106,598	148	12.28	1.38
1912	14,044,368	121,392	157	11.17	1.29
1913	15,486,318	133,042	185	11.95	1.39
1914	16,727,631	137,851	146	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	17,326,384	153,683	163	9.41	1.06
1918	19,347,039	176,269	197	9.93	1.12
1919	21,769,727	190,052	260	11.95	1.37
1920	17,082,711	175,943	172	10.07	0.98

APPENDIX II
ACCIDENTS IN MINES.

Table No. I.

List of Fatal Accidents in mines regulated by the Indian Mines Act, 1901, during the year 1920.

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 FIREDAMP—(5 deaths).						
1	26th April, 7-30 P.M.	Choitodih mine, Katrasgarh P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ld.	Badhan Chamar <i>alias</i> Puran, (m.), 28 ; Lukshu Chamar <i>alias</i> Nanku, (m.), 36, <i>Coal-cutters.</i>	Coal	Deceased were about to commence work in a gallery when one of their lamps ignited an accumulation of fire damp. They were both severely burnt and died after intervals of 18 and 36 hours respectively. Inspection and inquiry made.
2	4th October, 9-30 A.M.	Malkera mine, Katrasgarh P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ld.	Khedu Dhoi, (m.) 22, <i>Coal-cutter.</i>	Coal	Deceased, carrying an open light, entered a narrow main gallery in a coal seam and was about to commence cutting coal in the face when he ignited an accumulation of gas. An explosion took place and he was severely burnt. He died eight hours later. Inspection and inquiry made. See "Report," page 8.
3	21st December, 7-30 P.M.	Pandaveswar mine, Pandaveswar P. O., Bengal.	Highfield Colliery, Ld.	Sakhu Meah, (m.), 21 ; Niroo Kol, (m.), 25, <i>Coal-cutters.</i>	Coal	The deceased persons, carrying open lights, entered a discontinued gallery and ignited an accumulation of fire damp. They were both severely burnt and died two days later. Inspection and inquiry made.
FALLS OF ROOF AND SIDES.						
Fall of roof—(48 deaths).						
4	4th January, 9-30 A.M.	Loyabad mine, Banejora P. O., Bihar and Orissa.	Burrakar Coal Co., Ld.	Narayan Barhi, (m.), 30, <i>cropping Sirdar.</i>	Coal	A gang of men, directly supervised by an experienced European overman, were taking out props in a pillar cutting district. Deceased, although warned not to do so, knocked out a certain prop, and brought about the fall of roof coal, 9 inch thick, over an area about 6 feet square. He was knocked down and died within half an hour. The roof coal fell from a height of about 7 feet. Inspection and inquiry made.
5	8th January, 7-30 A.M.	Ghandhala (No. 1) mine, Dandot P. O., Punjab.	Pandit Gain Chand	Mohomed Bux, (m.), 15, <i>Coal-cutter.</i>	Coal	Deceased was cutting coal when a slip in the roof was exposed, causing a fall of shale. A large piece fell on his head and injured him so severely that he died within 15 minutes. Inspection and inquiry made.

APPENDIX II—*contd.*

Fatal Accidents, 1920—*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—<i>contd.</i>						
(a) Fall of roof—<i>contd.</i>						
6	6th February, 2 A.M.	Tikak mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Tinging Bhatia, (m.), 37, Sirdar.	Coal	Deceased, against the sirdar's orders, lay down in an opening or chamber only 4 feet high. A piece of soft coal, weighing about 2 lbs. fell from the roof and struck him on the spleen. He died shortly after. Inspection and inquiry made.
7	10th February, 12 Noon.	Mohpani mine, Mohpani P. O., Central Provinces.	Great Indian Peninsula Railway.	Matadin Thakur, (m.), 42, Coal-cutter.	Coal	Whilst deceased was cutting coal near a fault a fall of roof took place. He sustained injuries which caused death a month later.
8	14th February, 11 P.M.	Bhelatand mine, Sijua P. O. Bihar and Orissa.	Tata Iron and Steel Co., Ltd.	Sardar Singh, (m.), 36, Sirdar.	Coal	Deceased was crushed under a slab of roof shale, 12' x 0' to 5' x 6" thick, which fell from the roof at a height of 6 feet. He was said to have been sounding the roof or trying to take down the unsound portion at the time. Inspection and inquiry made.
9	26th February, 7 P.M.	Bulliar mine, P. O. Kusunda, Bihar and Orissa.	Chuni Lal Coal Co.	Etwari Dhobi, (m.), 20, Coal-cutter.	Coal	Deceased was one of four coal cutters who were engaged in extracting a pillar of coal. Coal fell from the goaf side of the pillar, and deceased passed through a fence and began to pick up the fallen coal. He was killed on the spot by a slab of roof stone, 8' x 4' x 6" thick, which fell from a height of 10 feet. Inspection and inquiry made.
10	16th March, 2 P.M.	Chittidand mine, Golpur P. O., Punjab.	Punjab Coal Co., Ltd.	Fakir Mohammed, (m.), 16, Stone-man.	Coal	Deceased was packing dirt in a disused road when a piece of roof coal fell on him and killed him instantly. Inspection and inquiry made.
11	4th April, 1 A.M.	Surangi (Harlaghati) mine, Ganwan P. O., Bihar and Orissa.	F. F. Chrestien & Co., Ltd.	Kungal Koiri, (m.), 30; Bandhu Koiri, (m.), 26, Drillers.	Mica	Six men were engaged in driving a level, 7' 6" wide and 6' high. Four of them were working at the face and the two deceased were sitting down resting about 6 feet back from the face. Without warning a mass of pegmatite and mica schist, 5' x 3' x 3' fell from the roof. The deceased were killed instantly and a carrier, named Sukar Gope, was seriously injured. The men in the face escaped without injury. Inspection and inquiry made.
12	4th April, 5 A.M.	Jotejanaki mine, Toposi P. O., Bengal.	P. K. Chatterjee	Arshun Mejhian, (f.), 21, Coal-carrier.	Coal	The deceased with two other women, in the absence of the sirdar, broke down a fence and were loading fallen coal in a disused gallery when a mass of overhanging coal and shale, weighing about 2 tons, fell upon them from a height of twelve feet. Deceased was killed instantly and her companions sustained serious injuries. Inspection and inquiry made.
13	9th April, 10-30 P.M.	Benahir mine, Jharia P. O., Bihar and Orissa.	Standard Coal Co., Ltd.	Biswanath Chamar, (m.), 35, Coal-cutter.	Coal	Deceased entered a gallery which had been fenced off because the roof was unsound. Whilst cutting coal in the gallery a mass of roof stone, 6' x 5' x 3" to 6", fell upon him from a height of 7 feet, killing him instantly. Inspection and inquiry made.

14	10th April, 9 P.M.	Ledo Valley (Old West) mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Among Singh Chetri, (m.), 30, Tub-filler.	Coal	Whilst a gang of loading coolies were loading coal in an "opening" or chamber, 30' 0" x 70' 0" x 13' 0" high, a fall of some 50 tons of coal took place suddenly. Deceased was killed instantly and another man was severely injured. Inspection and inquiry made.
15	15th April, 1 P.M.	Baraboni (Joyramdanga) mine, Asansol P. O., Bengal.	New Beerbhun Coal Co., Ltd.	Chandka Passi, (m.), 32, Coal-cutter.	Coal	A sirdar, finding a portion of the roof unsafe in a place where some overhanging roof coal had been blasted down, fenced it off and went away. Deceased broke down the fence and took some coal carriers inside to load out the coal. A piece of shaley coal, measuring 2' 3" x 1' 0" x 0' 3", fell on to him from a height of seventeen feet. He sustained serious injuries and died two hours later. Inspection and inquiry made.
16	18th April, 1 P.M.	Dandot mine, Dandot P. O., Punjab.	Isbar Das Kapur	Ahmed Khan, (m.), 30, Coal-cutter.	Coal	Deceased was injured by a mass of roof stone which fell from between the timbers in a longwall working. He died three weeks later.
17	23rd April, 4-30 P.M.	Namdang mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Hastey Thapa, (m.), 25, Coal-filler.	Coal	Deceased sustained injuries to the head and back by the fall of stone in an 'opening' or chamber. He died in hospital five months later. Inspection and inquiry made.
18	28th April, 8-30 A.M.	Dumarkunda mine, Chirkunda P. O., Bihar and Orissa.	Bengal Coal Co., Ltd.	Muchiram Bauri, (m.), 14, Coal-carrier.	Coal	A mass of shale roof, measuring 10' 0" x 14' 3" x 6", fell from a height of eight feet on to deceased who was carrying a basket of coal. He was severely injured and died three and a half hours later. Inspection and inquiry made.
19	7th May, 12-30 P.M.	Golukdih mine, Jharia P. O., Bihar and Orissa.	N. M. Chowdhury & Co.	Hetu Bhuisa, (m.), 36, Coal-cutter.	Coal	Deceased was cutting floor coal in a gallery 11 feet in height when a slab of coal, 9' x 4' x 5", fell from a 'slip' in the roof and pinned him down. He was injured so severely that he died within an hour. Inspection and inquiry made. (See Report page 8.)
20	7th May, 2 P.M.	Khoist mine, Khoist P. O., Baluchistan.	North Western Railway	Qadr Bux, (m.), 45, Carpenter.	Coal	Whilst engaged in timbering a longwall face deceased was killed by the fall of roof stone, 18' x 20' x 3' thick.
21	8th May, 4-30 P.M.	Namdang mine, Margherita P. O., Assam.	Assam Railways Trading Co., Ltd.	Dhan Lama, (m.), 30, Coal-cutter.	Coal	Whilst deceased was undercutting the corner of a pillar of coal, a mass of some two tons of coal fell upon him without warning. He was killed instantly.
22	11th May, 5-30 A.M.	Sodepur mine, Dishergarh P. O., Bengal.	Bengal Coal Co., Ltd.	Pralhad Korah, (m.), 30, Coal-cutter.	Coal	A mass of roof coal, measuring 27' 0" x 9' 9" x 3' 6", broke away from a concealed 'slip' and fell from a height of nine feet on to deceased, who was carrying a basket of coal underneath it, killing him instantly. Inspection and inquiry made.
23	11th May, 9 A.M.	Loyabad mine, Bansjora P. O., Bihar and Orissa.	Burrakur Coal Co., Ltd.	C. W. Caston, (m.), 35, P. Quinn, (m.), 35, Overmen ; Kodo Pasi, (m.), 9, not employed; Bedesia Roy, (m.), 35, Coolie.	Coal	A severe crush came on in a goaf and affected a large area of workings standing on pillars. Materials such as rails, crossings and coal tubs were being withdrawn from the dangerous area, and a number of persons, superintended by two European overmen, were engaged in this work. The crush extended and finally resulted in the sudden collapse of a very large area accompanied by a severe airblast. The work-persons escaped but the two overmen were caught under the fall and completely buried. Bedesia Roy was caught by the blast and blown against the side of the travelling road as he was running out of the mine, and Kodo Pasi, who was walking along a pathway in front of the incline, was hurled a distance of 35 feet. Both of them were fatally injured. Inspection and inquiry made. See Report, page 9.

APPENDIX II—*contd.*

Fatal Accidents, 1920—*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—<i>contd.</i>						
(a) Fall of roof—<i>contd.</i>						
24	16th May, 3 A.M.	Bansdeopur mine, Kusunda P. O., Bihar and Orissa.	Bansdeopur Coal Co., Ltd.	Harkhu Kole, (m.), 31, Coal-cutter.	Coal	Deceased was loading coal which he had got down from the side of a gallery, 27 feet in height. A mass of undercut coal, 17' x 5' x 2' 9" thick, lying between two "breaks" came away from a dirt band, at a height of 10 feet, and fell on him. Death was instantaneous. Inspection and inquiry made.
25	1st June, 4 P.M.	Northern mine, Nowagarh P. O., Bihar and Orissa.	Northern Coal Co., Ltd.	Roby Mahato, (m.), 40, Coal-cutter.	Coal	A wedge shaped piece of coal, 8' x 3' x 3', fell from a slip in the roof of a gallery, 6 feet high and 9 feet wide, and fractured the skull of deceased, who was sitting underneath. He had probably released the coal by side dressing. Inspection and inquiry made.
26	13th June, 8-30 A.M.	Jainty Central mine, Karmatar P. O., Bihar and Orissa.	Jainty Central Colliery, Ltd.	Malo Mejhian, (f.), 16, Coal-carrier.	Coal	Deceased was loading coal which had been robbed off the corner of a pillar when she was struck by a mass of roof-stone, measuring 21' 0" x 8' 0" x 1' 0", which fell from a height of 6½ feet. She was killed instantly. Inspection and inquiry made.
27	25th June, 1-30 A.M.	Tikak mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Monbahadur Ali, (m.), 28, Sirdar.	Coal	Deceased was killed in an 'opening' or chamber by the fall of stone, measuring 4' x 3' x 1'. The sirdar had ordered him not to go to the place, but he disobeyed.
28	12th July, 11 P.M.	Bullhari mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Janki Singh, (m.), 40, Tekon Dosad, (m.), 26, Stone-cutters; Manik Roy, (m.), 30, Sirdar.	Coal	The two deceased stone-cutters were loading stone which had been blasted down from the roof in a gallery, 11 feet wide and 6 feet high, at a point near faulty ground, when the roof fell and imprisoned them. The deceased sirdar and a contractor's foreman went to the rescue, when a second fall occurred killing the two stone cutters and the sirdar and slightly injuring the foreman. The bodies of the deceased were recovered some 15 hours later. The combined fall measured 14' x 16' x 4' and would weigh at least 20 tons. Inspection and inquiry made.
29	7th August, 11 30 A.M.	Aldih mine, Sitarampur P. O., Bengal.	Aldih Coal Co., Ltd.	Somi Mejhian, (f.), 25, Coal-carrier.	Coal	A triangular piece of overhanging coal, measuring 3' 0" x 2' 0" x 1' 0", fell from a 'slip' at a height of 13 feet on to deceased who was passing underneath it carrying a basket of coal on her head. She sustained a fracture of her right arm and died two hours later. Inspection and inquiry made.
30	18th August, 1-30 P.M.	Kongon mine, Kongon P. O., Assam.	Nazira Coal Co., Ltd.	Twilla Hasda, (m.), 30, Coal-cutter.	Coal	Whilst deceased was lying asleep near his working place in the mine, a piece of stone, 12" x 12" x 3" fell upon his chest from a height of 6 feet. He sustained an internal injury and died two days later. Inspection and inquiry made.

31	20th August, 1 A.M.	Rajhara mine, Rajhara P. O., Bihar and Orissa.	Bengal Coal Co., Ld.	Gopla Dosad, (m.), 20, Coal-cutter.	Coal	Deceased was robbing coal from a split in a pillar in a fenced-off area. The sirdar removed him but he went back. The sirdar ordered him out and was going for assistance when a piece of coal, 11' long \times 3½' wide \times 3' thick, fell from a 'slip' and pinned the deceased against the pillar, causing injuries to which he succumbed in two hours. Inspection and inquiry made.
32	7th September, 1 P.M.	Sudamdih mine, Bhujudih P. O., Bihar and Orissa.	Sudamdih Coal Co., Ld.	Mongal Bauri, (m.), 35, Haru Bauri, (m.), 39, Coal-cutters.	Coal	Three coal cutters and a female carrier were robbing a pillar of coal in a quarry under overhanging shaley roof. The roof fell, knocking out three props, and stone, 15' \times 4' \times 4' fell on them. One coal cutter was killed instantly. Another died within two hours. The third coal cutter and the carrier were seriously injured. At the time of the accident the quarry was fenced off and no work had been done for three days owing to insufficiency of timber. Inspection and inquiry made. (See Report, page 9.)
33	10th September, 6 A.M.	Damudarpur mine, Nandi P. O., Bengal.	Bengal Coal Co., Ld.	Khette Baurin, (f.), 50, Boiling coolie.	Coal	The deceased woman, who had been bailing water, was resting at a cross road. Stone, measuring 9' \times 2' \times 5" thick, fell upon her from the roof 8 feet above, and fractured her spine and right leg. She died within an hour. Inspection and inquiry made.
34	11th October, 9-30 P.M.	Kurhuharee mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Company.	Gonga Manjhi, (m.), 30, Coal-cutter.	Coal	Deceased passed through a fence and cut coal from a prohibited portion of the pillar of coal which he had been ordered to cut. He released a large slab of roof stone adjacent to a fault, and a piece of this stone, weighing 2 tons, fell on him from a height of 7 feet. He was killed instantly. Inspection and inquiry made.
35	23rd October, 7 A.M.	Gambraia mine, Pind Dadan Khan P. O., Punjab.	Thakur Dass, Ramji Dass	Sher Khan, (m.), 42, Coal-cutter.	Coal	Deceased was killed by a fall of roof whilst working in a prohibited part of a longwall face.
36	30th October, 2-30 P.M.	Sitanala mine, Bhujudih P. O., Bihar and Orissa.	Bengal Coke and Coal Products, Ld.	Bidu Baurin, (f.), 13; Kodi Baurin, (f.), 30, Coal-carriers.	Coal	The gang to which the deceased belonged went through a fence and started to rob coal when a fall of roof stone took place. Bidu was killed instantly and Kodi received injuries from which she died three hours later. Inspection and inquiry made.
37	3rd November, 11-30 A.M.	Bawdwin mine, Namtu P. O., Northern Shan States, Burma.	Burma Corporation, Ld.	Zai Yo Lyin, (m.), 34, Miner.	Lead-silver	Whilst deceased and two other miners were engaged in extending the timbering in a stope closely timbered with square sets, a mass of about one ton of ore fell upon the deceased, killing him instantly. Inspection and inquiry made.
38	26th November, 1-30 P.M.	Loyabad mine, Bansjora P. O., Bihar and Orissa.	Burrakur Coal Co., Ld.	Ruggoo Rai, (m.), 35, Carpenter.	Coal	Deceased was fixing a fence at the edge of a goaf fall, preparatory to starting the extraction of the next pillar, when a fresh fall took place in the goaf. This knocked out a prop so that it struck him on the side of the head, killing him instantly. Inspection and inquiry made.
39	27th November, 2 P.M.	Jealgora (No. 2) mine, Jamnoda P. O., Bihar and Orissa.	East Indian Coal Co., Ld.	Lathua Kole, (m.), 20, Coal-cutter.	Coal	Whilst dressing the roof deceased was killed by a fall of roof coal which came away from two converging 'slips'. He had been previously warned not to start dressing until the sirdar came to supervise the work, as the roof was known to be in a bad condition. Inspection and inquiry made.
40	10th December, 11-30 P.M.	Jainty Central mine, Karmatar P. O., Bihar and Orissa.	Jainty Central Colliery, Ld.	Karam Manjhi, (m.), 30, Coal-cutter.	Coal	Deceased, whilst walking along a tramming level, was buried under a mass of roof, measuring 30' \times 14' \times 3' which fell without warning from a height of five feet. He was killed instantly. Inspection and inquiry made.

APPENDIX II—*contd.*

Fatal Accidents, 1920—*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—<i>contd.</i>						
(a) Fall of roof—<i>conold.</i>						
41	16th December, 8-30 A.M.	Dhobidih mine, Giridih P. O., Bihar and Orissa.	Bengal Giridih Coal Co., Ld.	Melo Mojhan, (f.), 19, Coal-carrier.	Coal	While deceased was sleeping in a gallery, 7 feet wide, she was killed by a mass of roof stone, measuring 11' x 6' 6" x 1' 9" thick, which fell from a height of 5 feet from two converging 'slips.' Inspection and inquiry made.
42	29th December, 7-30 A.M.	Bansjora mine, Bansjora P. O., Bihar and Orissa.	Bansjora Coal Co., Ld.	Domi Rajwar, (m.), 35, Coal-cutter.	Coal	Deceased went into a quarry before the sirdar had made his inspection. While examining the roof at the mouth of an opening leading into the mine, a mass of coal, weighing about 3 tons, fell on him from two converging 'slips' in the roof. The roof had been propped, but the props had been knocked out. Deceased was killed instantly. Inspection and inquiry made.
43	30th December, 5-30 A.M.	Borrea mine, Kulti P. O., Bengal.	New Beerbham Coal Co., Ld.	Maharaj Singh, (m.), 35, Coal-cutter.	Coal	Deceased, whilst levering down roof coal from a ladder in a prohibited area, was slightly injured by a fall of coal. He died shortly afterwards of heart failure. Inspection and inquiry made.
FALLS OF SIDES—(40 deaths).						
44	24th January, 4 A.M.	Tikak mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ld.	Gorey Lama, (m.), 23, Opening-man.	Coal	Whilst three miners were working in an 'opening' 33' x 36' x 18' high, a mass of coal fell without warning from a 'slip', killing deceased instantly and injuring the two other men. Inspection and inquiry made.
45	28th January, 6 P.M.	Hsaikho (Mile 23-6) mine, Namtu P. O., Northern Shan States, Burma.	Burma Corporation, Ld.	Shauk Lu, (m.), 35, Li Wee, (m.), 28, Whe San, (m.), 33, Tan Yin Kawng, (m.), 30, Whe San, (m.), 33, Earth-cutters.	Limestone	A gang of eight earth cutters was engaged in stripping overburden from a hill side in preparation for limestone quarrying. The excavation was 25 feet in depth, and a conical measurement pillar, 20' high x 1' to 10' diameter, had been left unworked. Recent rain had softened the ground, and a mass of several tons of clay fell from the pillar. Five men were killed instantly and the three others were slightly injured. Inspection and inquiry made.
43	31st January, 3 P.M.	Joyrampore mine, Jharia P. O., Bihar and Orissa.	Jainarayan Agarwalla. Ramjash	Balamati Chamarin, (f.), 35, Coal-carrier.	Coal	Whilst a miner was taking down overhanging coal from a pillar in a seam, 25 feet thick, a mass of coal, weighing about 8 tons, fell prematurely from a height of 15 feet. Deceased, who was loading coal at the place, was struck by the falling coal and killed instantly. Inspection and inquiry made.

47	7th February, 10 A.M.	Bhalgora mine, Jharia P. O., Bihar and Orissa.	Bhalgora Coal Co., Ltd.	Akal Kanna, (m.), 21, Coal-cutter.	Coal	A miner's sirdar dislodged a mass of overhanging coal from the corner of a pillar under extraction. In falling, the coal, weighing about 1 ton, dislodged a prop, 26 feet long. The end of the falling prop struck deceased on the head killing him on the spot. Inspection and inquiry made.
48	19th February, 7 A.M.	Sonabhad mine, Jharia P. O., Bihar and Orissa.	Ramjash Agarwalla	Tarwar Bilaspuri, (m.), 50, Coal-cutter.	Coal	Deceased entered an area of disused and fenced-off workings, and began to cut coal from the corner of a pillar in a gallery, 40 feet in height. A mass of coal, weighing about 50 tons, fell from a 'slip' at a height of about 20 feet. He was struck by some of the falling coal and killed on the spot. Inspection and inquiry made.
49	2nd March, 12 Noon.	Mera mine, Hazaribagh P. O., Bihar and Orissa.	Gopi Chand Seth	Ghata Koiri, (m.), 25, Dhania Koiri, (m.) 22, Miners.	Mica	Whilst deceased were working in a quarry about 20 tons of soft overburden fell upon them from the side at a height of 12 feet. They were killed on the spot. Two other persons were injured. Inspection and inquiry made.
50	10th March, 12 Noon.	Sowardih mine, Sudamdih P. O., Bihar and Orissa.	Sowardih Coal Co., Ltd.	Kunja Hari, (m.), 45, Coal-cutter.	Coal	Deceased was employed in cutting floor coal in a quarry. He undercut at the foot of a bench of coal, 5 feet in height, and brought about the fall of about 1 ton of coal and debris. He sustained injuries to which he succumbed later in the day. His wife, who carried coal for him, was slightly injured. Inspection and inquiry made.
51	23rd March, 9 A.M.	Jamadoba (No. 1 Division) mine, Jamadoba P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ltd.	Dinu Bauri, (m.), 45, Coal-cutter.	Coal	Deceased and three other coal cutters were engaged in taking out a pillar of coal in a seam, 12 feet thick. He undermined a corner of the pillar and brought about the fall of a mass of coal, weighing about 30 cwts., from a height of 6 feet. He was struck by the falling coal. His injuries were such that he died a few minutes later. Inspection and inquiry made.
52	5th April, 12-30 P.M.	South East Baraboni mine, Charanpur P. O., Bengal.	Maharaja of Cassimbazar	Etwari Chamar, (m.), 35, Coal-cutter.	Coal	Deceased was standing on a stool cutting overhanging coal from a pillar in course of extraction, when a mass of coal, weighing about 4 tons, broke away from a concealed 'slip' at a height of 8 feet. He was knocked off the stool and struck on the head by a portion of the coal, and died fourteen hours later. Inspection and inquiry made.
53	6th April, 1 P.M.	Sudrendih mine, Nowagarh P. O., Bihar and Orissa.	Jainarayan Agarwalla. Ramjash	Rakhil Hari, (m.), 25, Coal-cutter.	Coal	Deceased undercut the face of a quarry and brought about the fall of a mass of overburden, 10' x 3' x 3' from a height of 3½ feet. He sustained injuries to which he succumbed shortly afterwards. Inspection and inquiry made.
54	9th April, 3 P.M.	Singho-Buria mine, Tisri P. O., Bihar and Orissa.	F. F. Chrestien and Co., Ltd.	Lalo Gope, (m.), 22, Mica dresser.	Mica	Deceased was one of a gang of workers engaged in picking out mica from a dump. Whilst at work at the bottom of a pit, 3 feet wide and 15 feet deep, he was buried by debris which slipped down from the sides of the pit. Before he could be rescued he died from suffocation. Inspection and inquiry made. (See Report, page 9.)
55	23rd April, 1-30 P.M.	Chasnalla mine, Bhojudih P. O., Bihar and Orissa.	Lodna Colliery Co., Ltd.	Khudi Baurin, (f.), 20, Coal-carrier.	Coal	A mass of coal, measuring 12' x 8' x 0' to 4' 6", fell from the side of a gallery, at a height of 12' feet. Deceased was struck by the falling coal and succumbed to her injuries about three hours later. The fall was caused by coal-cutters attempting to rob coal from the side. Inspection and inquiry made.
56	23rd April, 4 P.M.	Kajora mine, Onda P. O., Bengal.	H. N. Pal Choudhury	Ram Kisan Rewani, (m.), 26, Contractor's assistant.	Coal	The deceased was sitting on top of the partially constructed masonry lining of a sinking shaft when a portion of the side, weighing about 1½ cwt., broke away and fell on to him from a height of three feet. He was knocked off the wall and fell a distance of ten feet to the shaft bottom, sustaining serious injuries to the spine. He died eighteen days later. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1920—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.						
(b) Fall of side—contd.						
57	5th June, 2 P.M.	Namdang mine, Margherita P. O., Assam.	Assam Railways and Trading Co., Ltd.	Jogiram Chetri, (m), 40, Coal-filler.	Coal	Whilst deceased was shovelling coal in an 'opening' or chamber a small piece of coal fell from the roof and struck him on the foot, causing a severe contusion. He died in hospital from gangrene two months later. Inspection and inquiry made.
58	15th June, 1 P.M.	Patlabari mine, Barakar P. O., Bihar and Orissa.	Kumardubi Fireclay and Silica Works, Ltd.	Lokhi Mojhian, (f), 38, Coolie.	Fireclay	Deceased went into a disused quarry to pick up some loose fireclay. A portion of the side, weighing about 3 cwt., broke away and fell upon her from a height of 4½ feet. She was fatally injured. Inspection and inquiry made.
59	2nd July, 3-30 P.M.	Kenda mine, Toposi P. O., Bengal.	Banerjee Santan	Sambhu Bauri, (m), 26, Coal-cutter.	Coal	Deceased went into a fenced area and began to break down coal which was already undercut when a mass of coal, weighing about 5 tons, fell on him from a height of 10 feet. He received injuries from which he died three hours later. Inspection and inquiry made.
60	11th July, 6 A.M.	Jamadoba (No. 1 Division) mine, Jamadoba P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ltd.	Melo Mejhain, (f), 19, Coal-carrier.	Coal	Deceased, with other miners, entered a fenced-off area for the purpose of robbing coal. About two tons of coal fell from the top of a pillar. One piece, about 1' 6" x 1' x 9", striking her on the back, killed her instantly. Inspection and inquiry made.
61	18th July, 7-30 A.M.	Saltore mine, Dishergarh P. O., Bihar and Orissa.	Burrakur Coal Co., Ltd.	Thakurmani Mejhian, (f), 22, Puni Korah, (f), 35, Coal-carriers.	Coal	The deceased and another woman were loading machine-cut coal which had been blasted down from the side of a pillar. A mass of coal, weighing about 10 cwts., broke away from the side of the pillar and fell upon them. The deceased were killed and the other woman sustained serious injuries. Inspection and inquiry made.
62	22nd July, 9-30 A.M.	Parbelia mine, Dihsergarh P. O., Bihar and Orissa.	Bengal Coal Co., Ltd.	Isaac Edwards, (m), 31, Overman.	Coal	Deceased was in the sump of a sinking shaft, 1,440 feet in depth, when a piece of stone fell from the side of the shaft and knocked off his helmet. Before he could replace it, another piece of stone, measuring 9" x 6" x 4" fell and struck him on the head, fracturing his skull. He died 7½ hours later. Inspection and inquiry made. (See Report, page 10.)
63	22nd July, 10 A.M.	Alkusa and Kiska mine, Kusunda P. O., Bihar and Orissa.	Kanga & Co.	Tiloo Mallick, (m), 35, Coal-cutter, Khem Mallick, (f), 25, Coal-carrier.	Coal	The deceased left their working place and began to rob coal from the side in another gallery. A mass of coal fell from the side killing them instantly. Another miner, who was cutting floor coal at the time, was injured. Inspection and inquiry made.
64	21st August, 11 A.M.	Tilana mine, Ajmer P. O., Rajputana.	Seth Sita Ram	Chatar Daranga, (m), 35, Coolie.	Mica	Deceased, during the midday rest, went into a disused mine, and commenced to cut out a 'book' of mica. A piece of stone fell from a height of a few feet and struck him on the arm, cutting a blood-vessel. He died from loss of blood several hours later. Inspection and inquiry made.

65	27th August, 3 P.M.	Ledo mine, Margherita P. O., Assam.	Assam Railways Trading Co., Ltd.	Nokaya Mala, (m.), 25, Coal-shoveller	Coal	Deceased was employed in shovelling coal in a narrow road which was timbered. He was buried by a mass of coal, 5' x 4' x 2', which fell from the side knocking out two settings of timber. Inspection and inquiry made.
66	1st September, 5-15 A.M.	Katras mine, Katragarh P. O., Bihar and Orissa.	Nowagarh Coal Co., Ltd.	Nanka Meah, (m.), 20, Coal-cutter.	Coal	Deceased, with his father, entered a fenced area in order to rob coal. The pillars in this area were crushed and a mass of coal, 6' x 4' x 2', fell upon him causing injuries to which he succumbed shortly after. Inspection and inquiry made.
67	2nd September, 2 P.M.	Bhaswakola mine, Rajauli P. O., Bihar and Orissa.	Bal Mukund Sahai	Sunkar Gope, (m.), 25, Coolie.	Mica	Deceased was killed and two other persons were injured by a fall of side in a shallow prospecting pit.
68	8th September, Between 3 and 11 P.M.	Thondaung mine, Maymyo, Burma.	Burma Corporation, Ltd.	Two unknown Burmen.	Iron Ore	Deceased were killed by a fall of earth in a railway cutting.
69	30th September, 10-50 P.M.	Damaghurria mine, Kulti P. O., Bengal.	Damaghurria Coal Co., Ltd.	Mohan Manjhi, (m.), 40, Coal-cutter.	Coal	Deceased had been cutting floor coal. He went through a fence into a gallery, 20 feet distant, to dress the side of a pillar. A mass of some twelve cwt. of coal came away from a stone parting and fell on him. He died two hours later. Inspection and inquiry made.
70	27th October, 10 A.M.	Kalonta mine, Tavoy P. O., Burma.	Burma Finance Mining Co., Ltd.	Karaka Bahadur, (m.), age unknown, Coolie.	Wolfram	Whilst at work in an open cut, where working had been prohibited, deceased was killed by a fall of overburden.
71	5th November, 2 P.M.	Jenlgora mine, Jamadoba P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Phulari Bauri, (m.), 30, Coal-cutter.	Coal	Deceased went through a fence to rob coal from the side of a pillar, and whilst engaged in pulling down coal with a short piece of rail, some of the coal fell upon him, killing him instantly. Inspection and inquiry made.
72	7th December, 12 P.M.	Ena mine, Jharin P. O., Bihar and Orissa.	North West Coal Co., Ltd.	Hulu Chamar, (m.), 30, Coal-cutter.	Coal	Deceased with five other miners was engaged in the extraction of a pillar of coal. He undercut the pillar and caused a mass of coal, about 8' x 3' x 1½' thick, to fall from a 'slip.' The coal fell upon him, causing injuries from which he died about 15 hours later. Inspection and inquiry made.
73	7th December, 4 P.M.	Ekra mine, Bansjora P. O., Bihar and Orissa.	Maharaja of Cassimbazar	Dukan Chamar, (m.), 45, Coal-cutter.	Coal	Deceased went through a fence to rob coal from the corner of a pillar, and brought down upon himself some 2 tons of side coal from a height of 20 feet. He was injured so seriously that he died about an hour afterwards. Inspection and inquiry made.
74	18th December, 12 NOON.	Dhemo Main mine, Sitarampur P. O., Bengal.	Dhemo Main Collieries, Ltd.	Gopal Singha, (m.), 46, Assistant manager.	Coal	Deceased when in the act of getting into a bucket at the bottom of a shaft, 1,146 feet in depth, was struck on the head by a piece of stone which fell from the side of the shaft. He sustained a fracture of the skull and died half an hour later. Inspection and inquiry made. (See Report, page 10.)
75	20th December, 8-30 P.M.	Tikak Lower mine, Margherita P. O., Assam.	Assam Railways & Trading Co., Ltd.	Dalbahadur Thakuri, (m.), 28, Coal-tunner.	Coal	Deceased was working near the back rib in an 'opening' or chamber when a 'bump' caused about 5 tons of coal to drop from a concealed 'slip.' One piece, weighing about ½ cwt., fell on the head of deceased, causing injuries to which he succumbed almost immediately. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1920—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—(44 deaths). Overwinding—(2 deaths).						
76	1st July. 3-30 P.M.	Soebpur mine, Charanpur P. O., Bengal.	Katras Jharis Coal Co., Ld.	Biraj Manjhi, (m.), 36, Coal-cutter; Sukhi Mejbhan, (f.), 25, Coal-carrier.	Coal	Whilst persons were being raised and lowered in a shaft, 350 feet in depth, the winding engine got out of control. The ascending cage, containing the deceased persons, was overwound and held by the detaching hook. Before the engine could be brought to a standstill, the rope, attached to the descending cage in which an injured person was riding, coiled on the drum in the opposite direction and raised the cage some distance above the shaft bottom until it became detached by the jerk and released the cage which fell heavily on the shaft bottom. The deceased persons were fatally injured and one other person was seriously injured. Subsequent to the accident a loose nut was found between the steam regulator valve and its seating. This caused the accident by preventing the engineman from closing the valve during the wind. Inspection and inquiry made.
IN SHAFTS—ROPES AND CHAINS BREAKING— (1 death).						
77	21st January, 2-50 P.M.	Sijua mine, Sijua P. O., Bihar and Orissa.	Tata Iron & Steel Co., Ld.	Lakhi Singh, (m.), 23, Pump-khalassie.	Coal	Deceased was on a pump scaffold near the bottom of a sinking shaft. This was apparently unknown to two men who were fixing pipes in the shaft. Whilst these men were raising some pipes from the bottom of the shaft the winch rope broke and deceased was struck on the head and died on the next day. Inspection and inquiry made.
IN SHAFTS—WHILE ASCENDING OR DESCENDING BY MACHINERY—(18 deaths).						
78	10th January, 4-30 P.M.	Patlabari mine, Chirkunda P. O., Bihar & Orissa.	Chela Panchan and Sons	Bhade Manjhi, (m.), 27, Odhava Bauri, (m.), 22, Pump-khalassies	Coal	The deceased persons were being raised in a pumping shaft by a crab winch. When they were nearing the top of the shaft the rope broke and they fell a distance of 100 feet into water in the shaft bottom. Their bodies were recovered four days later. Inspection and inquiry made.
79	30th January, 4-30 A.M.	Parbelia mine, Disbergarh P. O., Bihar and Orissa.	Bengal Coal Co., Ld.	Nathu Singh, (m.), 32, Head fitter; Ganesham Gope, (m.), 25, Khairo Maujhi, (m.), 28, Madhu Singh, (m.), 27, Sinking Sirdars.	Coal	The stage in a sinking shaft, 1,350 feet in depth, had been lowered a distance of 40 feet to a total depth of 1,260 feet. The signal was given to lower the bucket which was hanging in the shaft 10 feet above the stage. The winding engineman started his engine, lost control of it and ran away. In consequence the bucket was dashed on to the bottom of the shaft. The spare rope on the drum was unwound, the end of the rope broke away from the drum, and 1,500 feet of winding rope fell down the shaft. The deceased who were in the bucket and on the stage, superintending the lowering of the stage, were killed instantly. Inspection and inquiry made.

80	8th March, 10-30 A.M.	Chinchuria mine, Asansol P. O., Bengal.	New Beerbhun Coal Co., Ld.	Kunju Muchi, (m.), 35, <i>Underground pump- man.</i>	Coal	Deceased was descending a shaft, 400 feet in depth. The cages collided at the meetings and he was thrown out and fell a distance of 200 feet to the shaft bottom and killed instantly. The cages were not fitted with gates. Inspection and inquiry made. (<i>See Report, page 10.</i>)
81	18th September, 7 P.M.	Bawdwin Mine, Namtu P. O., Northern Shan States, Burma.	Burma Corporation, Ld.	Law Mein, (m.), Law Mein, (m.), Leo Shew Kway, (m.), Kow Pyn Yone, (m.), Law Swain, (m.), <i>Miners;</i> Law Tai, (m.), Yan Pin Kyone, (m.), Wong Pan, (m.), Law Kyow, (m.), Law Kyam, (m.), <i>Shovellers;</i> Hoo Shan Kyeo, (m.), <i>Trucker.</i>	Lead-silver	Whilst ten persons were being lowered in a cage in a vertical shaft, 543 feet deep, the cage jammed in the wooden guides. The engineman continued to lower the rope, and loose coils of it projected into the adjacent compartment of the shaft and were caught by the ascending cage. The contact was sufficient to release the jammed cage, but it fell again to the limit of the slack rope. The resulting jerk broke the clamps of the tumbler capping by which the rope was attached to the cage. The cage fell to the shaft bottom, killing all its occupants and another man who happened to be looking up the shaft from an intermediate level. Safety-catches were attached to the cage, but they failed to come into action. Inspection and inquiry made. (<i>See Report, page 11.</i>)
IN SHAFTS—FALLING INTO THE SHAFT FROM THE SURFACE—(3 deaths).						
82	2nd February, 11 A.M.	Square 16(c) mica mine, Kodarma P. O., Bihar and Orissa.	Lakshmi Narayan Sukhani	Rahan Gopa, (m.), 20, <i>Miner.</i>	Mica	Deceased was crossing a hillside, honeycombed with old prospecting pits. The top of one of these pits, 16 feet deep and 3' 6" in diameter, was covered with <i>debris</i> , which broke down with his weight. He fell to the bottom of the shaft and was covered up by <i>debris</i> which fell after him. When the body was recovered about 1½ hours later it was found that death had been caused by suffocation. Inspection and inquiry made.
83	8th May, 6-30 A.M.	Kandri mine, Ramtek P. O., Central Provinces.	Central Provinces Prospecting Syndicate, Ld.	Mansook Padama, (m.), 35, <i>Miner.</i>	Manganese	Whilst at work getting ore in a quarry deceased fell into a winze, 80 feet deep, and was killed instantly.

APPENDIX II—contd.

Fatal Accidents, 1920—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—FALLING INTO THE SHAFT FROM THE SURFACE—contd.						
84	15th September, 7-30 A.M.	Pandaveswar mine, Pandaveswar P. O., Bengal.	Highfield Colliery, Ld.	Jhalka Manjhi, (m.), 25, Hookman.	Coal	Deceased, a surface hookman, whilst assisting to land a bucket on the trolley at the top of a sinking shaft, stepped off the trolley into a gap formed between the trolley and the side of the shaft. He fell to the bottom of the shaft sustaining a fracture of the base of the skull, death being instantaneous. Inspection and inquiry made. (See Report, page 11.)
IN SHAFTS—FALLING INTO THE SHAFT FROM PART OF THE WAY DOWN—(4 deaths).						
85	19th March, 9 P.M.	Central Kurkend mine, Kusunda P. O., Bihar and Orissa.	Central Kurkend Coal Co., Ld.	Ramcharan Barhi, (m.), 25, Shaft-sinker.	Coal	Deceased was one of a gang of 12 men who were drilling shot holes at the bottom of a sinking shaft, 446 feet deep. Having finished drilling he climbed up on to a pump suspended about 10 feet above the shaft bottom, where he obtained shelter from water dropping from above. It is presumed that he dozed, for, about half an hour later he fell to the shaft bottom. His knee was injured and the wound became septic. He died four days later. Inspection and inquiry made.
86	7th May, 5-30 A.M.	Angarpathra mine, Katrasgarh P. O., Bihar and Orissa.	National Coal Co., Ld.	Rajeswar Gope, (m.), 22, Chargeman.	Coal	The deceased was being lowered down a sinking shaft, 130 feet deep. His foot appears to have slipped out of the loop at the end of the rope, which was being lowered by hand. He fell some 50 feet to the shaft bottom. His legs were broken above the ankle, and he died five hours later. Inspection and inquiry made.
87	2nd September, 7-15 P.M.	BawJwin mine, Namtu P. O., Northern Shan States, Burma.	Burma Corporation, Ld.	Loa Yun, (m.), Shoveller.	Lead-silver.	Deceased was climbing a ladder, 15 feet long, inclined at an angle of 1 in 4, and leading to a stop where he worked. He was carrying a shovel in one hand and a candle lantern in the other. He fell from the ladder and through the opening in the platform below to the foot of a lower ladder, 28 feet long. He sustained a fracture of the base of the skull and died on the way to hospital. Inspection and inquiry made. (See Report, page 12.)
88	15th October, 1 P.M.	Palmani mine, Sydapuram P. O., Madras.	W. A. Beardsell & Co.	Badiwal Sabba Reddi, (m.), 38, Hand-jumper coolie.	Mica	Whilst climbing a ladder in a vertical shaft, deceased slipped and fell to the bottom, 45 feet below. He succumbed to his injuries shortly after.
IN SHAFTS—THINGS FALLING FROM THE SURFACE—(4 deaths).						
89	9th January, 4 A.M.	Purusathampur mine, Pandaveswar P. O., Bengal.	Tata Iron & Steel Co., Ltd.	Kadu Meah, (m.), 30, Sinking Sirdar.	Coal	A bucket of debris and water was being raised from the bottom of a sinking shaft, 270 feet in depth. On reaching the surface the bucket was swung out towards the chute, and the catches were opened for the bucket to be emptied. Before it was emptied, the winding engineman raised the bucket and, as the catches were open, the contents of the bucket were tipped into the shaft. A piece of stone struck deceased in the shaft bottom and killed him instantly. Inspection and inquiry made. (See Report, page 12.)

90	22nd March, 5 P.M.	Mudidih mine, Sijua P. O., Bihar and Orissa.	Barrakur Coal Co., Ltd.	Dhanu Singh, (m.), 35, <i>Sinking Sirdar.</i>	Coal	Whilst a gang of seven sinkers was at work at the bottom of a sinking pit, 290 feet deep, an overwind took place. A loaded bucket was drawn up into the headgear, and its impact dislodged a steel girder, 10 feet 7 inches in length, which fell to the bottom of the shaft, and killed deceased. Inspection and inquiry made. (<i>See Report, page 12.</i>)
91	15th May, 8-30 A.M.	Mudidih mine, Sijua P. O., Bihar and Orissa.	Barrakur Coal Co., Ltd.	Behari Ieli, (m.), 32, <i>Pit-sinker.</i>	Coal	Deceased and three others were at the bottom of a sinking shaft, 348 feet deep, for the purpose of lading water into a bucket. A brick fell down the shaft and struck deceased on the head, killing him instantly. There was suspicion that somebody had thrown the brick into the shaft, but no evidence of this was obtained. Inspection and inquiry made.
92	29th September, 5-30 P.M.	Lakurka mine, Katrasgarh P. O., Bihar and Orissa.	Lakurka Coal Co., Ltd.	Mahadeo Suri, (m.), 16, <i>Coal-cutter.</i>	Coal	Whilst adjustments at the top of a head gear were in progress, a piece of round timber, 3' diameter and 5'-6" in length, which was being used as a lever, slipped from the hands of a coolie, and fell down the shaft. In falling, it glanced off the side of the shaft into the mouth of a gallery at the shaft bottom, 221 feet below. Deceased, who was sitting there, was struck on the head and sustained injuries which caused death ten hours later. Inspection and inquiry made.
IN SHAFTS—THINGS FALLING FROM PART OF THE WAY DOWN—(2 deaths).						
93	8th January, 1 P.M.	Jamadoba mine, Jamadoba P. O., Bihar and Orissa.	Tata Iron & Steel Co., Ltd.	Bhaglow Myan, (m.), 30, <i>Sinker.</i>	Coal	Whilst deceased with 16 other persons was at work at the bottom of a sinking shaft 210 feet deep, a piece of stone, weighing about 5 lbs., fell upon his head and killed him instantly. The stone fell from the side of the shaft, but the particular place from which it fell could not be detected. Inspection and inquiry made.
94	11th September, 11 A.M.	Nandlagunta mine, Sydapuram P. O., Madras.	W. A. Beardsell & Co.	Rapur Subbie, (f.), 14, <i>Carrier.</i>	Mica	Debris was being raised in buckets at a windlass shaft. The empty bucket in descending fouled the loaded bucket, and became detached from the rope. It fell upon the deceased injuring her fatally.
IN SHAFTS—MISCELLANEOUS—(10 deaths).						
95	11th January, 4 A.M.	Kirkend mine, Kusunda P. O., Bihar and Orissa.	Kirkend Coal Co.	Miton Bauri, (m.), 38, <i>Coal-cutter.</i>	Coal	Deceased, whilst attempting to cross the bottom of a shaft, was knocked down and killed instantly by the descending cage. Inspection and inquiry made.
96	28th January, 1 P.M.	Bhalgora mine, Jharia P. O., Bihar and Orissa.	Bhalgora Coal Co., Ltd.	Barhon Meah, (m.), 26, <i>Onsetter.</i>	Coal	Deceased whilst attempting to cross the bottom of a shaft instead of going round by the road provided, was struck by the descending cage and killed instantly. Inspection and inquiry made.
97	3rd February, 8 P.M.	Gasliton mine, Sijua P. O., Bihar and Orissa.	New Manbhuan Coal Co., Ltd.	Chattu Pathak, (m.) 34, <i>Munsii.</i>	Coal	Deceased whilst attempting to cross the bottom of a shaft was crushed by the descending cage. He sustained injuries to which he succumbed shortly after. A proper pass-by was provided. Inspection and inquiry made.
98	17th February, 9 P.M.	Hatgaronic mine, Sitarampore P. O., Bengal.	Barrakur Coal Co., Ltd.	Palu Meah, (m.) 35, <i>Onsetter.</i>	Coal	Deceased, whilst attempting to cross the bottom of a shaft was struck by the descending cage and killed instantly. A travelling road around the shaft was provided. Inspection and inquiry made.
99	31st March or 1st April, between 7 P.M. and 6 A.M.	Bhuggutdih mine, Jharia P. O., Bihar and Orissa.	Bengal Nagpur Coal Co., Ltd.	Panu Bauri, (m.), 36, <i>Sirdar.</i>	Coal	Deceased was found dead at the bottom of a cage pit, 321 feet deep. His injuries were such as might have been caused by a fall from the surface or from the cage. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1920—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—contd.						
100	3rd April, 7-30 P.M.	Central Jamehari mine, Raniganj P. O., Bengal.	Central Jamehari Coal Co., Ltd.	Kanker Rajwar, (m.), 30, <i>Sinker.</i>	Coal	Deceased was being raised by hand out of a sinking shaft, 72 feet in depth, when a mass of soft strata, weighing about 5 cwts., fell from the side of the shaft and struck him, causing him to let go of the rope and fall a distance of 54 feet to the bottom of the shaft. He was killed instantly. Inspection and inquiry made.
101	16th April, 8-30 A.M.	Parbelia mine, Dishergarh P. O., Bihar and Orissa.	Bengal Coal Co., Ltd.	Ram Manjhi, (m.), 28, <i>Sinker.</i>	Coal	A sinking bucket full of debris was being steadied preparatory to being raised from a shaft bottom. Deceased, who was loading another bucket, stumbled and fell against the first one which was spinning round. His head came into contact with the handle of the bucket and he was killed instantly.
102	3rd June, 12-15 P.M.	Harriladih mine, Jharria P. O., Bihar and Orissa.	Equitable Coal Co., Ltd.	Budu Gope, (m.), 34, <i>Sinker.</i>	Coal	Deceased was one of a gang of men employed in putting down a borehole in the bottom of a sinking shaft, 390 feet deep. Whilst they were at work, a water barrel was lowered, and deceased did not get out of the way quickly enough. He was struck on the head, sustaining injuries which resulted in death on the following day. Inspection and inquiry made.
103	6th August, 6-15 A.M.	Gopalichuck West mine, Bansjora P. O., Bihar and Orissa.	Gopalichuck Coal Co., Ltd.	Adu Singh, (m.), 32, <i>Pump-khalasia.</i>	Coal	Deceased went down a shaft, 365 feet deep, in a bucket to adjust a pump slung in the shaft. The atmosphere was hot and steamy. He was overcome by the heat, dropped into the water, and was drowned. Inspection and inquiry made. (<i>See Report, page 13.</i>)
104	25th December, 2 P.M.	Ghorawadi mine, Jamai P. O., Central Provinces.	S. Shahabuddin and Sons.	Rukhia, (f.), 17, <i>Labourer.</i>	Coal	Whilst at work in a coal quarry, deceased was killed by the fall of a tree on the edge of the quarry.
SUFFOCATION BY GASES—(8 deaths).						
105	18th June, 8-0 A.M.	Burria Domchanch mine, Domchanch P. O., Bihar and Orissa.	F. F. Chrestien and Co., Ltd.	Mulia Gope, (m.), 20, Ugar Dhobi, (m.), 20, <i>Pump-khalasiae ;</i> Saniehar Singh, (m.), 18, <i>Coolie.</i>	Mica	Two men were being lowered in a bucket, 19" diameter by 20" deep, into a disused shaft, 120 feet deep, for the purpose of bailing water at the bottom. At a depth of 24 feet they were overcome by blackdamp and before they could be raised to the surface, they released their hold of the rope and fell to the shaft bottom. A third man went to the rescue and suffered the same fate in a similar manner. When the bodies of deceased were brought to the surface their skulls were found to be fractured. Inspection and inquiry made.

106	13th September, 4 P.M.	Bhalua mine, Domchanch P. O., Bihar and Orissa.	F. F. Chrestien and Co., Ld.	Shan Singh, (m), 36, Hular Dosad, (m) 40, Bhatu Turi, (m), 26, Bhatu Kamar, (m), 30, Miners.	Mica	The deceased were employed in prospecting for mica. They descended a disused shaft, 22 feet deep. Owing to the presence of foul air in the shaft they were overcome and died of suffocation. Inspection and inquiry made.
107	30th December, 10 A.M.	Bagdigi mine, Jharia P. O., Bihar and Orissa.	C. J. Smith	Lakhi Ram Bauri, (m), 18, Earth-cutter.	Coal	While engaged in clearing out an old air shaft, in proximity to an under-ground fire, the soft earth forming the bottom of the shaft gave way, causing deceased to slip into a gallery which was full of blackdamp. Deceased was asphyxiated before he could be rescued. Inspection and inquiry made. (See Report, page 13.)
BY EXPLOSIVES—(12 deaths).						
108	17th February, 9 P.M.	Barkui mine, Pench P. O., Central Provinces.	Pench Valley Coal Co., Ld.	Noor Khan, (m), 14, Shotfirer's assistant.	Coal	Deceased went to sleep in a mine near a wooden chest, in which a leather bag containing 5 lbs of gunpowder had been placed. The gunpowder exploded and he sustained severe burns, which resulted in death on the following day. It is probable that he had placed his lamp near the box and thus ignited the gunpowder.
109	4th March, 2-0 A.M.	Kandri mine, Ramtek P. O., Central Provinces.	Central Provinces Pro- specting Syndicate, Ld.	Gariba, (m), 29, Miner.	Manganese	Deceased, in violation of the rules, commenced drilling in an old shot-hole. An explosion took place, and he sustained injuries which resulted in death a few days later. There was probably some dynamite in the old hole which had not been detonated when the previous shot was fired.
110	12th March, 8 P.M.	Serampore mine, Giridih P. O., Bihar and Orissa.	East Indian Railway Co.	Chota Keso Gopa, (m) 25, Stone-cutter.	Coal	The deceased and a dynamite carrier, although not authorized to fire shots, were preparing to fire shots in a heading which was within three feet of connection with another heading. In this second heading shots had been fired about 20 minutes before, and a missfire had occurred. An explosion took place, killing deceased and seriously injuring the other man. Inspection and inquiry made.
111	11th April, 3 P.M.	Hermyingyi mine, Tavoy P. O., Burma.	Burma Finance and Mi- ning Co., Ld.	Chong Keo, (m), 40, Dump-picker.	Wolfram	The deceased was employed in picking out ore from a waste dump, and was not authorized to work in an adit or to have or use explosives. Without permission, he entered an old adit and charged a shot there. The charge hung fire, but exploded when he had returned to the place. He sustained injuries which resulted in death on the following day.
112	24th July 1920, 3-30 P.M.	Bhajipani mine, Pench P. O., Central Provinces.	Pench River Coal Co., Ld.	Mandhir Kole, (m), 18, Coal-cutter.	Coal	Deceased, although not authorized to fire shots, obtained gunpowder cartridges and stemmed two shot holes in the absence of the shotfirer. He accidentally lit a third cartridge which he was holding in his hand. The cartridge exploded and inflicted severe burns to which he succumbed six days later. Inspection and inquiry made.
113	6th August, 9 A.M.	Saltore mine, Dishergarh P. O., Bihar and Orissa.	Burrakur Coal Co., Ld.	Durga Pasi, (m), 35, Coal-cutter.	Coal	Deceased was drying a quantity of loose gunpowder near a fire when it became ignited and exploded. He was seriously burnt about the upper part of the body and died four days later. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1920—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.
HAULAGE—contd.						
127	3rd September, 5-30 A.M.	Bulliyari mine, Kusunda P. O., Bihar and Orissa.	Chuni Lal Coal Co.	Johuri Mish, (m.), 35, <i>Mining Sirdar.</i>	Coal	A train of empty tubs was being lowered down an incline, when the front tub became detached from the rest of the train, ran wild and was derailed at a curve where deceased was sitting. The tub pinned him against the side causing injuries from which he died three hours later. Inspection and inquiry made.
128	12th November, 9 P.M.	Khost mine, Khost P. O., Baluchistan.	North Western Railway	Ali Shafa, (m.), 25, <i>Miners' coolie.</i>	Coal	Deceased and another miner were being raised in a tram up a steeply inclined shaft. The tram derailed, and deceased, in attempting to get out of it, fell to the bottom of the shaft, 400 feet below, and was killed.
129	23rd December, 3 A.M.	Kustore North mine, Kusunda P. O., Bihar and Orissa.	Raniganj Coal Association, Ltd.	Sumi Mejhian, (f.), 17, <i>Coal-carrier.</i>	Coal	Whilst lowering tubs from an underground landing on to a stop-block, the hookman missed a sprag with the result that two loaded tubs collided with two other tubs standing against the stop-block. The stop-block was broken by the impact, and the four loaded tubs ran wild for a distance of 100 feet and collided with two empty tubs which were standing at the entrance to a loading station. The empty tubs were overturned and fell on deceased, who was lying asleep at the time. She was killed instantly. Inspection and inquiry made.
190	25th December, 9 A.M.	Banksimulla mine, Charanpur P. O., Bengal.	Bengal Coal Co., Ltd.	Dukhni Kole, (f.), 50, <i>Dust-carrier.</i>	Coal	Deceased was walking along a landing in the middle of the track for the loaded tubs. She was run over and killed by a tub. Inspection and inquiry made.
131	26th December, 8 A.M.	Barkui mine, Pench P. O., Central Provinces.	The Pench Valley Coal Co., Ltd.	Mulchand Kotwar, (m.), 35, <i>Coal-cutter.</i>	Coal	A train of empty tubs was being lowered down an incline when the leading tub became uncoupled and ran wild. Deceased, who was walking up the incline, was struck by the run-away tub and fatally injured. Inspection and inquiry made.
192	27th December, 9-30 A.M.	Ghugus mine, Ballarpur P. O., Central Provinces.	Sir Kasturchand Daga and Mr. M. B. Dada-bboy.	Ramdoe, (m.), 14, <i>Trammer.</i>	Coal	Deceased was crushed between two tubs on a haulage road and sustained injuries which resulted fatally on the following day.
133	28th December, 1 P.M.	Patmohna mine, Sitarampur P. O., Bengal.	Patmohna Collieries, Ltd.	Jugal Bauri, (m.), 32, <i>Trolleyman.</i>	Coal	Deceased was guiding a train of five full tubs round a curve, when his foot slipped under the rear wheel of the leading tub, and two of his toes were severed. Tetanus supervened and he died fourteen days later. Inspection and inquiry made.

SUNDRIES UNDERGROUND—(11 deaths).

184	16th January, 3-30 P.M.	Dishergarh mine, Dishergarh P. O., Bengal.	Equitable Coal Co., Ld.	Rupa Sing, (m.), 40, <i>Tindal Sirdar.</i>	Coal	An electrically driven pump was being lowered down a dip gallery. Deceased, in spite of being warned not to do so, caught hold of the cables before the current was cut off. He was electrocuted. Inspection and inquiry made.
185	24th January, 4-30 A.M.	Sijua mine, Sijua P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ld.	Bigan Napit, (m.), 36, <i>Coal-cutter.</i>	Coal	This accident took place in a coal seam, 19 feet thick, which is worked in two sections. An intermediate band of shale, 2 feet thick, forms the floor of the top section and the roof of the lower section. A fall of roof in the lower section had reduced the thickness of the band. Whilst deceased was carrying a basket in the upper section the floor broke away leaving a hole, 2' 6" in diameter, through which he fell to the floor of the bottom section, a distance of 12 feet. His skull was fractured and he died within two days. Inspection and inquiry made.
186	2nd February, 3 P.M.	Jatachappa mine, Pench P. O., Central Provinces.	The Upper Pench Coal Co., Ld.	Manti Chamarin, (f.), 18, <i>Tub-filler.</i>	Coal	Deceased was carrying a piece of coal on her head and lost her footing. The coal fell on her leg and cut it. She died in hospital a week afterwards from tetanus.
187	20th February, 10 A.M.	Benahir mine, Jharia P. O., Bihar and Orissa.	Standard Coal Co., Ld.	Pustab Mura, (m.), 35, <i>Coal-cutter.</i>	Coal	A gang of seven coolies was carrying a prop through a gallery, in which props had been set. The prop they were carrying bumped against a standing prop, 24' 6" long, and knocked it out. Deceased was sitting down resting at a distance of about 20 feet. The falling prop struck him on the head and killed him instantly. Inspection and inquiry made.
188	17th May, 4 P.M.	Tikak Lower mine, Margherita P. O., Assam.	Assam Railways and Trad- ing Co., Ld.	Shatey Mongar, (m.), 20, <i>Tub-filler.</i>	Coal	Deceased was shovelling coal down a narrow and steeply inclined road from an 'opening' or chamber above, when he slipped and fell upon his shovel. He sustained injuries to the abdomen and died on the following day. Inspection and inquiry made.
189	10th June, 5 A.M.	Mohpani mine, Mohpani P. O., Central Provinces.	Great Indian Peninsula Railway.	Sukhia Kotwarin, (f.), 22, <i>Coal-carrier.</i>	Coal	Deceased, whilst carrying a basket of earth on her head up a gradient of 1 in 6, slipped and fell down. The loaded basket fell upon her back. She sustained spinal injuries which resulted fatally within 24 hours.
140	19th June, 6-15 A.M.	Bhalgora mine, Jharia P. O., Bihar and Orissa.	Bhalgora Coal Co., Ld.	Sok hi Korah, (m.), 45, <i>Coal-cutter.</i>	Coal	Deceased was sitting at a distance of about 22 feet from a point where the cutting of top coal in a pillar, 24 feet high, was in progress. A large piece of coal, which was thrown down by the miner who had cut it, struck the foot of a long prop supporting the roof, and this prop fell out and struck deceased on the head killing him instantly. Inspection and inquiry made.
141	22nd June, 12 noon.	Taungpila mine, Tavoy P. O., Burma.	Quah Cheng Guan	Bhima Behara, (m.), 30, <i>Tributor.</i>	Wolfram	Whilst deceased was prospecting on the surface, the ground subsided over an old adit, and he was engulfed. His body was recovered by excavating to a depth of 20 feet. Death was due to suffocation.
142	23rd August, 4 P.M.	Khost mine, Khost P. O., Baluchistan.	North Western Railway	Ganesh Dass, (m.), 25, <i>Mine maistry.</i>	Coal	Deceased was engaged in releasing the stone in a blocked shaft. He was caught in the sliding debris and fatally crushed.
143	1st November, 2 P.M.	Banksimula mine, Charanpur P. O., Bengal.	Bengal Coal Co., Ld.	Khedan Koiri, (m.), 16, <i>Coal-cutter.</i>	Coal	Deceased was carrying a lump of coal, weighing about 40 lbs., to a tub on an underground tramway when he fell down and sustained injuries to the head from which he died an hour later. Inspection and inquiry made.

APPENDIX II—*contd.*

Fatal Accidents, 1920—*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—<i>contd.</i>						
144	3th December, 12 noon.	Bhelatand mine, Sijua P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ld.	Rajani Meah, (m.), 22, Coal-cutter.	Coal	Deceased was cutting coal on the last portion of a pillar under extraction when a fall of about 3 cwts. of roof stone occurred. In avoiding it he tripped and fell on his back across the rail of a tramway. His spine was partially fractured and he died twelve days later. Inspection and inquiry made.
SURFACE MACHINERY—(1 death).						
145	18th March, 8-30 P.M.	Ekhlehra mine, Pench P. O., Central Provinces.	Pench River Coal Co., Ld.	Krishna Gond, (m.), 18, Banksman.	Coal	Deceased was pushing a loaded tub into a tippler when the keps were accidentally withdrawn too soon. He overbalanced and fell forward into the chute. The tub fell upon him and killed him. Inspection and inquiry made.
SURFACE BOILERS OR PIPE BURSTING— (1 death).						
146	18th September, 6 P.M.	Kendra mine, Pandaveswar P. O., Bengal.	Sarla Kendra Collieries, Ld.	Surja Kumar, (m.), 24, Blacksmith.	Coal	A fitter was trying to caulk a joint where a 6" bend pipe, off a main steam range, was screwed on to a flange bolted to the closed stop valve of an empty Lancashire boiler. He omitted to shut down the stop valve of another connected boiler which was working at a pressure of 100 lbs. per square inch. The bend was blown out of the flange, the connected portion of the main steam range became unscrewed, and the whole was flung to earth 7 feet below, taking with it the deceased blacksmith who was assisting. He died from his injuries within an hour. Inspection and inquiry made. (See Report, page 15.)
ON SURFACE RAILWAYS AND TRAMWAYS BELONGING TO THE MINES—(10 deaths).						
147	23rd January, 3-30 P.M.	Bokaro mine, Bokaro P. O., Bihar and Orissa.	East Indian and Bengal Nagpur Railways.	Gangia Mallahin, (f.), 14, Coal-carrier.	Coal	Deceased attempted to uncouple one of a train of 25 empty tubs which was being pushed by hand on a siding in a quarry. She fell between the tubs and was dragged for some distance, sustaining a lacerated wound on the leg. She died of pneumonia in hospital about six weeks later. Inspection and inquiry made.
148	26th January, 3 P.M.	Shivrajpur mine, Shivrajpur P. O., Bombay.	Shivrajpur Syndicate, Ld.	Darga Lalla, (m.), 54, Coolie.	Manganese	Deceased was crushed between a tub and the side of an open cutting on a surface tram line. Several of his ribs were fractured and, pneumonia supervening, he died five days later.
149	6th March, 5 P.M.	Bokaro mine, Bokaro P. O., Bihar and Orissa.	East Indian and Bengal Nagpur Railways.	Moirā Lohar, (m.), 13, Sprag-carrier.	Coal	Deceased, whilst attempting to push a loaded tub through a tippler, fell on the line and was run over by a tub which was following. He was injured internally and died about two hours later. Inspection and inquiry made.

150	29th March, 8 A.M.	Kongon mine, Kongon P. O., Assam.	Nazira Coal Co., Lt.	Putna, (f.), 30, Trummer.	Coal	Deceased, while at work at the foot of a self-acting incline, was run over and killed by a train of tubs which broke away after a collision caused by the loaded train being sent down the wrong line. Inspection and inquiry made.
151	2nd June, 1-30 P.M.	Bawdwin mine, Namtu P. O., Northern Shan States, Burma.	Burma Corporation, Lt.	Sandoo, (m.), age unknown, Trackman.	Lead-Silver.	Deceased, whilst sleeping on the line in a tunnel was run over and killed by an electric motor trolley.
152	5th June, 8-35 P.M.	Knaadib mine, Kalipahari P. O., Bengal.	Knaadib Coal Co., Lt.	Bhusan Bhumji, (m.), 18, Coal-cutter.	Coal	Deceased, whilst under the influence of liquor, attempted to step on to a moving locomotive. He slipped and fell with his leg across the rail, and one of the wheels passed over his foot. He died from tetanus four days later. Inspection and inquiry made.
153	21st June, 9 P.M.	Chatrisconla mine, Pandaveswar P. O., Bengal.	Samla-Kendra Collieries, Lt.	Nanu Bauri, (m.), 19, Boiler fireman.	Coal	Deceased was sleeping close to or between the rails on a surface railway siding. A train of empty tubs was backed into the siding and two tubs which were standing on the line were pushed forward a short distance. Deceased was dragged along by the front tub and fatally injured. Inspection and inquiry made.
154	6th July, 8 A.M.	Khewra mine, Khewra P. O., Punjab.	Government of India	Ali Mohamed, (m.), 20, Coolie.	Salt	Whilst tipping a wagon loaded with salt, deceased slipped and fell under the wagon. The body of the wagon and its load of salt fell upon him causing injuries which resulted in death shortly after.
155	12th October, 7-30 P.M.	Bullhari mine, Kusunda P. O., Bihar and Orissa.	Bullhari Coal Co.	Narbada Shanker, (m.), 16, Tub-checker.	Coal	Deceased attempted to 'tip' a loaded coal tub from an overbridge on to a loading depot, 12 feet below. Both the body and the frame of the tub overturned carrying deceased with them. He was crushed beneath the frame and received injuries to the head from which he died immediately after. Inspection and inquiry made.
156	16th November, 9-30 P.M.	Ena mine, Jharua P. O., Bihar and Orissa.	North-West Coal Co., Lt.	Mahadi Meah, (m.), 24, Trolley coolie.	Coal	Deceased, whilst walking along a surface tram line, was overtaken by a train of ten loaded tubs. He was run over and killed instantly. He was somewhat deaf and hence failed to hear the train coming behind him. Inspection and inquiry made.
MISCELLANEOUS ON SURFACE.—(21 deaths.)						
157	4th January, 11 A.M.	Parascole mine, Ondal P. O., Bengal.	Bengal Coal Co., Lt.	Trilochon Das, (m.), 28, Carpenter.	Coal	Deceased was helping to remove a beam supporting the roof of a boiler house. The beam was safely lowered to the ground and deceased subsequently fell from a height of 12 feet on to the ground, from the top of a brick pillar on which he was sitting. He died of heart failure 18 hours later. Inspection and inquiry made.
158	17th February, 12-15 P.M.	Kargali mine, Bokaro P. O., Bihar and Orissa.	Great Indian Peninsular Railway.	Thukal Tanti, (m.), 40, Coal-cutter.	Coal	Deceased was getting coal with a hammer and wedge in a quarry. A small piece of the top of the wedge flew off and struck him on the leg, severing the femoral artery. He died from loss of blood within half an hour. Inspection and inquiry made. (See Report, page 15.)
159	23rd February, 4-30 P.M.	Bellarpur mine, Bellarpur P. O., Central Provinces.	Sir K. C. Daga and Mr. M. B. Dadabhoy.	Motya, (m.), 12, Oil boy.	Coal	Deceased entered a sand-bin used for supplying sand for mine packing. The sand fell upon him and he was suffocated.

APPENDIX II—contd.

Fatal Accidents, 1920—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.
MISCELLANEOUS ON SURFACE—contd.						
160	3rd March, 4-30 P.M.	Amlabad mine, Jharia P. O., Bihar and Orissa.	Eastern Coal Co., Ltd.	Bhim Doba, (m.), 22, <i>Earth-cutter.</i>	Coal .	Whilst cutting earth for a railway embankment, deceased under-mined a bank, 8 feet high. A mass of congealed sand and gravel, weighing about a ton, fell upon him from a height of 4'-8". He died shortly after. Inspection and inquiry made.
161	17th March, 9-30 A.M.	Muslia mine, Kalipahari P. O., Bengal.	Ghusick and Muslia Collieries, Ltd.	Nidhi Baurin, (f.), 25, <i>Loading coolie.</i>	Coal .	Deceased and another woman were loading a wagon at a depot. They were filling baskets of coal within a passage through an embankment. The passage was flanked by vertical masonry walls. One of the walls collapsed suddenly and completely buried deceased. Her companion, who was only partially buried, was rescued. Inspection and inquiry made.
162	2nd April, 9-25 A.M.	Lodna mine, Jharia P. O., Bihar and Orissa.	Lodna Colliery Co., Ltd.	Thakur Singh, (m.), 19, <i>Labourer.</i>	Coal .	Deceased, presumably out of curiosity, climbed up a steel tower carrying wires transmitting electricity at a pressure of 500 volts. He was found hanging on the wires, and when the current was switched off, he fell to the ground. Artificial respiration was applied, but failed to restore animation. Inspection and inquiry made.
163	30th April, 2 P.M.	Hermyingyi mine, Tavoy P. O., Burma.	The Burma Finance and Mining Co., Ltd.	Ramsawmy, (m.), 15, <i>Wood cutter.</i>	Wolfram .	Whilst deceased was cutting a log it slipped and rolled on him, inflicting injuries which caused his death on the following day.
164	2nd May, 8 A.M.	Kajora Khas mine, Ondal P. O., Bengal.	Kajora Khas Collieries, Ltd.	Bhiri Baurin, (f.), 45, <i>Rope coolie.</i>	Coal	Two leather buckets containing water were being raised by separate ropes from the bottom of a sinking shaft, 80 feet in depth. One of the buckets reached the surface and the banksman shouted for the rope to be slackened. The women, who were pulling the rope of the second bucket, which was five feet from the top of the shaft, thinking that the signal to slacken the rope was meant for them, let go of the rope and allowed the bucket to run back. Deceased became entangled in the rope and was dragged a distance of 30 feet along the ground. She sustained concussion of the brain and died half an hour later. Inspection and inquiry made.
165	13th May, 0-30 P.M.	Hetkantra mine, Bhujadib P. O., Bihar and Orissa.	Krishna Coal Co., Ltd.	Tusi Baurin, (f.), 15, <i>Earth carrier.</i>	Coal	Deceased went through a fence to get drinking water from a disused and water logged quarry. She fell into the water and sank immediately. Her body was recovered four days later. Inspection and inquiry made.
166	7th June, 8-30 A.M.	Patmohna mine, Sitarampur P. O., Bengal.	Patmohna Collieries, Ltd.	Ram Lal Pan, (m.), 20, <i>Gurkha guard.</i>	Coal	Deceased was found in the bottom of a disused incline cutting containing water. It was presumed that he went out of his depth whilst bathing, and fell into the mud on the bottom which prevented him from saving himself. Inspection and inquiry made.

167	21st June, 8 A.M.	Taungpila No. 2 mine, Tavoy P. O., Burma.	Tavoy Wolfarm Co.	Lg. Shaw, (m.), 34, <i>Miner.</i>	Wolfgram	Deceased was engaged in ground sluicing at the foot of a dump. The flow of water undermined the dump, and a portion of it fell upon deceased and buried him.
168	21st July, 2 P.M.	Hermyingyi mine, Tavoy P. O., Burma.	Burma Finance and Mining Co., Ld.	Khow Wong, (m.), 35, <i>Dump picker.</i>	Wolfgram	Deceased was engaged in picking out ore from a waste dump. A slide of loose rock took place. He was buried by the sliding rock, and sustained injuries to which he succumbed on the same day.
169	11th August, 1-30 A.M.	Hermyingyi mine, Tavoy P. O., Burma.	Burma Finance and Mining Co., Ld.	Too See, (m.), 24, <i>Tributor.</i>	Wolfgram	Deceased was employed in sluicing operations. A stone fell upon him from the sluicing face at a height of 10 feet. He died on the following day.
170	20th August, 7-15 A.M.	Bhuggutdih mine, Jharia P. O., Bihar and Orissa.	Bengal-Nagpur Coal Co., Ld.	Bulka Meah, (m.), 14, <i>Punkha coolie.</i>	Coal	Deceased went to bathe in a tank. He got out of his depth, and was drowned before assistance could reach him. Inspection and inquiry made.
171	3rd September, 2 P.M.	Mundulpore mine, Nandi P. O., Bengal.	Mundulpore Coal Co., Ld.	Nitu Baurin, (f.), 55, <i>Sinking rope coolie.</i>	Coal	Water was being drawn out of a sinking pit, 30 feet deep, in a buffalo skin holding 10 gallons. Six women were on the leading draw pole and four on the second. Thinking the skin had been drawn over the landing plate the women turned round and slackened their hold on the rope. The weight overcame them and the rope went down the pit. Deceased was struck on the head by the rear pole and was killed instantly. Inspection and inquiry made.
172	22nd September, 2-35 P.M.	Lodna mine, Jharia P. O., Bihar and Orissa.	Lodna Colliery Co., Ld.	Prayag Dosad, (m.), 34, <i>Tindal-coolie.</i>	Coal	A Lancashire boiler was being raised on its seating on screw jacks, and was steadied by means of wooden packing and wedges. One of the wedges became displaced and the boiler rolled over. Some of the packing struck deceased on the side of the head, killing him instantly. Inspection and inquiry made.
173	6th October, 10 A.M.	Burdwan mine, Toposi P. O., Bengal.	Burdwan Coal Co., Ld.	Khudi Mejhian, (f.), 17, <i>Earth-cutter.</i>	Coal	Deceased was cutting clay in the bottom of an excavation, measuring 10' x 14' x 9', when one side of the excavation caved in. She was buried under a mass of clay, weighing two tons, and was suffocated. Inspection and inquiry made.
174	10th October, 10 A.M.	Kanbank mine, Tavoy P. O., Burma.	Kanbank (Burma) Wol- fram Mines, Ld.	Ah Sung, (m.), 30, <i>Tributor's coolie.</i>	Woolfram	Whilst engaged in washing for wolfram in the bed of a stream, deceased undermined the bank and was buried by the fall of some 12 tons of earth. He was killed instantly.
175	30th October, 5 A.M.	Bhulanbarari mine, Jharia P. O., Bihar and Orissa.	Bhulanbarari Coal Co., Ld.	Khago Bhuia, (m.), 25, <i>Trolleyman.</i>	Coal	Deceased was raking out the coal from a coal tub which had been turned on end for the purpose on the stock heap. The tub tilted over sideways and rolled down the heap, carrying him with it and injuring him so seriously that he died five hours later. Inspection and inquiry made.
176	20th December, Early morning.	Bhulanbararee mine, Jharia P. O., Bihar and Orissa.	Bhulanbararee Coal Co., Ld.	Kamalananda Chatterjee, (m.), 26, <i>Clerk.</i>	Coal	Deceased, while under the influence of liquor, climbed the wall surrounding an inclined cutting and fell to the bottom, 35 feet below. He received injuries from which he died four days later. Inspection and inquiry made.
177	23rd December, 4 P.M.	Bokaro mine, Bokaro P. O., Bihar and Orissa.	East Indian and Bengal Nagpur Railways.	Chami Gowalin, (f.), 16, <i>Coal-carrier.</i>	Coal	Deceased and her sister were swinging on a wire fence on the edge of a quarry. The fence broke and they fell a distance of 10 feet. Deceased received injuries from which she died eight hours later. Inspection and inquiry made.

APPENDIX II—contd.

Fatal Accidents, 1920—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.
DEATHS NOT INCLUDED IN THE STATISTICS—(37 deaths).							
1	Between the 3rd and 6th January.	Kuchidhana mine, Chhindwara P. O., Central Provinces.	The Indian Manganese Co., Ltd.	Tukdia, (m.), 45.	Manganese	Not employed.	Deceased was found floating in the water in a trial trench, about 12 feet deep. The cause of the accident was unknown. Inspection and inquiry made.
2	27th January, 12-15 P.M.	Nursumuda mine, Asansol P. O., Bengal.	Seetarampur Coal Co., Ltd.	Chatovah Bhuiya, (m.), 4.	Coal	Not employed.	Deceased was playing behind an empty tub, which was standing on a surface tramline. He stepped out in front of a full tub which was passing on the adjacent line and was knocked down, being killed instantly. Inspection and inquiry made.
3	4th February, 8 P.M.	Dharmaband mine, Katrasgarh P. O., Bihar and Orissa.	D. N. Ghosh & Bros.	Mukteswar Kora, (m.), 4.	Coal	Not employed.	Deceased, whilst at play, fell into an unfenced boiler feed tank, 4' 6" deep, and, in the absence of assistance, was drowned. Inspection and inquiry made. (See Report, page 15.)
4	19th February, 9-30 A.M.	Jatachappa mine, Pench P. O., Central Provinces.	The Upper Pench Coal Co., Ltd.	Gonesh Chamar, (m.), 12, Tub greaser.	Coal	Not a mining accident.	Deceased and several other men were pushing an empty railway wagon. He was pushing from the side. In order to avoid some pools of water he attempted to get under the wagon, but slipped and fell, the rear wheel passing over him. He died on the following day as a result of his injuries.
5	25th March, 4 A.M.	Sijua mine, Sijua P. O., Bihar and Orissa.	Tata Iron & Steel Co., Ltd.	Somri, (f.), 10, One child, name unknown, (m.) 6 months.	Coal	Not employed.	The deceased were burnt to death in a straw shelter which was set on fire by a spark from a fire which was burning close by.
6	7th April, 9-30 A.M.	Ballarpur mine, Ballarpur P. O., Central Provinces.	Sir Kasturchand Daga and Mr. M. B. Dadabhoj.	Jiggaroo Sumaloo, (m.), 30, Coolie.	Coal	Not a mining accident.	Whilst deceased was trimming a coal wagon another wagon bumped into the wagon on which he was standing. He fell from the wagon and was run over and killed instantly.
7	14th April, During night actual time not known.	Bhutdoba mine, Kalipahari P. O., Bengal.	Bhagirathi Coal Co.	Gopal Manjhi, (m.), 50.	Coal	Not employed.	Deceased was found lying dead at the bottom of a shaft, 115 feet in depth. The top of the shaft was securely fenced. Deceased apparently suffered from paralysis and was of unsound mind, and it was presumed that he threw himself into the shaft. Inspection and inquiry made.
8	15th April, Time not known.	Dhemo Main, mine, Sitarampur P. O., Bengal.	Dhemo Main Collieries Ltd.	Sahidon Muselmani, (f.), 45, Raj Mistry's carrier.	Coal	Not a mining accident.	The body of deceased was found in a well. She had been unwell for some time and it was presumed that she committed suicide. The top of the well was protected by an iron grating in which

9	28th May, 9-30 A.M.	Bhowra mine, Jamadobi P. O., Bihar and Orissa.	Eastern Coal Co., Ltd.	Chatia Hari, (f.), 6.	Coal . .	Not employed	Deceased was playing on the steps of a bathing tank, 3 feet deep. She overbalanced, fell into the water and was drowned. Inspection and inquiry made.
10	1st June, 8 A.M.	Sijua mine, Sijua P. O., Bihar and Orissa.	Tata Iron & Steel Co., Ltd.	Beharia Singh, (m.), 5.	Coal . .	Not employed	Deceased was drowned in a masonry boiler tank, 4 feet deep, used for bathing purposes. The walls of the tank were 4'-6" above ground level, but there were sloping buttresses giving access to the top of the wall. Inspection and inquiry made.
11	9th June 8 A.M.	Sahana mine, Chota P. O., Bengal.	Sahana Coal Co., Id.	Dassi Singh, (f.), 3.	Coal . .	Not employed	Deceased fell into a boiler tank containing 5 feet of water and was drowned. Inspection and inquiry made.
12	13th June, 10 A.M.	Central Kujama mine, Jharia P. O., Bihar and Orissa.	Central Kujama Coal concern.	Sahadwan, (f.), 30; Khadim, (m.), 6.	Coal . .	Not employed	The two deceased went into an abandoned part of a quarry where there was water 8 feet deep. The child probably fell into the water first and the mother went to the rescue. Search was made and both bodies were recovered within an hour. Death was due to drowning. Inspection and inquiry made.
13	14th June, 3 P.M.	Sowardih mine, Pathardih P. O., Bihar and Orissa.	Sowardih Coal Co., Ltd.	Baru Bauri, (m.), 24.	Coal . .	Not employed	The deceased infant had been left unattended. During a storm he was blown over. He was found face downwards in a pool of water about 10 inches deep. Death was due to suffocation. Inspection and inquiry made.
14	16th June, 9-30 A.M.	North Ghosick mine, Kalipahari P. O., Bengal.	Niga Valley Collieries, Ltd.	Name not known, (f.), 30.	Coal . .	Not employed	The body of deceased, a person of unsound mind, was found lying at the bottom of a shaft, 73 feet in depth. The top of the shaft was securely fenced. Inspection and inquiry made.
15	22nd June, 1 P.M.	Kohinoor mine, Bhojudih P. O., Bihar and Orissa.	Pilehor & Co., Ltd.	Sandri Dasg, (f.), 24.	Coal . .	Not employed	Deceased crawled under the fencing of a boiler feed tank containing 6 feet of water. She fell into the water and was drowned. Inspection and inquiry made.
16	28th June, 5-30 A.M.	Faridpur mine, Charanpur P. O., Bengal.	Poniaty Coal Co.	Sahagi Mejhain, (f.), 25, Coal-carrier.	Coal . .	Not a mining accident.	Deceased threw herself down a shaft, 134 feet in depth, and received injuries from which she died shortly after. The shaft was adequately fenced. Inspection and inquiry made.
17	7th July, 10 P.M.	Khas Jharia mine, Jharia P. O., Bihar and Orissa.	Khas Jharia Colliery Co., Ltd.	Tilak Toli, (m.), 6.	Coal . .	Not employed	The deceased child was asleep in a gallery in which his mother was working, when a mass of coal, about 25' x 10' x 5' thick, slipped from the side of the pillar, and a small portion fell upon him injuring him so severely that he died soon after. Inspection and inquiry made.
18	15th July, 4-30 P.M.	New Kessurgarh mine, Nowgarh P. O., Bihar and Orissa.	New Kessurgarh Coal Co., Ltd.	Monmotia Beldarin, (f.), 10.	Coal . .	Not employed	Deceased went to a well to draw water, overbalanced and fell in. Inspection and inquiry made. (See Report, page 16.)
19	5th August, 9 A.M.	Lakurka mine, Katragarh P. O., Bihar and Orissa.	Lakurka Coal Co., Ltd.	Gangia Bhuiani, (f.), 38, Shale picker.	Coal . .	Not a mining accident.	Deceased was sitting under a railway wagon sheltering from the rain, when the train was put in motion by a shunting engine. The wheels of one of the wagons passed over her body, killing her instantly. Inspection and inquiry made.
20	1st September, 5 P.M.	Jamadoba mine, Jamadoba P. O., Bihar and Orissa.	Tata Iron and Steel Co., Ltd.	Falbasia, (f.), 4.	Coal . .	Not employed	Deceased was sitting on a charpoy upon which some 2 lbs. of gunpowder was drying in the sun. The gunpowder was ignited by some means unknown, burning the child so severely that she died three days later. Inspection and inquiry made. (See Report, page 13.)

APPENDIX II—concl'd.

Fatal Accidents, 1920—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.							
21	3rd September, time not known.	Shampur mine, Nirsachatti P. O., Bihar and Orissa.	Shampur Coal Co., Ltd.	Nepal Mahata, (m.), 9.	Coal .	Not employed	The deceased child fell off the walling into an abandoned shaft partly full of water and was found drowned some days later. Inspection and inquiry made.
22	9th September, 11-30 A.M.	Kendwadih mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Pairee Barhin, (f.), 8.	Coal .	Not employed	Deceased, who was subject to fits, went to a cooling tank to get warm water for washing. She was found drowned in the tank. Inspection and inquiry made.
23	17th September, 3-30 P.M.	Kendwadih mine, Kusunda P. O., Bihar and Orissa.	East Indian Coal Co., Ltd.	Jamuna Noonis, (m.), 30, Loading coolie.	Coal .	Not a mining accident.	Deceased was walking along the main line of a railway siding when a locomotive, pushing a train of empty wagons, came up behind him. The leading wagon struck him on the right shoulder and knocked him down under the wheels. He died two days later. Inspection and inquiry made.
24	23rd September, 7-30 A.M.	Nandi mine, Nandi P. O., Bengal.	Adjai Coal Co., Ltd.	Sindhu Bala Baurin, (f.), 10.	Coal .	Not employed	The deceased child was sitting under a wagon which was being loaded on a siding. The wagon was moved by impact from other wagons so that a wheel passed over the child. She died from her injuries within twenty minutes. Inspection and inquiry made.
25	1st October, 12-Noon.	Sonardih mine, Katrasgarh P. O., Bihar and Orissa.	Guru Das Bhattacharjee .	Monger Kahar, (m.), 12.	Coal .	Not employed	Deceased, who could not swim, was bathing in a colliery bathing tank, 10 feet deep. He got out of his depth and was drowned. Inspection and inquiry made.
26	6th October, 11-30 A.M.	Miragpur mine, Tirodi P. O., Central Provinces.	Central India Mining Co., Ltd.	Bowra, (m.), 6.	Manganese .	Not employed	Deceased, who was stated to have been dumb and demented, was drowned whilst bathing in a waterlogged quarry.
27	26th October, 8 P.M.	Nundj mine, Nundi P. O., Bengal.	Adjai Coal Co., Ltd.	Kusum Bowrin, (f.), 20, Loading coolie.	Coal .	Not a mining accident.	Deceased, who was suffering from an incurable disease, was missed from her home. She was found shortly afterwards lying at the bottom of a shaft, 103 feet in depth. The shaft was securely fenced. Inspection and inquiry made.
28	4th November, 6 A.M.	Katras mine, Katrasgarh P. O., Bihar and Orissa.	Nowagarh Coal Co., Ltd.	Khatun (f.), 5 to 8.	Coal .	Not employed	Deceased was presumably drinking at a boiler tank when she fell in and was drowned. Inspection and inquiry made.
29	10th November, 11 A.M.	Lodna mine, Jharua P. O., Bihar and Orissa.	Lodna Colliery Co., Ltd.	Sideoo Hazam, (m.), 6.	Coal .	Not employed	Deceased was found drowned in a boiler feed tank which was walled on all sides. Inspection and inquiry made.

30	11th November, 4 P.M.	Jamuria mine, Nandi P. O., Bengal.	Equitable Coal Co., Ltd.	Dulia Goala, (m.), 38, <i>Tub repairer.</i>	Coal	Not a mining accident.	Deceased threw himself into a boiler feed tank, containing water 7 feet deep. He was drowned. The tank was securely fenced. Inspection and inquiry made.
31	21-22nd November, Night.	Sendra mine, Bansjora P. O., Bihar and Orissa.	Sendra Coal Co., Ltd.	Tulshi Dosad, (m.), 40, <i>Coal-cutter</i> ; Munia Dosad, (f.), 9, <i>Not employed</i> ; Parni Dosad, (f.), 28, <i>Coal-carrier.</i>	Coal	Not a mining accident.	The deceased went to sleep in a room with a coal fire burning in a stove. They had blocked up all holes for the sake of warmth. They were asphyxiated. Inspection and inquiry made.
32	9th December, 11 A.M.	South Kustore mine, Kusunda P. O., Bihar and Orissa.	Raneegunge Coal Associa- tion, Ltd.	Bhagaban Singh, (m.), 35, <i>Depot chaprassia.</i>	Coal	Not a mining accident.	Deceased, whilst labelling wagons, was passing between two loaded wagons which were about three feet apart, when another loaded wagon, which had just been lowered from under the screens, bumped the rear wagon and caused it to close on to the one in front. Deceased was crushed between the buffers, and sustained injuries to the chest from which he died a few hours later. Inspection and inquiry made.
33	28th December, 8 A.M.	Sodepur (No. 11) mine, Dishergarh P. O., Bengal.	Bengal Coal Co., Ltd.	Dukhi Telli, (m.), 38, <i>Stone-cutter.</i>	Coal	Not a mining accident.	Deceased went to sleep in a room in which a fire was burning, and was asphyxiated. 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 1920.

PROVINCE.	District and mineral field.	Total average number of persons employed daily.	FATAL ACCIDENTS.			SERIOUS ACCIDENTS.			DEATHS BY 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.
A.—COAL.													
Assam	Lakhimpur	2,725	11	11	..	11	103	95	5	103	0.08	..	4
	Naga Hills	419	2	1	1	2	1	1	..	1	4.81	4.74	4
	TOTAL	3,144	13	12	1	13	104	96	5	104	5.9	0.80	4
Baluchistan	Loralai . . . . .	..	..	..	..	..	..	..	..	..	..	..	..
	Quetta-Pishin	86	..	..	..	..	1	..	1	..	..	..	..
	Sibi-Khost	779	3	3	..	3	..	..	..	..	7.14	..	3
TOTAL	865	3	3	..	3	1	1	..	1	6.38	..	3	
Bengal	Bankura, Raniganj	93	..	..	..	..	..	..	..	..	..	..	..
	Birbhum "	360	..	..	..	..	..	..	..	..	..	..	..
	Burdwan "	43,329	33	26	9	35	41	25	16	41	1.05	0.40	..
TOTAL	43,782	33	26	9	35	41	25	16	41	1.04	0.48	..	
Bihar and Orissa	Hazaribagh { Bokaro-Ramgarh Giridih	10,575	4	..	4	4	10	2	8	10	..	1.08	0.0
		9,430	3	3	..	3	12	10	2	12	0.45	..	0.0
		1,622	..	..	..	..	..	..	..	..	..	..	..
	Maubhum { Jharin	83,519	65	64	12	76	61	35	17	62	1.32	0.31	0
		Raniganj	10,196	7	11	1	12	2	2	1	3	2.07	0.21
	Palamanu, Daltonganj	436	1	1	..	1	1	1	..	1	3.65	..	2
	Sambalpur, Hingir-Rampur	540	..	..	..	..	2	2	..	2	..	..	..
	Sonthal Parganas { Jainty	1,494	2	2	..	2	..	..	..	..	2.63	..	1
		Raniganj	375	..	..	..	..	..	..	..	..	..	..
	TOTAL	118,187	82	81	17	98	78	52	28	80	1.16	0.5	0
Central Provinces	Betal	21	..	..	..	..	..	..	..	..	..	..	..
	Chanda, Ballarpur	1,752	2	1	1	2	3	2	1	3	1.01	1.31	1
	Chhindwara, Pech Valley	4,900	7	6	1	7	4	3	1	4	2.11	0.49	1
	Narsinghpur, Mohpani	1,697	2	2	..	2	6	6	..	6	1.83	..	1
	Yeotmal	33	..	..	..	..	..	..	..	..	..	..	..
TOTAL	8,403	11	9	2	11	13	11	2	13	1.83	0.57	1	
Burma	Northern Shan States	242	1	8	..	8	1	1	..	1	148.15	..	30
Panjab	Jhelum	1,113	4	4	..	4	..	..	..	..	5.79	..	8
	Mianwali	111	..	..	..	..	..	..	..	..	..	..	..
	Shahpur	98	..	..	..	..	..	..	..	..	..	..	..
TOTAL	1,820	4	4	..	4	..	..	..	..	5.22	..	8	
GRAND TOTAL (COAL)		175,943	147	143	29	172	238	186	54	240	1.39	0.40	0

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 1920—contd.

Provinces.	District and mineral field.	Total average number of persons employed daily.	FATAL ACCIDENTS.			SERIOUS ACCIDENTS.			DEATH-RATE PER 1,000 PERSONS EMPLOYED.				
			Number of separate fatal accidents.	NUMBER OF DEATHS.		Number of serious non-fatal accidents.	NUMBER OF PERSONS SERIOUSLY INJURED.		Below ground.	Above ground.	Below and above ground.		
				Below ground.	Above ground.		Total deaths.	Below ground.				Above ground.	Total number of persons injured.
			B.—MICA.										
Bihar and Orissa.	Manbhum	11	...	...	...	...	...	...	...	...	...	...	...
	Gaya	1,582	1	1	...	1	1	1	...	1	1.05	...	0.68
	Hazaribagh	13,684	6	13	...	13	5	7	...	7	1.53	...	0.95
	Monghyr	980	...	...	...	...	...	...	...	...	...	...	...
	Sambalpur	90	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	16,351	7	14	...	14	6	8	...	8	1.89	...	0.86
Madhya Pradesh.	Kistna	36	...	...	...	...	...	...	...	...	...	...	...
	Nellore	4,153	2	2	...	2	4	9	...	9	0.66	...	0.48
	Salma	200	...	...	...	...	...	...	...	...	...	...	...
	Trichinopoly	20	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	4,409	2	2	...	2	4	9	...	9	0.64	...	0.44
Central Provinces.	Balaghat	5	...	...	...	...	...	...	...	...	...	...	...
Rajputana	Ajmer-Merwara	1,100	1	1	...	1	...	...	...	...	1.48	...	0.90
	GRAND TOTAL (MICA)	21,961	10	17	...	17	10	17	...	17	1.23	...	0.77
			C.—MANGANESE ORE.										
Bihar	Panch Mahals	1,286	1	...	1	1	2	...	2	2	...	3.58	0.78
Central Provinces.	Balaghat	5,294	...	...	...	...	4	3	2	5	...	...	...
	Bhandara	1,261	...	...	...	...	...	...	...	...	...	...	...
	Chhindwara	627	...	...	...	...	...	...	...	...	...	...	...
	Nagpur	4,208	2	2	...	2	4	...	4	4	0.69	...	0.48
	TOTAL	11,370	2	2	...	2	6	3	6	9	0.23	...	0.16
Madhya Pradesh.	Viragapatam	589	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (MANGANESE ORE)	13,264	3	2	1	3	10	3	8	11	0.19	0.33	0.23
			D.—LIMESTONE.										
Madhya Pradesh.	Northern Sban States	152	1	5	...	5	...	...	...	...	32.89	...	32.89
Central Provinces.	Bilaspur	482	...	...	...	...	...	...	...	...	...	...	...
	Jabalpur	3,701	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	4,133	...	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL (LIMESTONE)	4,285	1	5	...	5	...	...	...	...	1.62	...	1.17

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 1920—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.		Total number of persons injured.	Below ground.	Above ground.	Below and above ground.	
				Below ground.	Above ground.		Total deaths.	Below ground.					Above ground.
			E.—SALT.										
Punjab	Jhelum	856	1	...	1	1	4	1	3	4	...	14.71	1.17
	Mianwali	51	...	...	...	...	...	...	...	...	...	...	...
	Shahpur	62	...	...	...	...	...	...	...	...	...	...	...
GRAND TOTAL (SALT)		969	1	...	1	1	4	1	3	4	...	14.70	1.07
			POTASH.										
Punjab	Jhelum . . . . .	...*	...	...	...	...	...	...	...	...	...	...	...
			F.—GEMS.										
Burma	Mogok (Rubies, etc.)	1,207	...	...	...	...	...	...	...	...	...	...	...
Rajputana	Ajmer-Merwara	12	...	...	...	...	...	...	...	...	...	...	...
GRAND TOTAL (GEMS)		1,219	...	...	...	...	...	...	...	...	...	...	...
			G.—SLATE.										
Bihar and Orissa	Monghyr	444	...	...	...	...	...	...	...	...	...	...	...
Punjab	Gurdaspur . . . . .	...	...	...	...	...	...	...	...	...	...	...	...
	Gurgaon	225	...	...	...	...	...	...	...	...	...	...	...
	Kangra	192	...	...	...	...	...	...	...	...	...	...	...
TOTAL		417	...	...	...	...	...	...	...	...	...	...	...
GRAND TOTAL (SLATE)		861	...	...	...	...	...	...	...	...	...	...	...
			H.—GOLD.										
Bihar and Orissa	Singhbhum	96	...	...	...	...	...	...	...	...	...	...	...
Madras	Anantapur	338	...	...	...	...	...	...	...	...	...	...	...
GRAND TOTAL (GOLD)		434	...	...	...	...	...	...	...	...	...	...	...
			I.—IRON ORE.										
Bihar and Orissa	Singhbhum	1,258	...	...	...	...	2	...	2	2	...	...	...
Burma	Mandalay	608	1	2	...	2	...	...	...	...	12.27	...	8.2
	Northern Shan States	520	...	...	...	...	2	1	1	2	...	...	...
	TOTAL	1,128	1	2	...	2	2	1	1	2	6.39	...	1.7
Central Provinces	Jabalpur	197	..	..	...	...	...	...	...	...	...	...	...
Rajputana	Ajmer-Merwara	12	...	...	...	...	...	...	...	...	...	...	...
GRAND TOTAL (Iron Ore)		2,590	1	2	...	2	4	1	3	4	1.65	...	0.71

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 1920—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.
FULLERS EARTH.													
Central Provinces	Jabalpur . . . . .	...*	* Labour figures included with those for Limestone.									
SAMARSKITE.													
Madras	Nellore . . . . .	...*	* Labour figures included with those for Mica.									
WOLFRAM.													
Burma	Mergul	336	
	Tavoy	4,177	8	3	5	8	7	4	4	8	1.03	3.92	1.92
	Thaton	31
GRAND TOTAL (WOLFRAM).		4,544	8	3	5	8	7	4	4	8	0.99	3.29	1.78
SILVER.													
Burma	Northern Shan States . . . . .	...*	* Labour figures included with those for Lead ore.									
Madras	Anantapur . . . . .	...*	* Labour figures included with those for Gold.									
K.—MAGNESITE.													
Madras	Salem	732	
L.—CHROMITE.													
Baluchistan	Zhob	376	
Bihar and Orissa	Singhbhum	829	
GRAND TOTAL (CHROMITE)		1,205	
MOLYBDENITE.													
Burma	Tavoy . . . . .	...*	* Labour figures included with those for Wolfram.									
BARYTES.													
Madras	Kurnool	25	
M.—COPPER ORE.													
Bihar and Orissa	Singhbhum	2,094	7	2	5	7	
Central Provinces	Balaghat	62	
GRAND TOTAL (COPPER ORE)		2,156	7	2	5	7	
N.—BAUXITE.													
Gujarat	Kaira	97	

APPENDIX II--contd.

Table No. 2--concl'd.

Statement of fatal and serious accidents in and about mines regulated by the Indian Mines Act, 1901, during the year 1920--concl'd.

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.					
O.—CLAY.															
Bihar and Orissa	Bhagalpur	255
	Manbhum	174	1	1	...	1	1	...	1	8.13	6.75	
	Palamanu	79	
	TOTAL	508	1	1	...	1	1	...	1	4.57	1.97	
Central Provinces	Jabalpur	916	
Delhi	Delhi	40	
GRAND TOTAL (CLAY)		1,470	1	1	...	1	1	...	1	0.90	0.68	
P.—LEAD ORE.															
Burma	Northern Shan States	950	4	13	1	14	9	7	2	9	21.24	2.96	14.74		
Central Provinces	Drug	34	...	...	...	...	...	...	...	...	...	...	...
GRAND TOTAL (LEAD ORE)		984	4	13	1	14	9	7	2	9	20.67	2.82	14.28		
Q.—TIN ORE.															
Bihar and Orissa	Hazaribagh	140	1	2	...	2	...	...	...	...	25.00	...	14.29
Burma	Mergui	445	...	...	...	...	...	...	...	...	...	...	...
	Tavoy	503	...	...	...	...	...	...	...	...	...	...	...
	Thaton	40	...	...	...	...	...	...	...	...	...	...	...
	TOTAL	988	...	...	...	...	...	...	...	...	...	...	...
GRAND TOTAL (TIN ORE)		1,128	1	2	...	2	...	...	...	...	2.63	...	1.77
R.—STREATITE.															
Central Provinces	Jabalpur	210	...	...	...	...	...	...	...	...	...	...	...
Madras	Kurnool	7	...	...	...	...	...	...	...	...	...	...	...
GRAND TOTAL (STREATITE)		217	...	...	...	...	...	...	...	...	...	...	...
S.—OCHRE.															
Bihar and Orissa	Puri	37	...	...	...	...	...	...	...	...	...	...	...
T.—GRAPHITE.															
Bihar and Orissa	Singhbhum	29	...	...	...	...	...	...	...	...	...	...	...
Central Provinces	Betul	10	...	...	...	...	...	...	...	...	...	...	...
Rajputana	Ajmer-Merwara	39	...	...	...	...	...	...	...	...	...	...	...
GRAND TOTAL (GRAPHITE)		78	...	...	...	...	...	...	...	...	...	...	...
GRAND TOTAL (ALL MINERALS)		234,199	177	166	37	225	290	222	79	301	1.33	0.40	0.68		

APPENDIX II—contd.

Table No. 3.

Statement of fatal accidents in mines regulated by the Indian Mines Act, 1901, during the year 1920, classified according to the age and sex of the workers.

MINERAL.	PROVINCE AND MINERAL FIELD.	Number of separate fatal accidents.	NUMBER OF DEATHS.								TOTAL BELOW AND ABOVE GROUND.	
			BELOW GROUND.				ABOVE GROUND.					
			Adult males.	Adult females.	Children (under 13).	TOTAL.	Adult males.	Adult females.	Children (under 13).	TOTAL.		
COAL	Assam { Lakhimpur	11	11	...	...	11	...	...	...	...	11
	Assam { Naga Hills	2	1	...	...	1	...	1	...	1	2
	TOTAL ASSAM	13	12	...	...	12	...	1	...	1	13
	Baluchistan, Sibi, Khost	3	3	...	...	3	...	...	...	...	3
	Bengal, Raniganj	38	21	5	...	26	5	4	...	9	35	
	Bihar and Orissa.	{ Pokaro, Rangarh	4	...	...	...	2	2	...	4	4
		{ Giridih	3	2	1	...	3	...	...	...	3
		{ Jharin, Manbhum	65	54	9	1	64	10	1	1	12	76
		{ Manbhum, Raniganj	7	9	2	...	11	1	1	12
		{ Palamau, Daltonganj	1	1	1	1
	{ Sonthal Parganae, Jainty	2	2	...	...	2	...	...	...	...	2
	TOTAL BIHAR AND ORISSA	82	68	12	1	81	13	3	1	17	98	
	Burma, Northern Shan States	1	8	...	...	8	...	...	...	...	8
	Central Provinces	{ Chanda	2	1	1	1	1	2
{ Chhindwara		7	4	2	...	6	1	...	...	1	7
{ Narsinghpur		2	1	1	...	2	...	...	...	...	2
TOTAL CENTRAL PROVINCES	11	6	3	...	9	2	...	...	2	11	
Punjab, Jhelum	4	4	...	...	4	...	...	...	...	4	
TOTAL COAL	147	123	20	1	143	20	8	1	29	172		

APPENDIX II—contd.

Table No. 3—concl'd.

Statement of fatal accidents in mines regulated by the Indian Mines Act, 1901, during the year 1920, classified according to the age and sex of the workers—concl'd.

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.	
MICA	Bihar and Orissa { Hazaribagh .	6	13	...	...	13	...	...	...	...	1
	Gaya .	1	1	...	...	1	...	...	...	...
	TOTAL	7	14	...	...	14	...	...	...	...	1
	Madras, Nellore	2	1	1	...	2	...	...	...	...	1
	Rajputana, Ajmer	1	1	...	...	1	...	...	...	...	1
TOTAL MICA	10	16	1	...	17	...	...	...	...	17	
MANGANESE	Bombay, Panch Mahals . .	1	...	...	...	...	1	...	...	1	1
	Central Provinces, Nagpur .	2	2	...	...	2	...	...	...	...	2
	TOTAL MANGANESE	3	2	...	...	2	1	...	...	1	3
LIMESTONE	Burma, Northern Shan States .	1	5	...	...	5	...	...	...	...	5
LEAD ORE	Burma, Northern Shan States .	4	13	...	...	13	1	...	...	1	14
TIN ORE	Bihar and Orissa, Hazaribagh .	1	2	...	...	2	...	...	...	...	2
IRON ORE	Burma, Mandalay	1	2	...	...	2	...	...	...	...	2
WOLFRAM	Burma, Tavoy	8	3	...	...	3	6	...	...	5	8
SALT	Punjab, Jhelum	1	...	...	...	...	1	...	...	1	1
CLAY	Bihar and Orissa, Manbhum Raviganj.	1	...	1	...	1	...	...	...	...	1
GRAND TOTAL (ALL MINERALS)		177	165	22	1	188	28	8	1	37	225

APPENDIX II—concl.

Table No. 4.

Statement of fatal accidents in mines regulated by the Indian Mines Act, 1901, during the year 1920, 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.	Intrusions of water or falling into water.	Heavings.	Miscellaneous below ground.	Surface.	Total deaths.	Below ground.	Above ground.	Below and above ground.	
Coal	147	5	45	26	28	1	8	8	16	10	25	172	1.39	0.40	0.98	
Clay	1	...	...	1	...	...	...	...	...	...	...	1	0.90	...	0.68
Iron Ore . . .	1	...	...	2	...	...	...	...	...	...	...	2	1.35	...	0.77
Lead Ore . . .	4	...	1	...	12	...	...	...	...	...	1	14	20.67	2.82	14.23
Limestone . .	1	...	...	5	...	...	...	...	...	...	...	5	1.62	...	1.17
Manganese . .	3	...	...	...	1	...	1	...	...	...	1	3	0.19	0.33	0.23
Mica	10	...	2	5	...	...	...	...	...	...	...	17	1.23	...	0.77
Salt	1	...	...	...	...	...	...	...	...	...	1	1	...	14.70	1.03
Tin Ore	1	...	...	...	...	...	2	...	...	...	...	2	2.83	...	1.77
Wolfram . . .	8	...	...	1	...	...	1	...	...	1	5	8	0.99	3.29	1.76
TOTAL 1920	177	5	48	40	44	8	12	8	16	11	33	225	1.33	0.40	0.96	
TOTAL PRECEDING YEAR.	252	1	95	75	47	...	7	1	41	12	33	312	1.78	0.36	1.25	
DIFFERENCE	-75	+4	-47	-35	-3	+8	+5	+7	-25	-1	...	-87	-0.45	+0.04	-0.29	

APPENDIX III.

PROSECUTIONS UNDER THE INDIAN MINES ACT, 1901.

Statement of prosecutions instituted under the Indian Mines Act, 1901, during the year 1920.

PROVINCE.	District.	Number of prosecutions.	Number of persons prosecuted.	Number convicted.	Numbers of rules and sections of the Act contravened.	REMARKS
Bengal	Bardwan	1	1	1	Section 20, Rule 7 of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	1	1	Section 20, Rules 3, 7, 19 of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	1	...	Section 20, Rule 7 of Notification No. 864-68-20, dated 10th March 1904.	Acquitted.
	Do.	1	1	1	Section 20, Rule 1 of Notification No. 11793-103, dated 30th December 1903, as amended by Notification No. 5072-113, dated 1st July 1916.	
	Do.	1	1	1	Ditto ditto.	
	Do.	1	1	1	Ditto ditto.	
	Do.	1	1	1	Ditto ditto.	
	Manbhum	1	2	1	Section 20, Rule 3 of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	3	3	Section 20, Rule 3 of Notification No. 864-68-20, dated 10th March 1904, and Section 21 Special Rules 27 and 31.	
	Do.	1	1	1	Section 20, Rule 19 of Notification No. 864-68-20, dated 10th March 1904, and Section 21 Special Rule 22.	
Bihar and Orissa	Do.	1	3	2	Section 20, Rules 9 and 11 of Notification No. 864-68-20, dated 10th March 1904 and Section 21 Special Rules 34 and 35.	
	Do.	1	1	1	Section 20, Rule 12 of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	2	2	Section 13(1), Rule 47 of Notification No. 2068-82, dated 21st April 1906.	
	Do.	1	1	1	Section 20, Rules 1 and 3 of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	1	1	Section 20, Rule 3 and 10 of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	4	4	Section 20, Rule 19 of Notification No. 864-68-20, dated 10th March 1904.	
	Do.	1	2	2	Section 20, Rule 1 of Notification No. 11793-103, dated 30th December 1903 as amended by Notification No. 5072-113, dated 1st July 1916.	
	Do.	1	1	...	Ditto ditto.	Withdrawn

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 1920—concl'd.

Province,	District.	Number of prosecutions.	Number of persons prosecuted.	Number convicted.	Numbers of rules and sections of the Act contravened.	REMARKS.
Bihar and Oriassa	Manbhum	1	4	4	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	2	...	Ditto ditto	Acquitted.
	Bhagalpur	1	1	1	Ditto ditto.	
	Hazaribagh	1	2	2	Ditto ditto.	
	Do.	1	2	2	Ditto ditto.	
	Do.	1	2	2	Ditto ditto.	
	Do.	1	1	1	Ditto ditto.	
	Do.	1	1	1	Ditto ditto.	
	Do.	1	1	1	Ditto ditto.	
	Do.	1	1	1	Ditto ditto.	
	Do.	1	1	1	Ditto ditto.	
	Do.	1	1	...	Ditto ditto	Withdrawn.
	Do.	1	1	...	Ditto ditto	Do.
	Do.	6	1	...	Ditto ditto	Do.
	Do.	3	1	...	Ditto ditto	Do.
	Do.	7	1	...	Ditto ditto	Do.
	Do.	1	1	1	Ditto ditto.	
	Do.	1	2	2	Section 20, Rule 2 of Notification No. 11793-103, dated 30th December 1908, as amended by Notification No. 5072-113, dated 1st July 1916.	
	Do.	1	2	2	Section 20, Rule 4 of Notification No. 11793-103, dated 30th December 1908, as amended by Notification No. 5072-113, dated 1st July 1916, and Rules 3 and 19 of Notification No. 6436-152, dated 2nd September 1911.	
Rajputana	Ajmer	1	2	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.	
	Do.	1	2	...	Ditto ditto	Acquitted.
	Do.	1	2	...	Ditto ditto	Do.

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 west 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 Punjab.</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.</p>

Statement No. 2.

Names of persons to whom first and second class certificates to manage a coal mine were granted during the year 1920.

(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.
Maden, Henry	229	19th January 1920	602	27th January 1919.
Jones, William James	230	Ditto	4,146	28th January 1912.
Allen, Harry Sargent	231	Ditto	1	30th January 1913.
Jones, David	232	Ditto	534	26th July 1918.
Stanton, William Thomas	233	Ditto	181	26th January 1915.
Woodhead, Frank Neave	234	Ditto	499	23rd January 1918.
Sheppard, George Clement	235	Ditto	617	27th January 1919.
Jones, David John	236	Ditto	465	24th January 1918.
McArthur, James	237	Ditto	471	24th January 1918.
Jones, Griffith	238	Ditto	352	24th January 1917.
Glover, Mathew	239	Ditto	2,334	13th January 1904.
Wightman, James Hyslop	240	Ditto	892	27th July 1917.
Alexander, Arthur Cecil	241	Ditto	3,713	23rd August 1910.
Wightman, William	242	Ditto	283	22nd July 1915.

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

Statement No. 2—*contd.*

Names of persons to whom first and second class certificates to manage a coal mine were granted during the year 1920—*contd.*

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

FIRST CLASS—*contd.*

NAME.	No. of Indian certificate.	Date of Indian certificate.	No. of English certificate.	Date of English certificate.
Robinson, Ted	243	6th February 1920	4,000	13th March 1912.
Winfield, Claud William	244	Ditto	436	27th July 1917.
Dafton, Valentino Sydney	245	Ditto	345	24th January 1917.
Smithurst, Leonard	246	10th May 1920	618	27th January 1919.
Marr, James Hoppel	247	Ditto	874	15th March 1895.
McCormick, Michael	248	Ditto	3,004	14th June 1907.
Black, David	249	Ditto	3,256	15th June 1909.
Seaman, Tom	250	Ditto	428	27th July 1917.
Reid, Alexander	251	Ditto	3,625	9th June 1910.
Haden, Henry Frank	252	Ditto	2,952	11th June 1907.
Morgan, William	253	Ditto	4,160	28th June 1912.
Wallace, William	254	Ditto	700	30th July 1919.
Jones, William Emlyn	255	Ditto	3,893	3rd July 1911.
Foster, John	256	Ditto	3,265	25th September 1908.
Penmar, William Brown	257	Ditto	685	30th July 1919.
Howl, Thomas Ernest	258	Ditto	82	2nd February 1914.
Archibald, David	259	Ditto	627	30th July 1919.

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

SECOND CLASS.

Black, Henry	24	29th June 1920	72	30th July 1913.
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APPENDIX IV—contd.

MISCELLANEOUS—contd.

Statement No. 2—contd.

Names of persons to whom first and second class certificates to manage a coal mine granted during the year 1920—contd.

(b) certificates of competency.

FIRST CLASS.

NAME.	No. of certificate.	Date of certificate.	REMARKS.
Bose, Bhupendra Kumar	114	10th May 1920.	
Grieverson, Thomas John	115	Ditto.	
Das, Dharendra Nath	116	Ditto.	
Fitzgerald, James	117	Ditto.	
Baksi, Kall Krishna	118	Ditto.	
Walker, Terence George	119	Ditto.	
Mabata, Jyotish Chandra	120	Ditto.	

SECOND CLASS.

Banerji, Ram Dass	191	10th May 1920.	
Ghosh, Debendra Nath	192	Ditto.	
Kitchen, Philip H.	193	Ditto.	
Wilson, Thomas	194	Ditto.	
Boy, Jogesh Chandra	195	Ditto.	
Chattoraj, Jitendra Mohan	196	Ditto.	
Brownlow, Eric Hugh	197	Ditto.	
Linton, Eric Alwynne	198	Ditto.	
Laik, Surendra Nath	199	Ditto.	
Banerji, Bijoy Bhusan	200	Ditto.	
Mitra, Surendra Nath	201	Ditto.	
Karmakar, Kali Pada	202	Ditto.	
Starling, Robert Edwin McNiven	203	Ditto.	
Franz, Donald Joseph	204	Ditto.	
Mitra, Naliniranjan	205	Ditto.	
Lahiri, Ambika Charan	206	Ditto.	
Masunder, Jitendra Nath	207	Ditto.	
Mukherji, Bholanath	208	Ditto.	
Mukherji, Dwijendu Bhusan	209	Ditto.	
Banerji, Purna Kam	210	Ditto.	
Bhattacharji, Jagat Baudhu	211	Ditto.	
Panday, Kali Pada	212	Ditto.	
Mukherji, Ram Krishna	213	Ditto.	

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

Statement No. 2—*concl.*

Names of persons to whom first and second class certificates to manage a coal mine were granted during the year 1920—*concl.*

(c) Certificates of service.

FIRST CLASS.

NAME.	No. of certificate.	Date of certificate.	REMARKS.
Lothorn, Frederick Edward	156	11th May 1920.	
Whiffon, Cecil Herbert	157	29th June 1920.	
Bagehi, Purna Chandra	158	Ditto.	

SECOND CLASS.

NAME.	No. of certificate.	Date of certificate.	REMARKS.
Cotterill, William	203	11th May 1920.	
Danson, John Henry	204	Ditto.	
Khan, Shaludat	205	29th June 1920.	

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 1908.
Calcutta University in respect of its Degree of Bachelor of Engineering in the Branch of Mining Engineering.	24th September 1910.
Harvard University, Cambridge, Massachusetts, in respect of its Diploma in Mining Engineering.	22nd February 1913.
Columbia University, New York, in respect of its Degree of Engineer of Mines.	13th March 1915.
California University, United States of America, in respect of its Degree of Mining Engineer.	19th February 1916.
Pittsburg University, United States of America, in respect of its Degree of Engineer of Mines.	19th February 1916.
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.

Three classes of students are admitted—

Occasional—who are admitted to receive training in connection with private business.

Regular—who need have no experience of Mining.

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

Admissions are made as follows:—

Regular and occasional 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 in the middle of February.

B.—Through the Sub-Overseer classes (a two years' course) at Dacca, Burdwan, Rajshahi and Pabna in Bengal; Bankipore 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 candidates have served, showing the period and nature of 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 1921-22, 1923-24, 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 1920-21.

LECTURES on the Principles of Mechanical Engineering of Coal Mines will be delivered in English as follows:—

JHARIA COAL-FIELD.—INSTRUCTOR MR. JAMES McARTHUR.

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

RANIGANJ COAL-FIELD.—INSTRUCTOR MR.

Deshergarh ... Lecture-room near Club ... Wednesdays 5-30 P.M.
Raniganj ... Bengal Coal Co., Ltd. Zamindari office ... Thursdays ... 5-0 "
Jamuria ... Chief Mining Engineer's Office, Sibpur Colliery ... Friday ... 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 Sibpur College and are granted to enable the holders to attend the full course for the Diploma in the Principles of Mining. One scholarship of Rs. 50 is reserved for Europeans and two of Rs. 25 are awarded 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).	" G. S. Castles (Charanpur).	" A. T. Creet (Kalipahari).
" F. Owen (Deshergarh).	" D. N. Archibald (Sripur).	" W. J. Rees (Raniganj).
Babu M. N. Roy (Begunia).	" W. S. Elphinstone (Asansol).	Babu Promotho Nath Hazra (Toposi).
" P. C. Tarafdar (Mngms).	Babu Atul Shashi Mitra (Asansol).	" Purna Chandra Bagchi (Kalipahari).
" S. N. Ghosh (Barakar).		" S. Chaudhuri (Jamehari, Raniganj).

APPENDIX IV—*contd.*

MISCELLANEOUS—*contd.*

Statement No. 5—*contd.*

JHARIA COAL-FIELD.

<i>Jharia Centre.</i>	<i>Sijua Centre.</i>
Mr. F. L. G. Simpson, <i>Chairman.</i>	Mr. F. L. G. Simpson, <i>Chairman.</i>
„ R. G. M. Bathgate (Jamadoba).	„ A. A. Agabeg (Sijua).
„ J. Kirk (Jamadoba).	„ R. Heron (Bhalgora, Jharia) P. O.
„ J. B. Argyle (Lodna).	„ H. M. Bull (Bansjora).
„ R. Barrowman (Standard Coal Company, Jharia).	„ G. C. Leach (Sijua P. O.)
Babu Jhawari Lal Kalayan Rai Dholakia (Joyrampur Colliery, Kusunda P. O.)	Babu Trikumdas Doyal (Bullihari Colliery, Kusunda P. O.)
„ Narendra Nath Sarkar (South Knjama, Jharia).	„ Basanta Kumar Roy (Kirkend).

T. H. RICHARDSON,

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

MINING INSTRUCTION IN THE COALFIELDS OF BENGAL AND BIHAR AND ORISSA.

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 boreholes 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.*—Measurement; definitions of force, motion, friction, work and energy; the simple machines; mechanical and electrical units; hydrostatics; the siphon; pressure of gases; Boyles' 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 tramming; 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; tippers; 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.

T. H. RICHARDSON,

Secretary.

BENGAL ENGINEERING COLLEGE, SIBPUR;

The 10th September 1920.

Statement No. 6.

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 Mine 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.

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

Statement No. 7.

No. M-205/7.

GOVERNMENT OF INDIA.

BOARD OF INDUSTRIES AND MUNITIONS.

Dated Simla, the 13th September 1920.

NOTIFICATION.

In exercise of the power conferred by section 20 of the Indian Mines Act, 1901 (VIII of 1901), the Governor-General in Council is pleased to direct that the following amendment shall be made in the rules published with the notification of the Government of India in the Department of Commerce and Industry, No. 11793-103, dated the 30th December 1908, as subsequently amended, namely:—

After rule 10 of the said rules, the following new rule shall be added, namely:—

- "11. A copy of these rules shall be kept at every mine and shall be produced at any time on the request of an Inspector of Mines,"

F. R. R. RUDMAN,

Secretary, Board of Industries and Munitions.

Statement No. 8.

No. M-1/11.

GOVERNMENT OF INDIA.

BOARD OF INDUSTRIES AND MUNITIONS.

Dated Simla, the 20th October 1920.

NOTIFICATION.

In exercise of the powers conferred by section 20 of the Indian Mines Act, 1901 (VIII of 1901), the Governor-General in Council is pleased to direct that in the rules regarding mine managers and their certificates published with the notification of the Government of India in the Department of Commerce and Industry No. 2983-82, dated the 21st April 1906, as subsequently amended, the following amendments shall be made, namely:—

- (1) In rule 45 the words "in which more than 150 persons are on an average employed underground simultaneously, or" shall be omitted and for the figure 1,800, the figure 2,500 shall be substituted.
- (2) In rule 46 the words "in which more than 50 or less than 150 persons are on an average employed underground simultaneously, or" shall be omitted, and for the figure 1,800, the figure 2,500 shall be substituted.
- (3) In rule 47 the words "in which not more than 50 persons are on an average employed underground simultaneously, or" shall be omitted.

J. C. B. DRAKE,

Secretary, Board of Industries and Munitions.

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

Statement No. 9.

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.