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# REPORT

OF THE

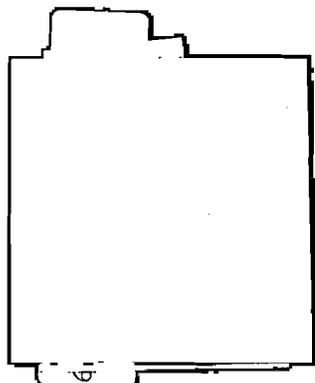
## ROYAL COMMISSION

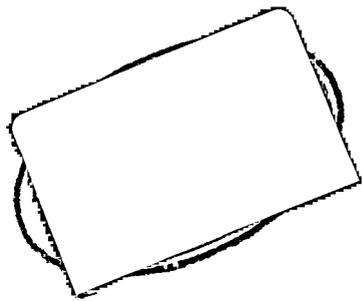
APPOINTED TO

INQUIRE INTO AND REPORT UPON THE RECENT DISASTER AT MOUNT MULLIGAN COAL MINE, AND ALSO INTO THE METHODS OF MINING CARRIED ON AT SUCH MINE, AND, FURTHER, TO MAKE SUCH RECOMMENDATIONS AS MAY TEND TO PREVENT THE RECURRENCE OF ACCIDENTS OF A LIKE NATURE.

TOGETHER WITH

PROCEEDINGS OF THE COMMISSION, MINUTES OF EVIDENCE,  
AND EXHIBITS.





44

1921.  
QUEENSLAND.

MOUNT MULLIGAN COLLIERY DISASTER—ROYAL COMMISSION OF INQUIRY.

# REPORT

OF THE

## ROYAL COMMISSION

APPOINTED TO

Inquire into and Report upon the Recent Disaster at Mount Mulligan Coal Mine, and also into the Methods of Mining carried on at such Mine, and, further, to make such Recommendations as may tend to Prevent the Recurrence of Accidents of a like nature,

TOGETHER WITH THE

PROCEEDINGS OF THE COMMISSION, MINUTES OF EVIDENCE, AND EXHIBITS.

Commissioners :

ROBERT ALEXANDER DUNLOP, ESQUIRE (POLICE MAGISTRATE AND WARDEN), *Chairman*.  
HON. CHARLES KILPATRICK, M.L.C., PRESIDENT AND INSPECTOR FOR QUEENSLAND COAL MINERS.

WILLIAM WANT, ESQUIRE, MANAGER OF MCQUEEN AND CO.'S COLLIERIES, BUNDAMBA.

JOHN T. H. BIRD, SECRETARY.

PRESENTED TO BOTH HOUSES OF PARLIAMENT BY COMMAND.

BRISBANE :

BY AUTHORITY: ANTHONY JAMES CUMMING, GOVERNMENT PRINTER.

C.A. 3—1922.

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Young, Alick ..	Labourer, Mount Mulligan Colliery .. .. .	12, 13

## List of Exhibits.

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The following is a List of the Exhibits tendered in connection with the Inquiry:—

- Exhibit 1.**—Written Statement tendered by James Harris, Engineer, Mount Mulligan Colliery.
- Exhibit 2.**—Written Statement tendered by E. J. Laun, Inspector of Mines, and signed by E. J. Laun and E. C. Saint-Smith, Government Geologist.
- Exhibit 3.**—Statement tendered by C. V. Lewis, Accountant for Chillagoe Limited at Mount Mulligan, showing Names of Men in Mine at Time of Explosion and Cavil List on same day.
- Exhibit 4.**—Statement tendered by Constable Robert McClintock giving Names of Miners entombed at Mount Mulligan on 19th September, 1921, with List of Dependants where known.
- Exhibit 5.**—Copy of "*The Mines Regulation Act of 1910*," containing special reference to the Schedule, Part III.—"General Rules applicable to Collieries Only," and including Division I., "Ventilation"; Division II., "Inspection"; Division III., "Safety Lamps"; Division IV., "Protection of Underground Workings"; Division V., "Use of Explosives in Collieries" (pages 59 to 65 inclusive).—*Not printed.*
- Exhibit 6.**—Sketch drawn by Commissioner W. Want, showing Face of No. 11 Gateway, Fitzpatrick's Wall.
- Exhibit 7.**—Sketch Map drawn by Mr. R. A. Dunlop (Chairman of Commission) showing Electrical Installation at Mount Mulligan Colliery.
- Exhibit 8.**—Plan drawn by Mr. E. J. Laun, showing No. 2 Seam, Mount Mulligan Colliery.
- Exhibit 9.**—Plan showing No. 2 Seam workings, Mount Mulligan Colliery, with conclusions of Commission regarding Direction of Forces marked in red.
- Exhibit 10.**—Plan showing No. 1 Seam workings, Mount Mulligan Colliery, with conclusions of Commission regarding Direction of Forces marked in red.
- Exhibit 11.**—Special Rules issued under "*The Mines Regulation Act of 1910*" for the Conduct and Guidance of Officials and all Persons Employed in or about Mount Mulligan Colliery.—*Not printed.*
- Exhibit 12.**—Map of Cairns Hinterland, showing position of Mount Mulligan.
- Exhibit 13.**—Mount Mulligan Colliery, North Queensland, showing Inclined Tramway, Power House, and Weighhouse.
- Exhibit 14.**—Mount Mulligan Colliery and Surroundings.
- Exhibit 15.**—Mount Mulligan and Mouth of Main Tunnel before Explosion.
- Exhibit 16.**—Mount Mulligan Colliery after the Explosion.
- Exhibit 17.**—Three Mine Record Books, including Current Mine Record Book, containing certain entries.—*Not printed.*
- Exhibit 18.**—Affidavit of James Harris, Engineer, Mount Mulligan Colliery, dated 3rd November, 1921, with Plan attached.
- Exhibit 19.**—Original Cavil List in handwriting of Mr. George Hawes, Secretary of Mount Mulligan Branch of Coal Miners' Union (one of the victims of the disaster), found amongst Mr. Hawes's effects.
- Exhibit 20.**—Documents found amongst effects of the late Manager (Mr. T. J. Evans), giving list of names of authorised shotfirers, and one original written authority signed by T. J. Evans.
- Exhibit 21.**—Mine Record Book from August, 1916, to September, 1917, containing Record of Inspection of Mount Mulligan Coal Mine by Inspector of Mines (W. Grant-Taylor), dated 6th August, 1917 (p. 181)—*Not printed.*
- Exhibit 22.**—List received from Chillagoe Limited, Mount Mulligan, showing names of the victims of the disaster, with names and addresses of relatives.

## Proceedings of the Commission.

(Mount Mulligan.)

THURSDAY, 29 SEPTEMBER, 1921.

The Commission met at the Railway Station at 2.30 p.m.

PRESENT:

R. A. Dunlop, Esq. (*Chairman*).

Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The Commission appointing Messrs. Dunlop, Kilpatrick, and Want to be Commissioners to inquire into the recent disaster at Mount Mulligan Colliery was read.

Letters were received by the Commissioners in reference to their appointments, and a letter was received from the Chief Secretary's Department appointing Mr. J. T. H. Bird ("Hansard" Staff) as Secretary. The letters were received.

It was decided to take the evidence in public in O'Brien's Hall from 10 a.m. till 1 p.m. and from 2 p.m. till 4.30 p.m.

It was resolved that all witnesses should be sworn before giving evidence.

It was agreed to make a personal inspection of the mine on Friday, 30th September, and Saturday, 1st October, and on subsequent days, if necessary.

The Secretary was instructed to procure the Mine Record Book and Engine-room Record Book, and if possible the Explosives Issue Book for the use of the Commission.

The Chairman reported that he had made arrangements to procure the services of Mr. Daniell, electrician employed at the State Smelters at Chillagoe, to give evidence regarding the electrical installation at the mine.

The Secretary was instructed to arrange for the services of Mr. William Matthews to act as guide to the Commissioners when inspecting the coalmine.

It was agreed to group the evidence, so as to deal with mine administration, methods of mining, electricity, the accident, surface evidence, rescue work, &c.

Mr. Want reported that in company with the Secretary (Mr. Bird) he made an inspection of the surface, and found the mouth of the tunnel considerably knocked about. The tool-shop, also, was demolished, and the switch-house blown over. The sides of the tunnel had been blackened with the explosion. The cables and bell wires were disarranged. All the timber, apparently, had been knocked out, and temporary props erected. The mouth of the tunnel had been partially closed by a large fall of earth. In the first manhole on the right some coils of fuse were noticed, mixed up with debris. At the No. 2 or fan tunnel there were evidences of extreme violence. The fan drift, which was constructed of concrete and wood, with the fan housing about ten yards from the mouth had been demolished, and the Commissioner was informed that the fan, and also the casing, which was considerably damaged, had been recovered 20 yards down the hill. At the time of the inspection a Dwight-Lloyd fan was running. The dust in the vicinity of the screens was found to be particularly fine, and glistened in the sunlight, as did also that on the inclined way, though there were no thick deposits. Some shale from the mine was noticed lying near the brick kiln, and later, when water was applied, it quickly disintegrated.

B. A. DUNLOP, *Chairman*.

(Mount Mulligan.)

FRIDAY, 30 SEPTEMBER, 1921.

The Commission met at the Railway Station at 9 a.m.

PRESENT:

R. A. Dunlop, Esq. (*Chairman*).

Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The Commissioners, accompanied by the Secretary (Mr. Bird), Mr. J. T. Watson (Superintending Engineer, Mount Mulligan Colliery), Mr. Hamlyn Harris (Scientist), and Mr. William O. Matthews (Guide), entered the mine at 9.30 a.m. The inspection occupied the whole of the day. Full notes of the inspection were taken by Commissioners and Secretary as necessary.

The inspection included the south-side workings and was made under trying circumstances. Temperatures were high, owing to the defective ventilation, due to the small capacity fan (the largest immediately available), loaned by the Chillagoe State Smelters, necessitating the whole of the available air current having to be turned into each district under examination. Sufficient time had not elapsed to abate the stench left from the decomposition of the bodies of the men and of the dead horse lying in the intake to the top seam. This added materially to the discomfort of the inspection. The debris from the roof, fallen timber, and displaced pack walls, coupled with the disadvantages of inspecting with safety lamps, impeded progress considerably and lengthened the time taken for the inspection.

Starting from the mouth of the tunnel, it was observed that all timber had been blown out by the explosion to a point near the head of the dip. The tunnel is driven in stone underlying the coal seams, and is 12 ft. by 7 ft. 6 in. in the clear. Throughout the whole length the roof stone had fallen for about 1 ft. in thickness, and it lay on the floor mixed with the timber. In addition, about 20 tons of stone had fallen at the mouth of the tunnel.

A pair of jig drums, with shafting, bearings, and foundation, weighing approximately 3 tons, and placed immediately above the tunnel entrance, were hurled from their positions down the incline way for a distance of 50 ft. The switch-house, standing about 25 yds. from the pit mouth and to the left of the road, was overturned, and the switchboard was moved from its foundations. The smithy adjoining was completely demolished. The grass for some distance further away was burned, probably by the flame from the explosion.

The Deputy's cabin, about 100 yds. from the tunnel mouth, was wrecked badly, and all manholes had been filled up with debris carried into them by the force of the blast. A considerable fall of roof had taken place where the tunnel cut the seam, and from that point onward, to the bottom of the dip, falls of roof were frequently met with. There were evidences of a blast of great violence coming out of No. 10, which had displaced timber and caused a considerable fall of roof at this point. The brick stoppings on both sides from the head of the dip to this point had all been blown inwards with considerable violence from the dip. These stoppings had been built 9 in. thick and set in mortar.

The inspection showed that the explosion wave came out of No. 10 left and divided, the minor offshoot going downwards and the major travelling up the dip and out of the main tunnel. It was observed that at this point a skip had been clipped on to the haulage rope, showing

## VIII.

the clipper's pin still in the eye of the clip. The front wheels of this skip were thrown off the road to the right, and the Commissioners were informed that the body of the clipper (R. Thompson), who was evidently at the time of the explosion engaged in clipping the skip referred to, was found on the right-hand side rib 4 or 5 yds. further down. From this point downwards, a few yards below where Thompson's body was found, two sets of timber had been displaced, having a decided lean downhill. About 40 yds. from No. 10 there was a fall of considerable dimensions right across the dip, leaving some bad roofstone exposed. At a point immediately below this, the transformer is to be seen not badly displaced, but with the switch and brickwork on the low side, blown downwards.

On the top side, the glass of the voltmeter was broken, possibly by the flame, while the ammeter a few inches away was undamaged. Further down, near No. 12 South, a small electrically operated pump and its motor were examined and appeared not to have suffered damage, and, the Commissioners were informed, needed no repair after the explosion.

There was evidence of coking on props and caps. The endless haulage rope running from the screens to the bottom of the dip had not been damaged. Overhead light cables had been displaced.

The bottom gateway on the south side, No. 12, was visited, and evidences of contrary forces were observed in the lie and inbye for some distance. Skips, both full and empty, had been thrown from the rails and badly damaged. Evidences of coking were noticed on both sides of the props; also evidences of flame. The brushing stone had broken off the low rib side for some considerable distance in this road, and had come down in a body overlying the rails. The members of the Commission came to the conclusion that the diminished force going outbye from No. 12 had junctioned at this point with the force coming down the dip. An open can, apparently for holding monobel, was found near the face; also a number of detonators and two coils of fuse. These were lying 18 in. from rails and within 15 yds. of the face, unprotected in any way. A test was made with the hydrogen lamp at this face, and also on rib side under the brushing. Result: No gas. Evidence of dust in minute particles was observed on the very fine hydrogen flame, and could also be detected quite easily in suspension in the rays of the electric lamp that was taken in by one of the party, notwithstanding that no work was going on. The blast at the face had apparently come downwards. Evidences of coko dust on timber were found in the next place up. A heavy fall of roof had taken place at the face, and it was concluded from the strong stench that the body of the missing man was underneath. Evidence of the direction of blast was downwards. A test was made with the Hailwood safety lamp on the top of the fall. Result: No gas. In both these places a strong stench was present.

The evidences of force on all the faces in this pickwall showed downwards, also on the jig road, from which gateways lead to those faces. Stench was evident on the jig road just above No. 2 gateway, and we were informed the body found there was probably J. Reay. The top place was carefully examined. A packet of monobel and three detonators were found in a small tin, mixed with some sawdust. There was no lid on the tin, and they were not protected in any way. These were found 15 yds. away from the face, and alongside the rails. The blast at this point had been very violent, blowing out the topside packwalls in a downward direction. A full skip was off the road, and miners' tools were at the face.

The Commissioners then proceeded to No. 11 level, or the pump flat. The road into this section showed

evidences of contrary forces. A blast had very evidently come in from the dip for a considerable distance in this road, 16 or 17 skips being derailed on the lie. Double doors had been blown away, and splintered portions of those doors were scattered in both inward and outward directions. The foot of the staple pit up which the cables were carried to the top seam, situated outside from the position of the double doors, was inspected, and the switch was observed to be leaning in a downward direction.

In the pick section adjoining Fitzpatrick's machine wall on the main heading there were found two full boxes of detonators, about fifteen plugs of monobel, and some fuse. The monobel plugs had heavy coking on their surface. Those explosives and detonators had been stored in a wooden box without a lid, containing metallic tools, and had been scattered by the force of the blast, which at this point was exerted violently downward.

The main gate on the step faces below Fitzpatrick's machine-wall was examined, and showed that a very violent blast had been exerted in a downward direction at this point, the packwalls for a considerable distance from the face being spewed out.

Stench pervaded the foot of the cross gate, and we were informed that the bodies of Ostle and W. Thompson were found at this point. Passing up the cross gate and into the top place of the step faces, fifteen plugs of monobel were found, badly charred. Flame and blast had been very violent here, and had evidently travelled from above. No canisters or rammers were found here. A few detonators were picked up.

The members of the Commission then proceeded to the pick places above Fitzpatrick's machine-wall, and noted where F. Grant had been killed and was found lying under a fall of stone. A packet of monobel, some detonators, and a coil of fuse were found in the top pick place; also a box of detonators unopened. The blast at this point had evidently come from some point below and had travelled uphill. This fact was also noted in the other pick place in this section. From there the Commissioners went to the top place in Fitzpatrick's machine-wall, No. 12 gateway (mine plan). A Sullivan longwall coalcutting machine was found there. The machine had not been cutting at the time of the explosion. The machine was without its gear cover. The blast at this point had not been excessively violent, and had come uphill, as was evident on the bottom end of the machine, where trailing cable, feed chain, small coal, and stone were bunched up into the machine. The blast had also travelled outward from this face and into the higher workings. This place was cleaned up, and near the face one hundred detonators, unopened, and a packet of monobel were found lying unprotected near the rails.

The next place in a downward direction was visited by way of crawling along the face to what is termed on the mine plan, No. 11 gate. The roadhead was reached, and it was found there had been a fall of coal and roofstone from the low side of the roadway downward, covering an area in length of about 5 yds., under which the trailing cable was buried. It was also noted that the machine cuttings underlay the fall, and had not been thrown back. The coal had apparently fallen from a well-defined slip, extending from roof to floor, and lying in towards the bottom. There was a deposit of brownish dust on the coal, and also pieces of fallen roof. It was also noted that the machine cut had intersected the slip, with the result that after the coal had fallen 6 in. of undercut coal remained. Except for this fall, the face was clean of coal. On top of the coal near the end next the roadway, covering an area of 18 in. by 24 in., the coal was comminuted to slack for a depth of 3 or 4 in. A stemmer was found on the top side of the road. Other tools were noted lying in the road

way. The top part of a clumped miner's carbide lamp, with the rubber washer adherent thereto intact, was found. No stench was apparent. A skip half-full of lump coal was standing with its two back wheels drawn over the end of the rails, and resting on a piece of timber. The skip was not damaged though there were evidences of slight coking inside and outside. Just outside the skip on the roadside fifty detonators were found in an open tin, and beside them were one and a-half plugs of monobel and a coil of fuse. Commissioner Want made a sketch of this place on his return to the surface. Outside the skip, on the gob and timbers, were evidences of the blast having traversed the gateway outbye.

At No. 10 gateway on this wall there were evidences of flame having travelled the road. The junction-box switch was closed, and fuses were intact, the gear generally being in good order. At the face the pack-wall was blown downward and a cog displaced from the top side. A full skip standing here was thrown off the road in a downhill direction. The blast came downhill from No. 11.

At No. 9 gateway there was evidence of force at the cog. An examination showed that it had come downhill. There were also evidences of flame and coking on props and caps.

Passing down the face, there was distinct evidence of coking on the props.

At No. 8, evidences of flame on the props and of coking were seen. Apparently the velocity was not so great here. An empty skip had been thrown off the road, and there were distinct evidences of coking in the skip.

At No. 7 the Commissioners found one plug of Nobel's Australian-made gelignite, twenty-five plugs of monobel, and one coil of fuse, lying beside the road, without a container. There was distinct evidence of coking on the monobel, while outbye a box containing three plugs of monobel was found. The lid of the box was open and paper lying nearby was scorched.

There was evidence that, besides having travelled down to the step faces, the blast had also travelled outbye, down the wheeling road, on to No. 11 level, and for a considerable distance outwards.

In the places visited on this inspection in the No. 2 seam south, the gateways are 12 to 14 yds. apart, the width of gateways is from 5 to 6 ft., the packwalls on both sides being built to the roof, leaving little or no room for miners to store their explosives. The roads are brushed to a height of 5 ft.; the seam itself being 27 in. thick.

The Commissioners returned to the surface at 5 p.m.

R. A. DUNLOP, Chairman.

#### (Mount Mulligan.)

SATURDAY, 1 OCTOBER, 1921.

The Commission met at the Railway Station at 9.30 a.m.

#### PRESENT:

R. A. Dunlop, Esq. (*Chairman*).

Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The Commissioners, accompanied by the Secretary (Mr. Bird), Mr. J. T. Watson (Superintending Engineer, Mount Mulligan Colliery), Mr. Hamlyn Harris (Solicitor), and Mr. William O. Matthews (Guide), entered the mine at 10 a.m. The inspection occupied the whole of the day. Full notes of the inspection were taken by the Commissioners and Secretary as necessary.

The inspection included the workings in the No. 2 seam on the northern side of the tunnel, in what is known as Beattie's Wall, and the return airway on the south

side at seat of fire that occurred at the time of the explosion. A second inspection was made on Fitzpatrick's machine-wall, south side, and in the main tunnel.

Passing down the main tunnel and dip to No. 12 North entry, it was noted there were distinct evidences of flame and force having travelled inbye on No. 12. Six empty skips were found in the lie, four of those having been thrown about. Along the level to the face the packwalls were disturbed, and effects of flame were apparent, although coking had been slight. It was evident that the flame had kept to the roof, leaving the lower portions of the props untouched. Six or eight yards from the face, twenty plugs of monobel, eight plugs of gelignite, two coils and a piece of fuse, and a few detonators were found loose and unprotected, on the floor. The flame was not so intense at the face. There was a longwall Sullivan coalcutting machine lying at the face. It had not been working at the time of the explosion. The coal had been cleaned up from the face.

In the vicinity of No. 2 gateroad the bottom and wheels of a skip, and, 8 or 10 yds. further up, the body of the skip were found. Several plugs of gelignite and a quantity of monobel and detonators were picked up near the entry. There was evidence of flame at the face. Violence of blast had not been severe at this point. A shot had been fired in the brushing, some or which had been filled into a skip.

At No. 3 gate, evidence of flame was very distinct. Coking was noticeable on roof and skip, and paper lying in the gate was burnt. The coil of trailing cable leading from the junction box was severely scorched. The electric switch was in the "on" position. The temperature of the workings at the time of the inspection was very high.

On No. 4 gateway there was a skip overturned, and a detonator with fuse attached was found on it, where it had been placed, we were informed, by a rescue party. There was decided evidence of flame at the entry and into the face, on the upper portion of the timber. Paper was burned to ash. The blast had been more violent here than on the lower road. The Commissioners picked up one packet of monobel with the covering cardboard charred, and a box containing a hundred detonators. There were found in a wooden box fifty loose detonators in a tin without a cover, with a spanner, boring machine handle, pick, file, gad, and other tools. There were also picked up fourteen plugs of monobel lying loose in the roadway, all heavily coked. A brushing hole, 18 in. to 20 in. deep, charged with monobel, was found at the face.

At No. 5 gate there was evidence of intense flame and coking. The blast was more severe here.

At No. 6 there were evidences of flame and coking. A smell of afterdamp was encountered, and it was impossible to proceed further. A fall of roof had taken place above No. 6, and a test was made near here with the hydrogen lamp, no gas being detected.

The seam in this section is from 2 ft. to 2 ft. 3 in. thick, dipping at an angle of 8 degrees. Gateroads are driven on the level course about 14 yds. apart, crossgates being driven at intervals to cut off the roads. The gates are about 5 ft. high by 6 ft. in width. Packwalls are built to the roof. No provision has been made for the men to store their daily supply of explosives.

The Commissioners then proceeded to make their second examination of Fitzpatrick's Wall, on the south side. Passing along No. 11 level, or pump flat, to the position of the double doors, near the staple pit, there was evidence of considerable violence and pressure having been exerted, as was shown by falls of roof and displacement of timbers. The displacement of the heavier parts of the doors indicated that the original

force, coming down from the faces, travelled outbye, while the position in which the lighter material, consisting of splintered pine with which the doors were constructed, was found, proved that a subsequent force had passed inbye. The members of the Commission then proceeded by way of the wheeling road to No. 12 gate, on Fitzpatrick's machine-wall. The gear cover of the machine and a "farmer's friend" wrench were seen some yards to the rise above the machine. The gear-cover and wrench were not damaged in any way. The Commissioners then passed down along the face to No. 11 gate. It was noted that the trailing cable was lying on the floor, and was in good order. A close examination was made of this face, and the notes made on the day that this place was previously inspected were examined and confirmed.

A sketch made by a Commissioner was found to be approximately correct. Careful observations were made by the Commissioners and Secretary of the top of the fallen coal and roofstone in this place. It was found that the comminuted coal, lying on the fall, had sufficient depth to allow a Commissioner to obtain a double handful by digging into it and lifting it for observation.

The members of the Commission then went to No. 10, and the cable was examined from the junction box to the fall in No. 11. They then proceeded down the faces to No. 7 wall. It was found that a crossgate was being driven through the gob at this place, and the refuse was being stowed in the old gateroad between the wheeling road and the new crossgate. Flame and force had been violent on this road and on the roadway below. The Commissioners were informed that three men, including Deputy Parkinson, had been found on No. 7 roadway. There was also a stow skip there.

The Commission then proceeded out of No. 11 level, and went up the dip and into the return airway to the place marked "site of fire" on the mine plan. The fire had consumed portion of the rib coal for a distance of 15 ft. in length and 4 to 5 ft. in depth. The Commissioners were informed that the fire had been dug out, and saw a heap of ash, charred timber, and stone stowed nearby in the return. A test was made with the hydrogen lamp on the return airway near this point. No gas was detected.

From there the Commissioners went to the mouth of the tunnel and examined a manhole about 10 yds. from the entrance. The manhole was filled to a depth of about 3 ft. with refuse cast there by the explosion. The debris was raked out, and fifteen coils of fuse, two unopened packets of gelignite, loose sheets containing a record of the issue of explosives and weight sheets were found.

The Commissioners then went back to the Deputy's cabin about 70 yds. further in, and found there, buried in the debris, thirty coils of fuse. A kerosene case containing record books was carried out from the cabin.

The Commissioners returned to the surface at 5 p.m.

R. A. DUNLOP, Chairman.

(Mount Mulligan.)

MONDAY, 3 OCTOBER, 1921.

The Commission met at the Railway Carriage at 9 a.m.

PRESENT:

R. A. Dunlop, Esq. (Chairman).

Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The Commissioners entered the mine at 10 a.m., accompanied by Mr. J. T. Watson and Mr. William Matthews (Guide).

An inspection was made of the top seam. The Commissioners proceeded into No. 10 south or middle slit.

At No. 10 entry, i.e., lie for top seam, there was distinct evidence of great force directed outbye. Skips were smashed, timbers knocked out, and a small sirocco fan, not in use at the time of the explosion, was mixed up with a fairly large fall of roof. Evidence of slight coking on props and caps and intense flame were apparent. Going inwards, two other heavy falls of roof were encountered. At a point 100 yds. from the dip road the cross measure horizontal drift, called the stone drive, connects the top seam with this level. Immediately inbye in No. 10 from this point the remains of what had formerly been double doors were examined. There was evidence of considerable violence displacing those doors and the contingent brickwork, which formed a midwall between the doors, the materials of which had been blown inbye to the main return airway, thus opening a passage to the fan tunnel. Passing into the stone drive it was noticed that part of the floor for a length of 5 or 6 yds. had fallen through into a bord driven in No. 2 seam immediately underneath. Evidences of violence in the drift are not numerous, though there was a large fall of roof about 20 yds. in, and timbers were displaced, but not in such a manner as to indicate definitely in what direction forces had travelled. Further in, where the drift cuts the top seam, a small shunt-wound haulage motor, 220 volt direct current, and gear, were installed on the side of the road, for the purpose of pulling coal from the dip. This drift is the main intake for the top seam. We were informed that W. Cole, motor driver, was found a few yards below the motor on the opposite side of the road. There was evidence of fierce flame here. The ammeter glass was cracked, and the rig of the recording instruments was bent in towards the rib. Passing into the face of the first bord to the right there was evidence of flame, but no violence, and we were informed that the bodies of Spiers and O'Boyle had been found at the face. Tools were also noted at the face and a set of artificial teeth was lying on the floor. A section of the seam was booked, showing altogether about 6 ft. of coal and stone, the thickest band of coal being 20 in.

In No. 2 place, off the dip to the right, there was no evidence of violence, but evidence of flame was apparent. A shortwall Sullivan coalcutting machine had been working at the face at the time of the explosion, having sumped and cut 6 or 8 ft. from the low rib. The bord was about 8 yds. wide. Slight coking on the timbers was evident at the entry. Just below this place, towards the face of the dip, we were informed that Beattie, Butcher, and Martin had been found. In the face of the dip there was evidence of flame without violence. In the bottom bord, left hand, of the dip, there was evidence of force having travelled outward. The place has been cut by the machine, and a skip filled with small cuttings was standing at the face. It was noted that on the top rib there was a junction with another place, like a cut-through. In this cut-through there was a broken skip and a fall of roof. Evidently the blast had come down this cut-through and out the roadway. We were informed that J. Henry had been found near the face of this place. A few yards below the motor, what is known as the horse road is turned to the left off the dip. Passing in here, a fall was encountered, and a little further in some timbers were displaced. An empty skip was found, with horse limbers attached, the limbers being bent around the side of the skip in an outbye direction and lying with all the harness, except the collar, attached. Some brattice cloth, which may have been a check screen, was noticed tangled amongst the harness, and, on the top side, a blast appeared to have travelled into an old road. A few yards inbye from the skip an old brickwork doorway was noticed, and investigation led the Commission to believe there had been brattice there. A few yards further in, a dead horse was lying with his head towards the low side of the road, where the cut-through

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from Henry's place on the bottom left joined the horse road. At this point there is a connection with the bottom seam by means of a staple shaft. The Commission was informed that at the time of the explosion this shaft had been covered with boards and refuse, the only immediate use of the shaft being to carry electric cables up from the bottom seam. The props carrying the electric cables on the top side of the horse road opposite the shaft were also displaced, and the cables blown uphill. The top of the staple shaft was open at the time of inspection under review.

Notwithstanding that the dead horse had been liberally sprinkled with lime, the stench did not appear to have been overcome to any extent. Twenty-eight yards inbye, the horse's collar was found and a sleeper, broken uphill, suggested force travelling inbye. In No. 1 to the right, the place cavilled by Mansfield and Lewis, evidence of flame was slight. The Commissioners were informed that those men had been found 116 yds. from their working place.

By the roadside, near the face, twelve and a-half plugs of gelignite, half coil of fuse, one hundred detonators, and three plugs of monobel were found, contained in an open wood box, in which were also one file, and one large knife. This box was within 18 in. of the rails and 2 ft. from a full skip standing at the face. The explosives were 4 yds. distant from the face. The Deputy's initials "F.G. 19/9/21" were seen here.

At entry to the top place off the heading, there was evidence of slight flame, and further out charred paper was found. Near the face one packet of monobel, one plug of gelignite one hundred detonators in box, three detonators in box, and one coil of fuse were lying in an open box, 2 ft. from the rails, and within a few yards of the face. This place has been machine-cut and a skip of slack was standing at the face. The face is 10 yds. wide. There was no evidence of flame or violence. The Deputy's initials "F.G. 19/9/21" were found in this place. Just above this place, on the heading road, the Commissioners were informed that the bodies of O'Halloran and Fogarty had been found. There was evidence of flame here also. The staple shaft connecting with the bottom seam in this vicinity, and acting as the return, was next visited. The Commissioners were informed it was 26 or 28 ft. to No. 2 seam. A board laid across it was not displaced.

A light door on the low side of the shaft had been displaced outbye, and evidences on the packs show the blast to have travelled down the staple shaft, but not with violence.

The Commissioners returned to the entry of the stone drive and passed from there through temporary bratticing, which had been erected, to the return airway, where a test was made with the Hailwood safety lamp. No gas was detected. Forces here had been very slight.

The Commissioners returned to the surface at 3 p.m.

R. A. DUNLOP, Chairman.

(Mount Mulligan.)

TUESDAY, 4 OCTOBER, 1921.

The Commission met in O'Brien's Hall at 10 a.m.

PRESENT:

R. A. Dunlop, Esq. (Chairman).

Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the previous meetings were read and confirmed.

Mr. HAMLYN HARRIS (Solicitor, member of the firm of Messrs. McDonnell and Hamlyn Harris) watched the proceedings on behalf of Chillagoe Limited.

The Chairman intimated that it was proposed to group the evidence, and for that purpose several of the witnesses would require to be recalled.

The following witnesses presented themselves and were sworn and examined under the heading indicated:—

*The Disaster—Evidence of Surface Hands—*

George Morrison, Blacksmith and Tool Sharpener, employed at Mount Mulligan Colliery;

John Harris, Blacksmith, employed at Mount Mulligan Colliery.

*Evidence of those who were First at the Mine after the Explosion—*

James Thomas Watson, Superintending Engineer at the Mount Mulligan Colliery for Chillagoe Limited;

James Harris, Engineer, Mount Mulligan Colliery; Alick Young, Labourer, employed at Mount Mulligan Colliery.

*Evidence of Rescue Workers—*

James Thomas Watson, Superintending Engineer, Mount Mulligan Colliery;

James Harris, Engineer, Mount Mulligan Colliery; William Owen Matthews, Machineman, employed at Mount Mulligan Colliery;

Ernest Julius Laun, Inspector of Mines;

Aubrey Plunkett, Fitter, employed at Mount Mulligan Colliery.

*Evidence regarding Men Working in the Mine at the Time of the Disaster, and Cavilling List for Same Day—*

Charles Vandenberg Lewis, Accountant, employed by Chillagoe Limited at Mount Mulligan.

*Evidence of Identification of Bodies—*

Ignatius Neil Smith, Head Master, Mount Mulligan State School;

Robert McClintock, Police Constable, stationed at Thornborough.

*Evidence regarding Burial of Bodies—*

Bernard Thomas Fitchett, Joiner, employed by Chillagoe Limited at Mount Mulligan.

The Commission adjourned at 4.35 p.m. till 10 a.m. the following day.

R. A. DUNLOP, Chairman.

(Mount Mulligan.)

WEDNESDAY, 5 OCTOBER, 1921.

The Commission met in O'Brien's Hall at 10 a.m.

PRESENT:

R. A. Dunlop, Esq. (Chairman).

Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

The following witnesses were sworn and examined:—

*Evidence of Rescue Workers—*

James Joseph Lovell, Gold Miner, employed at Tyrconnell Gold Mine, Kingsborough;

Joseph Parkes, Miner, employed at Tyrconnell Gold Mine, Kingsborough;

Ernest Julius Laun, Inspector of Mines.

*Evidence of Mine Management and Mine Administration—*

James Thomas Watson, Superintending Engineer.

The Commission adjourned at 1 p.m. till 10 a.m. the following morning.

R. A. DUNLOP, Chairman.

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**(Mount Mulligan.)**

*THURSDAY, 6 OCTOBER, 1921.*

The Commission met in O'Brien's Hall at 10 a.m.

**PRESENT:**

R. A. Dunlop, Esq. (*Chairman*).  
Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

The following witnesses presented themselves and were sworn and examined:—

*Evidence of Mine Management and Mine Administration—continued.*

James Thomas Watson, Superintending Engineer;  
James Harris, Engineer, Mount Mulligan;  
Norman Andrew Fraser, Electrician, employed at Mount Mulligan Colliery.

*Evidence of Men who had Worked Underground—*

George Morrison, Blacksmith and Tool Sharpener;  
Frederick Joseph Larsen, Miner, living at Mount Mulligan;  
Arthur Ingram Griffiths, Clipper, employed at Mount Mulligan Colliery;  
George Williams, Miner, living at Mount Mulligan;  
William Owen Matthews, Machineman, Mount Mulligan Colliery.

*Evidence of Inspectors of Mines—*

Sydney Horsley, Inspector of Mines at Gympie, formerly in charge of Second Northern District (including Mount Mulligan);  
Osborne Maurice Williams, Inspector of Mines, temporarily at Charters Towers, but really attached to Third Northern District, with headquarters at Mareeba;  
Ernest Julius Laun, Inspector of Mines, temporarily stationed at Kidston, but really in charge at Charters Towers.

The Commission adjourned at 3 p.m. till 10 a.m. the following day.

R. A. DUNLOP, Chairman.

**(Mount Mulligan.)**

*FRIDAY, 7 OCTOBER, 1921.*

The Commission met in O'Brien's Hall at 10 a.m.

**PRESENT:**

R. A. Dunlop, Esq. (*Chairman*).  
Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

The following witnesses presented themselves and were sworn and examined:—

*Evidence of Mine Management and Mine Administration—continued.*

Clement Frederick Vivian Jackson, State Mining Engineer and Chief Inspector of Mines.

*General Evidence—*

Clement Frederick Vivian Jackson, Chief Inspector of Mines;

John Stafford, Inspector of Mines, in charge of Ipswich and Darling Downs Districts of the South-eastern Division.

The Commission adjourned at 3.20 p.m. till 10.30 a.m. the following day.

R. A. DUNLOP, Chairman.

**(Mount Mulligan.)**

*SATURDAY, 8 OCTOBER, 1921.*

The Commission met at the Pit Mouth at 7.30 a.m.

**PRESENT:**

R. A. Dunlop, Esq. (*Chairman*).  
Hon. C. Kilpatrick, M.L.C. William Want, Esq.

Accompanied by William Owen Matthews as Guide, the Commissioners made a further inspection of the mine.

The Commissioners entered the mine at 8 a.m., accompanied by Mr. William Matthews, and proceeded by way of the main tunnel to the No. 1, or top coal seam. A further examination was made in this seam and of the roads leading into it.

From the dip to the entrance of the stone drive, as already noted, there was much evidence of violence, which was greatest in effect at the entrance to the stone drive. It would appear as though there had been a violent local explosion here, which scattered material in several directions, though, on entering the drift, effects were not nearly so pronounced. A minute examination of the drift, further in, caused the Commissioners to confirm their conclusions of their earlier inspection. A careful examination of the workings in the district immediately near the No. 1 staple shaft did not disclose further evidence or alter the Commission's findings.

The Commission returned to the surface at 10 a.m. The whole of the inspections were conducted with safety lamps in advance.

There are two seams operated on, worked from a common main haulage, the entrance to both seams being the main tunnel. There is another tunnel giving access to the workings, used as a return airway. The seams worked are known as No. 1 (the top seam), and No. 2 (the bottom seam). The seams are about 26 or 28 ft. apart. The mine throughout is particularly dry, making about 4,000 gallons in the twenty four hours, which is easily handled by a small pump. No accumulations of coal dust were noticeable on the roads.

The top seam is worked by the bord-and-pillar system. The seam is 6 ft. in thickness, stone bands in the seams totalling 18 in. All coal in this seam is cut by a Sullivan shortwall machine, 6 ft. cutter-bar. The machine is gasproof. A motor driven winch for hauling coal out of the dip is installed. Horse wheeling is the method adopted.

No. 2 seam averages 2 ft. 3 in. of clean coal, and is worked on the longwall system, partly won by machines and partly by hand. There are no unfilled gobs, more brushings and cuttings being available than is required to stow the gob space. Both machines are Sullivan long-wall, cutter-bar 4 ft. 6 in. Machines are gasproof. All coal is wheeled by the miners.

Electricity is used as power for all purposes, alternating current driving all motors except the winch motor in the top seam, which is operated by direct current. D.C. is also used for lighting the mine and township.

R. A. DUNLOP, Chairman,  
CHARLES KILPATRICK,  
WILLIAM WANT,  
Commissioners.

### XIII.

The Commission met in O'Brien's Hall at 10.30 a.m.

PRESENT:

R. A. Dunlop, Esq. (*Chairman*).  
Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The following witnesses presented themselves and were sworn and examined:

*General Evidence*—continued.

John Stafford, Inspector of Mines;

William Owen Matthews, Machineman, Mount Mulligan Colliery.

The Chairman intimated that there were further witnesses to be examined at Chillagoe, and the inquiry would be adjourned to that centre.

The Commission then deliberated.

The Secretary was instructed to send telegrams to Dr. J. R. McClean, Atherton, and Dr. H. F. Perkins, Mareeba, asking them to give evidence before the Commission at Mareeba on Thursday, 13th October, and a further wire to Dr. P. S. Clarke, Cairns, asking him to give evidence at Cairns on Saturday, 15th October.

The Chairman reported that he had made arrangements for a special engine to leave Mount Mulligan on Monday for Dimbulah, where they would join the train for Chillagoe.

R. A. DUNLOP, Chairman.

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(Chillagoe.)

TUESDAY, 11 OCTOBER, 1921.

The Commission met at the Court House at 10 a.m.

PRESENT:

R. A. Dunlop, Esq. (*Chairman*).  
Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last two meetings were read and confirmed.

The following witnesses presented themselves and were sworn and examined:—

*General Evidence*—

James Thomas Watson, Superintending Engineer.

*Evidence on Electrical Installation*—

Frederick Edward Daniell, Chief Electrician employed at the State Smelters at Chillagoe.

The Commission adjourned at 1.15 p.m. till the following day.

R. A. DUNLOP, Chairman.

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(Chillagoe.)

WEDNESDAY, 12 OCTOBER, 1921.

The Commission met at the Court House at 9 a.m.

PRESENT:

R. A. Dunlop, Esq. (*Chairman*).  
Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

*Rescue Work*—continued.

Further evidence was taken regarding rescue work after the explosion, Robert Allen, Miner, being sworn and examined.

R. A. DUNLOP, Chairman.

(Mareeba.)

THURSDAY, 13 OCTOBER, 1921.

The Commission met at the Court House at 2.30 p.m.

PRESENT:

R. A. Dunlop, Esq. (*Chairman*).  
Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

The following witnesses presented themselves and were sworn and examined:—

*Medical Evidence*—

Dr. Herbert Francis Perkins, Medical Practitioner, residing at Mareeba;

Dr. James Robert McClean, Medical Practitioner, residing at Atherton.

R. A. DUNLOP, Chairman.

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(Cairns.)

SATURDAY, 15 OCTOBER, 1921.

The Commission met at the Court House at 10.30 a.m.

PRESENT:

R. A. Dunlop, Esq. (*Chairman*).  
Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

*Medical Evidence*—continued.

Dr. Philip Sylvester Clarke, Medical Practitioner, on being sworn and examined, gave further medical evidence.

R. A. DUNLOP, Chairman.

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(Brisbane.)

MONDAY, 31 OCTOBER, 1921.

The Commission met in No. 1 Committee Room, Legislative Council, Parliament House, at 10 a.m.

PRESENT:

R. A. Dunlop, Esq. (*Chairman*).  
Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The following witnesses presented themselves and were sworn and examined:—

*General Evidence*—continued.

Edgar Cecil Saint-Smith, Government Geologist, Queensland;

John Brownlie Henderson, Government Analyst;

John Stafford, Inspector of Mines, South-eastern Division.

The Commission then deliberated.

The inward correspondence included the following urgent telegram from Mr. J. T. Watson, Superintending Engineer, Mount Mulligan Colliery:—

“Mount Mulligan,

“29th October, 1921.

“R. A. Dunlop,

“Chairman,

“Mount Mulligan Royal Commission.

“New and very important evidence discovered in first bord below machine Fitzpatrick's wall. Practically impossible that any shot could have been fired in that place immediately prior to

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explosion. Theory *re* 'plaster' shot quite untenable. Also found in Record Book list of names of authorised shotfirers and one original written authority signed by Evans. Writer expects to be in Brisbane tenth November and will give further evidence if matter delayed until then.

"Watson."

The Chairman was authorised to send the following urgent telegram in reply:—

"Parliament House,  
"Brisbane,  
"1st November, 1921.

"J. T. Watson,  
"Mount Mulligan.

"Your wire received. Commission cannot delay unless some definite indication of new evidence is given to justify delay. Please wire.

"R. A. Dunlop, Chairman."

The Commissioners then started on the preparation of plans to attach to the report.

R. A. DUNLOP, Chairman.

(Brisbane.)

TUESDAY, 1 NOVEMBER, 1921.

The Commission met at Parliament House at 9 a.m.

PRESENT:

R. A. Dunlop, Esq. (Chairman).  
Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

The inward correspondence included the following telegram from Mr. J. T. Watson, Superintending Engineer, Mount Mulligan Colliery:—

"Mount Mulligan,  
"1st November, 1921.

"To R. A. Dunlop,  
"Chairman,  
"Mount Mulligan Commission,  
"Brisbane.

"In making inspection with writer Harris definitely identified bord below in which machine is standing Fitzpatrick's wall as place in which he found Morgan during rescue work. Original cavill sheet has been found and established that Morgan and Casloff cavilled that place. Morgan was found against front of skip in face within ten feet of place where alleged plaster shot was fired. Proof of this is on the skip itself portion of skin and flesh still adhering to end of skip next face. It would be ridiculous to assume that a man would fire any shot within ten feet of where he was working. Further at the spot where so-called plaster shot was assumed to be fired there is portion of a shot hole still remaining proving that a hole had been bored in the coal in the ordinary way. This hole had not been fired nor even charged with explosive. It looks as if the men had bored the hole and were about to charge it when the explosion occurred. The coal must have been standing then and fell after the explosion. Strong presumptive evidence that Morgan had bored the hole and was carrying the charge to the place when it was accidentally fired in his hand. Theory *re* plaster shot completely exploded.

"Watson."

After deliberation, the Secretary was instructed to send the following urgent telegram in reply to Mr. Watson:—

"Parliament House,  
"Brisbane,  
"1st November, 1921.

"Your wire received. Commission decided to hear your further evidence at Parliament House eleven o'clock Thursday tenth November.

"J. T. H. Bird, Secretary."

The plans of the electric installation and Nos. 1 and 2 seams were prepared for the Government Printer, the Commissioners marking the direction of the explosive force as it appeared to them.

R. A. DUNLOP, Chairman.

(Brisbane.)

THURSDAY, 3 NOVEMBER, 1921.

The Commission met at Parliament House at 9 a.m.

PRESENT:

R. A. Dunlop, Esq. (Chairman).  
Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

The inward correspondence included the following telegram from Mr. J. T. Watson:—

"Mount Mulligan,  
"2nd November, 1921.

"To R. A. Dunlop,  
"Chairman, Mount Mulligan Commission,  
"Brisbane.

"Arranging to be in Brisbane tenth instant with further evidence.

"Watson."

The Chairman reported that he had instructed the Secretary to send the following telegram to Mr. E. J. Laun, Inspector of Mines, Kidston:—

"Parliament House, Brisbane,  
"2nd November, 1921.

"To E. J. Laun, Kidston.

"Re your plan bottom seam. Please advise by wire if position of bodies recovered from top bords near machine accurately delineated.

"J. T. H. Bird, Secretary."

The following telegram was received in reply from Mr. Laun:—

"Kidston,  
"3rd November, 1921.

"To J. Bird,  
"Secretary, Royal Commission,  
"Parliament House.

"Yours. Saw bodies recovered from No. 11 left to No. 6 gate road. Harris party lifted bodies from five upper gate roads. Approximate position marked on plan from information given by volunteers who were rarely sure of gate road numbers. Probably bodies marked on No. 9 belonged to No. 10.

"E. J. Laun."

The following telegram was also received from Mr. J. T. Watson:—

“Mount Mulligan,  
“3rd November, 1921.

“To R. A. Dunlop,

“Chairman, Royal Commission.

“Can you arrange for Saint-Smith to be recalled for few minutes on the 10th instant. Writer would like with your permission to ask him a few questions.

“Watson.”

The following letter was received from the Government Analyst:—

“Government Chemical Laboratory,  
“Brisbane, 2nd November, 1921.

“Sir,

“The following additional results were obtained from samples Nos. 7 and 9 in accordance with your request of yesterday's date and the article in the ‘Colliery Guardian’:—

“No. 7—

Separated on the 30 m. sieve—Coarse = 66.0 per cent. Fines = 34.0 per cent.

*Proximate analysis of fines—*

	Per cent.
Moisture .. .. .	1.35
Volatile Matter .. .. .	28.85 } *
Fixed Carbon .. .. .	43.80 }
* = 72.65 per cent. ‘Combustible Matter as per ‘Colliery Guardian,’ June, 1921, page 1594.	
Ash .. .. .	26.00
	100.00 per cent.

“No. 9—

Separated on the 30 m. sieve—Coarse = 60.5 per cent. Fines = 39.5 per cent.

*Proximate analysis of fines—*

	Per cent.
Moisture .. .. .	2.00
Volatile Matter .. .. .	23.10 } *
Fixed Carbon .. .. .	46.95 }
* = 70.05 per cent. ‘Combustible Matter.’	
Ash .. .. .	27.95
	100.00 per cent.

“Yours faithfully,

“J. B. HENDERSON,  
“Government Analyst.

“W. Want, Esq.,

“Mount Mulligan Royal Commission,  
“Brisbane.”

It was decided to accept Mr. Henderson's letter as further evidence.

R. A. DUNLOP, Chairman.

(Brisbane.)

FRIDAY, 4 NOVEMBER, 1921.

The Commission met at Parliament House at 9 a.m.

PRESENT:

R. A. Dunlop, Esq. (Chairman).

Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

It was resolved to further examine Mr. J. T. Watson in Brisbane on Thursday, 10th November, and it was further resolved to ask Mr. E. C. Saint-Smith, Government Geologist, to be in attendance on that day.

The Commission deliberated.

R. A. DUNLOP, Chairman.

(Brisbane.)

MONDAY, 7 NOVEMBER, 1921.

The Commission met at Parliament House at 9 a.m.

PRESENT:

R. A. Dunlop, Esq. (Chairman).

Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

Further consideration was given to the plans and other exhibits, and to the printed evidence.

R. A. DUNLOP, Chairman.

(Brisbane.)

TUESDAY, 8 NOVEMBER, 1921.

The Commission met at Parliament House at 9 a.m.

PRESENT:

R. A. Dunlop, Esq. (Chairman).

Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

The Commission deliberated.

R. A. DUNLOP, Chairman.

(Brisbane.)

WEDNESDAY, 9 NOVEMBER, 1921.

The Commission met at Parliament House at 9 a.m.

PRESENT:

R. A. Dunlop, Esq. (Chairman).

Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

The Commission deliberated.

R. A. DUNLOP, Chairman.

(Brisbane.)

THURSDAY, 10 NOVEMBER, 1921.

The Commission met at Parliament House at 10 a.m.

PRESENT:

R. A. Dunlop, Esq. (Chairman).

Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

James Thomas Watson, Superintending Engineer, was recalled and further examined.

Mr. Watson asked permission to cross-examine Mr. E. C. Saint-Smith, Government Geologist, regarding certain statements made by him in his evidence before the Commission.

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The Chairman said: "Mr. Saint-Smith may answer the questions if he likes, but I will not force him to do so."

Mr. Saint-Smith stated he had no objection to answering Mr. Watson's questions, and he was recalled and further examined.

This concluded the evidence.

R. A. DUNLOP, Chairman.

(Brisbane.)

FRIDAY, 11 NOVEMBER, 1921.

The Commission met at Parliament House at 9 a.m.

PRESENT:

R. A. Dunlop, Esq. (Chairman).  
Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

The Commission deliberated.

R. A. DUNLOP, Chairman.

(Brisbane.)

MONDAY, 14 NOVEMBER, 1921.

The Commission met at Parliament House at 9 a.m.

PRESENT:

R. A. Dunlop, Esq. (Chairman).  
Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

The draft report of the first inspection of the Mount Mulligan mine, made by the Commission on Friday, 30th September, was presented and revised, and ordered to be included in the "Minutes of Proceedings" for that date.

R. A. DUNLOP, Chairman.

(Brisbane.)

TUESDAY, 15 NOVEMBER, 1921.

The Commission met at Parliament House at 9 a.m.

PRESENT:

R. A. Dunlop, Esq. (Chairman).  
Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

The draft reports of the inspections of the mine, made by the Commission on Saturday, 1st October, and Monday, 3rd October, were considered by the Commission, and with slight amendment were adopted and ordered to be included in the "Minutes of Proceedings" for the days mentioned.

R. A. DUNLOP, Chairman.

(Brisbane.)

WEDNESDAY, 16 NOVEMBER, 1921.

The Commission met at Parliament House at 9 a.m.

PRESENT:

R. A. Dunlop, Esq. (Chairman).  
Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

The draft report of the mine inspection made by the Commission on Saturday, 8th October, was presented, revised, and adopted, and ordered to be included with the "Minutes of Proceedings" for 8th October.

R. A. DUNLOP, Chairman.

(Brisbane.)

THURSDAY, 17 NOVEMBER, 1921.

The Commission met at Parliament House at 9 a.m.

PRESENT:

R. A. Dunlop, Esq. (Chairman).  
Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

After further deliberation, the Commission arrived at a unanimous decision regarding the origination of the explosion which caused the disaster at Mount Mulligan on Monday, 19th September.

The Commissioners adopted certain headings for inclusion in the report, and forthwith started on the preparation of the preliminary draft.

R. A. DUNLOP, Chairman.

(Brisbane.)

FRIDAY, 18 NOVEMBER, 1921.

The Commission met at Parliament House at 9 a.m.

PRESENT:

R. A. Dunlop, Esq. (Chairman).  
Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

A letter was received from Mr. H. Marshall, Under Secretary, Mines Department, enclosing a paragraph re an accident with an acetylene lamp on a motor bicycle forwarded to him by Mr. J. Stafford, Inspector of Mines. He suggested that the matter might be of interest to the Commission in view of the question of acetylene lamps having cropped up in connection with the investigation at Mount Mulligan. Received.

The following extract from a letter addressed to the Hon. W. N. Gillies by Mr. P. N. Stevens, of Millaa Millaa, under date 10th November, 1921, was also forwarded by the Under Secretary, Mines Department:—

"I notice in the report on the Commission enquiring in the Mulligan disaster, that the blame of the explosion is put on to the unfortunate miners who perished there.

"On their behalf I wish to state the little I have found out. On my last train journey from Millaa I got into touch with a Russian. He said he had been working there. He also stated that the mine worked five days one week and six days the next.

"When the men stopped work the fan that supplied air to the workings stopped also. That meant there were two days no air was being driven through previous to the men resuming work on the Monday morning. As you are aware the accident happened on a Monday morning and also the fan was not working at the time.

"The Russian states there was sufficient gas in the mine to cause the explosion. He says there was not much coming, but the two days' spell from fan working allowed the gas to accumulate.

"He left the mine on that account and is at present getting mill timber on the Millaa line.

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"I think myself it is the true explanation of the disaster, and I would like you to cause enquiries to be made, and, if possible, quieten some of the mud-slingers who are at work.

"The Government Geologist seems to be a past master at the art."

The letter was received.

In answer to inquiry from the Commission, further information was received regarding the addresses of dependants of miners killed in the disaster, and the list prepared by the Commission was amended accordingly.

The Commissioners proceeded further with the preparation of the report.

R. A. DUNLOP, Chairman.

(Brisbane.)

MONDAY, 21 NOVEMBER, 1921.

The Commission met at Parliament House at 9 a.m.

PRESENT:

R. A. Dunlop, Esq. (Chairman).

Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

Further progress was made with the preparation of the report.

R. A. DUNLOP, Chairman.

(Brisbane.)

TUESDAY 22 NOVEMBER, 1921.

The Commission met at Parliament House at 9 a.m.

PRESENT:

R. A. Dunlop, Esq. (Chairman).

Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

The printed plans to be attached to the report were examined and passed for the Government Printer.

The first portion of the report relating to the description of the mine and mining methods was adopted and forwarded to the Printer.

Further progress was made with the preparation of the report.

R. A. DUNLOP, Chairman.

(Brisbane.)

WEDNESDAY, 23 NOVEMBER, 1921.

The Commission met at Parliament House at 9 a.m.

PRESENT:

R. A. Dunlop, Esq. (Chairman).

Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

Mr. Kilpatrick reported that he had received from Chillagoe Limited, Mount Mulligan, a full list of the victims of the disaster and their relatives.

It was decided to include the list as an appendix to the report (*vide* Exhibit 22).

Mr. Kilpatrick also reported that, after consultation with the other members of the Commission, he had been

making inquiries regarding the use of safety electric lamps in coal mines, and that morning he had received the following reply from New South Wales, namely:—

"Weston, 18th November, 1921.

"MR. KILPATRICK.

"Dear Sir,—In reply to your request (per wire), the electric safety lamps I tested were as follows:—

	Weight.	C.P.
	lb.	
The Kingsway .. ..	5½	1½
The Fuller .. ..	4¼	..
The Oldham .. ..	5¼	..
Oldham Cap Lamp ..	5½	1½
The Wheat Cap Lamp ..	4¼	1½
The Premier .. ..	5	1¼
The Jones .. ..	4¼	..
Pearson's Nife .. ..	4	2

"The construction of the accumulator in the first seven lamps is of Lead v. Acid. This feature accounts for the lamp being so heavy. In addition, the acid, which is mainly sulphuric, is more or less likely to leak, particularly if the lamp gets a knock; will burn one's clothes or hands if coming into contact with same; and the light is affected if the acid happens to spill on the contact.

"The Pearson Nife lamp is of different constructional features. The Nife accumulator, unlike the others, has neither lead nor acid in its construction, steel, nickel, and alkali taking the place of these materials. Whilst this makes for an unusually strong and light accumulator, a further advantage is that steel, nickel, and alkali have no chemical influence on each other, thus giving to the Nife lamp many valuable characteristics foreign to the lead type of battery.

"Whilst the Nife is the dearest of the hand lamps tested, we are of the opinion that in eighteen months' or two years' usage it will pan out the cheapest, owing to the construction, and maintenance being more favourable than the others. Its light-power, which is 2 c.p., is guaranteed for nine hours. I have used it on several occasions for eleven hours, at the end of which it was tested and found very satisfactory.

"While we have chosen the Nife for our hand lamp, we find that several of the others are good. For instance, the Fuller is a first-class lamp. A feature that plays an important part, from the workers' point of view, is the weight, and, of course, the lighting power. The Kingsway and Oldham lamps have also met with approval, excepting that the Oldham lamp unfastens at the bottom, thus leaving it difficult to adjust the contact should it be necessary, which would have to be got to by putting your hand up the lamp case or barrel. The other lamps unfasten at the top. The Kingsway is a good lamp, and has maintained its qualities well, though some of them appear to have a faulty bulb or outer globe, which shows a reflection similar to wire netting, on the rib side, which is objected to by some horses as well as ourselves. Of course, such minor faults could be adjusted and improvements added by referring same to the manufacturers. The company here, Hebburn Limited, have decided to procure a supply of cap lamps for wheelers and road-layers, and hand lamps for all others, excepting, of course, deputies and officials whose duty is to test for gas, a feat the electric lamp is not equal to. They will continue to use the Glennie oil lamp, which is at present used here. I hold certain views on the question of safety which I presume are unnecessary to convey, excepting that it will be safer in using the electric than the present oil lamp.

"Of the two kinds of cap lamps tested, there is only one in it, and that is the Wheat mine electric safety lamp. It has two bulbs, but only burns one at a time,

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but either can be used. It is so that if one goes out of commission you simply turn the other on. The battery in case is fastened to your belt at the back, with a cord in rubber tube enclosure from battery over your back to the headpiece or lamp, which fastens to the cap or hat. Each bulb gives a 1½ c.p. light, and burns from twelve to sixteen hours. This lamp, we agree, is a splendid affair. It gives the worker both hands free, which is a decided advantage to both employee and employer alike. We have found it most satisfactory, and regard it as the latest and best tested or read about. The whole of my opinions expressed herein are also held by our Head Electrician, J. Cleary, of Hebburn Limited.

"Sorry I am not an expert, but have taken an active part in this question for the benefit of my fellow workmen. Should you require anything further on the matter, I shall be pleased to give it, if it is in my power to do so.

"Trusting this will help you in some small way.

"With kind regards.

"Yours in the cause,

"E. PETERS.

"P.S.—Jones's lamp is only a sample, just completed by a local man, of Newcastle, but a quantity of same is not procurable yet.

"I am not sure of the address of the Premier lamp, but could get it for you later.—E.P.

"The Oldham Lamps can be obtained from the N.S.W. Mines Department, Sydney.

"Kingsway Agents.—The British General Electrical Company, Bolton street, Newcastle, N.S.W.

"The Fuller.—Lawrence and Harrison Electrical Company, 115 Clarence street, Sydney.

"Pearson's Nife.—Alkaline Miners' Lamps Limited, Victoria Works, Marshgate lane, Stratford, London, E. 15. Address telegrams.—Alkalamps, Bochurch, London.

"The Wheat Cap Lamp.—Sydney agent—Ramsay Sharp, Salesman, &c., George street, Sydney. Manufacturer's address—Koehler Mfg. Co. Inc., Marlboro, Mass., U.S.A."

The letter was received.

The following letter was received from Mr. John Stafford, Inspector of Mines for the Ipswich and Darling Downs districts of the South-eastern Division:—

"Ipswich, 23rd November, 1921.

"The Chairman and Members of the Royal Commission inquiring into Mount Mulligan Disaster.

"Gentlemen,—It having been brought to my notice that certain statements given in evidence and affidavit concerning No. 11 gateway, Fitzpatrick's machine wall, were considered doubtful, and not in accordance with evidence collected by the Commissioners on the spot regarding the position of the skip that was found in that place, I hereby tender the following statement taken from my notes during the time of my inspection at Mount Mulligan:—

'I found that the skip referred to was standing with the two inbye wheels over the end of the rails. The wagon was partly filled with coal, and would be, in my opinion, in a position usually adopted by fillers when filling the skip at the face, more particularly in places where the seam was low. I do not think the skip had been disturbed in any way.'

"Yours faithfully,

"J. STAFFORD,

"Inspector of Mines."

The letter was received, and ordered to be printed with the proceedings.

The final proofs of the evidence were revised and passed for press.

Further progress was made with the preparation of the report, reference being made to all the inspections which took place at Mount Mulligan after the disaster.

R. A. DUNLOP, Chairman.

(Brisbane.)

THURSDAY, 24 NOVEMBER, 1921.

The Commission met at Parliament House at 9 a.m.

PRESENT:

R. A. Dunlop, Esq. (Chairman).

Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

Further progress was made with the preparation of the report.

R. A. DUNLOP, Chairman.

(Brisbane.)

FRIDAY, 25 NOVEMBER, 1921.

The Commission met at Parliament House at 9 a.m.

PRESENT:

R. A. Dunlop, Esq. (Chairman).

Hon. C. Kilpatrick, M.L.C. William Want, Esq.

The minutes of the last meeting were read and confirmed.

The drafting of the report was finalised, the Commissioners being in complete agreement throughout, including the findings and recommendations. The draft report was signed and ordered to be printed.

The Chairman stated that as the report had been practically completed, he had to leave Brisbane that evening for the North, to take up his new duties as Warden and Police Magistrate at Cloncurry. As the Commissioners had unanimously agreed on the findings and recommendations, he would leave the final revision of the printed report in the hands of his colleagues. He thanked Messrs. Kilpatrick and Want for the valuable assistance they had rendered the Commission throughout, and was pleased that they had arrived at a unanimous decision.

Messrs. Kilpatrick and Want reciprocated and eulogised the services rendered by the Chairman in bringing the work of the Commission to a satisfactory conclusion.

Mr. Kilpatrick was appointed Acting Chairman during the absence of Mr. Dunlop.

R. A. DUNLOP, Chairman.

(Brisbane.)

MONDAY, 28 NOVEMBER, 1921.

The Commission met at Parliament House at 9 a.m.

PRESENT:

Hon. C. Kilpatrick, M.L.C. (Acting Chairman).

William Want, Esq.

The minutes of the last meeting were read and confirmed.

The Commissioners were engaged in revisory work, the sitting lasting till 11 p.m.

C. KILPATRICK, Acting Chairman.

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(Brisbane.)

TUESDAY, 29 NOVEMBER, 1921.

The Commission met at Parliament House at 9 a.m.

PRESENT:

Hon. C. Kilpatrick, M.L.C. (*Acting Chairman*).  
William Want, Esq.

The minutes of the last meeting were read and confirmed.

The first portion of the printed report was revised and adopted.

C. KILPATRICK, Acting Chairman.

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(Brisbane.)

WEDNESDAY, 30 NOVEMBER, 1921.

The Commission met at Parliament House at 9 a.m.

PRESENT:

Hon. C. Kilpatrick, M.L.C. (*Acting Chairman*).  
William Want, Esq.

The minutes of the last meeting were read and confirmed.

The whole of the printed report was revised and adopted.

C. KILPATRICK, Acting Chairman.

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(Brisbane.)

FRIDAY, 2 DECEMBER, 1921.

The Commission met at Parliament House at 10 a.m.

PRESENT:

Hon. C. Kilpatrick, M.L.C. (*Acting Chairman*).  
William Want, Esq.

The minutes of the last meeting were read and confirmed.

Copies of the completed report were received and subsequently handed to the Chief Secretary (Hon. E. G. Theodore, M.L.A.).

C. KILPATRICK, Acting Chairman.

## Commission.

GEORGE THE FIFTH, by the Grace of God, of the United Kingdom of Great Britain and Ireland, and of the British Dominions beyond the Seas, King, Defender of the Faith, and Emperor of India :—

To Our Trusty and Well-beloved ROBERT ALEXANDER DUNLOP, Esquire, Warden and Police Magistrate, Chillagoe; The Honourable CHARLES KILPATRICK, a Member of the Legislative Council of Queensland; and WILLIAM WANT, Esquire.

Greeting :

WHEREAS it is expedient in the public interest that full and careful inquiry should be made into the recent disaster at the Mount Mulligan Coal Mine, and also into the methods of mining carried on at such Mine: Now, therefore, know ye that We, reposing especial trust in your zeal, knowledge, learning, industry, discretion, and ability, do, by these presents, by and with the advice of Our Executive Council of Our State of Queensland, constitute and appoint you, the said ROBERT ALEXANDER DUNLOP, CHARLES KILPATRICK, and WILLIAM WANT, to be Our Commissioners for the purpose of inquiring into the matters hereinbefore mentioned: And We do hereby require and enjoin you to make diligent inquiry into the matters aforesaid, and for that purpose to exercise all the powers conferred upon a Commission by "*The Official Inquiries Evidence Act of 1910*": AND We do furthermore command and enjoin you to summon before you and to examine all such persons as may appear to you able to inform you concerning the premises, and to cause to be taken down and reduced in writing the evidence of the several witnesses that may appear before you, and such evidence, together with a full and faithful report touching the matters aforesaid, and such recommendations as may tend to prevent the recurrence of accidents of a like nature, to transmit to the Honourable the Premier and Chief Secretary of Our said State.

And We do hereby appoint you, the said ROBERT ALEXANDER DUNLOP, to be Chairman of this Our said Commission.

In testimony whereof, We have caused the Public Seal of Our said State to be hereunto affixed.

Witness Our Right Trusty and Well-beloved Counsellor Sir Matthew Nathan, Major on the Retired List of Our Corps of Royal Engineers, having the Brevet Rank of Lieutenant-Colonel in Our Army, Knight Grand Cross of Our Most Distinguished Order of St. Michael and St. George, Governor of Our State of Queensland and its Dependencies, in the Commonwealth of Australia, at Government House, Brisbane, this twenty-third day of September, in the year of Our Lord one thousand nine hundred and twenty-one, and in the twelfth year of Our Reign.

(Signed) MATTHEW NATHAN.

By His Excellency's Command,

(Signed) EDWARD G. THEODORE

Chief Secretary's Office,  
Brisbane, 23rd September, 1921.

HIS Excellency the Governor, with the advice of the Executive Council, has been pleased to appoint

JOHN THEODORE HARVEY BIRD, Shorthand Writer, "Hansard" Staff, Parliament House,

to be Secretary to the Royal Commission appointed to inquire into and report on the recent disaster at the Mount Mulligan Coal Mine.

EDWARD G. THEODORE.

Entered on Record by me in the Register of Patents, No. 5, page 27, this twenty-third day of September, A.D. one thousand nine hundred and twenty-one.

(Signed) P. J. McDERMOTT,  
Under Secretary, Chief Secretary's Department.

1921.

QUEENSLAND.



ROYAL COMMISSION ON MOUNT MULLIGAN COLLIERY DISASTER.

## REPORT.

To His Excellency THE RIGHT HONOURABLE SIR MATTHEW NATHAN, Major on the Retired List of the Corps of Royal Engineers, Knight Grand Cross of the Most Distinguished Order of St. Michael and St. George, Governor of Queensland and its Dependencies in the Commonwealth of Australia.

MAY IT PLEASE YOUR EXCELLENCY,

On the 23rd day of September last we were honoured with Your Excellency's Commission to make full, careful, and diligent inquiry into the disaster which occurred at the Mount Mulligan Colliery on Monday morning, the 19th day of September, and we were asked to inquire into the methods of mining carried on at such mine, and to make such recommendations as may tend to prevent the recurrence of accidents of a like nature.

At the time of the appointment of the Commission, our Chairman, Mr. R. A. Dunlop, was at the scene of the disaster at Mount Mulligan, and as we, your other Commissioners, the Hon. Charles Kilpatrick, M.L.C., and Mr. William Want, realised the advantage of proceeding to the district in question without delay, we met the Secretary (Mr. J. T. H. Bird) in Brisbane and left for Mount Mulligan by the Northern Mail Train on Friday evening, 23rd September.

Mount Mulligan was reached on the 28th September, and on the following day we had a full meeting of the Commissioners, and proceeded forthwith to make an examination of the mine. Altogether one surface examination and four underground inspections were made, extending over a period from 29th September to 8th October. Detailed reports of these inspections will be found on reference to pages vii. to xii. of the Minutes of Proceedings.

In investigating a calamity of this nature, involving as it did the sacrifice of seventy-five lives, we realised at the outset the importance of speedily recording the story of the disaster from those who were able to give their testimony while the details were fresh in their minds. Unfortunately every man who was in the mine on that fateful day succumbed to the explosion or its after effects, and we regret that we are unable to present any first-hand evidence as to what actually occurred in the mine that morning. Our inspections were carried out with scrupulous care, and quite early in our examination we were in complete agreement as to the locality of the origin of the explosion, its probable cause, and also as to the direction of the forces through the mine workings before escaping to the surface.

## EVIDENCE.

Arrangements were made for the presentation of suitable persons for examination, and at Mount Mulligan twenty-two witnesses gave evidence, those being followed by others who gave their testimony at Chillagoe, Mareëba, Cairns, and Brisbane. The evidence taken at Brisbane included the examination of the Government Analyst (Mr. J. B. Henderson) who gave the records of the analysis of the coal and dust taken from the Mount Mulligan Mine, and these have an important bearing on our findings.

*Method of Taking Evidence.*—It was decided to divide the evidence under its various heads, grouping relative evidence, so that when taken the evidence might admit of readier analysis, avoid jumbling of depositions relating to the various phases of the inquiry, enhance its value for reference, and preserve the story of the disaster in narrative form and sequence. It was therefore necessary, in many cases, to examine a witness on different subjects at different dates. Witnesses were sworn before examination.

*List of Witnesses.*—A list, showing the name of witness, his place of abode and occupation, with the name of the place where his deposition was taken, and reference to pages of this report, appears on pages iii. and iv.

*Exhibits.*—A list of exhibits, including plans, sketches, written statements, lists (giving the names of the victims of the disaster and their dependants), and photographs tendered by witnesses and Commissioners, is to be found at page vi.

## DESCRIPTION OF MINE AND MINING METHODS.

## SITUATION.

Mount Mulligan is situated at the terminus of the Mount Mulligan Branch Line, due west from Cairns (the port) fifty-five miles, and by rail 103 miles. The mountain itself forms the watershed between the Hodgkinson and the Little Watson Rivers, affluents of the Mitchell River, which drains the base of Cape York Peninsula, and empties into the Gulf of Carpentaria. The mine is ten miles west-north-west from Thornborough, the principal town of the Hodgkinson Goldfield.

## HISTORY.

The mountain takes its name from Mr. J. V. Mulligan, a pioneer and prospector of the district. In 1907, Mr. William Harris, while prospecting for opals, brought in some crop coal. His stepfather, Mr. Richards, recognising the importance of the discovery, proceeded, with the assistance of the Irvinebank Company, to prospect the find. Sufficient work to prove its value was done, and in 1910 the Chillagoe Company, having smelters, mines, treatment works, and a railway to find in fuel, became interested in the mine, since which time it has been steadily developed. In 1915 the branch railway line from Dimbulah to Mount Mulligan was opened.

## GEOLOGY.

Mount Mulligan is an isolated, somewhat incised tableland or mesa, with numerous hanging valleys, and in the upper half almost completely girt by tier on tier of vertical cliffs, which in places have a clear drop of between 200 ft. and 300 ft. Above these precipices the mountain rises but a few hundred feet, reaching an elevation of, at most, 1,400 ft. above the Hodgkinson River at Woodville, or 2,500 ft. above the sea level.

The mural escarpments present unbroken faces over distances of several miles, and on the eastern and northern sides there is, in fact, only one place where even the blacks could scale the mountain. Their unusual linear persistence has a distinctly dwarfing effect that deceives even the most experienced observers, but trigonometrical observations indicate that the escarpments alone have a vertical range of at least 500 feet. (L. C. Ball, B.E., G.S.Q., Publication 237).

The base of the mountain is made up of vertical beds of shales and greywacke, over which there are horizontally bedded sandstones, conglomerates, shales, and beds of desert sandstone (?) formation (upper cretaceous). Dunstan's "Mineral Index."

The Mount Mulligan Coal Measures are situate under a mesa of triassic sandstone, 1,000 ft. to 1,300 ft. in thickness, overlying from 50 ft. to 150 ft. of permo-carboniferous rocks. The coal measures proper have been preserved through trough faulting, the higher formations having protected the lower from denudation. The coal measures dip west, and the underlying carboniferous grits here dip to the east at a steeper angle. The dip of the coal measures runs from 1 in 3, and may yet become practically flat, the dip on the western side being 1 in 7. Between the three seams are fireclays, sandstones, and shales. The bottom seam is close to the measures, and the middle seam is intermediate in position. The coal in the top seam is variable in composition and inclined to be high in ash. About 27 ft. below this seam is 2 ft. 3 in. of good coal, known as the No. 2 or bottom seam, on which most of the work has been carried out. Below that, again, some 32 ft., is the No. 3 seam, the amount of work done on which is negligible.

Those who have seen the coal measures and overlying strata of the Illawarra District, New South Wales, cannot but be impressed by the remarkable resemblance of the Mulligan measures thereto, and geologists report that their ages are identical.

In the two seams that are being worked, the coal is of a hard nature, the approximate analyses being as follows:—

	F.C.	V.H.C.	Ash.	Moisture.
Bottom Band No. 1 Top Seam .. . . .	58%	27%	11.4%	2.9%
12 in. Band Top Seam .. . . .	52.71%	28.06%	18.55%	.68%
Top Band .. . . .	57.5%	31.2%	8.5%	2.8%
Bottom or No. 2 Seam .. . . .	56.2%	30.5%	10.6%	2.7%

The analysis of fireclay underlying No. 2 seam is as follows:—

	Percentage.		Percentage.
Silica .. . . .	61	Sulphur Trioxide.. .. .	.34
Ferric Oxide .. . . .	3	Alkalis .. . . .	2.18
Lime .. . . .	.4	Water H <sub>2</sub> O .. . . .	1.18
Magnesia .. . . .	Trace.	Loss on ignition .. . . .	11.6
Alumina .. . . .	20.2		

Volatilisation of contained carbonaceous matter is most likely the prime cause of the large loss on ignition.

## MANAGEMENT.

The mine and business are under the control of Mr. J. T. Watson, who is called the Superintending Engineer, and is also the Agent of the Company. The sole control of the underground workings, according to the Superintending Engineer, was vested in the Manager (Mr. T. J. Evans), who held a colliery manager's certificate from one of the other States (either Victoria or Western Australia) and whose ticket was registered in Queensland. There were two Deputies, Mr. F. Grant (who held a first-class metalliferous miner's and also a colliery manager's certificate, both issued in Queensland), and Mr. F. Parkinson, whose qualifications are not stated in the evidence, and who appears to have been a Deputy without a certificate. Mr. James Harris is the Mechanical Engineer in charge of all plant, and is properly qualified.

## PLANT.

The power-station is situated alongside the Mount Mulligan-Dimbulah Railway Line, at a distance of 27 chains from the mouth of the tunnel. Two Babcock and Wilcox boilers, 190 h.p. each, supply steam to two electro-generating sets, the largest one a Bellis Morcom enclosed compound condensing engine of 400 h.p., driving a 400 K.V.A. generator, which produces three-phase alternating current of 1,050 volts, transformed in the mine to 450 volts, for service on the coalcutting machines and pump. Coalcutter motors are squirrel-cage type and enclosed. The smaller is a Bellis Morcom compound engine of 30 h.p., driving a 26 kilowatt direct current generator for lighting works, quarters, and town, and for pumping. One D.C. generator, driven by a 60 h.p. slip-ring induction motor, is used as a standby. Alternating current is also used for main haulage and ventilation. The machinery is housed in a concrete building.

A diagram of the electric installation is appended (Exhibit 7).

## WATER SUPPLY.

Water for power purposes is obtained from the mine and from a small concrete dam, capacity 1,500,000 gallons, at Slip Creek, below the township. Water is obtained for domestic purposes and reticulated through the township from a concrete cantilever walled dam situated on the top of the mountain, 800 feet above the railway line.

## SYSTEM OF MINING.

Coal is won from two seams, called locally the No. 1 or top seam and the No. 2 or bottom seam, by means of a main tunnel driven 10 ft. by 7 ft. 6 in. in the clear, through measures underlying the coal seams, and intersects the No. 2 seam at 180 yds. from the mouth. The tunnel enters the mountain at a height of 180 ft. above the railway line and 28 chains therefrom. The No. 2 seam is 2 ft. 3 in. in thickness. The main haulage road is driven practically on the true dip of this seam for a further distance of 330 yds. Four main levels are driven to the left and three to the right, opening up the seam over lengths of 430 yds. and 250 yds. respectively. The total length of all roads and returns in the mine is four miles.

In the earlier working of this seam the bord and pillar system was adopted, but latterly was discarded in favour of the longwall system, straight face obtaining generally, although one small section, from which the coal is hand-won, is stepped. Machine faces are about 100 yds. in length, and are worked by longwall Sullivan machines, 4 ft. 6 in. cutter bars. To obtain the necessary height, all roads have been brushed on the roof. The brushing is used to build packwalls.

The top seam is approached by a cross-measure horizontal drift, driven in the measures between the two seams, off what is known as No. 10 level or middle slit, at a distance of approximately 100 yds. from the main dip. The seam is six feet thick, and contains three bands of fireclay, aggregating eighteen inches, the largest coal band being twenty inches in thickness. Bord and pillar method of working is adopted. Coal is cut by a Sullivan shortwall machine, with a 6-ft. cutter bar. Bords are driven level course off the dip and also off the rise heading.

In both seams the explosive in general use was monobel, although gelignite had also been in use.

#### SYSTEM OF HAULAGE.

The main haulage system recently installed is of the endless rope type, and is operated by a 60 h.p. slip-ring induction motor. The rope speed is from 1 to 2 miles per hour, and the circumference of the rope is  $3\frac{1}{2}$  in. The maximum distance coal is hauled is 51 chains. Tension trolley is in the vicinity of the motor. Skips weighing approximately one ton loaded are spaced at intervals of 3 chains. The average output at the time of the explosion was about 180 tons a day.

In No. 1 seam a 15 h.p. D.C. motor-driven winch, situated in the main intake, operates a gravity haulage. Coal collected by the winch and by horse-wheeling from the rise faces is horse-wheeled from the lie near the winch to the main rope.

Coal in the No. 2 seam is hand-wheeled from the faces to the main haulage.

#### VENTILATION.

A turbon type double inlet fan, 35 inches in diameter, running 550 r.p.m., and exhausting 42,000 c.f.p.m. against 2-in. water gauge, is driven by a 100 h.p. capacity slip-ring induction motor. The fan is installed about 10 yds. from the mouth of No. 2 tunnel, and was housed in brick and concrete walls. The sides of the fan and drift were of brick and concrete, covered by a light wooden roof, and was in a direct line with the tunnel.

The mine is divided into three ventilating districts, one in No. 1 seam and two in No. 2 seam. An overcast is situated near the point where the main tunnel intersects No. 2 seam, through which return air from the North side, No. 2 seam, joined the main return. This overcast was not damaged by the explosion.

The haulage tunnel is the main intake. The air travelling the full length of the tunnel is split north and south at No. 12 flat, from which point it is taken to the faces, along which it rises to the main return.

For the top seam the air is split at No. 10 South, passing along the level into the stone drive. After ventilating the dip workings it ascends to the higher workings, from where, by means of a staple pit, it passes down to the return in No. 2 seam.

A report of the air quantities circulating and temperatures entered in the record book, under date 26th August, 1921, by Mr. F. Grant, Deputy, reads as follows:—

Place.	Quantities— c. ft. per min.	TEMPERATURES.	
		Wet Bulb.	Dry Bulb.
Top Seam Split .. .. .	10,000	73	84
South Packwall .. .. .	5,000	75	84
North Wall .. .. .	5,000	79	86
South Machine Wall .. .. .	..	79	88
Beattie's North Wall .. .. .	..	75	85

This indicates that face velocities in the No. 2 seam were from 200 to 300 cubic feet of air per minute, with a relative humidity of from 50 per cent. to 60 per cent. This, with other reports that were made available to the Commission, shows that the report under review is a fair index to average conditions of mine atmosphere. The low relative humidity is worthy of comment in connection with Queensland coal mines, due, to some extent, to altitude of the mine, which approximates 1,400 ft. at the entrance.

#### LIGHTING.

The inclined way, main tunnel, dip, and the flat at the winch in the top seam are lighted by the ordinary incandescent electric lamps, direct current.

Naked lights, acetylene and tallow, were used by the workmen. Safety lamps were used in accordance with the regulations for inspections. The light in general use was a small acetylene headlight. A few larger acetylene hand lamps of various types were also used.

#### MINE CONDITIONS.

*Gas.*—After careful examination of the mine with oil and hydrogen lamps, a thorough search of mine record books and records of tests made with a hydrogen lamp during the course of several years, and examination of witnesses with long experience of Mount Mulligan, we conclude that the mine workings, up to the date of our inspection, were free from inflammable gas. Our inspections included an examination of the working faces for evidence of outbursts.

*Coal Dust.*—Having discarded the theory of gas having been a factor in the explosion in the mine, the heading under which we are now writing has, of necessity, to be thoroughly discussed in regard to the properties and composition of the coal, the nature of the seams, the methods of getting the coal, the methods of haulage, ventilation, and moisture in the mine.

The coal is bituminous in character and of a hard nature, containing approximately 28 per cent. of volatiles. In the No. 2 seam, averaging 2 ft. 3 in. in thickness, the bulk of the coal produced is undercut by machines, cutting in pricking, which at times contains a high percentage of carbonaceous matter. As the mine is extremely dry, and face velocities of air are high, it is natural to expect that the finer dust from the cuttings after the machine and when being stowed in the gob, would readily pass into suspension in the air. The shooting, hand-mining, filling, wheeling, and the bumping of skips on the flats would all contribute their quota of dust to the mine atmosphere, a large proportion of which would be deposited on the packwalls, timbers, floor, roof, and sides. The shooting down of the brushing, which contains some coal, would also contribute.

There is no evidence to show that there were accumulations of dust on any of the roads, such as may be seen in some mines. The small amount of coking observable also goes to prove that the quantity available from the floor was in no way large, except, perhaps, in the flats. It might be expected that there would be a large percentage of stone dust on the roads near the faces in this seam, in view of the fact that the brushing was shot down, and every road had packs on each side; but a determination of dust taken from the junction of the wheeling road with No. 11 level (Sample No. 7) shows 71 per cent. carbonaceous matter.

Crossgate roads were formed by taking out part of the packwalls and brushing the roof. As the machine cuttings were stowed inside the walls, and the machine does not always cut exactly where desired—that is to say, it may be cutting in the floor or in coal, according to circumstances—the construction of these gateroads would necessarily be a dusty operation. Men were working on the construction of such a road in Fitzpatrick's machine wall section on the morning of the explosion.

Both machines were idle on the morning of the explosion, and there is no evidence of falls that morning to raise the dust. It is natural to suppose that a large quantity of dust would be deposited in the returns, where there was no traffic except the passing of officials on weekly inspections.

Packwalls are built of brushing, which is of extremely friable character, rapidly disintegrating under the application of water. This reason was given as being sufficient to preclude watering to allay dust. No other method of dealing with the dust has at any time been in use in this seam. So that the dust raised, except for that proportion which would pass into the main return, would remain in the workings. In its fine dry state any disturbance would be sufficient to raise and put into suspension much of this latent dust.

No. 1 seam differs slightly from No. 2 seam, more particularly in the methods of working and in the composition of the seam. Three stone and fireclay bands, aggregating 18 in. in thickness, are interlaminated in the coal, the total height being 6 ft. Coal is entirely machine-won on the bord and pillar system, the machine having a 6-ft. cutter bar. The coal, being strong, necessitates fairly large charges to bring it down. Except for the places off the dip, the coal is horse-wheeled. Definite evidence of the

dusty condition of these places has been given by Mr. W. O. Matthews (page 61), who also states that watering was, for a time, resorted to. Watering appears to have been carried out until the air current was capable of taking the dust away. It might be expected that, owing to the presence of the stone and fireclay bands, the dust would carry a fair percentage of incombustibles, but Mr. Henderson's determination of Sample No. 9 (page 141), taken from the main dip road in the seam, which was made in accordance with the tests required by the British regulations and passed through a 30-mesh sieve, gives 70 per cent. of combustible matter. The standard mesh sieve used in determination of road dust in the mines of Great Britain is 28 to the inch, but as No. 28 was not available, a 30-mesh was substituted. Not less than 50 per cent. incombustible dust is demanded by the British regulation. A similar regulation has not been promulgated in the Australian States, although the Mines Department of New South Wales have recommended the adoption of the British regulations or others of a like nature.

Except for this instance of watering, no serious attempt seems to have been made to deal with the dust question.

It has been elicited from various witnesses that the flat in the vicinity of the place from which No. 9 sample was taken was bumpy. There are decided evidences of intense flame in this neighbourhood.

Of the three ventilating splits, No. 2 South is the largest, wherein the maximum travel of the air is about one mile. Determinations have not been made of the oxygen contents in the return air, but there is no reason to believe that the percentage is appreciably lessened in the circuit of the mine. It may be stated as a fact that the air throughout the workings was good, face velocities above the average, and relative humidity remarkably low. No face in the mine, except the dip, showed any sign of dampness. An intermittent dripping of water in the rise heading, top seam, was insufficient to more than damp the floor directly underneath for a few feet.

The determinations of dust samples recorded in Mr. Henderson's evidence (pages 141 and 142) show a fineness of dust which, coupled with the unusual absence of moisture in the mine and the mine air, the plentiful supply of oxygen, and the length of time some of the dust had been exposed to atmospheric influence, would be conducive to conditions which, according to authorities on coal dust explosions, are extremely dangerous.

It may be noted that temperatures taken and entered in the record book by Inspector O. M. Williams, under date 10th March, 1921, that is, during the wet season, show a relative humidity of about 75 per cent., against a humidity of 50 per cent. recorded by Deputy F. Grant in August last.

#### MARKETS FOR COKE AND COAL.

The mine is not producing sufficient coal for district requirements. The district is somewhat isolated, being far removed from the nearest other producing colliery. Heavy sea freights prohibit the import of southern coal, except when necessary for special purposes. The Mount Mulligan coal,

being of a quality suitable to district requirements finds a ready market. The principal consumer is the Government Railway Department. Other consumers are sugar-millers, sawmillers, meatworks, smelters, and metalliferous mines in the district. The Company, assisted by the Government, has entered upon the construction of a fairly extensive coking plant. The demand for coke comes from the Chillagoe State Smelters, and it is thought that a ready market will also be found with the various smelting works in the Cloncurry district, where coke from Mount Mulligan would be more quickly and cheaply landed than coke from the South. The tests show that the coke is of excellent quality for smelting purposes.

### EXPLOSIVES.

In examining the question of explosives in the mine, the evidence from all witnesses must be taken into account.

It is a matter for regret that no first-hand evidence could be obtained from those responsible for the carrying out of the arrangements underground. The weight of responsibility was entirely thrown on Manager Evans, Deputy Grant, and Deputy Parkinson—the Superintending Engineer stating in his evidence that he “did not interfere in any way with the management of the mine.” That officer, however, also stated that he was entirely responsible for the introduction of monobel, the use of which he insisted upon. The inspections of the Commission disclosed that gelignite had been in use underground, varying quantities having been found in different parts of the mine. It was stated by witnesses that gelignite was introduced during a temporary shortage of monobel. No other brand of explosives appears to have been used. The detonators in use were the ordinary No. 6. Fuse in use was Bickford’s Blue. The magazines for storing explosives and detonators were in accordance with the Act, and appear to have been properly kept. The method of distribution of explosives left much to be desired. The magazine-keeper brought the estimated daily requirement to a manhole inside the tunnel mouth where explosives, caps, and fuse were handed to the miners as they went to work. The excess of supply of explosives, detonators, and fuse were stored in this manhole, which is situated in the main intake. We found two packets of gelignite, about fifteen coils of fuse, and were informed that a box containing detonators was found in this manhole after the explosion. The evidence goes to show that few, if any, of the men had containers in accordance with Rule 54 of Division VII. of Part II. of “*The Mines Regulation Act of 1910*,” to carry or store explosives. The explosives were taken into the mine loose in the hands of the men, an exceedingly dangerous and reckless practice, contrary to the regulations, of which the management were well aware. It is indeed hard to understand how anyone having anything to do with the mine could have been ignorant of the practice. No provision had been made by the management for the storage of explosives at the face, and men were consequently compelled to arrange their own methods of storing. This induced a laxity of discipline abundantly apparent in the careless methods adopted. In many cases explosives, detonators, and fuse were jumbled indiscriminately with steel and iron tools in wood boxes without covers. There were

instances of explosives having been placed on the floors at short distances from the rails and faces. In some places explosives and detonators were stored in the crevices of the packwalls. It has been suggested in the evidence that explosives were lifted and scattered by the force of the explosion, but this can only be applied to a few instances, and then to loose explosives lying on the floor. In very few cases were explosives contained in billy-cans. In one case only where explosives were contained in a wooden box were they scattered, this box having been overturned, probably by the force of the explosion. There is ample evidence of a corroborative nature that sand, clay, or other tamping was not supplied by the management to the men. In isolated instances men carried in sufficient sand for their own tamping, but the general practice seems to have been to tamp the holes with the hole borings, generally coal, as the brushing holes were bored in a coal band. As far back as 6th August, 1917, Inspector W. Grant-Taylor says—

“The use of coal dust borings for tamping is to be discontinued and clay supplied for same.”

This was also an exceedingly dangerous practice, known to the management and contrary to Rule 14 of Rules of the 1st August, 1912. The management should have made proper provision for tamping material. Notwithstanding that Rule 20 (iii.) (a) and (b) of 1st August, 1912, expressly prohibits firing of charges in dry and dusty places unless water or other contrivance has been used within a radius of twenty yards, the management has failed in its duty in this respect, the rule not having at any time been put into practice. Stonedusting or watering roadways and freeing floors, roof, and sides from dust, as provided in Section XVI. of “*The Mining Act Amendment Act of 1920*” was not put into practice, except for a short period of especially dusty conditions in No. 1 seam, neither were entries made in the record book of examination of roads for coal dust. Though a *permitted* explosive (monobel) was in use, there was no limit to the charge, no registered district shotfirer, nor record of subordinate shotfirers assented to by the Inspector, as required by Rules 8 and 9 of the 1st of August, 1912.

## INSPECTIONS BEFORE DISASTER.

### DEPARTMENTAL.

For departmental inspection purposes by officers of the Mines Department, Mount Mulligan is situated in No. 2 District, Northern Division, with the inspector's headquarters at Herberton. Mr. Mines Inspector S. Horsley, one of the senior inspectors, was in charge of the district from March or April, 1905, till 23rd July, 1921. He was assisted by a junior inspector, Mr. W. Grant-Taylor, from May, 1917, till March, 1920. Mr. Taylor was succeeded by Mr. O. M. Williams, who still continues in that position. Mr. Murray Russell was appointed to succeed Mr. Horsley, but to date has not taken up his duties. Mr. Williams was temporarily placed in charge of special work at Charters Towers, and had been at that place some ten weeks before the explosion at Mount Mulligan. Mr. E. J. Laun, who was appointed Mines Inspector at Charters Towers, was for some time in charge of special work at Kidston in No. 3 Northern Inspection District, and was not during that time required to carry out routine

inspection duties, so that this district was left without supervision by Inspectors from the date of Mr. Horsley's departure. Mr. Laun visited the mine five days before the explosion, however, on special duty for the Mines Department not connected with inspection work, and during his stay went below, and made the following report in the record book, under date 14th September, 1921 :—

“With Manager made a hurried visit to bottom headings in the main dip and the dip workings in the top seam.

“E. J. LAUN, Inspector of Mines.”

An examination of the current record book shows that on the 29th May, 1920, Mr. Horsley made an inspection and compared his anemometer with the mine anemometer, his report of which is quoted in answer to Question No. 1761. The next inspection was made by Mr. O. M. Williams on 11th November, 1920 (*see* Question 1827). A further inspection was made by that officer on the 10th March, 1921 (*see* Question 1801). He again visited the mine on the 23rd April, 1921, in connection with an accident (*see* Question 1827). This was the last official inspection prior to the disaster.

Safety lamps for testing purposes were not supplied to the Inspectors, who relied on the mine management to supply lamps for inspection. The Inspector's anemometer was out of use for about sixteen months. All Inspectors who had made inspections in the district for many years were without colliery experience.

#### BY COLLIERY OFFICIALS.

The weekly inspections by the Manager and the daily inspections by the Deputy seem to have been regularly made. No mention of dust is made in the reports recorded by the Manager. The last report of inspection by the Manager is dated 3rd September, 1921, while the last report of the Deputy is dated 13th September, 1921. The lastnamed entries lead us to conclude that, although it seemed inspections were regularly made, reports were not immediately entered as required by the regulation.

The local Inspector (Mr. G. Hawes) appointed by the men made regular inspections and reported same in the record book. His reports generally speak of mine conditions as being good. No mention is made of dust in his reports.

The District Inspectors, appointed by the Miners' Organisation, made inspections when in the district. The reports contain no record of dust, but refer generally to mine conditions.

#### THE DISASTER.

At 9.25 a.m. on Monday, the 19th day of September, 1921, the little township of Mount Mulligan was startled and appalled by a series of explosions issuing from the mine situated nearby, and which could be heard for a distance of fourteen miles. At the time of the explosion there were seventy-five men underground, and it was apparent to those who immediately rushed to the tunnel mouth that all hope of saving life might be abandoned. The entrance to both tunnels was wrecked, the drums over the main tunnel, the tool-sharpener's smithy, and switch-box having been blown away. The grass had for some distance been burned

by the flame issuing from the main tunnel mouth. About twenty tons of overburden had fallen at the mouth of the No. 1 or main tunnel, while the wreckage at the mouth of the No. 2 tunnel included the fan itself, the fan drift, and the concrete housing.

*Rescue Work.*—The Superintending Engineer (Mr. J. T. Watson), accompanied by the Mechanical Engineer (Mr. James Harris) and a small party of men, promptly entered the main tunnel, and near the entrance they found Mine Manager T. J. Evans and Martin O'Grady (the man in charge of the endless rope), both seriously injured. Without delay these two men were removed to the surface. They were the only persons working in the mine on the morning of the disaster who were picked up alive, and we regret to have to record that both subsequently succumbed to their injuries. The dead body of the youth Nevill Ruming was picked up close to where Mr. Evans was found. Ruming was occupied in spacing the skips, and he was performing this last duty when he was overtaken by the force of the blast and killed instantaneously. Volunteers were put on to clear the track, and put in timber where necessary for safety. The rescue party proceeded as far as the head of the dip, whence they were driven back by after-damp. Rescue operations were more or less impeded for a time by the absence of ventilation. This, however, was partially restored by the installation of a small booster fan at the bottom of the dip which had been shifted about as needed, and by bratticing off all openings leading away from the section then being explored. Great care was taken in checking the men who volunteered for rescue work. The men entering the mine were tallied in and out by tally clerks standing at the tunnel mouth, and the system worked admirably. At this stage Superintending Engineer J. T. Watson was badly affected by after-damp, and as he had also contracted influenza he retired, and Mr. E. J. Laun, Inspector of Mines, took charge of the rescue operations, assisted by Mechanical Engineer James Harris. By this time, *i.e.*, Tuesday, volunteer workers were arriving from Mungana, Chillagoe, Thornborough, Mareeba, and Cairns, while the material required for rescue work and for the burial of the victims was also coming to hand. Provision was made to victual and lodge the workers, and the widows of the victims and other women volunteers from Cairns and elsewhere played an important part in this necessary though arduous task. The volunteer workers were divided into gangs and placed, according to their natural abilities, in the mine, at the graveyard, at the morgue, in the carpenter's shops and elsewhere, while a further number were detailed as messengers and carriers, all performing necessary and useful work. The small Dwight-Lloyd fan brought from Chillagoe was installed at the fan tunnel, and the benefit was immediately felt in improved ventilation. Seven bodies were recovered from the main tunnel and dip, and two more from just inside No. 12 South wheeling road, up till Tuesday. The next section to be explored was Beattie's machine wall on the North side, whence thirteen bodies were recovered. From the positions in which these bodies were lying it was safe to conclude that they had had some little warning of the explosion. On Wednesday, the south side district was entered *via* the No. 12 main gateway, in which two more bodies were found. Owing to the bad state of

the ventilation, rescue operations were at this time suspended in this district, and an entry was made through No. 10, or the middle slit, to the top or No. 1 seam. Thirteen bodies were taken from this district. On Thursday, the south district of No. 2 seam on the bottom pick section was again entered by way of No. 12 main gateway, and fourteen bodies recovered. Immediately after, eight bodies were taken from the pick step faces adjoining, by way of No. 11 South, or Pump Flat. On Friday, Fitzpatrick's Wall and the pick places above were explored, and thirteen bodies recovered. Three bodies were afterwards recovered from the return airway, inbye from the stone drive, and were taken out down the wheeling road, and by way of No. 11 South. The last body recovered was taken out of the mine at 3.40 a.m. on Saturday, 24th September.

If the caval sheets available are correct, there is still one body unrecovered, which was thought to be under a fall of earth in the second pick place off No. 12 South.

A satisfactory feature of the rescue work was that it was conducted without mishap to the rescuers, although falls of roof were frequent, ventilation was bad, and many of the workers were inexperienced. Rescue apparatus was not used, the nearest station, Ipswich, being not less than 1,000 miles away. On Saturday, a fire discovered in the top slit main return airway, which no doubt originated at the time of the explosion, was extinguished by volunteer workers. The Government proposes to recognise the heroic work of the rescuers in a tangible way.

#### THE DEATH LIST.

A list of those who lost their lives in this unparalleled colliery disaster, so far as Queensland is concerned, will be found in Exhibit 4, attached to this report. A list of the dependants, so far as could be ascertained in the brief time devoted to this inquiry, will be found in the same Exhibit.

#### BURIAL.

As the bodies were recovered they were identified as far as possible, and numbered. Unfortunately, owing to the length of time which elapsed before some of the bodies were recovered, and to the disfiguring results of flame and force, some could not be identified, and descriptions of the appearance of the bodies, of their clothing, and of any remarkable condition of body, were taken for future inquiry and reference. The bodies were placed in coffins, and, with the exception of four, were buried by voluntary workers in the site chosen, a mile and a-quarter from the township. Clergymen of various denominations read the services at the burial.

#### TEMPORARY RELIEF.

Temporary relief was made available for the widows, orphans, and dependants at the time. Moneys raised generally for relief are to be administered by a Trust, appointed by Act of Parliament, and subject to Government audit.

## INSPECTIONS AFTER THE DISASTER.

Inspections after the disaster were made by Mr. E. J. Laun (Inspector of Mines), accompanied by Mr. E. C. Saint-Smith (Government Geologist), commencing on Monday, 26th September (a week after the disaster). A written account of their inspection is appended as Exhibit 2, and a plan to accompany same has been added as Exhibit 8. The report of their inspection deals in detail with rescue work and mine conditions after the explosion, having regard more particularly to evidences of violence and direction of forces. They were subsequently examined on oath, and their depositions, except in a few minor immaterial matters, do not differ from their written report. They fix the focus of the explosion at No. 11 gateway, Fitzpatrick's wall section, at the working face. The explosion went uphill, downhill, and outward from that point, making its escape by gates and roadways to the main dip, whence it entered through the various openings on the north side, which it swept, and then passed into the top slit to the main return, part of the forces having split off and escaped through the entrance to the main tunnel. The force entered the top seam, traversed the workings and returned to the bottom seam through the staple shaft down to the No. 11 South wheeling road, part of it having split off and escaped through the fan tunnel. They note evidence of conflicting forces at the entrance to the stone drive to the top seam and at No. 11 South, south side bottom seam.

## INSPECTION BY EXPERTS.

Consequent upon the disaster, officials of the Mines Department, including Mr. C. F. V. Jackson (State Mining Engineer and Chief Inspector of Mines) and Mr. John Stafford (Inspector of Mines with colliery experience) visited Mount Mulligan, and together made an extensive examination of the mine, taking samples of coal, coal dust, and mine air. The result of their examination was not made available to the Commission in writing, but both officials presented themselves as witnesses, and deposed on oath. Their evidence may be briefly summarised as follows:—

*State Mining Engineer.*—A description of the practice adopted by the Department to exercise control of inspection districts, of methods of appointment of Inspectors, their duties and powers, a review of the rescue station at Ipswich, and the advisableness of establishing rescue stations at individual mines, together with a description of his examination of the colliery after the explosion, and a deduction from his observations as to direction of forces, occupies the whole of his evidence. There are also references to the use of naked lights, presence or otherwise of gas, and coal dust in the mine, their accompanying dangers, ventilation, adequacy of explosive regulations, and the danger of tamping with coal dust. The point of ignition was not definitely fixed, but appears to be in the vicinity of the machine in Fitzpatrick's wall, bottom seam, there being in this vicinity evidence of forces having travelled uphill to the pickwall faces above, and downhill along the pick faces below, also outward down the wheeling road. The forces travelled outbye through the Nos. 11 and 12 North. Evidences of extreme violence were at points 60 and 100 yards in from the dip in Nos. 12 and 11 South respectively, to which points forces had travelled inbye from the dip. The wave swept the North district working faces and travelled out along the return air. The forces

entered the top seam workings through the No. 10 South and the stone drive, and traversed the dip places. There was also evidence of forces having come up the dip. Except in the stone drive and dip, no violence visited the top seam. In Fitzpatrick's machine section, the following observations were made:— No. 7 gateway was being filled by gob material, and a crossgate being driven. A truck was here, and three bodies were taken from this place. Coking in pieces as large as a tobacco-pipe bowl were seen. There were evidences of a local explosion. The gobs in the wheeling road were blown downhill. In No. 10 gateway a full truck was standing, and some miners' tools were found. In No. 11 gateway a truck half-filled with large coal stood in the face. Here the blast appeared to be downwards, and inwards towards the face, which had been nearly cleaned up, except for a little coal on the lower side. Here was a strong fall of coal, but no comminution was noticed. The undercut coal had been shot down, and was in process of being filled. The top of the fallen coal was free from dust. The top half of a clamp on an acetylene hand lamp, shovels, half a box of detonators, and one and a-half plugs of monobel were found. The trailing cable of the machine was close to the face. In No. 12 gateway there was no evidence of shots having been fired, and no truck was standing in this gateway. Spent carbide was noticed on the floor. The cable and chain had been bunched up under one corner of it. In the Northern district No. 2 seams foul air of an extinctive composition was located at No. 5 gateway, and a sample taken. There were no indications of origin in the top seam workings where the blast was not violent, except in the stone drive. Heat was great round the machine, which was working at the time. The flame travelled with the air. The junction box stood upside down with the handle broken off and the cable scorched. Numerous instances were given of explosives being found in the mine, and a note was made that there were no containers seen.

*Inspector of Collieries.*—The evidence given by Mr. John Stafford, Inspector of Collieries, was of a corroborative nature to the State Mining Engineer, and contained a brief review of coal-dust explosions and supplementary evidence of direction of forces, together with a description of air and dust samples. He was agreed that the point of ignition was in the vicinity of the machine place in Fitzpatrick's wall in No. 2 seam, and that forces went uphill, downhill, and outbye from a comparatively calm zone, the centre of the explosion. The natural expansion of forces filled all gateways and openings as it passed, and brought explosive conditions to every part of the mine. Forces were not as great in the north side of No. 2 seam as in the south side. Conflicting evidences of violence were noticed in the top seam at the dip and the entrance to the stone drive, and also in the entrances to the Nos. 11 and 12 south levels. The electric plant played no part in the origin of the explosion. There was not as much coal dust as one might expect, most of it going out with the blast. The coal dust might separate from the stone dust and go into suspension in the air. The amount of dust would be above the average, owing to its dryness and fineness.

#### INSPECTIONS BY COMMISSIONERS.

Inspections were made by the Commissioners in the presence of witnesses Watson and Matthews. A detailed account of these inspections is to be found in the "Minutes of Proceedings" and in the Exhibits. Commissioners used safety lamps in all inspections.

## CONSIDERATION OF EVIDENCE.

*Superintending Engineer J. T. Watson.*—In reviewing the evidence of Mr. J. T. Watson, Superintending Engineer, it shows that he possessed qualifications above the ordinary as a mining engineer, and that he had had large experience in New South Wales and New Zealand as manager, inspector, consulting engineer, lecturer on coalmining, surveying, and kindred subjects, and expert work generally. His evidence as to having been employed by Chillagoe Limited, his references to the leases held by that company, and his statements as to what happened on the morning of the disaster, are set out in a very clear and concise way. His efforts at rescue work from Monday morning till the time he was forced to knock off on Tuesday night are, we feel sure, fully appreciated by all. His narrative description of the electric plant and fittings for carrying on the mine work left nothing to be desired, and appeared to be complete in every detail. Mr. Watson's evidence in this direction certainly shows that he had taken a very keen interest in all that appertained to this important adjunct to the well-being of the mine, and incidentally to those employed there. He was able to describe clearly all the arrangements for water supply to the township, the ventilating system adopted in the mine, the methods of winning the coal, the grades of the different seams, the composition of the various coal seams and their analyses, the length of roads in the mine, and the quality and quantity of the mine atmosphere. His evidence showed that Mr. Watson had a very thorough knowledge of the mine and the mine conditions. Up to that point the evidence of Mr. Watson is helpful and goes to show that in some directions his supervision of the mine was efficient. From that point his evidence is not satisfactory, and is open to question in some particulars. His statement that Mr. Evans was wholly responsible for the management of the mine, in view of his other statements that he was Agent for the owners and Superintending Engineer, is doubtful. The installation of electrical gear of a type used in mines which give off some gas, his aversion to the use of naked lights, and his introduction of a permitted explosive, show that Mr. Watson had a lively sense of danger to be apprehended. It is difficult, in the light of these facts, to understand the total disregard of the explosives regulations which obtained in connection with their distribution, storage underground, the absence of containers, and the methods of carrying the explosives to the faces, and of the precautions to be taken when shotfiring, as set out in Rule 20, 1st August, 1912. No effort was made to observe the provisions of Section 16 of the Amending Act of 1920, dealing with the watering or dusting of roads. It is regrettable that the expressed contempt for, and ignorance of, important mandatory regulations dealing with safety and general conditions, by the Superintending Engineer, should have had its reflex in the conduct of the mine. His replies to Questions 1114 and 3064 regarding issue of certificates in Queensland, his statement in answer to Question 1143, to the effect that men were supposed to use a tamping-rod with a copper end, and his statements in answer to Questions 3819 and 3820 that workmen were primarily to blame for the careless use of explosives, show that his knowledge of Queensland Regulations is defective. His later evidence in Brisbane must be examined, having regard more particularly to the position of the skip at the end of the rails, the presence of strong smell, the condition of the

body found there, the fall of coal, the lighting of explosives, the position of the man who accidentally lit the charge, and the position of the two men cavilled to that place at the moment of the explosion. From this evidence it is clear that the theory advanced by the Superintending Engineer, supported by affidavit from James Harris, Mechanical Engineer (admitted as Exhibit 18), is that Morgan, who with Casloff had cavilled this place, was about to fire a breaking-hole when the explosive went off in his hand and originated the explosion. He relies solely on an examination made by Harris and himself on the 29th October, forty days after the explosion. This evidence is detailed as under, namely:—A skip half-full of round coal had been blown downwards and inbye, carrying the rails with it, and was lying just over the end of the rails. Morgan's body was lying against the top inbye corner of the skip. Tools were near the face, half-covered by a fall of brushing. Skin and flesh were adhering to the inbye end of the skip. Casloff and Morgan were working in the face at the moment of the explosion. Casloff was found 140 ft. away. A tamping-rod was found near Morgan's left hand. There was a fall of coal at the face, which fell after the explosion, but did not cover the trailing cable of the machine. The dust and slack lying on top of that coal were blown there by the explosion. A strong smell was present. An unfired hole was bored through the coal (which afterwards fell) into the roof. Against this there is the evidence of Stafford, Laun, the three Commissioners, the Secretary, and Watson himself in his previous deposition. All material witnesses are agreed as to the point of origination of the explosion. The evidence of the Superintending Engineer is conflicting in itself, thereby detracting from its value. For instance, he said—

“Those two men (Morgan and Casloff) were working in that face at the moment of the explosion,”

and almost immediately afterwards he said—

“Casloff was found about 140 ft. from where Morgan was found.”

Then, again, he said that the fall of coal had come down after the explosion, but that the dust and slack coal observed on the end of it were put there by the explosion. There is no other effort made to explain the comminution of coal on top of the fall noticed by so many witnesses as singular. Conflicting answers were given to Questions 3720 and 3721. There is no evidence of the shattering effects of an explosion of fracture on Morgan's body, such as might reasonably be expected to be found if the explosive went off in his hand. The tamping-rod he was said to have been carrying was not damaged. Mr. Watson's theory regarding the means of precipitating the explosion of the charge in the man's hand is unsatisfactory. The weight of evidence is against him in his statements of the position occupied by the skip in this place and the presence of a strong smell. Mr. Harris's plan shows the trailing cable of the machine buried under the fall of coal, but Mr. Watson states that this was not so, although he tendered that plan as part of his evidence. It is reasonable to expect that men contemplating the firing of a breaking-hole would protect their tools by moving them, whereas tools could be left where they were if a plaster were to be fired. On the other hand the slip in the face, the fallen coal, the machine cuttings, and the trailing cable underlying it, the distinctly comminuted area to a depth of 3 inches or 4 inches on the top of the fallen coal, the fall of roof on top of the coal, free of a coating of brown dust, and the skip half-full of round coal,

all denote the firing of an open shot on top of the fall, whether accidental or otherwise. All witnesses are, in the main, agreed as to the direction of force and flame, with minor exceptions, notably in the stone drive entrance to the top seam and in the Nos. 11 and 12 south levels. There can be no doubt that the explosion originated in the face in the No. 11 gateway, Fitzpatrick's machine wall section in the No. 2 seam, whence it was propagated throughout the workings of both seams. No machines were working in the No. 2 seam on the morning of the explosion, and since the explosion occurred within an hour and a-half of starting time, it is probable that the dust in suspension at that time was less than it would be later in the day. It is, however, reasonable to infer that some shooting had been done on the lower walls—that is, on the intake side.

Men were working on the construction of a crossgate between No. 6 and No. 7 gateways, Fitzpatrick's machine wall section, and naturally would raise the dust. A violent local explosion occurred here.

On flats where coal dust might be expected to accumulate, violent explosions occurred.

Rescue operations appear to have been carried out expeditiously and efficiently, and no rescue apparatus was immediately available. Rescue apparatus appears to be looked upon only as an immediate means to bring men out, whereas it can be used to much advantage in restoring ventilation, locating bodies, and, even when hope of recovering men alive is gone, it reduces the risk to rescuers.

The machinery in the mine sustained practically no damage, and the clearing of falls of roof and side and re-timbering should not be a long job. The restoration of the ventilation is, perhaps, the greatest problem, but, as this has been proceeding since immediately after the explosion, completion should be in sight.

#### REVIEW LEADING TO RECOMMENDATIONS.

*Explosion Effects.*—From Fitzpatrick's machine section, towards the return, evidences indicated the diminution of violence and flame, though no doubt the dust in the whole of the return was raised by concussion and subsequently detonated by the flame or explosion wave. Evidences of violence and pressure at and outbye from the doors on No. 11, and also at the top of the old staple pit, top seam, in this vicinity, where the horse was killed, indicate that violent propagation to the top seam occurred here, and, splitting quickly, travelled all the faces except one. There was evidence of intense flame near the haulage motor and flat in this seam. Travelling outbye through the stone drift, No. 10 level, on to the main dip road, there is evidence that an offshoot of the explosion wave, which travelled up the main tunnel, travelled down the dip and into the north workings, also into the flats on the south, and, in the case of No. 11, some distance inbye. It may be stated that evidence of violence was pronounced in all intakes, especially where obstructions were encountered, and that there has been flame in almost every working face in the mine. Though we were unable to obtain evidence from

witnesses regarding accumulation of dust at the flats or lies, evidence of extraordinary violence at every flat was apparent: evidence of violent local explosions which, in their effects, were confusing to witnesses.

In one instance, a witness at first asserted his belief that there were two distinct origins of explosion: one at a face, and one at No. 10 junction to the top seam; but No. 12 south flat and No. 11 inbye from the flat, and also the top seam flat in the vicinity of the motor, were not different from No. 10, inasfar as in all these cases violent local explosions had occurred, evidenced by the result of radiating forces surrounded, in the case of No. 12 south, by a comparatively calm area. There can be no doubt that these phenomena are attributable to the fact that there was a supply of coal dust at the flats, which was raised into suspension by the preceding, or, as Dr. John Hargar calls it, the pioneering wave, and was later detonated by the explosion wave. Undoubtedly the greatest violence was apparent from the junctioning of the stone drift with No. 10 outbye on to the main haulage and up the main tunnel, whilst double doors in the vicinity of the junction were demolished in the opposite or inbye direction, and the explosion wave travelled immediately into the main return and out of the fan tunnel. In the stone drift here (that is, inbye) and at right angles to No. 10, the violence was not nearly so apparent, though it was not absent, and suggested that forces had travelled both ways (that is, out and in) propagation in the first place outbye having been comparatively slow until it met the results of the pioneering wave at this point. The violent local explosion that occurred here can be explained by assuming that the preceding wave from Fitzpatrick's wall, which is almost last on the return of No. 2 seam, and not far distant, was violent enough to open the separation doors and raise the dust, and also project it into the main intake travelling the dip, ready to be detonated by the flame wave travelling out of the top seam (that is, to the intake). Regarding the fact that the explosion travelled out of both tunnels, there is reason to believe that a large quantity of inflammable dust had been raised in the whole return before the explosion wave passed into the return at this point.

The explosion originated in a seam 27 inches thick, worked longwall, and there was no open gob. Pack walls were built of the brushing done in the roof, which is a shale or fireclay readily disintegrating when water is applied. Atmospheric conditions quickly reduce it to small cube-like pieces, about  $\frac{1}{4}$ -in. or less in size, obviously not the material with which to construct packwalls contiguous to a place where shots are to be fired, and consequently, when dry and dusty, requiring to be watered. Brushing the floor, we think, would not alter the position. It is to be noted that the dryness of the mine is an outstanding feature, and the explosion occurred towards the end of a dry season.

*Departmental Inspections.*—Regarding departmental inspections, it is difficult to imagine a more dangerous practice than the appointment of inspectors to collieries who had no colliery experience. With regard to their ability or qualifications to supervise metalliferous mines there may be no doubt; but, having had no training on coalfields, they are at a distinct disadvantage when they begin to discuss methods of working, etc., with

managers who know the coal business thoroughly. Instead of the inspectors being able to give counsel, and, in some cases, warning, they appear to have been actually serving their time to the management at Mount Mulligan. They depended on the Company to provide an anemometer, and even safety lamps, having none of their own. If inspectors must inspect both classes of mines, they should certainly hold both classes of certificates.

*Prevention.*—Regarding prevention, the discreet way is to recognise that all coal dust is explosive when violently agitated either by detonation of explosives, runaway skips, extensive falls of roof—either in pillar or old workings—or any cause whatever, accelerating the mingling of the dust particles or atoms with the mine atmosphere; consequently anything that can be done by way of preventing such conditions from obtaining, and, in the event of their occurring, the prevention of ignition by curtailing or, in some cases, eliminating the use of explosives, the handling and firing of same by men who realise their possibilities, and the prohibiting of naked lights in certain cases, appear to be the correct lines to follow. All authorities are agreed that “nipping in the bud” is the best cure.

*Dust Treatment.*—Stone-dusting the face, before or simultaneously with firing, or the watering of contiguous areas as required by rule, recognising the limits of the practice, the use of only permitted explosives, the keeping of roads free from accumulations of coal dust, and the stemming of holes with fine stone dust, is commendable. Authorities are agreed that, to be effective, the distribution of stone dust should be general. Much experimental work with zones has been carried out, and their value in arresting propagation of an explosion in its early stages has been proved, but the ratio of the length of zone to the distance between zones is unknown, and obviously must vary according to local conditions, that no determination in an experimental gallery could be applied generally to mines. It follows that the aim should be the provision of conditions of general safety along these lines, and restriction within the narrowest limits of places of danger, chief among which are the working faces. What is known as the Taffenel barrier system appears to have much to recommend it, and their installation on the roads, in addition to general dusting, is worthy of consideration. We are in entire accord with what Mr. John Gerard, His Majesty's Inspector of Mines in Great Britain, is reported to have said, namely:—

The danger in connection with coal dust is not the excess of coal dust, but rather the exceedingly small amount that is necessary to initiate an explosion. All I have heard from practical mining men, and from men working in the mine, pointed to their want of appreciation of the small amount of coal dust that is necessary to initiate an explosion.

The report of the Committee of Inquiry into Coal Dust in Collieries in New South Wales contains the following:—

It is not, perhaps, generally realised that an infinitesimally small quantity of coal dust is sufficient to propagate a disastrous explosion, one-tenth of an ounce per cubic foot in the air, or a layer one two-hundred-and-fiftieth of an inch, about the thickness of a newspaper, on the floor, roof, and sides, given the initiating flame, being ample to wreck any mine.

The keeping of the roadways and workings of a mine absolutely free from coal dust is impossible. The better method appears to be the distribution of incombustible dust. It is also important that stone dust of a

character which is not likely to be injurious to health should be used. Dr. J. S. Haldane states as follows :—

It would be well to point out, however, that dust from hard stone, fireclay, sand, or any material containing free silica, ought not to be employed. With this precaution, I am confident that not the slightest risk to health would arise from the use of stone dust for stopping explosions.

He also says—

At present we do not know how great or how small the danger arising from flue dust inhalation would, in practice, be, but it does not seem to me justifiable to experiment in this direction on fellow men.

The report of the Explosions in Mines Committee, Great Britain, in 1912, contains the following :—

*Practical Application of Stone Dust.*—Previously to use, the shale requires to be pulverised in a grinding mill until the dust produced will pass through a sieve having a mesh similar to that of a safety lamp gauze, and of the dust so passed 50 per cent. by weight should pass through a finer sieve of 200 by 200 mesh.

Stone-dusting is practised to a considerable extent in Great Britain, and methods employed vary at individual collieries. In some cases mechanical contrivances are used, but the efficacy of hand-dusting in certain parts of the mine is recognised.

#### PROPOSED REDUCTION OF OXYGEN.

Dr. John Harger's statement, that a reduced percentage of oxygen in the mine air will render mines explosion-proof, appears logical, but the effect on those employed underground must be considered. There are those who do not hesitate to say that no inconvenience will be felt, but we submit that, owing to impurities which are added to the mine air in circulation, the regulation of the percentage of oxygen throughout the mine within narrow limits would be a difficult operation. Exhaustive experiments, carried over a period of years, as to the effects of such reduction on humans, is necessary before it can be said with certainty that no evil results will follow. Dr. Harger's ideas are worthy of exploration, but in the meantime are not practicable. On the other hand, experiments and experience have proved that by following explored paths explosions can be rendered rare in occurrence.

#### EXPLOSIVES AND SHOTFIRING.

In the investigation of explosions it has been shown that shot-firing, and the use of explosives in the mine, have a bearing of the greatest importance. Legislation and shotfiring regulations in all coal-mining countries recognise this. Our examinations at Mount Mulligan confirm the importance of rigidly regulating the use of explosives in Queensland.

#### LIGHTS.

There is no recorded instance of an ignition of coal dust by a naked light used by persons below, though the Monangah, U.S.A., explosion, in which over 300 persons succumbed as a result of a dust explosion, was found to be caused by runaway skips agitating the dust, which was ignited at an electric arc lamp. Nevertheless, the use of naked lights must be regarded as an element of danger when handling explosives in a mine.

In the case of mines which are not naturally damp and free from inflammable gas, this danger is increased by the possibility of originating extensive explosions. The chief objection to the use of oil safety lamps is the low candle-power, and the consequent strain on the eyes of those who use them is undoubtedly a handicap to both employer and employee. The approved electric lamp, which now gives up to two-candle power, we think, should remove this objection to the use of safety lamps. It is a matter for regret that, so far, no lamp which combines high illuminating power with ability to detect gas has been placed on the market. Such a lamp would be of great service to officials who inspect collieries.

It is worthy of note that at a large colliery in the Maitland District in New South Wales, electric hand and cap lamps of two-candle power capacity, are to be installed shortly to displace the oil safety, which was largely responsible for the disease of the eye known as "Nystagmus."

#### EXPERIMENTAL STATION.

Regarding experiments with dust, the experience in other countries is to the effect that, unless experiments are carried out under exact conditions obtaining in the mine, they are useless, and determinations made under any other conditions are dangerously misleading, inasfar as immunity may be imagined where no immunity or security exists. In several cases where dust taken from certain collieries has been diagnosed as non-explosive, serious explosions have followed, notably in the case of the Camphausen, and also in the case of experiments conducted by Sir Henry Hall. Given proper facilities, however, the advantage of having research work conducted in Australia is apparent, as climatic conditions are very different from those obtaining in the older coalmining countries of the world, and the transmission of samples for determination entails large loss of time. We have no doubt that there are men thoroughly qualified for this particular class of work in Australia.

#### RESCUE WORK.

While every effort should be put forth in the prevention of accidents, it is necessary to make provision for dealing with them when they occur, and, in this respect, thorough organisation of rescue stations should not be lost sight of.

#### FINDINGS.

On the 19th day of September, 1921, at 9.25 a.m., a violent explosion occurred in the underground workings of Mount Mulligan Mine, killing seventy-three men outright, and so badly injuring two others that they succumbed shortly afterwards. After making a minute examination of the mine workings, and considering the oral and written evidence of all available witnesses, we find :—

#### POINT OF ORIGIN.

1. That an explosion of coal dust originated at the face of No. 11 gateway, Fitzpatrick's machine wall, south side, No. 2 seam, and travelled the working faces and roads of the mine and passed out of the entrance of both intake and return tunnels.

## THE CAUSE OF THE IGNITION.

2. Three possible sources of origination have been suggested by the evidence.

Firstly, the discovery of the top half of an acetylene hand lamp, which was made in two sections, the bottom being made to clamp to the top, created an inference that the contents had exploded in the lamp and ignited the coal dust. An examination of the parts found showed no damage. The rubber washer between the two parts was adhering to the top part of the lamp, and had not been scorched. In view of the fact that more tangible evidence of other sources of ignition are available in this place, and that this theory was set up tentatively, we have discarded it.

The theory set up by Mr. J. T. Watson, supported by Mr. James Harris, that the charge had been exploded in contact with an open light in Morgan's hand when he was in the act of carrying it to charge a hole, is discussed at length under the heading of "Consideration of Evidence."

As the weight of evidence is against this theory, and the evidence advanced in its support conflicts with other evidence, and takes no account of certain singular results observed in that place by witnesses, we find that this theory is untenable.

Having considered from every point of view the several theories advanced, including the possibility of an ignition of methane or other inflammable gas, having made minute examinations of mine workings, and carefully investigated the depositions of witnesses, we are unanimously agreed.

The cause of ignition was the firing of an explosive, either accidentally or otherwise, on the top of a large block of fallen machine-cut coal, such explosive not having been placed in a shot hole.

It is difficult to understand how explosives, being used in the ordinary way, could be fired in this spot. Alternately the conclusion that obtrudes itself is that a plaster shot was placed on this block of coal to break it, so as to facilitate handling, and it exploded prematurely, either because of defect in the fuse or from some other cause, such as a fall of roof stone.

## PROPAGATION.

3. Explosive effects were not immediately violent, propagation proceeding with various degrees of velocity and intensity throughout the mine. Exhibits 9 and 10 show our finding in regard to the direction of forces.

## EXPLOSIVES.

4. Explosives were distributed, carried, used, and stored underground in a careless manner, without regard to the regulations.

## ENTRIES IN RECORD BOOK.

5. Entries in the Record Book were not made as prescribed by regulation.

DEPUTY.

6. An uncertificated Deputy was employed in the mine, contrary to the regulations.

CONDITION OF THE MINE.

7. The mine was dusty and extremely dry, and no adequate means were adopted to render dust innocuous, as prescribed by regulation.

DEPARTMENTAL INSPECTIONS.

8. We find that departmental inspections were made by men without colliery experience, without the necessary equipment, and were not made as frequently as necessary.

RECOMMENDATIONS.

We recommend as follows :—

SEPARATE COLLIERIES ACT.

1. The passing into law of an Act for collieries, separate and distinct from "*The Mines Regulation Act of 1910*," with a re-enactment of all approved sections of the said Act.

INSPECTORS.

2. The administration of the said new Act to be under the supervision and direction of competent colliery men.

The appointment of Inspectors to be made from men who hold colliery manager's certificates of competency.

Inspectors to be equipped with all necessary instruments for inspection purposes, including a lamp capable of detecting  $\frac{1}{2}$  per cent. of methane.

Inspections to be made at intervals not exceeding three months, and to include an examination of the returns and other parts of the mine for methane, and the examination of roads, roof, and sides for dust; the state of the ventilation, the use of explosives in the mine, timbering, and mine conditions generally. Records of all inspections to be made and returned to head office at intervals not exceeding one month.

RECORD BOOKS.

3. Revision of the Record Books, with the view of providing space for reports by more than one Deputy.

EXPLOSIVES.

4. Rigorous administration of existing regulations regarding the use of explosives in collieries.

The use of only *permitted* explosives in all mines that are not naturally damp and free from inflammable gas, in substitution of Rule 19 of 1st August, 1912, regarding prohibited explosives. Where *permitted* explosives are required to be used, every shot hole shall be charged and stemmed by or under the supervision of a district shotfirer.

In Rule 20, subclause (iv.), the words "or dust" to be inserted after "inflammable gas." Amend the same subclause by providing that the cable used for firing the charges shall be not less than thirty yards in length, instead of twenty yards.

In Division VII., clause (e), the deletion of the words "cases or" and the addition of the words "approved by the Inspector" after the word "canisters."

In Division VII., Rule 54, subclause (f), the following additional subclause :—

Provision to be made in recesses at a distance of not less than 30 yards from every working place in which explosives are used, for the storage of the daily supply.

Applications for the registration of shotfirers (district and subordinate) to be made on forms provided for the purpose.

The Act to make provision for the supply of tamping at the working faces by the management, such tamping to consist of fine stone dust, sand, or clay.

#### SAFETY LAMPS.

5. In addition to clauses (a) and (b) of Rule 3, Division III., Part III. of "General Rules applicable to Collieries only," the insertion of a clause, as follows, namely :—

In every case where, by reason of dry and dusty conditions obtaining in the mine, danger is apprehended by the Inspector, he shall have power to order the use of safety lamps or approved electric lamps throughout the mine or any part thereof.

In addition to Rule 4, provision to be made for fixing of lamp stations and the regulation thereof.

#### STONE DUSTING.

6. We append copy of the British Stone-dusting Regulations for inclusion in the Queensland Act, in lieu of stone-dusting regulations contained therein :—

##### PART I.—PRECAUTIONS AGAINST COAL DUST.

1. The following regulations shall apply to all mines in which coal other than anthracite is worked, except mines of which the floor, roof, and sides of the roads are naturally wet throughout.

2. Except in a seam in which anthracite only is worked, the floor, roof, and sides of every road or part of a road which is accessible shall, unless the natural conditions as regards presence of incombustible dust and moisture are such as to comply with the requirements of this regulation, be treated in one of the following ways, either :—

(a) They shall be treated with incombustible dust in such a manner, and at such intervals, as will ensure that the dust on the floor, roof, and sides throughout shall always consist of a mixture containing not more than 50 per cent. of combustible matter ; or

(b) They shall be treated with water in such manner and at such intervals as will ensure that the dust on the floor, roof, and sides throughout is always combined with 30 per cent. by weight of water in intimate mixture.

Provided that the percentage of incombustible dust required under this regulation may be reduced by an amount equivalent to the percentage of water present in the mixture.

3. The incombustible dust used for the purpose of the preceding regulation shall contain not less than 50 per cent. by weight of fine material, capable when dry of passing a sieve with 200 meshes to the lineal inch (40,000 to the square inch): Provided that if a larger proportion of incombustible dust is used than is required under the foregoing regulation, the percentage of fine material aforesaid contained in the incombustible dust may be reduced proportionately, but shall not fall below 25.

## XLVI.

4. For the purposes of testing the composition of the dust mixture in any part of a road, the following procedure shall be adopted :—

- (a) Representative samples of the dust shall be collected from the floor, roof, and sides over an area of road not less than 50 yds. in length ;
- (b) The samples collected shall be well mixed, and a portion of the mixture shall be sieved through a piece of metallic gauze having a mesh of 28 to the linear inch.
- (c) A weighed quantity of the dust which has passed through the sieve shall be dried at 212 degrees Fahrenheit, and the weight lost shall be reckoned as moisture. The sample shall then be brought to a red heat in an open vessel until it no longer loses weight. The weight so lost by incineration shall be reckoned as combustible matter for the purposes of the test.

Provided that in the case of dusts to which the foregoing test would not be applicable, the test shall be such as may be prescribed ; if any dispute arises as to the test which should be applied, it shall be determined in the manner provided by the Act for settling disputes.

Representative tests shall be made by the management at intervals of not less than once a month, and the results shall be posted at the pithead.

5. No dust shall be used for the purpose of complying with these regulations of a kind which may be prohibited by the Secretary of State on the ground that it would be injurious to the health of persons working in the mine : Provided that if any dispute arises as to whether the dust is injurious, it shall be determined in the manner provided by the Act for settling disputes.

6. Paragraph 3 of section 62 of the Act shall be amended to read as follows :—The floor of every travelling road shall be cleared of dust at regular intervals of time, so as to keep it free from all accumulations of dust. The intervals shall be fixed by agreement between the manager and the workmen employed in the mine or their representatives, or, in default of agreement, by the Inspector of the Division.

“ Travelling road ” means a road used by the main body of any shift employed in the mine for travelling to or from their working places, and, where the mine is divided into districts, the road used by the main body of men employed in a district.

7. In the foregoing regulations, “ road ” includes all roads of any description extending from the shaft or outlet to within 10 yds. of the coal face ; but chutes from the coal face down which coal is thrown, offices, stables, engine-houses, motor switch and transformer rooms, and pump rooms, shall not be deemed to form part of any road.

8. This Part of the Regulations shall not come into force until 1st January, 1921 : Provided that, if it is shown to the satisfaction of the Inspector of the Division in regard to any mine that it has not been practicable by that date to obtain the necessary plant for carrying out the regulations, the Divisional Inspector may, subject to such conditions as he thinks fit, allow such extension of time as shall appear to him to be reasonably required.

### SPECIAL RULES.

7. We recommend that a committee be appointed to revise the Special Rules, with a view to making better provision for the more effective control of individual collieries.

### RESCUE STATIONS.

8. That rescue stations be established in all districts.

### REVERSAL OF AIR CURRENT.

9. We recommend that, where new fans are installed, provision shall be made for the reversal of the air current.

### SHOT FIRING.

10. That all shotfiring shall begin and be conducted in such a manner as to minimise the danger of igniting the dust raised by preceding shots.

EXPERIMENTAL STATION.

11. That the Department of Mines seek co-operation with other States for the establishment of an experimental station in Australia for the purpose of carrying out research work in matters relating to explosions in mines, their prevention, and the limiting of their effects.

CONCLUSION.

We have now completed the arduous and responsible duty with the execution of which your Excellency has entrusted us. We earnestly hope that the result of our investigations may prove of benefit to all concerned in the coalmining industry of this State, and the public generally, and that the avoidance of such disasters as that which led to the holding of this inquiry, may be the result of our labours. It is with pleasure we recognise the sterling capabilities of Mr. J. T. H. Bird as a reporter and secretary. His capacity to overcome work, and his attention to detail, coupled with a genial disposition, have indeed made him an invaluable aid to the Commission.

R. A. DUNLOP (Chairman).

CHARLES KILPATRICK (Commissioner).

WILLIAM WANT (Commissioner).

Brisbane, 25th November, 1921.

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1921.

QUEENSLAND.

ROYAL COMMISSION ON MOUNT MULLIGAN COLLIERY DISASTER.

MINUTES OF EVIDENCE

TAKEN BEFORE

THE ROYAL COMMISSION

APPOINTED TO

INQUIRE INTO THE DISASTER AT MOUNT MULLIGAN  
COLLIERY.

FIRST DAY.

MOUNT MULLIGAN.

TUESDAY, 4 OCTOBER, 1921.

PRESENT:

R. A. DUNLOP, ESQUIRE (*Chairman*).

HON. C. KILPATRICK, M.L.C.

W. WANT, ESQUIRE.

J. T. H. BIRD (*Secretary*).

Mr. HAMLYN HARRIS (Solicitor, member of firm of McDonnell and Hamlyn Harris) watched the proceedings on behalf of the Chillagoe Company Limited.

The Secretary read the Commission.

*The Chairman:* The Commission propose to take the evidence in groups, and for that purpose we will require to recall several of the witnesses. By grouping the evidence we will be able to keep all the relative evidence together. The evidence will be more precise, and it will enable us to make a precis without much trouble. The evidence will also read much better, as the events following the explosion can be read in sequence.

THE DISASTER.

Evidence of Surface Hands.

GEORGE MORRISON, 38, Blacksmith and Tool Sharpener, employed at the Mount Mulligan Colliery, sworn and examined:

1. *By the Chairman:* How long have you been working at the Mount Mulligan Colliery?—About two years.
2. In what capacity?—As a tool sharpener.
3. Did you ever work down the mine?—I was down the mine for about a month.
4. You were injured in the mine?—I was injured on the surface.
5. On what date?—On the 19th September.
6. What caused your injury?—The explosion which occurred on that date.
7. What was the nature of your injury?—My knee was all bruised, and my legs and arms were bruised.
8. You are still suffering from that injury?—Yes.
9. How long will that injury last?—About another week.
10. Where were you when the explosion occurred?—In the blacksmith's shop.

G. Morrison.

4 October, 1921.

- G. Morrison.  
4 October, 1921.
11. Where is the blacksmith's shop?—Adjoining the tension box on the incline road to the pit mouth.
  12. Can you describe the explosion, having regard to its direction and force, and result?—No.
  13. You remember the explosion?—Yes; that is about all I can remember.
  14. Did you see any flame?—Yes.
  15. You were rendered unconscious by the explosion?—Yes.
  16. Did you have any warning of the accident?—No.
  17. It was instantaneous so far as you were concerned?—Yes. I only heard a crack.
  18. That is as it issued from the tunnel mouth?—Yes.
  19. Just before the accident did you notice anyone on the incline way?—No.
  20. Did you notice anyone near the pit mouth?—No.
  21. What happened after the explosion?—I saw men running up after I came to my senses.
  22. You were in an unconscious state?—Yes.
  23. How long were you in an unconscious state?—I could not say.
  24. *By Mr. Want:* Have you heard since how long you were unconscious?—No.
  25. It could not be long, because you saw the people running up?—It could not be long.
  26. *By the Chairman:* Do you remember the position you were in when you were picked up?—No.
  27. You were in the smithy at the time of the explosion?—Yes.
  28. What direction was the smithy knocked?—It was knocked backwards off the incline way towards the bathroom.
  29. *By Mr. Want:* How far were you off the mouth of the tunnel?—About forty or fifty yards away when the explosion occurred.
  30. Do you know how far you were from the tunnel when you were picked up?—No.
  31. Have you had any information with regard to that?—No.
  32. *By the Chairman:* You were knocked outside the smithy when you were picked up?—Yes.

JOHN HARRIS, 40, Blacksmith, employed at the Mount Mulligan Colliery, sworn and examined:

- John Harris.  
4 October, 1921.
33. *By the Chairman:* Do you remember the 19th of September?—Yes, very well.
  34. What happened on that date?—An explosion occurred.
  35. At what time?—About 9.30 a.m.
  36. Where were you at the time of the explosion?—I was in the machine shop.
  37. Did you see the explosion or the effects of it?—No. I first heard an explosion, and then I heard a second explosion.
  38. Where did the explosion come from?—The first explosion came out of the fan drift.
  39. How long after the first explosion did the second explosion occur?—About two seconds after.
  40. Were you then outside the machine shop?—Yes.
  41. You ran out after hearing the first explosion?—Yes.
  42. Did you see the second explosion?—I did not exactly see it, but I saw the dust rise.
  43. Did you see anything else?—I saw a big cloud of dust and smoke rise.
  44. What did you do?—I went up with the rest. We all ran up as fast as we could go.
  45. Tell us who else was there?—My brother (Jim Harris) and the two Plunketts.
  46. What time elapsed when you reached the pit mouth?—About three or four minutes.
  47. That was after you heard the second explosion?—Yes.
  48. When you arrived at the pit mouth what did you see?—We met Morrison coming down.
  49. Was he injured?—I noticed his face was blackened, and he was bleeding. We stopped a second or two, and we noticed that he was not badly hurt. Somebody took him down.
  50. Was he being carried?—He was half walking, and was also being assisted along by somebody else.

John Harris.  
4 October, 1921.

51. Whom did you see at the pit mouth?—My brother Jim and Mr. Watson were the first to come in. They got their safety lamps and went into the tunnel.
52. Can you describe the appearance of the pit mouth?—Everything was wrecked around the pit mouth. Mr. Watson and my brother examined the pit mouth to see if it was safe to go in. I was not well myself on the day of the explosion, and I did not go into the tunnel just then. Mr. Watson told me to fix up the mouth of the pit and make it safe for people to go in.
53. Were there any winches at the pit mouth?—No. There were two drums which were used to run the rope pulling the skips of coal up and down.
54. Jig drums?—Yes, two jig drums.
55. Where were those two drums after the explosion?—They were blown down the incline about twenty yards.
56. They were hurled from their position over the pit mouth?—Yes.
57. And thrown to the left of the incline?—No, they were pretty well on the incline.
58. What happened to the smithy?—It was blown to pieces. There is really no smithy there now.
59. What happened to the switch house?—That was turned over also, just as you notice it now.
60. Was the switch-box moved a little?—I did not notice.
61. Will you describe what the entrance to the pit mouth looked like?—All the timber was knocked out. All the mouth fell in.
62. How much of it?—I suppose about 20 tons.
63. What length of mouth fell in?—About 10 ft. of the brow of the pit mouth had caved in. There was some concrete work at the pit mouth, and it was all broken.
64. Tell us what happened at the pit mouth after you got there?—Mr. Watson and my brother Jim went into the tunnel with safety lamps, but I did not go in. Soon after they went in they sent out word that there were two men alive, and they asked us to give them a hand to bring them out. The two Plunketts and a number of others, including myself, went into the tunnel and all gave a hand to get the two men out of the tunnel.
65. Who was the first man you picked up?—Thomas Evans, the mine manager, and we afterwards picked up Martin O'Grady.
66. Where was Evans when you picked him up?—At the mouth of his cabin.
67. How far is his cabin in the tunnel?—About 100 yds. O'Grady was lying just opposite to him.
68. How was Evans lying?—On his back.
69. Which way was his head facing?—His head was a little in the tunnel, facing towards the entrance of the tunnel.
70. He was lying across the tunnel?—Yes.
71. With his head near the left wall?—Yes.
72. And his feet across the roadway?—Yes.
73. Was he badly injured?—Yes; he was unconscious, and at the time he was groaning.
74. Was he badly burnt?—He seemed to be badly burnt.
75. Do you know if he suffered from any other injuries?—Yes, a stick was protruding from his throat.
76. Did you pick him up?—Yes.
77. Did you take him out to the pit mouth?—Yes.
78. Did you stay outside when you took Evans out?—Yes, for a few minutes, and then I went in again.
79. Do you remember O'Grady coming out?—Yes.
80. Were you in the tunnel when O'Grady was picked up?—Yes. He was lying opposite to Evans.
81. How was O'Grady lying?—He was sitting up. There was timber all round him.
82. The timber from the tunnel?—Yes, it had fallen down. I heard him say something about getting cold, and he also said, "Take me to my camp."
83. How was O'Grady injured?—I saw a big wound on the side of his head.
84. Was O'Grady burnt?—Yes. He had no shirt on.
85. Was his shirt burnt off?—It appeared as if it had been burnt off.
86. How far was he away from Evans?—About 6 or 8 ft.
87. Did you carry O'Grady out?—No, he was carried out by the other men.

- John Harris.  
4 October, 1921.
88. Can you describe the appearance of the tunnel at that time?—The tunnel was wrecked all the way in, and all the timber was down.
89. How was the roof?—Fairly good in places. The roof was not bad, but a few sticks here and there had slipped out.
90. Was the roof falling at all?—No, there were no falls when I was there.
91. You have heard since that both Evans and O'Grady died?—Yes.
92. You know that they were taken to the Mareeba Hospital?—Yes.
93. The entrance to the main tunnel is blacker now than it was before the explosion?—Yes.
94. You know that the tunnel mouth is soft white material usually?—Yes.
95. And it is now all blackened?—Yes.
96. *By Mr. Want:* Would you say that the blackening of the tunnel was due to the explosion?—Yes.
97. Were the jig drums in use at the time of the explosion?—No.
98. Can you give us any idea of the size and weight of the drums?—They were 3-ft. drums.
99. Was there a shaft through them?—Yes, there was a 3-in. shaft right through them.
100. What was the length of that shaft?—It would be 12 ft. It was right across the tunnel through the two drums.
101. They had plumper blocks on?—Yes.
102. Were those drums fastened down on the foundation?—Yes.
103. Would you say that those drums were lifted 25 yds.?—Yes.
104. Approximately, what would be the mass that was moved?—There was about a quarter of a mile of  $\frac{3}{4}$ -in. rope on each drum.
105. *By the Chairman:* How much of it was rolled on the drums?—The whole of it. It was not then in use.
106. *By Mr. Want:* Would you say there were 2 or 3 tons there?—Yes.
107. Did those drums get the full force of the blast?—I could not say.
108. Would you expect the drums to be in the direct line of the blast?—They must have been to get blown away. They were just over the mouth of the tunnel.
109. *By the Chairman:* The blast went straight out of the tunnel mouth and these drums were over the tunnel mouth, so they could not have been in the direct line of the blast?—The drums were fastened on to the timber at the mouth of the tunnel, and the timber was a couple of feet in the solid ground.
110. The timbers were in the direct line of the blast?—Yes.

**Evidence of those who were first at the Mine after the Explosion.**

JAMES THOMAS WATSON, 49, Superintending Engineer at the Mount Mulligan Colliery for Chillagoe Limited, sworn and examined:

- J. T. Watson.  
4 October, 1921.
111. *By the Chairman:* Will you give us a brief statement of your qualifications?—I was trained as a mining engineer, starting from the age of 14. In due course, when I was about 22 years of age, an Act came into force in New South Wales requiring mining engineers to sit for examination in order to obtain certificates of competency, and I obtained that certificate.
112. That certificate would include a knowledge of general mine management?—Yes, and mine administration.
113. It also includes electrical engineering?—Yes.
114. *By Mr. Want:* Are you registered in Queensland?—No, I am not registered in Queensland.
115. *By the Chairman:* You have had a lot to do with collieries for a good many years?—Yes, for 35 years.
116. During that time you worked in collieries throughout the length and breadth of Australia and New Zealand?—Yes. I hold a certificate of competency for New Zealand as well as New South Wales.
117. Can you give us some of the collieries you worked in in New South Wales?—The first management I took up was for the Stockton Colliery in New South Wales, in 1898. I did not take up the active management of the mine straight away. I was restoring the mines and opening up other mines at first, and I did not tie myself down to one or two places. After I restored the mine at Stockton I went to Gunnedah and opened the colliery there, also putting in a railway line. That took me two years to complete. I then returned to Newcastle and took up consulting work. Incidentally, I was appointed lecturer on coal-mining, mine surveying.

and other kindred subjects at the Technical College at Newcastle. I was two years doing consulting work. I was appointed Government Inspector of Collieries in New South Wales in 1902. That was about a month prior to the Mount Kembla explosion, and the first official duty I undertook was rescue work and investigation into the Mount Kembla explosion.

J. T. Watson.  
4 October, 1921.

118. *By Mr. Want:* Were you the Inspector for the Mount Kembla district?—No. The Inspector for that district was injured, and I was transferred there in consequence.
119. *By the Chairman:* Did you have any other experience?—I had four and a-half years' experience as an inspector when I was offered an appointment to open up a large colliery in New Zealand. It was called the Paparoa Coal Mining Company.
120. You went to New Zealand?—Yes, and opened up the mine. I completed that work and put the mine on a producing basis. That took four years. It was an extensive job.
121. When you finished in New Zealand, what did you do?—I came back to New South Wales, spent a month or two wandering about, and then was appointed in charge of the Corrimal-Balgownie Colliery.
122. How long did you stay with them?—Slightly over two years. In the meantime coal had been discovered at Mount Mulligan, and the Chillagoe Company asked me to come up here to undertake an inspection and report on the proposition.
123. *By Mr. Want:* When was that?—In May, 1912.
124. *By the Chairman:* You made that inspection and report?—Yes. I made a report for the Company and advised them to do certain work. At that time there was no very favourable indication of good coal, and I gave them that advice. The work was done as I suggested within the next twelve months. It was arranged that if they intersected any more seams of coal I was to come back and make a second inspection. I came back and found that they had got hold of some excellent coal, quite sufficient to justify opening the mine. On my return the Company asked me to undertake the opening of the mine, as they intended to go in for cokemaking for their own purposes.
125. That was in 1913?—Yes. I came back here finally in May, 1913.
126. You have been on the job here ever since?—Yes, with the exception of absences from the district doing the Company's work in other parts. I may also say that I am a member of the Federated Institution of Mining Engineers of Great Britain, member of the Australasian Institute of Mining and Metallurgy, and an associate member of the Institution of Engineers, Australia.
127. The Mount Mulligan Colliery is held under lease from the Queensland Government?—Yes.
128. What are the titles; are they all coalmining lease titles?—There are three leases held by the Irvinebank Company, and several leases held by the Chillagoe Company.
129. Some of them are in the name of John Moffatt?—Yes.
130. How many leases have the Chillagoe Company got?—The leases held by Chillagoe Limited, are as follows:—

LEASES HELD BY CHILLAGOE LIMITED.

MOUNT MULLIGAN.

	Lease No.	Name.	Area.
Chillagoe	398 .. ..	Mulligan .. ..	640 acres.
	399 .. ..	Thornborough .. ..	640 acres.
	384 .. ..	Bowen .. ..	160 acres.
	342 .. ..	Melbourne .. ..	320 acres.
	M.L. .. ..	Dimbulah .. ..	18 acres 3 roods 13 perches.
Irvinebank Company	397 .. ..	Yass .. ..	640 acres.
	400 .. ..	Federal .. ..	640 acres.
	417 .. ..	Northern Territory	320 acres.
	415 .. ..	Tasmania .. ..	640 acres.

4,018 acres 3 roods 13 perches.

LEASES BEING WORKED.

Nos. 415 and 417 (mine workings).

No. 384 (new tunnel).

131. Are some of them ordinary mineral leases?—They are all converted into coal leases.
132. Even those on which the machinery and plant stand?—That is a mineral lease for machine purposes.

- J. T. Watson. 133. Do you remember the 19th of September?—Yes.
- 4 October, 1921. 134. Can you tell us what happened at the Colliery on that date, having regard to the occurrences at the pit mouth, and so far into the tunnel as was penetrable?—I was on the coke works foundation setting out work for the bricklayer. I was stooping down doing some measuring at the time when I heard a very heavy report.
135. Did you notice the time?—It was about twenty-five minutes past nine. I had just come from the engine-house a few minutes before. It was 9.20 a.m. when I left the engine-house. When I heard the report I looked in the direction of the tunnel, and I saw a heavy cloud of smoke at the main tunnel entrance. Almost simultaneously I saw a heavy explosion come out of the fan tunnel.
136. Almost simultaneously?—Yes. I heard a heavy blast come out of the fan tunnel, and I saw things scattering in all directions at the fan tunnel.
137. I suppose it would be about two seconds between the two reports?—Just a fraction of a second. About a fraction of a second later there was another explosion at the main tunnel. The indications to me then were that the first explosion came out of the main tunnel, a second explosion occurred which came out of the fan tunnel, and then another explosion out of the main tunnel.
138. Do you think the second explosion split into two?—Yes.
139. Can you approximate the dimensions of those blasts?—They were very violent.
140. They extended for a good distance out of the tunnel?—Yes. I knew what had happened. I immediately went up to the mine and took charge of operations at the tunnel mouth. On the way up I met Morrison coming down.
141. Morrison was injured?—Yes, he seemed stupid. Two men had him in their charge. Morrison said something had exploded, but as he did not appear to know what he was saying I passed on. The man was semi-conscious.
142. You went to the tunnel mouth?—Yes, straight to the tunnel mouth.
143. There were others there?—Yes, Jim Harris was there and Jack Harris, and the two Plunketts. We all went up together.
144. When you got to the tunnel mouth you made a cursory glance round?—Yes. The first thing I noticed was that the grass 60 yds. in front of the tunnel was on fire. Judging from that I immediately assumed that there had been flame right out to that distance. It was a little this side of the change house.
145. *By Mr. Want:* On the south side?—Yes.
146. *By the Chairman:* That would be the limit that the blast expended itself, about 60 yds.?—Yes. I went to the tunnel mouth and there was a heavy volume of afterdamp and smoke still in the tunnel. It was impossible for any man to live in it, so I kept everyone back.
147. Did you notice the smithy?—I noticed that the smithy was demolished. It was only a roof, but it was demolished. The switch house was also turned over.
148. Were those places in the direct line of the blast?—No, they were a little to the right.
149. The blast would have spread itself on nearing those places?—Yes.
150. Did you see the drums?—I saw the drums lying on the ground 20 to 25 yds. from their original position.
151. Can you describe those drums?—They are 3-ft. drums, each one weighing 15 cwt. They are made of cast-iron cheeks, heavily built with heavy wooden lagging. There was a 3½-in. shaft 11 ft. long running through those drums, and each drum had 30 chains of 1½-in. circumference rope round it, weighing 1,400 lb. to 1,500 lb. each.
152. They were fastened at the entrance to the tunnel?—They were mounted on frame work just immediately outside the tunnel. The lower portion of the drums would be just in the line of the tunnel.
153. What was the framework made of?—Heavy timber. The framework was built on the squareset system, with front stays set out of the angle of the rope.
154. Were the legs of the sets sunk in the ground?—Yes, about 1 ft.
155. How was the set clinched on the top?—The whole thing was bolted.
156. You went into the tunnel mouth?—Yes. I saw the tunnel mouth was badly shattered and the ground was moving. It looked as if there was going to be a further fall.
157. There had been a fall at the tunnel mouth?—Yes. It fell away in little pieces. There was no extensive fall.

J. T. Watson.

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158. How much stuff fell there?—About 40 or 50 tons of stuff came away there.
159. That would be at the point of issue of the blast?—Yes.
160. You went into the tunnel?—Yes, as soon as I saw the afterdamp retreating. I asked John Harris to secure the tunnel against further falls. I sent for my electric lamp and took it with me, and James Harris had his safety lamp. We went into the tunnel, and at the Deputy's cabin, a little over 100 yds. inside, I noticed that the timber was scattered about, and I had a good deal of scrambling to do to get in. The first thing I noticed was a man lying at the entrance to the Deputy's cabin. He was smothered in dust, and black. I thought it was Deputy Grant. Jim Harris said that the man lying there was Evans. He was insensible. He never moved while I was there.
161. How was he lying there?—He was lying with his head out in the direction of the entrance to the tunnel. His feet were touching the rail.
162. Would you say that he had just left the cabin door?—He was evidently just walking out of the cabin door when he was struck.
163. He was badly injured?—Yes. I heard him groan. I thought he was dying, and I said, "Get him out quickly." I then heard O'Grady speak.
164. Where was O'Grady?—He was lying about 6 ft. from Evans, straight across the drive.
165. Was he sitting up?—He was sitting hunched up with his head resting on his hands. I recognised his voice. He said, "Who is it?" and when I answered, "All right, Martin, we will get you out in a second," he said, "It is Mr. Watson." I told him it was, and he said, "Get me to my camp." I said, "All right," and told the men to get him away, as he was badly injured.
166. Did he say anything further?—He said, "I am feeling a little bit cold." There was some cloth there, and I wrapped it around him. He then said, "I feel better now."
167. Was he jammed by the timber?—No. He was quite free of the timber.
168. O'Grady was sent out?—Yes. I went on into the tunnel with Jim Harris.
169. How far did you enter?—We got to the brow, 550 ft. from the entrance. We noticed the afterdamp was strong, coming out of both sides on the top level. I saw it would be madness to go down the tunnel. We procured some brattice cloth and blocked the right and left entrances with brattice so as to force the air down the tunnel. We went down to the entrance to the old slit, which was really the entrance to the top seam.
170. *By Mr. Want:* How long was that after the explosion?—It was difficult to estimate the time.
171. *By the Chairman:* I suppose about ten minutes?—It would be more than that. It would be fifteen minutes before we got Evans and O'Grady out.
172. You went straight on?—Yes. We picked our way. We got more brattice up. Jim Harris, the two Plunketts, and three or four other men with myself got down a bit further, when I saw a man lying against a prop. I recognised him as Bob Thompson. He was lying down with his shoulder resting against a prop.
173. Was he alive?—No. I put my hand on him and I knew that he was dead.
174. What was his occupation?—He was a clipper.
175. Could you tell what he was doing at the time of the explosion?—He was actually clipping on a skip when the explosion occurred.
176. What made you think that?—The pin was in the eye of the clip. I thought there might be a possibility of getting a man or two who was still alive, so we left Bob Thompson and went on, but the afterdamp was too strong.
177. You did not get much further?—No. We went back to restore the ventilation. I was satisfied then that we would get no living men out of the mine.
178. When you got to the mouth of the tunnel, what did you do?—I had made the tunnel entrance safe, and Jack Harris took charge of the entrance. He was instructed not to let anyone in unless they were authorised to go into the tunnel. There was some difficulty in keeping the men back, but it was only running further risks because of the danger of afterdamp.
179. How long did you stop there?—I was there without any spell until 5 o'clock next morning.
180. Did you go up to the fan?—Yes. We started to put up a small supplementary fan to replace the main fan which had been blown to pieces.
181. Can you describe the nature of the injury to the fan?—The fan itself is not badly injured, but the shaft of the fan was bent, and the fan casing was scattered some distance. One portion of the casing, weighing 30 cwt., was blown 50 yds. away.

- J. T. Watson.  
4 October, 1921
182. What about the motor?—The motor is still on its foundation.
  183. What about the foundations of the fan?—They were shattered.
  184. What were the foundations made of?—They were concrete walls 1 ft. thick.
  185. The fan was set on a concrete bed?—Yes. It was roofed with wooden slats. The fan motor house had walls of wood 6 ft. high, with wood and iron roofing. The whole of it was demolished.
  186. Including the fan columns?—Yes.
  187. Were the foundations moved?—The foundations of the fan moved, but the foundations of the motor were intact.
  188. The motor was all right?—Yes. It was at right angles to the direction of the drive, and a straight shaft went through.
  189. How far did the blast shift the casing?—40 to 50 yds. down hill.
  190. Might it not have rolled that distance?—No, there was a big rock in the way. It would go up into the air. As a matter of fact, I think I saw something in the air, and that is what it would be.
  191. Was there any evidence of a scorching flame the same as at the tunnel mouth?—No. There was no evidence of flame.
  192. What happened after you left the fan drift?—They had a secondary fan put up, but it was too small to move the air, and I directed them to remove it, and open the tunnel out and let the natural ventilation operate. They did that, and it improved the position a great deal, because the men were able to get back into the main tunnel. I started the men at work to make a track in the tunnel so that the stretcher-bearers could get in and out with some freedom.
  193. Can you say whether you noticed any smell?—I noticed the smell common to all fires in mines. I noticed the smell that there is no mistaking.
  194. What is that smell?—It was a kind of tarry smell. Then I noticed a smell of pyroligneous acid. It is a pungent smell, and it smarts the eyes.
  195. That smell would be caused by wood burning in the mine?—Yes.
  196. Where did you smell it first?—At the fan, and afterwards in the tunnel right at the top of the dip.
  197. How long did you stay at the top?—I was there until 5 a.m. next day without interruption. I then fixed my attention on getting rid of the afterdamp so that the rescue parties could get in and remove the bodies. It was extremely dangerous work. I got organisation at the tunnel mouth, and with the assistance of the police we got the gangs properly constituted, knowing what men went in and what men came out. We had to do that so that no rescuers would be lost.
  198. Were there any other occurrences during that first period that might be taken as premises for deduction?—I noticed that the force had come out there with considerable violence.
  199. Were the timbers lying in a certain direction?—They indicated that the blast came out of that particular drive.
  200. Was the roof cracked very much?—The roof had fallen slightly. The main tunnel was 12 ft. wide, and the slit was 12 ft. to 14 ft. wide, and a large area of it was untimbered roof.
  201. Can you tell what direction the breaking of the roof commenced, from the top or the bottom?—That is difficult to tell, because it broke and just fell straight down.
  202. When you got Evans and O'Grady out you saw them at the head of the incline road?—Yes. I heard that O'Grady died shortly afterwards.
  203. You saw Evans on the incline road?—No, I saw him in the change house.
  204. What was his appearance?—He was badly knocked about. I noticed a stick in his throat. I think it penetrated his thorax. He was probably in a stooping position when the blast came, and the stick went into his neck and through to the cavity of his chest.
  205. Was he badly burnt?—Yes. His head and arms and right leg were burnt.
  206. Was his hair singed?—Yes. So was O'Grady's.
  207. Was Evans's clothing intact?—No. His shirt and trousers were blown to pieces. His chest was exposed and was all burnt. He was quite sensible when he spoke to me in the change house before they took him away. When I saw him in the change house he wanted to tell me where the men were in the mine. He said to me, "I was coming out of the office with the cavil when it happened. I will tell you where the men are." I said, "Don't worry yourself about it now. The doctor is taking you away." He was taken away almost immediately. Doctor Perkins was there at the time.

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208. He was taken to the Mareeba Hospital?—Yes.
209. You heard since that he died at Mareeba?—Yes.
210. *By Mr. Want:* As compared with other explosions you have investigated, was this one more intense?—As compared with other explosions, this one was comparatively light, and the violence was much less than I thought at first.
211. You would not say that the dust and smoke came out of the No. 2 tunnel at first?—No, because I looked at the tunnel. There was a big cloud there. I saw three distinct outbursts, two of which came out of the main tunnel, and one from the fan, practically all within a second or two. The sequence of the outbursts was just as I described them.
212. *By the Chairman:* Was the noise very great?—It was a sharp detonation. The blast at the fan was the loudest noise.
213. There was no boom or continued sound?—No. There was a rumbling and it died down.
214. Have you any idea of the force of the blast?—I can only roughly approximate it by the drums.
215. How would you estimate it?—I could not put it into figures, but it was violent at the tunnel mouth. That is the usual result following explosions, as the access to oxygen would completely burn everything there.
216. *By Mr. Kilpatrick:* Did you take notice of an acceleration of air at any time after the explosion?—Yes, when I told them to clear it up and the natural ventilation got to work I noticed there was a fire burning in the mine. There was clear evidence to me that a fire was burning.
217. Did subsequent events confirm that opinion?—Yes. I found that that fire was of material advantage to us in the early stages.
218. *By the Chairman:* Could you tell the position of the fire by its effect on the ventilation?—Yes.
219. *By Mr. Kilpatrick:* It was in the return airway?—Yes, in the second dip.
220. *By Mr. Want:* You really had a furnace helping you with the ventilation?—Yes.
221. Did you recognise the danger of another possible explosion?—Yes. I knew that men going in and out were taking serious risks. It was a case of volunteers all the time.
222. That was the reason you took only one or two men with you?—Yes, until the tunnel was repaired. When you find a fire in a mine no man can tell what is going to happen while the fire lasts. I might mention that the second time we got down to the dip we went to recover Thompson's body. There were strangers looking for work that morning, and they were with me at that time. One of them was a bricklayer named Smith, who had just started work. We had got down to Bob Thompson's body when I heard a heavy fall. A few seconds after that fall I noticed carbon monoxide poisoning almost immediately. I ordered the men to retreat. I said, "Get back immediately."
223. *By the Chairman:* You were not in good health at the time of the explosion?—No. I had a very serious time with synovitis in the knee for two months previously, and I could only get about with a stick.
224. You went to bed after that?—I went to bed with influenza. It was the influenza that knocked me out.
225. More so than the poison gas?—It was the influenza that laid me out together with the high temperature.
226. *By Mr. Want:* That would be on Tuesday night?—On Monday night I got the gas, but I got over it fairly quickly. It was on Tuesday afternoon that the high temperature and the excess of blood pressure commenced to make me giddy. I had to rest, and I dosed myself with some stuff to get my temperature down. I got better and went back to the tunnel, and went on with the work as well as I could. On Tuesday Dr. McClean ordered me to bed. I was in a state of collapse then, and I do not remember what happened afterwards.
227. *By Mr. Want:* Who took charge of the operations then?—James Harris, and Mr. Laun, Inspector of Mines. I handed over the charge of operations to them.
228. *By the Chairman:* Who works this mine—the Proprietary, or is it worked on a royalty system?—The Chillagoe Company work the mine. They own the mine.
229. They have bought the mine on a royalty basis?—No. The only royalty is that the Irvinebank Company get a royalty for the coal extracted from their leases. We also pay the Government a royalty on the coal.

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JAMES HARRIS, Engineer, employed by the Chillagoe Company Limited at the Mount Mulligan Colliery, sworn and examined:

230. *By the Chairman:* Will you tell the Commission what qualifications you have got, and what tickets you hold?—I hold several certificates of the School of Mines at Charters Towers, and I also hold a first-class winding-engine driver's certificate.
231. Do you remember the 19th September?—Yes.
232. Do you remember what happened on that day?—Very well.
233. Can you give the Commission an account of what happened from the time you first went up to the mine?—Yes. I have made out a statement which covers what I can say about the matter.  
[Statement produced and tendered and marked *Exhibit 1.*]
234. *By Mr. Want:* You were incapacitated as a result of rescue work?—Yes.
235. You are not quite recovered yet?—No.
236. *By the Chairman:* You mention in your statement that a mining explosion took place on that day. At what time did it take place?—About half-past 9 o'clock.
237. You immediately went into the mouth of the tunnel?—Yes.
238. Who was with you?—Mr. Watson, the two Plunketts, and my brother John.
239. You were at the coke works when the explosion took place?—Yes.
240. When you reached the tunnel mouth, what was the condition of affairs there?—The smithy was blown away and the switch house was turned back.
241. The switch house would have fallen right over only for the bank?—Yes.
242. There was a telephone wire supporting it?—I think it was the cable there that supported it.
243. Did you notice the position of the two drums that were previously at the mouth of the pit?—They were blown down hill 20 or 30 yds.
244. Were they damaged?—The flanges of the drums were broken and the shaft twisted.
245. What was the weight of those drums?—Over 2 tons.
246. Were they blown directly in front of their position?—Yes.
247. You think they were blown directly forward?—Yes.
248. What did the mouth of the pit look like?—The timber had been blown down and the mouth of the tunnel had fallen to a certain extent.
249. Did you hear more than one explosion that morning?—There seemed to be two explosions.
250. Can you place them?—The first explosion came from the fan shaft.
251. And the second explosion?—It came through the main tunnel.
252. What time elapsed between the two explosions?—A few seconds.
253. Did you see any flame at all?—No. I saw plenty of smoke and dust.
254. Where was the smoke and dust issuing from?—The biggest part came from the fan drift.
255. Did you notice any at the mouth of the tunnel?—Yes, I saw some.
256. You went into the tunnel mouth?—Yes.
257. What was the condition of the roof and timber of the tunnel?—All the timbers were down.
258. And the roof?—The roof was hanging in small pieces, but not dangerous.
259. You could tell that by the roadway?—Yes. A good deal of the roof had shattered and fallen.
260. What system of timbering was adopted in the tunnel?—The ordinary sets with two legs and a cap.
261. You penetrated the tunnel into the cabin?—Yes.
262. How far in is the cabin?—About 100 yds.
263. Was the cabin demolished?—Yes.
264. What did you find there?—I saw Mr. Evans, the mine manager.
265. How was he lying?—On his side. His head was facing into the tunnel.
266. Was he lying across the road?—Partly.
267. He was not lying square with the line in the tunnel?—No.
268. Could you see whether he was injured badly or not?—We just had a look at him. He was groaning.
269. Was he conscious?—No.
270. Was he badly burnt?—I did not take particular notice then.

271. What was his position when the blast came? Was he walking or stooping in his cabin?—I could not say. James Harris.  
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272. Evans was sent out of the tunnel then?—Very shortly afterwards.
273. Who was the next man you found?—Martin O'Grady.
274. Where was he?—He was lying right opposite Evans on the opposite side of the roadway.
275. What position was he in?—A stooping position.
276. Was he in amongst the timber?—The timber was all around him.
277. He was not jammed?—No, he was quite free.
278. Was he badly burned?—Yes, about the legs.
279. Was he injured in any other way?—No.
280. Did he speak?—Yes. He wanted to know who was there, and he asked us to take him to his camp.
281. Do you remember whether he said he was cold?—No.
282. He said nothing at all about the explosion?—No.
283. He was sent out of the tunnel immediately?—Yes.
284. You went on down into the tunnel with Mr. Watson?—Yes.
285. How far did you get?—Thirty yards below No. 2 slit going into the top seam of the mine.
286. Would that be below the brow of the dip?—Yes, the wall below.
287. What did you find there?—We found the body of Bob Thompson.
288. How was his body lying?—In a stooping position. He had his head against a prop, with his back turned towards the roadway.
289. What was he doing?—He was stooping to clip a skip at the time of the explosion.
290. Would you say that he was killed instantaneously?—Yes.
291. There was a full skip standing there?—I could not remember. There were several skips, but I do not remember if they were full or not.
292. What happened after you saw Thompson's body?—I went on 30 yds., but as there were signs of afterdamp, we could not penetrate further with safety.
293. Did you have a safety lamp?—There were two with safety lamps in the party, and Mr. Watson had an electric lamp.
294. There were no open lights in the mine then?—No.
295. As soon as you noticed the afterdamp you went straight out of the tunnel?—Yes.
296. Did you see Evans when you went to the tunnel mouth?—No. I never saw him again.
297. You heard that he was taken to the Mareeba Hospital, and that he died there?—Yes.
298. Did you go to the fan drift?—Yes. My next work was to restore the fan.
299. What was the condition of the fan?—Badly knocked about.
300. What class of fan was it?—A Turbon stationary fan capable of supplying 80,000 cubic feet of air per minute.
301. How was that fan driven?—By a 100 horse power electric motor.
302. How were the fan and motor set?—They were set in a concrete foundation.
303. How was the motor attached to the fan?—By a flexible coupling.
304. In a direct line with the fan shaft?—Yes.
305. How was the gear of the fan housed?—It had a concrete wall and was covered with wood.
306. And the house?—6-ft. or 7-ft. timber with an iron roof.
307. Were the foundations disturbed?—They were. All the walls of the house were blown down. The foundations of the motor were intact, but the foundations carrying the fan were all broken up.
308. How did the fan itself get on?—The fan itself is not damaged, although the casing was blown down the hill 40 yds. away.
309. Do you think that the casing stopped where it fell, or did it roll?—It may have rolled.
310. Was the motor injured?—No. It is all right.
311. You were instructed to instal a temporary fan?—Yes.
312. You immediately set about doing it?—Yes.

- James Harris.  
4 October, 1921.
313. How long did it take to do it?—It took 1½ hours to get a small fan running. When I finished that I went back to the main tunnel.
314. After the explosion were men put on to do anything at the tunnel mouth?—Yes. Mr. Watson picked a gang to clear the road into the main tunnel. When I came back after putting up the little fan I saw them coming out of the tunnel, as the gas was too bad. Mr. Watson was suffering from gas then.
315. Did you notice any distinctive smell in the tunnel?—Yes.
316. Could you place the smell?—I had never noticed it before, but it was the smell of the explosion.
317. What was the blast from the main tunnel; was it straight forward?—Yes, it appeared to go straight out.
318. How far did it reach?—It showed the effects of the blast right out past the bathroom, 50 yds. away.
319. What was the effect of the blast?—The grass was alight there. It may have been caused from the blast, or it may have been caused by the fire from the blacksmith's forge.

ALICK YOUNG, 52, Labourer, employed at the Mount Mulligan Colliery, sworn and examined:

- A. Young.  
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320. *By the Chairman:* Were you employed at the time of the explosion?—I was going to start work on the surface.
321. Where were you employed before that?—At Tarzali.
322. Have you ever done any coalmining?—I have done mining in metal mines at Cloncurry, Hampden, Duchess, Trekelano, and Mount Cuthbert, and I previously did some coalmining in New South Wales.
323. How long were you coalmining?—About eighteen months.
324. Where?—At Abermain and at Hebburn.
325. Anywhere else?—I also worked at the Aberdare Colliery in Queensland for nine months.
326. How long were you working in metalliferous mines?—For five years.
327. You were unemployed on the 19th September?—Yes.
328. You remember that date?—I do not remember the date, but I remember the day the explosion occurred. It was last Monday week.
329. Did you hear the explosion?—Yes.
330. About what time?—Somewhere after 9 o'clock in the morning.
331. Where were you?—I was at McCormack's hole going down to the dam when I heard a noise.
332. Was the noise sudden and sharp?—Yes.
333. Was there one noise or more?—More than one, but I remember one big noise.
334. When you heard the noise you looked up the hill?—Yes.
335. What did you see?—I saw two black columns of smoke.
336. Where were those columns coming from?—I saw them on the hillside.
337. Where did they come from?—I think it was an explosion in the mine. I started running towards the mine.
338. Would the two columns of smoke you saw correspond with the mouth of the tunnel and the fan drift?—Yes.
339. How long did it take you to get up to the mouth of the tunnel?—About ten minutes.
340. Did you meet anyone on the way?—Yes. I saw a man leading the blacksmith down the incline.
341. Was the blacksmith injured?—Yes.
342. Was anybody with you?—Yes, a miner named Tom Hamilton.
343. You went round by the power house and up the incline roadway?—Yes, straight up to the mouth of the tunnel.
344. Did you notice anything at the bath house?—No.
345. Did you notice the smithy?—No, I took no notice of it.
346. When you got to the pit mouth, did you notice that the mouth of the tunnel had fallen?—No, I did not notice.
347. *By Mr. Want:* What did you do?—I offered my services to go into the mine.
348. *By the Chairman:* Did you go in with the first lot?—No. Watson, Plunkett, and another man went in first. Mr. Watson came out soon afterwards and said that there was a man alive in the tunnel. We went in with some stretcher-bearers and carried out two men.

349. Where were they when they were picked up?—From 200 ft. to 250 ft. inside the tunnel. One was on the right-hand side and the other on the left.
350. Which one did you take out first?—Evans, the manager.
351. He was on the left-hand side?—Yes. We took him out first and then went back and brought out the other man.
352. Was Evans unconscious?—He never spoke. He only moaned.
353. The other man was O'Grady?—Yes.
354. You picked him up and put him on the stretcher?—Yes.
355. Did O'Grady say anything?—Yes. He said "Carry me to the camp." As soon as we carried him out the sun was shining on him, and he said, "Take me out of the sun." We covered a bit of calico over him, and he said, "That is better." We went into the tunnel again.
356. Was the tunnel badly knocked about?—Yes. It was rough going into the tunnel.
357. What made it rough?—The timber and stones which fell from the roof.
358. When you went in again, how far did you go?—We went about 10 ft. further in when I saw Bob Thompson sitting up against the left-hand side of the tunnel with his shoulder against the prop. Mr. Watson said, "He is dead." There were eight of us down the dip then. A fall of ground occurred about 20 ft. or 30 ft. right straight ahead, and the gas came back. Mr. Watson said "Go on, get out," and we all got out.
359. How much ground fell?—Just the top of the roof.
360. It was a part of the roof between the sets?—Yes.
361. Did you notice where you picked up Evans in the tunnel?—Yes.
362. Did you notice his cabin?—Yes. There was a lot of burnt paper there, but we never looked at anything. We only got the men out.
363. What did you do when you went out after Mr. Watson told you?—We went away after we noticed the afterdamp, and we did not go in again until 4 o'clock in the afternoon.
364. Did you notice anything about the entrance to the pit at all?—Yes. The ground was difficult for walking on.
365. Did you notice the jig drums or the smithy?—No.
366. Did you go to the fan drift?—Yes. I went up in the afternoon when they were putting in the new fan.
367. *By Mr. Kilpatrick:* Did you say you went up the road with a man named Tom Hamilton?—Yes.
368. I do not know any man named Hamilton who worked here?—He did not work here. He came here with me.

A. Young.  
4 October, 1921.

#### Evidence of Rescue Workers.

JAMES THOMAS WATSON, Superintending Engineer, recalled, and further examined:

369. *By the Chairman:* Can you tell us in a narrative form how the rescue work was carried out after Evans and O'Grady were removed from the tunnel?—The first thing I gave attention to was to see if any men were alive, and after I got out the first and second men alive I was satisfied that there were no more men alive in the mine. As I wanted to avoid any accidents in connection with the rescue work, I next gave my attention to the restoration of the ventilation and opening up the track into the mine so that the stretcher-bearers could get in with some comfort. It was about 5 o'clock on the Tuesday morning before we could get very much further with that work.
370. Did you put on a volunteer gang to put up the roof?—We put on timber men to restore the roof in bad places and to clear the fallen timber out of the way. We also had men at work bratticing the various openings in order to get the ventilation down the dip.
371. Other men were removing the debris?—Yes. We wanted to make a good travelling track of it. As soon as the police came on the scene I got the Police Inspector to appoint one of the constables to check everyone going into the mine, and I told him not to allow anyone to go in who was not authorised to go. The men were organised into shifts. I wanted to keep a close record of them, so that if a man got into trouble we would be able to locate him at once.
372. The men picked up the roof, and cleared the track for some distance?—They cleared the track practically to the foot of the main dip.
373. To the No. 12 roadway?—Yes. We got two bodies out of the main dip.

J. T. Watson.  
4 October, 1921.

- J. T. Watson.  
4 October, 1921.
374. The first two men taken out were Evans and O'Grady?—Yes. They were taken from opposite Evans's cabin. I heard that young Ruming was discovered while we were inside, and his body was taken out.
375. Who was the next man found?—Bob Thompson.
376. You found him on Tuesday morning?—Yes. I forget the time. Then the body of Tommy Hawes was next picked up at the entrance to No. 11.
377. What was Hawes's duty?—His duty was to unclip the empties.
378. What position was he found in?—He was on his knees with his head on the ground, and the empty skip which had got turned over was partly on top of him. There was a big prop alongside him, and it looked as if he had been killed instantly by the prop hitting his head and knocking his brains out.
379. Was Tom Hawes working at the time of the explosion?—Yes. He had evidently just unclipped an empty skip. It might have been the skip that was on top of him.
380. You think his death was instantaneous?—Yes. He was thrown up against the cap.
381. Was he burned?—Yes, badly burned.
382. Who was the next man you got out?—Jim Harris, Plunkett, and somebody else got a little bit ahead of me as I was giving a little bit of attention to the right-hand side to clear the afterdamp out of the tunnel. I had men at work putting up the bratticing while Harris and the two Plunketts went forward, and they found two more men in the dip. One of the men was Joachimzik. Mr. Laun was there at the time.
383. Did you find any more men?—No. I was not present when any more bodies were recovered. I went on with the work of restoring the ventilation, and I was satisfied that the right-hand side was clear enough to get in.
384. Where was the afterdamp when you went in in the morning?—Right at the tunnel mouth.
385. Was the boy who was unclipping the skips at the mouth of the level?—Ruming was working about 20 yards inside the tunnel mouth.
386. Where was the other boy, Tommy Hawes?—At the bottom of the dip. His duties were to take the skips off.
387. Was he thrown against the wall?—No. He was kneeling between the two roads with his back towards the entrance to the tunnel.
388. What was his position with respect to No. 12?—He was in the level above No. 12. I did not expect to get any more men in the main tunnel, and judging from the effects I knew that the restoration of the ventilation was necessary.
389. You judged that from the effects of the air on the men?—Yes, from the effect of the blast and the existence of afterdamp.
390. You did not notice any other gas?—I noticed carbon monoxide was present all the time, by its effects. After 5 o'clock on Tuesday morning I never noticed any odour at all.
391. You never saw any trace of firedamp?—No. No explosive gas at all.
392. You continued the clearing of the timber off the track until you left?—Yes. I then handed over the charge of the men to Jim Harris and Mr. Laun, Inspector of Mines. I gave them a few general directions and they carried on the work after that.
393. What arrangements were made about stretcher-bearing appliances?—We had some appliances on the job, but they were not adequate until the ambulance men came out.
394. Where are those appliances housed?—There used to be a stretcher kept up in the change house, and the others were down in the store.
395. Were they always handy?—Yes. They also had an ambulance appliance underground.
396. *By Mr. Kilpatrick:* You spoke of carbon monoxide. What is the pet name for that amongst miners?—The term principally used is "white damp." It is essentially a product of an explosion or fire. It is not found in the mine under other conditions.
397. It is really a product of incomplete combustion?—Yes.
398. Did you notice any signs of carburetted hydrogen?—No.
399. *By Mr. Want:* Did the body of the clipper found at No. 11 suggest where he had been thrown?—It looked as if he had been blown down the tunnel and struck the side of his head on a cap. It just lifted the top of his head off and his brains were scattered about. The whole of the skull was opened and he was killed instantly. The truck rolled over and partly covered him. I noticed that the empty truck was just unclipped.

400. *By the Chairman:* At that stage all the bodies were readily identifiable? —Yes. I could identify Bob Thompson and young Hawes as I knew them better than most of the other men. I knew Hawes by his build. He was a tall, slight lad. J. T. Watson.  
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401. Means were adopted afterwards to identify them?—Yes.
402. At the time you were there, arrangements were made for the railway people to store the corpses in the goods shed?—Yes. I instructed Fitchett to take charge of the burial of the bodies. He took charge of the burial arrangements, and I left that duty to him.

JAMES HARRIS, Engineer, recalled, and further examined:

403. *By the Chairman:* After you had finished the installation of the small fan you returned to the tunnel mouth and went in?—Yes. We had a rest first, and waited to see if the fan was shifting the gas. James Harris.  
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404. You went into the tunnel two or three hours afterwards?—Yes.
405. Whom did you go in with?—There were a good number of us. I forget who was there, but I remember that Mr. Watson was there.
406. Were you able to get to No. 10 below Thompson's body?—No. We could not get past the first level.
407. *By Mr. Want:* What did you do then?—We found the gas was too bad and we came back again to the entrance to the tunnel.
408. You removed the small fan then?—Yes.
409. Where did you move it to?—To the main tunnel at the top of the dip.
410. Then you were able to get to No. 10?—Yes.
411. How far was it past Thompson's body?—50 feet.
412. Where did you go from there?—Shortly after we passed No. 10 we again met with gas, so we came out again and gave the fan more time to shift the gas.
413. You went in again?—Yes.
414. How far did you get?—Right to the bottom of the dip. Mr. Laun had come along in the meantime.
415. Did you go with him to the bottom of the dip?—I went first and saw two bodies near the terminal wheel.
416. How were they lying?—One on each side of the heading. They were lying with their heads down. One of the men was turned half round. His body faced down the dip and his legs were at right angles to the dip. The other man was lying straight out in the direction of the tunnel, with his head down hill.
417. Do you know what men should have been working there?—No.
418. Would it be the wheelers?—Most likely.
419. They were right over the terminal wheel in the roadway?—Yes.
420. What did you do?—I went back to Mr. Laun and he took a party down to get the three bodies.
421. Then what did you do?—I stayed up above No. 10 until Laun got the bodies out. We then bratticed across the main heading and turned the air into No. 10. I then went home to have a rest.
422. Were you there when Joachimzik and the other man were found?—Yes, they were probably the two at the terminal wheel.
423. You were off the job for some time?—It was breaking day when I went off and I came back at 8 o'clock. That was Tuesday morning.
424. You went down the tunnel again?—Yes.
425. How was the air then?—Quite clear.
426. How was the fan running?—It was blowing the air in.
427. When you went into the main tunnel, which way did you go?—To Beattie's wall on the north side.
428. There is a main roadway along No. 10 and then a jigway to the face?—Yes.
429. The wheeling is done along that level?—Some of it. Some of it is done along the lower level, No. 12.
430. That is the intermediate level into Beattie's wall?—Yes.
431. Was the machine working at the time of the explosion?—I cannot remember.
432. When you went to the wall did you smell any afterdamp?—Yes, it was very strong.
433. Near the top of the jigway?—Right up the jigway. We also visited all the top facing.

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434. Did you notice any evidence of violence in the jigway?—No.
435. Were any trucks off the road?—I did not notice them.
436. The jigwalls were not disturbed?—No.
437. Did you find any men there?—No.
438. Did the afterdamp drive you out?—We visited all the faces. There were no men on the top machine faces.
439. Did you have safety lights?—There were two safety lights and an electric torch. The open lights were kept back.
440. You picked up Mr. Laun?—Yes, in the main heading. I came out again. It was nearly 4 o'clock then.
441. You went in again?—Yes. I went in and took charge of the gang.
442. You and Mr. Laun arranged to relieve each other and work shifts?—Yes.
443. One had to wait until the other came on?—Yes.
444. You accompanied the gangs and did exploratory work?—Yes.
445. When you went in at 4 o'clock, where did you go?—We decided to shift the fan from the main heading down to Taylor's flat; that is the bottom flat on the left. We shifted the fan and installed it at No. 12.
446. Very near the main roadway?—Going into the bottom pick wall. When we got the fan installed and running, Matthews and I went into the jig off No. 12. We then decided that it was safe to send a party of men in. We got out two more bodies, and I was relieved by Laun.
447. Where did you get those bodies?—One was on the jig road half way up. It was Roley McCormack.
448. Where was he working?—He was a clipper on the jig road.
449. How was he lying?—At right angles to the jig.
450. In which direction was his head?—Towards the face.
451. Did the position suggest to you where the force struck him?—No.
452. Where was the second man you found?—He was at the top. I was in with the gang when they took him out. I saw him being brought out.
453. Then you came out and you were relieved by Laun?—Yes.
454. How long were you off then?—I was off somewhere about six hours. That was early on Wednesday morning.
455. You went down again?—Yes. I remember Mr. R. A. Dunlop coming in at that time. I was with Matthews most of the time.
456. You went to the top seam?—Yes, along the main airway up the stone drive.
457. Did you find anyone there?—The winch driver was right alongside the winch. His name was William Cole.
458. How was he lying?—Parallel with the road, with his face pointing inwards towards the top seam. He was lying flat on his face.
459. He was carried out?—Yes.
460. At this stage it would be as well to indicate how you pointed out the places in the mine which had already been searched?—I always told Laun the places we had searched, and he told me.
461. Did you mark any places?—I did.
462. You went straight into the top seam?—Yes.
463. There is a machine in the working bord there?—Yes.
464. Did you find anybody there?—Yes, we found three bodies together right at the mouth of the machine wall. They were Jim Beattie, the machine man, Frank Butcher, the second machine man, and Harold Martin.
465. How were those bodies lying?—Beattie and Martin were lying together across the road with their heads pointing towards the machine in both cases.
466. And Butcher?—He was on his back as if he were blown straight down the dip.
467. All of those bodies were badly burnt?—Yes, badly burnt.
468. Was there anything suggestive about the attitude of those men?—I don't know.
469. Were they trying to protect their faces?—No, they appeared to be going straight out.
470. Butcher was killed from the front?—Yes, by a blast which came in from the stone drive.
471. He was advancing towards the stone drive?—Yes, or standing there.
472. He appeared to be thrown back with a good deal of violence?—Yes.

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473. He was identified by the peculiarity of his hands?—Yes.
474. Where did you go then?—To the first bord on the left. We found another man in there, named Jack Henry.
475. What position was he lying in?—Across the road facing outwards. He was lying on his side.
476. Was his face protected by his arms?—No.
477. He appeared to have been killed instantaneously?—Yes.
478. The same blast struck him as struck the other men coming down the return airway?—Yes.
479. Was he burnt?—Yes. His hair was singed a good deal.
480. Was he easily recognised?—He was not hard to recognise.
481. After you left him, what happened?—We found Spiers and O'Boyle. They were working in the first place to the right. We found their bodies lying about 4 yds. apart.
482. In what position?—One was lying across his shovel. The bodies were very decomposed at this stage. The other man was jammed against the prop.
483. Which way did the blast come in?—It came in from the same drive.
484. How was the second man lying?—He was lying on his back.
485. Were his arms extended?—I did not notice anything particular about his arms, but his head was pointing up the return airway.
486. That was the first machine bord?—Yes.
487. Were any others found there?—Yes, we found five more there.
488. Where?—On the first place on the right before you go down the dip. He was after rails or something. I took it to be Carson.
489. How was he lying?—Doubled up.
490. The blast hit him?—Yes.
491. Was he badly burnt?—The flame had got at him as he was singed. His hair showed signs of singeing.
492. What about the next man?—We found the next two men on the high workings in the same seam. They were Mansfield and Lewis.
493. In the machine face?—Yes.
494. How far up?—Over 100 yds.
495. How were they lying?—As if they were coming out, with their heads towards the entrance.
496. In regard to these men, did you see any of their lamps or anything else?—These last two men had their lamps with them. They had fallen on them.
497. You went straight off up the roadway?—Yes.
498. Did you find anyone else there?—In the roadway that branches to the left, just behind the brattice, we found two men.
499. How were they lying?—The same as the others, with their heads towards the entrance, endeavouring to get out.
500. Were they burnt?—They were singed.
501. Who were they?—O'Halloran and Fogarty.
502. You went up further along that roadway?—Yes, we went right through that section.
503. Did you find anyone else?—No.
504. In regard to that section, did you notice any signs of great violence there? Were the cogs disturbed or the timbers smashed?—The skips were blown into the gob. Where we found the last four men there was no violence at all. There was a fair amount of violence up the roadway, but the roadway was not disturbed.
505. Was there a fall of ground near where Henry was found?—There may have been.
506. What other district did you go to?—We started to get the air into Fitzpatrick's wall. That is off the pump flat on the south side.
507. How far in from the tunnel is that wall?—1,700 or 1,800 ft.
508. Was the roadway knocked about?—No.
509. Were there signs of flame along it?—I did not notice any signs of flame.
510. You went into Fitzpatrick's wall?—No, I started to get the air in and I was relieved by Laun. I went off and I came in again on Wednesday night.

- James Harris. 511. That was about midnight on Wednesday?—Yes.
- 4 October, 1921. 512. You went in again?—I did not take the lead. I never saw any bodies picked up on my shift that time.
513. How many bodies came out from Fitzpatrick's wall?—Five men came out from Fitzpatrick's wall. I do not know exactly where they came from, except Ted Morgan.
514. Where was he found?—He was found on Fitzpatrick's wall.
515. They were found on Fitzpatrick's wall?—Yes.
516. Amongst those five men picked up there were machine men, miners, and shift men?—One Deputy was brought out, Mr. Parkinson. The other four were miners.
517. During the whole of the time you did not find any bodies on the left?—No.
518. You were stretcher-bearing?—Yes, but I did not go into the face.
519. You were relieved again by Laun?—Yes. That was something before daylight on Thursday. He came in about 4 or 5 o'clock.
520. When you went down again, where did you go?—Laun cleared up all the bodies that he knew of. I took a gang and started at the bottom pick wall. We went along all those faces, into all the cut-off roads, and waited there for six hours without finding any bodies at all.
521. When you came out of that section did you come down the jig?—Yes. We finished at the back of Fitzpatrick's wall.
522. You were relieved by Laun?—Yes.
523. Did you notice any signs of violence or the direction of the force?—I was not looking for it. I noticed the top of Fitzpatrick's wall was all right and the gobs seemed to be good.
524. The bottom place of No. 12 was knocked about?—There was a big fall in the face there.
525. The jig road leads into there?—Yes.
526. Were there any signs of flame and scorching?—I did not notice any. I saw a piece of a "Bulletin" in the return airway, but it was not scorched.
527. When did you go on again?—That finished my rescue work, and I did not go on again till Saturday.
528. With regard to the rescue parties that went down the pit, were they under proper control all the time?—They were, so far as I know. I gave them to understand that if they did not care to follow me they had better keep out. I would sooner men keep out altogether unless they are prepared to obey me.
529. You would not tolerate bodies of men wandering off by themselves?—No.
530. No one protested against the system?—No.
531. Every man was tallied in and out on your shift?—Yes.
532. Every man was provided with sufficient disinfectant and that sort of thing as a protection from the smells?—Yes.
533. All the bodies you got were decomposed?—Yes.
534. Many could not be identified?—No.
535. Were any of them afterwards identified as someone else on top?—Yes. Roley McCormack was identified below. He was supposed to come from another wall altogether.
536. *By Mr. Want:* Did you have any breathing apparatus on any exploration?—Nothing at all.
537. Do you know if any offers of breathing apparatus were made?—Some were made from Ipswich.
538. You travelled one gang at a time?—Yes.
539. You concentrated the air into that portion of the mine which the gang penetrated?—Yes.
540. With regard to the two men who fell on their lamps, did their positions suggest that they were running?—Yes.
541. That skip in Henry's place which you spoke of; was Henry's place joined to another place above?—Yes.
542. Could the skip come down hill?—No.
543. *By the Chairman:* You did not notice a fall of earth behind that skip?—No.
544. You know that oxygen cylinders were brought to the mine?—Yes.
545. *By Mr. Kilpatrick:* Did you notice during your rescue work if there were any explosives lying about?—In a couple of roadways I saw a packet of monobel which had not been opened.
546. Was it in a tin canister or in a billycan?—No, in a wooden box.

547. Did you notice any detonators?—No.

548. Did you see any coils of fuse?—No.

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[The Inquiry was adjourned at 1 p.m. and resumed again at 2 p.m.]

WILLIAM OWEN MATTHEWS, 32, Machine Man, employed at the Mount Mulligan Colliery, sworn and examined:

549. *By the Chairman:* Where were you employed in the colliery before the explosion?—On the bord and pillar machine in the top seam.

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550. Where were you on the morning of the 19th September?—I was at Mareeba Railway Station, and I heard that Mount Mulligan Colliery had been blown up. I came to Mount Mulligan in the special train, and arrived here about a quarter to 12 o'clock.

551. What did you do when you arrived?—I went home as quickly as I could and changed my clothes, and got to the tunnel mouth about 12 noon.

552. What was the condition of the tunnel mouth at that time?—There was a good deal of wreckage lying about, and everything seemed to be dislocated as compared with what it was when I last saw it.

553. Were there any gangs of men working?—Yes. Mr. Watson and James Harris came out of the tunnel with some other men.

554. Was there anyone left in the tunnel then?—No.

555. When did you go into the tunnel?—I could not say for certain, but I went in with Mr. Watson and Mr. Harris between 12 and 1 o'clock.

556. Where did you go to?—We only got as far as the brow when Mr. Watson said the gas was too thick and he ordered us back.

557. You went out and you went back again subsequently?—Yes, about an hour afterwards and got as far as the top of the brow.

558. What happened then?—Mr. Watson said there was too much gas, and we could do nothing until we got more air.

559. Were you there when Evans and O'Grady were brought out?—No. Evans was in the bathroom when I came up.

560. Did you see him?—Yes.

561. Was he conscious?—I think he was.

562. Did you see O'Grady?—No.

563. Did you see any men in the tunnel?—No. When I first went up, Mr. Watson told me that he had seen the body of Bob Thompson, but was unable to get to the body on account of the gas.

564. Were you there when Raming was brought out?—No.

565. You did not see his body?—No.

566. You went into the tunnel again?—Yes, I went with Mr. Watson and Jim Harris, and we got the body of Bob Thompson.

567. Where was it?—Three yards below the road going into the top seam.

568. He was easily identifiable?—Yes. Everyone in the party knew him personally.

569. Could you say if he was killed by a fall of ground?—He was driven from the road leading into the top seam straight across the road to the prop, and he was leaning up against the prop when we found him.

570. He was clipping on the full skips?—Yes. There was a full skip there at the clipping station.

571. Could you say what he was doing at the time of the explosion?—No.

572. Did you go further?—Yes. We went further down the dip and got the body of Tom Hawes.

573. You identified him easily?—Yes.

574. Where was he lying?—He was lying under a corner of the skip. The skip was thrown over on its side.

575. How had he been killed?—His skull was smashed.

576. Had he been blown any distance?—I do not think so. He was in a crouching position when we found him.

577. In what position was his head?—His head was up the hill.

578. Was he lying with the length of the tunnel?—He was drawn up with his legs underneath him.

579. What was he doing in the mine?—He was running off the empties.

580. He was at the clipping station, too?—Yes.

581. Did you get any further that trip?—Yes, we went as far as Taylor's flat in the bottom road on the left-hand side.

- W. O. Matthews. 582. Did you find any more bodies?—I was a bit excited at the time and I do not remember exactly what I did next. I think they brought the fan down, then.  
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583. Did you stop in all the time?—No. I came out while the fan was being put down.
584. During those trips down as far as the pump shaft, did you notice the condition of the mine with respect to the roof timber and walls?—Yes. From the brow of the incline down to the slit the timber was knocked about in places and knocked down.
585. From which direction did the force appear to have come?—I think it would be impossible to say, as things were so mixed up. In the meantime, men had been down and cleared the track on the left-hand side going down.
586. From the tunnel entrance to the brow?—It was all tangled up.
587. You could not form an opinion as to which way the blast came?—No.
588. I suppose there was a certain amount of risk going down the mine?—There was, but we had a man I had every confidence in leading us. That was Mr. Watson. I was not in any way nervous at all.
589. You came in after the fan was put up?—Yes. I went in again with Mr. Watson's gang about midnight on Monday. The fan was on the top of the hill then, at the brow. That was the time they got four bodies from the bottom.
590. You looked at them all?—Yes. I recognised Liversidge.
591. Where was his place in the mine?—I do not know what he was doing.
592. Who were the others?—I could not identify them.
593. Were they burnt?—Yes, everyone was black.
594. Were they otherwise knocked about?—No.
595. You went out after those bodies were taken out?—Yes, and I went down on Tuesday morning.
596. Where did you get to that time?—When I got down, men were going into Beattie's wall. There had been several parties out, and they told us that the remaining thirteen men were in sight. That really finished that section known as Beattie's machine wall, on the north side. They finished on the Tuesday morning.
597. Did you see those thirteen men come out?—I saw them taken past me.
598. Did you find any more men in that section?—No.
599. You were in there?—Yes.
600. Did you go out again?—It is hard to remember what happened then. The next thing I have any recollection of was that the fan was down at the bottom, and we tried to get into the bottom pick places in Fitzpatrick's wall.
601. Did you succeed?—Yes.
602. Did you find anything there?—Yes. We turned up the hill up the jig road leading to Fitzpatrick's wall, and we found a body there.
603. Did you recognise the body?—At the time I said it was Roley McCormack, but I found out afterwards that it was Jim Reay.
604. Where was he lying?—On the road just past the first gateway, with his head down the hill.
605. Did he appear to have been blown down the hill?—Yes. His leg was shot off.
606. Was he killed by the explosion or some other means?—He was black, and I suppose he was burnt. He was the first man I saw with his eyes protruding very much.
607. You went on into that face?—We went on to the top of the jig and found Percy Marks there. He was lying at the pick wall. Jim Reay was also found there.
608. What was his position?—He was lying across the road with his head downhill.
609. Did he appear to have been struck with the downhill blast?—It looked as if he had run and then he fell.
610. Was his body knocked about?—No.
611. Did you find any more men?—When we found Percy Marks we also found Jack Drier and his son. They were locked together, the father having his arms around the son. They were lying in the roadway with their faces downhill.
612. Had they been badly knocked about?—Yes, they were horrible to look at.

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613. Could you say if they were burnt or not?—No.
614. Where did you go after that?—Other men got in other gateways along there, and it was a case of as soon as you found the men to get them out as quickly as possible.
615. Did you find any more men?—I saw two men in those bords, but I don't know who the men were.
616. Were those bords near the top?—No, towards the bottom.
617. Did you come out after that?—Yes, I think I did.
618. Do you remember going in again?—Yes. After that we shut off the air and went in the straight to the bottom place. I saw men brought up from there.
619. Did you notice whether they were burnt?—No.
620. Did you go anywhere else in the mine after that?—Yes. I think I was down in the bottom places.
621. You don't know whether you found men there or not?—I really could not say. I was going for four days and four nights, and I cannot remember now, but I can tell you about the top seam.
622. Do you remember seeing anything to indicate in which direction the force had travelled below in Fitzpatrick's section?—Yes. According to my idea, there was an explosion of some sort, either by firing a shot or a plaster immediately below Fitzpatrick's machine. I believe it was in the second bord.
623. How did the explosion travel?—The explosion split both ways, as the cover from Fitzpatrick's machine was off.
624. You noticed that afterwards?—Yes.
625. You went into the top seam on Wednesday?—Yes.
626. Describe what happened?—We went into the top seam, and a few yards in from the stone drive, from the slit, the road was broken up. We put a brattice cloth across it in order to keep the air. We followed that along till we came to the electric winch at the top of the dip. About 4 yds. from that, on the opposite side of the road, we found the body of Bill Cole. It was in exactly the same position as Bob Thompson's. He was driven into a prop like Bob Thompson, and his pipe was lying beside him just where he dropped it.
627. Was he burnt?—He was black. I could not say if he was burnt.
628. You went on from there?—Yes, straight down the dip.
629. Did you find anybody in the dip?—We found three bodies in the straight dip.
630. Who were they?—Jim Beattie, Frank Butcher, and Harold Martin.
631. How were they lying?—Butcher was lying on his back with his arms up in the air. We recognised Butcher because he had two or three fingers off one hand.
632. What about the other men?—We did not notice anything particular about them.
633. They were easily identified?—Yes.
634. Where did you go from there?—We went to the first right-hand bord and found Jim O'Boyle and Bob Spiers.
635. Were they in the face?—Yes.
636. How were they lying?—They were lying together side by side.
637. With their heads towards the face?—Their heads were up the hill.
638. Were they badly knocked about?—They were badly decomposed. I could not tell if they were knocked about.
639. Where did you go from that bord?—While we were there, Jim Harris and somebody else went through the left-hand bord going down. Henry was found in there.
640. Which direction did you take?—We came up the hill from there. When we got to the top, near where the winch is situated, Carson's body had been found to the right. I saw the body and came out. We went up the hill past the monkey-shaft and found the pony there. We went to the first bord on the right, and some distance in we found the bodies of Mansfield and Lewis.
641. How were they lying?—They were lying with their heads out towards the road. They had evidently come out from the face.
642. Did you notice where their lights were?—They had their lamps with them.
643. Were those bodies knocked about?—No.
644. Were they burnt?—They were badly decomposed. One of them was scorched. We went up hill to the second right-hand bord and found no signs of any men. We followed the air tunnel round until we came to

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- the straight road again. We turned down and found O'Halloran and Fogarty. I went home after that.
645. You went in again?—Yes, on Thursday night or Friday morning. Mr. Jim Harris and others were hunting for four men who were left in the mine. We were after those four men, but could not find them.
646. That would be the end of the search?—Yes. We hunted high and low on the north side and on Fitzpatrick's wall pick places.
647. Were you there when those men were subsequently found?—No.
648. *By Mr. Want:* You told us that when you went to the brow you could not get any further, and Mr. Watson ordered you back, saying there was too much gas. Did he say "gas" or "afterdamp"?—One of the two. We could see it.
649. Did he say "gas" or "afterdamp" or "bad air"?—He might not have used either of those expressions. He might have said that it was too thick, and not to stop.
650. Regarding where you found the pony, how far would that be off the dip road?—About 50 yds.
651. Would it be that much?—Between 40 and 50 yds.
652. Did you notice the harness?—Yes. The first thing we came to was an empty skip. At the corner of the skip we saw the harness, with the exception of the bridle and collar. The harness was smashed against the corner of the skip, including the limbers, and they were badly bent and twisted. The bridle was on the pony's head, and the collar was 30 yds. up the hill in the opposite direction.
653. Where was the harness?—On the skip the opposite way.
654. The harness was outbye and the collar was inbye?—Yes.
655. In your exploration and penetration of the mine, did you have any trouble with your eyes?—Yes.
656. Did the afterdamp trouble you?—Yes. It made my eyes tingle.
657. *By the Chairman:* There is a monkey-shaft near where that horse was found?—Yes.
658. Did you have a look at the monkey-shaft at all?—Yes. When we were looking for bodies I thought the wheeler might have been blown down the shaft, but he was found in a ledge to one side.
659. What made you think that?—We could not see the wheeler.
660. Is there any indication at that shaft as to which way the blast came?—In my opinion it came up that shaft.
661. Why do you say so?—It appears to me that the pony was standing immediately opposite the shaft. The blast came up the shaft and hit the pony square or the skip. It drove the skip back one way, and the collar being light, it drove it the opposite way up the hill. There were props at the shaft, which also had guard rails to prevent the pony from going down the shaft. The electric cables which hung on the left side of the road were blown to the opposite side. It looked to me as if the blast came up there.
662. *By Mr. Want:* What was the position of the horse-driver?—I did not see him.
663. *By the Chairman:* Mr. Watson wishes me to ask you whether you were present when Fitzpatrick and Conopia were found?—No.

ERNEST JULIUS LAUN, 45, Inspector of Mines, sworn and examined:

E. J. Laun.

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664. *By the Chairman:* Where are you located at the present time?—My headquarters are at Charters Towers, but I am temporarily stationed in this district. I was sent up here to erect a State Battery at Kidston, and I have been on other State work for the Department up here under direct instructions from Brisbane, and not otherwise.
665. That means to say that you are not in general supervision of the district?—No, I am not.
666. What are your qualifications?—I am a graduate of the Charters Towers School of Mines, and I hold a certificate as a metalliferous mine manager.
667. You have had a large experience of metalliferous mines?—Yes, all my life.
668. You have a limited experience of coalmines?—Yes.
669. Is Mount Mulligan the only one?—Mount Mulligan and the Bowen coal-fields.
670. When did you first hear of the disaster?—About 11.45 a.m. on the 19th of September. I was at Chillagoe Court House with the Warden when the Sergeant of Police came in and told us that he heard from the Railway authorities that there had been a big explosion at Mount Mulligan, and that they were getting relief trains or rescue party trains out there.

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671. What did you do?—We endeavoured to get into communication with Mount Mulligan, but the telegraph lines were overloaded and we heard nothing further until 2 o'clock. Mr. Rutledge, the metallurgist in charge of the State Smelters in the absence of Mr. Goddard, told me about 2 p.m. that he had heard the same report from Mr. Goddard. I considered that that was a reliable authority, as Mr. Goddard confirmed the report we had received from the police. Mr. Goddard was at Dimbulah at the time. At about 4 p.m. I received a wire from Mr. Watson informing me of the disaster. I told Mr. Rutledge I would go to the State Smelters straight away and see what we could do in the way of getting a relief party together and picking up such gear as might be required. A large number of volunteers offered their services. I had a look at the fans to see if I could take any with me to Mount Mulligan. Later on a wire came from Mr. Watson to Mr. Goddard, saying he would be pleased to get any fans that could be obtained at Chillagoe. He also said that only coalminers were required as relief workers. I secured a Dwight-Lloyd fan and asked the engineer to arrange for its transshipment to Mount Mulligan. I also had a look at the small fans and put four on one side. I also went through the list of volunteers and, acting on Mr. Watson's wire, I refused to accept those who had no mining experience at all. We had a list of thirty odd volunteers, and we cut down the list to those who had coalmining experience. We asked these men to go to the railway station at 7 o'clock, as by that time the train would be up and also Mr. Goddard's rail motor. At 7.30 p.m. I left Chillagoe with the volunteers, and with Mr. Warden Byrne we came right through to Mount Mulligan. I arrived in Mount Mulligan at 2.30 a.m. the following day. A special train with forty-four men from Mungana arrived here on the Tuesday night, bringing the Dwight-Lloyd fan with them.

672. Tell us what you did when you arrived?—I arrived at Mount Mulligan by the rail motor at 2.30 a.m. on Tuesday. Fitchett met me at the railway station and asked me to go to the mine at once. I went up to the mine and met Mr. Watson at the mouth of the tunnel. I went up to the fan and had a look at the wreck at the top tunnel. I noticed a small amount of feeble blue smoke coming from the mouth of the fan tunnel. I could see that nothing much could be done immediately. I went down to the bottom tunnel and went in. I noticed that the tunnel was very much crushed. Timber was lying crossways and every other way. I could not decide which way the movement came, from the way the timber was lying. Fortunately, the roof of the tunnel was not too bad, as only small falls had taken place. We went into the tunnel as far as the brow where a small Turbon fan had been placed in position, blowing through 10-in. galvanised-iron pipes down the dip for a distance of 200 ft. I believe Mr. Jim Harris was with us, but I can only remember seeing Mr. Watson and a number of others. There were too many strangers to remember them. We went down a short distance, and Mr. Watson said we could look for the bodies that were in the bottom of the dip. Mr. Jim Harris went down with a party and got two bodies. I may say that I have written a report on the disaster, and I have tabulated the numbers of the bodies that were brought from the mine, which I tender to the Commission. I have also prepared a plan of the mine workings.

[Mr. Laun's written statement tendered and marked *Exhibit 2*.]

[Plan prepared by Mr. Laun tendered for reference, and subsequently accepted as evidence and marked *Exhibit 8*.]

673. *By the Chairman:* This is a list of all the men?—Yes, and on the plan I have marked the position of such bodies as I have been able to locate and which I knew definitely.

674. You remained continuously in the mine, relieving Mr. James Harris in turn?—Yes. Nos. 1, 2, 3, 4, and 5 of the bodies marked on the plan had been taken out of the mine by the time I arrived, and Mr. Harris recovered Nos. 6 and 7 immediately I came.

675. Where were those bodies taken from?—Straight down the dip near the terminal wheel. I went down and looked over the trucks at the entrance to No. 12 South. The bodies of Nos. 8 and 9 were found there, apparently blown hard up against the full trucks. The two men were together, but not in any regular order.

676. In what direction were they blown?—They must have come out of the tunnel and they fell against the truck on the inbye side. Then we came back to where the air was fairly good. I insisted on Mr. Watson and Jim Harris having a spell, as they had had a long run, while I was comparatively fresh. I said, "It will not do for all of us to stop here. Tell me what you propose to do." Mr. Watson said, "I think the best thing to do is to put a stopping across the dip below No. 10, and drive the air north." They had previously stopped all the openings off the dip down

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to that point, so that any air which came down the dip would be confined to the dip. We then made a search in No. 10 North. I do not think there was one man in my party who knew the mine at all. I had with me Moore, McDonald, and Charlie Austin. We all went in on the north side in No. 10. We came across three bodies at the bottom of the small jigroad. These bodies were considerably scorched. They were Nos. 10, 11, and 12. There were no other parties at work at that time. As a matter of fact, we decided that only one party should work at a time in order to get all the air available for that particular party. Mr. Jim Harris insisted on having another turn in the mine, and he went into the top of the jig road, but as he did not find anyone he came out again. Mr. Harris had been carrying a bird in a cage, and the bird showed signs of exhaustion. As a matter of fact, it turned over on its back and took fits. Mr. Harris went out and sent word back to us to come out also, as two of the men in his party had been overcome as soon as they reached the surface.

677. *By Mr. Want:* What kind of bird did he have in the cage?—A painted finch. It was a small local bush bird. I came out to the fresh air, in the dip. We decided to take the air straight in past the jig road. After recovering the three bodies, I put a brattice across the straight inroad and followed it down around on to the No. 12 level to the north side. We found the air on the top of the jig road was too poor for us to live in, and we pulled the brattice down and ran the air straight across. We were all new to the mine, but we found the second jig road, although we did not know where it led to. I thought the best thing to do was to put a stopping across the main jig road and carry the air straight across and around the coal face.
678. Had you not seen a plan at all?—No, not at that time. The air did not appear to travel satisfactory, so we pulled out that stopping. We found two of the bodies were down the main dip towards No. 12, also in a cuddy immediately under No. 10 level on the left. We secured thirteen bodies at Beattie's machine wall. They are marked on the plan.
679. *By the Chairman:* Was there anything particular about those bodies?—I could not identify any one of them. The first three of the bodies I came across were right in the middle of the road, coming out. The second was lying with his feet up the jig road, and his head in the middle as though he came down the road and fell.
680. Did he have a lamp?—I don't remember.
681. *By Mr. Want:* Was there any evidence of violence?—No. The third body was against the pack wall on the opposite side where he fell. There was a deep impression on his forearm where he fell down on the stones; otherwise the body was not knocked about.
682. *By the Chairman:* What about the other bodies?—I don't remember if any of the other bodies had marks on them at all. The last two bodies were found in a dead end where they should have no business except they were making a retreat, or perhaps made a mistake as to where they were going. They must have run there together after the accident, because they had no business there and there was no air current there. They had warning of the explosion and came from their working place into this dead end.
683. *By Mr. Want:* What did they go there for?—They retreated there because they thought they were safe.
684. *By the Chairman:* Where did they come from?—They were not two out of the thirteen bodies within 50 ft. of their working faces and gates. Their tools were right at the faces.
685. *By Mr. Want:* Do you consider they had some warning?—Yes. After the explosion occurred they came some distance.
686. *By the Chairman:* They were on Beattie's wall section?—Yes.
687. Did you go into another section?—James Harris then fixed up a fan and started on the south wall. He removed the fan from the top of the dip to the entrance to No. 12 South. This gave sufficient ventilation to enable us to go in and make a search. Mr. Harris secured two bodies in No. 12 South—Reay and Percy Marks.
688. You went through practically the whole of the mine?—No; I did not go into the top seam at all. When we finished the south, I said, "I believe the workings are too hot in Fitzpatrick's wall. There is a much better chance of getting a quicker recovery of bodies in the top seam. I recommended Mr. Harris to get those bodies first. The decomposition of the bodies had set in, and it was advisable to remove those which we could get the quickest. Mr. Harris got thirteen bodies out of the top seam. We re-closed the brattice on the top seam and we proceeded to go in and clean up Fitzpatrick's wall. We got up to No. 6 gate, and we cleaned up as far as that point. That was the last of my shift for that day. When I came on again next morning the police informed me that there were seven

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bodies yet to be found, and we had to start all over again and make a re-search of the mine. As we had got the thirteen bodies named in the cavil on the north side, and the thirteen bodies on the top seam, we thought it unnecessary to go there again. I put Jim Lovell in charge of the party working on Fitzpatrick's wall and I took a gang on to the bottom of the south wall, where I got one body—No. 71. The others on the top level got Mr. Grant's body and two others. They got Nos. 68, 69, and 70 in Fitzpatrick's wall. That left three bodies still to be found. Mr. Harris went all over the workings looking for bodies under falls of ground. I resumed the search on Thursday night, when we divided up into two sections. Parkes and myself found the last three bodies. We went on the old road northward from the top of the long rise wheeling road above Fitzpatrick's wall. We followed the road turning northwards and found a trolley with some rails on it. We knew we were near the roadman James, as it was his business to attend to the rails. We proceeded on a distance of 80 yds. and found the first body. I came across a miner's cap with a lamp on it about 10 yds. nearer the trolley.

689. *By Mr. Want:* Was it 10 yds. nearer Fitzpatrick's wall?—Yes. The head was lying towards Fitzpatrick's wall in the opposite direction to that which I assumed they were travelling. The feet were out towards the main dip. They only had to travel another 50 yds. and they would have got through to the intake air into the top seam.
690. They had been running?—Yes.
691. How did you know the way they were travelling?—They had the trolley partly loaded.
692. They would go in from the trolley?—They were on the side where the rails were pulled up. There was nothing for them to go down that way for, except to get to the fresh air.
693. *By the Chairman:* Were those bodies burnt?—They were very much blackened and decomposed. I could not say whether it was soot or whether they were burnt. I think they were slightly burnt, because, when handling them, the skin came off.
694. They were the last three bodies?—Yes. When the volunteer parties went away we thought we had seventy-five bodies out, but we found we had only seventy-four, and that one body remained in the mine. None of us felt fit to go back and look for the other body. We believed it was covered by a fall of rock on the first working place above the main road, No. 12 South.
695. During the time you were engaged on rescue work, did the condition of the mine have any significance for you in respect to the direction of the contending forces in the mine?—No. While we were recovering the bodies, practically our whole attention was directed to that only. It was a case of looking after ourselves and not studying the conditions of the mine.
696. Subsequently you made a fairly minute inspection of the mine?—Yes.
697. During the rescue work, how did you indicate to the people following behind you that the various places were searched?—In the first place we could only work on one air circuit, and we had only one gang in at a time—either Jim Harris or myself or somebody we nominated was in charge of the gang. We would work in a particular portion of the mine and examine any headings. We would never let the parties break up. Lovell took charge of a party to inspect Fitzpatrick's wall. Until then we had not broken up and we always carried on as one party. When it came to a re-search of the mine we were afraid that some places had been overlooked. We thought, on examining the whole of the mine, that we might find a place where a man was creeping away. We made a straight chalk line on entering a heading, and if we were satisfied it was cleared we made a horizontal chalk line, forming a +. If we thought it required further examination we made a circle round the cross. We did not keep examining the ones that were not necessary.
698. Did the tally system work satisfactorily?—I was not responsible for it, but I understand that it was very good. The check clerks who held the book saw that everybody who went into the mine also came out again.
699. *By Mr. Want:* Who introduced it?—I do not know. It was in operation when I came.
700. *By the Chairman:* You are satisfied that under that system no man could be lost in the mine?—No man could be lost in the mine.
701. In the early stages of the explosion, did the mine itself indicate to you what had happened there? You formed a theory?—No, not during the rescue work. There was not much attention paid to the mine itself during the rescue work. We had any amount of theories as to what had happened,

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but we would not commit ourselves to it without making an examination to enable us to form some kind of opinion.

702. Taking the appearance of the mine as a whole, did it strike you that it was badly knocked about then?—There has been some slight fall of roof since in the main dip, but otherwise the mine was in the same condition as you see it now. The timbers which lay across the road in the main tunnel and down the main haulage dip have been straightened up for the convenience of travelling in and out.
703. Was any of the gobbing spewed out in the roadway?—Very much so on the bottom side of Fitzpatrick's wall, near the solid wall.
704. Which side of the gobbing would that be?—They are all blown down hill.
705. The cogs were burned?—Yes.
706. Mr. Harris and the others gave evidence about the jig wheels being blown off the pit mouth, and they also referred to the demolition of the smithy and the fan?—I know that is true.
707. Regarding that body which you have located in No. 12, what steps would be necessary to get it out?—That is a mining job. There might be a fall of rocks, followed by further falls.
708. Has the roof fallen in?—Yes. Probably more would fall that way. The safest method is to take the dirt out from along the working face. It is a mining proposition, as it will want to be opened up. It is better to open up the gate road and timber it as you go along. The easiest way would be to follow the coal up. I believe that the body is closer to the face than the thickest part of the fall. Having the solid coal there is of some assistance.
709. Have you been able to arrive at any idea as to whose body it is?—There was a man named Keirs and another man named Don Butler at that particular working place, and neither of those bodies were identified.
710. There was one body recovered there?—One body was recovered, but it was not identified. It is commonly believed that it is Don Butler's body that is left in the mine, but it may be Keirs's body.
711. Have you received instructions from your Department to report on this accident?—The only official instruction I received was to send a report for the "Mining Journal," and I have attended to that.
712. *By Mr. Want:* What lamps did you use on your exploration?—Three safeties and an electric torch. In all the advanced work, only safeties and the electric torch were used. We found the air coming in by the sweetness of the air and by the dust following. We afterwards brought in acetylene lamps and a hurricane kerosene lamp. Fortunately, we were able to use them all over the mine. We only used the electric torch for the pioneering work.
713. *By the Chairman:* Except for the top seam, you visited every district in the mine?—I visited every face except the top seam, which I did not visit until afterwards.
714. *By Mr. Want:* What make of safety lamps were you using?—I do not know the brand. They had gauze tops, lit by kerosene, with a screwed container and a single cotton wick.
715. Who did the testing?—The first to enter the north side was Austin, and he tested from time to time.
716. Did you at any time get a cap?—No. We did not get any flame other than the ordinary flame.
717. Was there any indication of gas at all?—No, except that the lights were nearly extinguished on the north side. The lights would have been extinguished if we had stopped there. The lights went low down, but they did not go right out.
718. *By Mr. Kilpatrick:* I suppose the use of naked lights assisted you greatly when you were doing the exploratory work?—We had to use them, and that was why we did use them. We were afraid to go ahead with the naked lights until we were satisfied they were all right.
719. *By Mr. Want:* Did Mr. Watson tell you when you arrived on the scene that he had never seen any gas at the colliery?—I do not remember that. I had visited the mine four or five days previously, and I spoke to Mr. Evans about that possibility. I asked him definitely if they had had any trace of gas in the mine, and he said, "No."
720. *By the Chairman:* Did Mr. Watson warn you of afterdamp when you went in?—Yes. He said, "You want to look out, and keep cool," and so forth. He did not name any special gas. It was a case of watching for anything in case of danger.

AUBREY PLUNKETT, 36, Fitter, employed at the Mount Mulligan Colliery, sworn and examined:

721. *By the Chairman:* Do you remember the 19th September?—Yes.
722. What happened on that day?—A disaster at the colliery.
723. Where were you when the explosion occurred?—I was standing on the incline roadway between the fitting shop and the cabin.
724. Did you see anything?—I heard a report first. Then I looked round and saw smoke, and I saw an explosion come out of the main tunnel.
725. Was there only one report?—No, there were two reports. One report came out of the fan and then a couple of seconds later there was an explosion at the main tunnel.
726. You saw volumes of smoke coming from the air drift and from the tunnel entrance?—Yes.
727. What did you do?—My brother and James Harris were standing near me, and they told me to stop the engine. I did so.
728. What did you do next?—I went to the mouth of the pit and I saw a lot of wreckage there.
729. Who else was there?—Mr. Watson, Jim Harris, Jack Harris, my brother, and several others.
730. What happened then?—Mr. Watson sent me down to get all the stretchers I could. I came down and got the stretchers and went back again.
731. Was anyone at the tunnel?—Yes, there were several there. Mr. Watson and James Harris were in the mine.
732. Did you go in?—Not on that occasion.
733. What bodies did you see brought out?—I saw Neville Ruming brought out.
734. Where was he found?—About 30 yds. inside the tunnel.
735. What was the condition of his body?—It was burnt, and black.
736. Was he injured in any other way?—He had a broken leg.
737. Do you remember how he was lying?—No. They were just getting him out when I got there.
738. He was easily identified?—Yes.
739. Did you wait at the pit mouth until the rescue party came?—No. Mr. Watson sent me out to see about getting the doctors and nursing staff.
740. And after that?—When I got back again they were bringing Evans and O'Grady out of the pit.
741. Did you hear them speaking?—Evans spoke.
742. Can you remember what he said?—I asked him what had happened, and he wanted to know who else was hurt. I told him that O'Grady was hurt, and he asked me how he was.
743. Did he say anything else?—He wanted to know if we had got Grant. He told me that Grant was on the top level.
744. Did he say anything else?—He started to tell me where the different men were working. The doctor came in then, and Mr. Evans did not say any more.
745. Did O'Grady say anything?—I was helping Smith to dress Evans. The others attended to O'Grady.
746. O'Grady died shortly afterwards?—Yes.
747. He was badly injured?—Yes.
748. Did you hang about the pit mouth?—Yes. I stayed there all the time.
749. Did you go into the pit at all?—Yes. I went in with Mr. Watson and James Harris. We took in the motor and the fan.
750. Where did you go?—We went to the top of the dip with the fan and motor, and laid the pipes down the dip. We then made our way down until we got to the bottom.
751. How many bodies did you see coming out of the tunnel shortly after the accident?—Four. They were Tom Hawes, Bob Thompson, and two others down the main dip.
752. Did you go out after you rigged the fan?—No. We stopped some considerable time. We went down as far as we could get.
753. Do you know who recovered the two bodies from the bottom of the dip?—They were strangers here.
754. Were men picking up the roof and clearing the travelling way?—Yes. Jack Harris was doing the timber work to make it secure.
755. Did you take part in the rescue work after that?—Yes, I was in the mine all the time.

A. Plunkett.

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- A. Plunkett,  
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756. Where did you go then?—After getting the main dip cleared we went into No. 10 North.
757. Did you go to the top of the jig way in the top of that section?—I do not know much about that section.
758. Did you find anyone there?—No. They were all out then. We came back again and then went towards No. 12 North.
759. Did you go in there?—No. My brother got gassed in No. 10 North and we brought him to the surface.
760. What happened next?—Next day we went to the south side and got thirteen men at the pump flat section. Mr. R. A. Dunlop was there, too.
761. Did you notice anything peculiar about the bodies? Were they burnt?—They were very much swollen and all black.
762. Except for that, was there any other evidence of burning?—I did not take particular notice.
763. Were any bodies mutilated through being thrown against a hard substance?—Yes, some of them.
764. Where did they come from?—Tom Hawes came from the main dip. He was badly knocked about. His head was knocked clean inside out.
765. Do you know what part of the mine the other bodies came from?—No.
766. Did you go into any other section of the mine?—We went into the top seam. I did not see any bodies taken from the top seam.
767. You are not used to underground work?—No. I do not know anything about the underground work at all.
768. You would not have any knowledge of the direction of the explosion or anything like that?—No.
769. Do you think that the tally system put in operation at the pit mouth was a good one, and worked satisfactorily as the men were tallied in and out?—Yes, it worked satisfactorily.
770. *By Mr. Want:* You said that Mr. Evans was anxious to tell you where the men were working that morning?—Yes.
771. Had he any reason for that?—I suppose he wanted to get them out as quickly as he could.
772. The men had changed their positions that morning?—Yes.
773. That would be one reason why Mr. Evans told you?—Yes, that would be the reason.
774. It was the beginning of the cavil?—Yes.
775. *By the Chairman:* Were you asked to give your name when you went in?—Yes. Every time I went in a man came and took my name.
776. There was a fan brought from Chillagoe?—Yes.
777. Can you tell me about the time it was installed?—I could not say.
778. Were you working on that job?—No. I was inside then.
779. Do you know who was working on it?—No.

#### List of Men Killed.

CILARLES VANDENBERGH LEWIS, Accountant in the employ of Chillagoe Limited, residing at Mount Mulligan, sworn and examined:

- C. V. Lewis,  
4 October, 1921.
780. *By the Chairman:* Does your work include secretarial duties?—I suppose so.
781. Have you got charge of all the office records?—Yes.
782. Besides accountancy, your work includes the keeping of records, correspondence, and so on?—Yes.
783. Are the mine records filed with you?—No.
784. Would the cavilling list come into your possession?—It was not supplied to me as a rule.
785. But you would have to have a list of men working in the mine?—Yes. I have made out a list, which I will tender in evidence.

[List showing names of men in mine at time of explosion and also Cavil List tendered and marked *Exhibit 3.*]

#### Identification of Bodies.

IGNATIUS NEIL SMITH, Head Master, Mount Mulligan School, sworn and examined:

- I. N. Smith,  
4 October, 1921.
786. *By the Chairman:* Do you remember the 19th September?—Yes.
787. Do you remember what happened on that day?—Yes. There was an explosion at the mine at about twenty-five minutes past 9 o'clock.

788. Were you there shortly after the explosion?—I was at the school when I heard the explosion, and I saw the dust. I went straight up to the tunnel mouth.
789. You were there when the bodies were being brought out?—Yes.
790. You identified several bodies?—Yes. I certified to them.
791. Will you describe the methods of identification adopted?—I knew some of the men had particular marks on them. Some had lost fingers. The first bodies were charred, but the features were not disfigured and we could easily identify them.
792. What methods did you adopt with those bodies which were difficult to recognise?—We sent down for the women and asked them to have a look at the clothes.
793. They were identified by means of their clothing?—Yes. Some of them were identified by their boots being fastened by copper wire, and things like that.
794. *By Mr. Want:* They were identified by their wearing apparel generally?—Yes.
795. *By the Chairman:* With regard to those which were not identified by those means, did you take a description of them?—Yes. We took a description of each one, and that description was put on the coffin alongside the number.
796. Was every body numbered as it came from the pit?—Yes.
797. And every coffin was numbered?—Yes.
798. Was a record kept of all those numbers?—Yes.
799. Was a record kept of all the unidentified bodies?—Yes. Those that were not identified at first were sent to the goods shed and people went and identified several there.
800. Was a record kept of the places from which those unidentified bodies were recovered?—I don't know. The men who were carrying the bodies out were strangers to the mine, and they could not tell where the bodies were found.
801. There were some bodies afterwards identified at the goods shed?—Yes.
802. Do you know how many bodies were not identified?—Twelve or fourteen.
803. You were there most of the time?—Yes. I was away on Tuesday night.
804. Who was at the mouth of the tunnel then?—Constable McClintock and Jack Harris were there. When I came back on Wednesday morning Jack Harris was there and also Walter Harrison.
805. What percentage of the bodies that came out of the pit were charred or touched by the flame?—There were only four or five that were not burnt. O'Halloran and Fogarty were not burnt. Frank Grant was only burnt a little about the feet.
806. You saw Grant's body?—Yes.
807. It was fully clothed?—Yes. I think he had his neck broken, because his head was twisted to one side.
808. Was his head hanging loose?—No; it was stiff; but his head was jammed on one side.
809. Was his head marked?—No.
810. Mrs. Grant identified that body?—Yes.
811. How were the bodies taken from the pit mouth to the goods shed?—They were run down the incline on the trucks, and they were carried from the bottom of the incline to the goods shed.
812. Who took charge of the bodies when you identified them?—Fitchett.

ROBERT MCCLINTOCK, Police Constable, stationed at Thornborough, sworn and examined:

813. *By the Chairman:* Do you remember the 19th September?—Yes.
814. Did you hear anything on that day?—Yes. I was at Thornborough and I heard an explosion.
815. One explosion?—Yes.
816. About what time?—Somewhere between 9 and 10 o'clock.
817. Were you inside a house?—No; outside.
818. How far is it from Thornborough to Mount Mulligan?—Twelve miles by railway.
819. What would it be in a straight line?—Eleven or twelve miles.

I. N. Smith.  
4 October 1921.

R. McClintock.  
4 October, 1921.

- R. McClintock.  
4 October, 1921.
820. Did you hear anything that day as to what caused the noise?—Yes. I heard about half an hour afterwards.
821. What did you do?—I waited for the special train running through Thornborough to Mount Mulligan. It came through Thornborough between 12 and 1 o'clock, and I came along with it.
822. What time did you get to Mount Mulligan?—12.30 p.m.
823. What did you do?—I assisted Constable Rosin to take Dr. Perkins's instruments to the pit mouth.
824. While at the pit mouth you saw the bodies being brought out?—Yes. Some had been brought out before I got there.
825. Whom did you see there?—I saw Evans and O'Grady.
826. Was O'Grady dead then?—No. He died after I arrived.
827. Was he conscious?—No.
828. Did you see Evans?—Yes.
829. Was he conscious?—No. I saw the doctor take a piece of wood out of his neck.
830. How many bodies were recovered from the pit when you arrived?—Three, including the two who were alive.
831. You subsequently saw other bodies being brought up?—Yes.
832. They were brought by stretcher-bearers?—Yes.
833. They were placed near the pit mouth?—Yes.
834. What means were adopted to identify those bodies?—I knew most of the men myself. I come to Mount Mulligan every fortnight when it is pay day.
835. You identified the men from your knowledge of them?—Yes.
836. You identified those you knew. What about those that were not easily identified?—We got some of their wives to identify them. Some of them identified the bodies down at the goods shed.
837. Were any of the bodies identified by means of disfigurements?—Yes.
838. Others were identified by the clothing and by marks on the clothing?—Yes.
839. Was every body numbered as it came out of the mine?—Yes.
840. And every coffin was numbered, too?—Yes.
841. Was a description taken of the bodies that were not identified?—Yes; and they were marked "Not identified."
842. The particulars were entered against the numbers on the coffin?—Yes.
843. How many bodies were not identified?—Twelve.
844. You had no means of ascertaining the places in the mine from which those bodies were recovered?—I got a rough slip from Morrison. Some men were at different walls.
845. Would it be possible to arrive at a rough identification of the bodies by means of that slip?—Yes. Those whose places I knew I could identify.
846. Were many of the bodies badly burnt?—A good few. Some of them had no hair on at all.
847. About three-quarters of them, I suppose?—About half of them were burnt. Some were badly burnt.
848. Do you know where the badly-burnt men came from?—No. I was outside all the time.
849. Have you got the list which Morrison gave you?—Yes; but I have made out a fresh list for the use of the Commission, which I will tender in evidence.
850. How many bodies were brought out of the mine?—Seventy-four, including Evans.
851. How many were buried at Mount Mulligan?—Sixty-nine.
852. There were four bodies sent away?—Yes.
853. You had some hand in looking after the property belonging to those men?—Yes.
854. You would be able to supply a list of the dependants?—Yes. I have a list here.

[List showing names of miners entombed at time of explosion and names of dependants, where known, tendered and marked *Exhibit 4*.]

**Evidence Regarding Burial of Bodies.**

BERNARD THOMAS FITCHETT, Joiner, employed by Chillagoe Limited at Mount Mulligan, sworn and examined:

855. *By the Chairman:* Do you remember the 19th September?—Yes, I do.
856. What happened then?—I was at Mareeba and I heard about the explosion at Mount Mulligan.
857. What did you do?—I joined a special train and got to Mount Mulligan about twenty minutes past 12.
858. What did you do then?—I proceeded to the mouth of the tunnel with stretchers.
859. How many stretchers did you have?— I think I had eight.
860. Did you have first-aid appliances?—Yes. Dr. Perkins, the matron, and nurses from the Mareeba Hospital were also here.
861. Did you have any breathing apparatus?—No.
862. Did you see any oxygen cylinders?—No. They were brought later.
863. You were engaged in looking after the dead bodies, and in seeing that they were placed in the right coffins and buried in the cemetery or otherwise disposed of?—Yes.
864. How many bodies were brought out of the tunnel?—I could not say. I know the number that I buried.
865. How many did you bury?—Sixty-nine.
866. You put each man in a coffin?—Yes.
867. How many of the bodies were sent away in coffins?—One.
868. Mr. Evans also went away alive and died in Mareeba?—Yes.
869. How many dead bodies were taken away from Mount Mulligan?—Three, including the body in the coffin.
870. The bodies were put into your charge at the goods shed?—Yes, they were put in my charge by Inspector Daley.
871. All the bodies were numbered?—Yes.
872. The coffins were also numbered?—Yes. The names were also written on when we knew them.
873. What about the bodies that were not identified?—Inspector Daley took a description of the bodies, and each description was put against the number on the coffin.
874. Most of the bodies were very decomposed?—Very much towards the latter end.
875. You had to widen some of the coffins?—Yes. Six-inch boards were put in.
876. The bodies were kept in the goods shed so that people could identify them if possible?—Yes.
877. A number of the bodies were identified by that means?—Yes.
878. Others were not identified?—No.
879. How many were not identified?—To the best of my knowledge, ten.
880. Do you remember how many you buried?—Sixty-nine.
881. Were they buried in separate graves?—They were all buried in separate graves with the exception of one case. Wilfred Thompson and Roland McCormack were buried together in one grave in accordance with the wishes of the relatives.
882. Have you got a plan of the graves?—Yes, I have a plan here, and it also gives a list of the men who were buried. There were thirty-seven buried in the Church of England ground, thirteen in the Roman Catholic ground, and nineteen in the ground set apart for other denominations. There were none buried in the pagan ground.

B. T. Fitchett.  
4 October, 1921.

[Plan tendered for reference purposes.]

[The Commission adjourned at 4.35 p.m. until 10 a.m. the following day.]

## SECOND DAY.

## MOUNT MULLIGAN.

WEDNESDAY, 5 OCTOBER, 1921.

The Commission met in O'Brien's Hall at 10 a.m.

## PRESENT:

R. A. DUNLOP, ESQUIRE (*Chairman*).

HON. C. KILPATRICK, M.L.C.

W. WANT, ESQUIRE.

**Evidence of Rescue Workers.**

JAMES JOSEPH LOVELL, Gold Miner, employed at the Tyrconnell Gold Mine, Kingsborough, sworn and examined:

- J. J. Lovell,  
5 October, 1921.
883. *By the Chairman:* Have you had a long experience in mining?—A little over thirty years.
884. Does that experience include coalmining?—Yes.
885. Where did you have experience in coalmining?—In New South Wales. I was coalmining in New South Wales twenty-six years ago, but my experience of coalmining is limited, as I was at it for only nine months.
886. Do you remember the 19th September?—Yes.
887. Did you hear anything that morning?—Yes. I was at Kingsborough, 12 miles from here, and I heard an explosion.
888. What time was that?—Between 9.30 a.m. and 10 a.m. I came on to Mount Mulligan in the special train, and went into the pit mouth about half an hour after reaching Mount Mulligan.
889. What work was going on at that time?—They were bratticing in the main dip. Mr. Watson and James Harris were there also. We were ordered back several times by Mr. Watson. I assisted to get away two bodies from the bottom of the dip. I cannot say who they were.
890. After you got these men, where did you go?—We came in again and got two men on the road. One of them was Gielis.
891. Whereabouts on the road?—At No. 11. I was a stranger to the mine.
892. Were any of the bodies badly burnt?—No, not badly burnt. They seemed to be more knocked about than burnt. I saw men on each side of the dip. One man went down behind a truck as if he was shoving the truck when the explosion occurred.
893. Where did you go after getting Gielis?—On the right-hand side.
894. Did you go into the bottom tunnel?—No, not at that time. I could not keep any account of the time, as we were going in and out all the time, and worked continuously day and night.
895. Did you find any more bodies?—Yes. I was with Purcell and Tudehope. The others behind were doing the exploring work. We got six bodies there, including one man named Hutton.
896. Where were those bodies lying?—In a bord where the men had been working. We found their cribs, and we also found a shirt, vest, and some lamps, but there were no traces of the men. We then went to the next bord and saw the crib cans and billycans and lamps of the two men working there. We went to the third bord and then got six men, including Hutton. Three men were at the corner and three inside.
897. Were the other men at the face?—There were three right at the face.
898. How were they lying?—One man was lying with his hands over his face, as if to shield his face. They seemed as if they were fending something off.
899. Were they lying with their heads down the dip?—Yes, with the exception of Hutton. He had his head up the dip.
900. Did you notice if those six men were burnt?—Yes. They were burnt black.
901. Was it soot or scorching?—It looked as if they were burnt with the flame.
902. Could you notice the direction of the flame?—No. We came out and had a spell and went in again. Matthews and Larsen were leading. We prospected up the jig road to the right as you go in, but we did not find anyone there. We went to the No. 12 south level and recovered some bodies there. The first body I discovered was said to be Roley McCormack, but afterwards that was said to be wrong. His leg was hanging off.
903. Where was he found?—In the long jig road lower down than the centre. He was lying on his back, with his head up the jig.
904. Was he burnt?—Yes. He seemed to be knocked about a good deal more than most of them.

J. J. Lovell.

5 October, 1921.

905. In which direction did the blast come that struck them?—It looked as if it were going up the jig road where the man was lying.
906. After you found him, where did you go?—We went several bords down. Matthews and Austin were with me then. We found two men locked together—father and son. They were pretty well on the wall.
907. They were the Driers?—Yes.
908. Were they knocked about?—Yes. They were lying in one another's arms. The old man was lying with the young fellow on top of him, and the father's arms were wrapped round the boy.
909. Were they lying with their heads up the dip?—No. They were in a place not as high as that table. The top man really filled the cavity, and their heads were down hill.
910. Were they burnt?—Yes.
911. *By Mr. Want:* They were knocked about?—Yes.
912. Was there any disturbance in the pack walls or faces?—Not much. Nothing to speak of.
913. After you found those men, where did you go?—We came out and had a spell.
914. You went in again?—Yes. I went in No. 11.
915. Where did you go in that district?—About five bords up. Manly was with me. We heard a man burst, and we got the smell from him. We could not go down the bord for the stench. I went down the bord behind and along the machine wall. We had the disinfectant with us. The first body we picked up was Hynes. He was lying almost on the wall.
916. Was he lying with his head up or down hill?—His head was up hill.
917. Was he badly burnt?—Yes.
918. Who was the next man you found?—Parkinson, the Deputy. He was lying 20 yds. further on, and his pick was alongside of him. I found Hynes along the wall, and coming back I saw Parkinson.
919. How was Parkinson lying?—He was lying as if he had been running out down the bord.
920. Was he lying on his face?—Yes. He crawled out with his hands in front of him. His arms were up.
921. He would be head-first out?—Yes, head-first out of the gate.
922. Was he badly burnt?—No. The men behind him were badly burnt, but he did not seem to be burnt.
923. Did you find any other men?—Yes, 20 yds. further on.
924. Ahead of Parkinson?—Yes. He was lying the same way, as if he had been running.
925. Was he burnt?—Slightly. Parkinson's hair was almost undamaged.
926. You think that the force that killed those men came in from the jig?—I think so. It was worse on the wall. The man found on the wall was burnt the most.
927. Would you think, from what you saw on the wall, that the blast came up hill along the wall?—I would.
928. Did you find any more men there?—They got three more men. Parkes and Purcell found them, but they were not able to load them on the stretchers. I loaded those three men on to the stretchers myself. They were further up towards where the machine was working.
929. Was that on the Friday night?—I am not sure, because I lost count of the time. They were found on the next bord down from where the machine was working.
930. Did you hear who those men were?—No.
931. Were they badly knocked about?—They did not seem to be as badly knocked about as Hynes. They were the same as Parkinson.
932. Were they burnt?—They were very much blackened, but there did not seem to be much sign of flame on them.
933. Did you notice that place particularly?—Yes. Very little damage was done to it. It was one of the cleanest bords we saw.
934. How were those men lying?—Their heads were out, going out of the dip.
935. Were they lying on their faces or on their backs?—One man was lying on his side and the other on his back, and the third man was almost on his face.
936. Were they together or apart?—They were separated by a few yards.

- J. J. Lovell.  
5 October, 1921.
937. After you found those men, did you find any others?—I crawled to where Grant was, but I missed him. Eventually we went in again and got Grant out.
938. Where was Grant found?—Grant was found at the face above where the machine was working.
939. Was it a pick place?—It was not a working face.
940. Was Grant lying free?—I did not see him uncovered. I understood that something fell on him, but I was going through the old workings while they were uncovering Grant.
941. He was under a fall of ground?—Yes. You could just see his hip sticking out.
942. You helped to carry him out?—No. I went looking for more bodies.
943. Did you notice Grant's body at all?—Yes. Considering the ground that was on him he was not very much knocked about. He was almost covered when they dug him out.
944. It was said that his neck was broken; was that true?—I could not say. I did not put him on the stretcher myself. The men who were handling him would know better than me.
945. Did you notice if the part of Grant's body that was exposed was burnt?—No. At any rate, he was not burnt above the average.
946. Where did you go then?—I went out and came in again, and under Laun's direction we re-searched the bords. There was a man found in a bord which we were told had been searched. It was near a dead end. We re-searched the level right up to the top when Parkes, Matthews, and I started to search the old workings to the left. Mr. R. A. Dunlop was there, and I went to take him down one of the bords when Laun located the last three bodies. We put them on the stretchers and took them out.
947. They were Peter Conopia and James Fitzpatrick?—Yes.
948. How were they lying?—There were three bodies there. One man on the side was doubled up. They were knocked about a lot.
949. How were the men lying?—The centre man was lying across the drive.
950. From their positions, what would you say they had been doing when the blast overtook them?—They were making out.
951. Do you think they were running?—Yes. There was a truck loaded with rails. They were evidently unloading the rails when the blast occurred.
952. *By Mr. Want:* How far did they run?—The nearest man to the load of rails would be 20 yds. off.
953. *By the Chairman:* How far would the furthest man be away from the truck?—He would be 50 or 60 yds.
954. Was the truck standing on the end of the rail line?—Yes.
955. Did you notice gear lying out between the truck and the men, or any of their belongings?—No. The smell was bad. We disinfected the bodies and got them out at once.
956. Those were the last three bodies that came out of the mine?—Yes.
957. Did you notice the tally system at the pit mouth?—I did not take much notice of it.
958. Do you think it worked all right?—The arrangements were as good as could be made.
959. Did you notice any smell of gas in any part of the mine?—No.

JOSEPH PARKES, Miner, employed at the Tyrconnell Mine, Kingsborough, sworn and examined:

- J. Parkes.  
5 October, 1921.
960. *By the Chairman:* Are you a gold miner?—Gold and coal.
961. What experience have you had in coal mines?—I started as a trapper boy in a coal mine in the North of England.
962. How long did you work there?—Six years.
963. And since then?—I came out to Australia and started coalmining in Newcastle.
964. How long were you there?—Six years.
965. *By Mr. Want:* What coal mine did you work in in England?—In South Yorkshire.
966. *By the Chairman:* Have you done any coalmining since you left Newcastle?—Yes.
967. Do you remember the 19th September?—Yes.
968. Did you hear anything on that day?—No. I was working below.

J. Parkes.

5 October, 1921.

969. Were you told anything?—Yes, I was told about the disaster at Mount Mulligan. I left the mine and came straight to Thornborough; but as I missed the special train going through I got on the pump trolley with several others and we pumped our way to Mount Mulligan.
970. What time did you get here?—About 5 o'clock.
971. Did you go into the pit straight away?—Yes.
972. What work was going on in the pit?—There were a few men retimbering the mouth of the tunnel.
973. When did you go into the pit?—I went down with the first crowd of rescue workers about 8 p.m.
974. Where did you go to?—We went right to the bottom, to the extreme end of the dip.
975. Did you see anything there?—On the way down I picked up Bob Thompson's body. That was about 9 p.m.
976. Did you get any men in the bottom of the dip?—I got a boy named Hawes about 40 yds. below Thompson.
977. You got some more men at the bottom of the dip?—I got four more.
978. Were they in the main tunnel?—Two were in the main tunnel and two in No. 12 South siding.
979. Do you know who those men were?—No.
980. Were the men in the bottom dip burnt badly?—They looked to be scorched. They were all covered with coal dust. I could see that they had experienced fire.
981. How were the men lying when you got there?—Some were lying with their heads down the dip and others on the side as if they were trying to come out.
982. Could you tell from the position of the bodies which way the blast came?—From my experience I think the blast came from the No. 10 level. The brick stoppings were all blown into the dip, and that made me think that the force came through that way.
983. Down the dip and round into No. 12 South?—Yes.
984. Where did you go after that?—After the bodies were recovered from No. 12 we decided on another course. We came up the dip and put the air pressure into No. 10. I was in the mine twelve hours then, and I was exhausted, so I went home for a sleep.
985. When you came back again?—I went down to No. 12 South. The next body I found was in No. 2 bord, or, rather, in the first gateway off the straight.
986. Could you tell whose body it was?—No.
987. How was it lying?—Alongside a truck at the back of a big fall.
988. Was he under the fall?—No. He was clear of the fall.
989. Was his head up or down hill?—His head was up the coal face.
990. Was he scorched?—It was the same as the rest of the bodies. In some cases the flesh simply parted when you shifted the bodies.
991. Where did you go then?—We found two more bodies in the straight at the extreme end of No. 12.
992. How were they lying?—They were lying side by side, with their faces looking up the bord.
993. Were they knocked about?—They were knocked about, all right, from the positions they were lying in. One man's arm was under the other's shoulder, and they were locked together.
994. Were they the two Driers?—I don't know.
995. Where did you go?—I came out of the mine then. On the following shift I went to No. 10.
996. Did you get any more bodies?—There were six bodies got there. There were three bodies on a stretcher and there were three more remaining bodies to be shifted. We brought those three bodies out and I went home for another spell.
997. Did you see how those last three were lying?—One man lay with one arm across the back of his head and another on his chest. The second man was twisted over, and the third man was lying on the side of the drive.
998. Which way was his head?—His head was looking down the drive.
999. From the position of those men, would you say which way the blast came?—Upwards from the higher workings.
1000. You went down the mine again?—Yes.

- J. Parkes.  
5 October, 1921.
1001. Where did you go?—We went into No. 11 South.
  1002. What part of No. 11 did you go into?—Right to the end of No. 11—right to the wall.
  1003. You followed the wall up?—Yes, until we struck the return air coming from No. 12.
  1004. Did you do anything there?—We found one man within 40 ft. of the extreme end of the wall. He was behind a truck. He was knocked about, and the truck was also knocked about. The man was partly covered over with fine coal and slack, and we got him out. I prospected for more bodies. Following the main air course, I found three more bodies, but I do not know who they were.
  1005. What position were they lying in?—One man was lying on his back with his arms behind his back. The other man was on his hands and knees. He was coming down the bord. The other man was on the side of the drive.
  1006. Were those three men together?—No; they were 15 ft. to 20 ft. apart.
  1007. Would the position of those bodies indicate the direction in which the blast came?—The blast came up the wall from No. 12 South. The lamps were hanging up. The man on the top bord evidently crawled round to the main entrance. His face was close to the ground.
  1008. Did you go anywhere after that?—We came back from there. We went further down to No. 11 into the first turning from the main dip, and we discovered five more bodies.
  1009. Where were they?—The first two were half-way down the bord and the third was half-way under a truck. His mate was down the bord 60 ft. away. He was lying in the centre of the bord with his face coming down the bord.
  1010. How was his mate?—He was lying with his feet at the face.
  1011. Were they burnt?—They all seemed to be burnt.
  1012. Can you say which way the blast came which killed those men?—It came up the main wall from No. 12 South.
  1013. Where were the other men?—In the last bord further down. We found three men on that bord.
  1014. Were they near the face?—No; all in the gateway.
  1015. Were they lying together?—No; they were all separate.
  1016. How were they lying?—As if they were coming down the bord. They were lying face downwards with their arms extended. One man had his hands in the air.
  1017. When you came out of that bord what did you do?—I came home and had a spell, and I went down again on the last shift with Laun.
  1018. Where did you go?—We went to No. 11 bord and tried to locate the men who were missing.
  1019. There were three men missing then?—Yes. Mr. Laun located the three men.
  1020. Where were they?—In the return air course coming back from the machine wall face.
  1021. Can you say what they had been doing?—I could see there was a trolley there partly capsized, and there were ten or twelve rails on it. It appeared to me as if they were picking up the old rails. I went behind that trolley and I reported to Laun what I had found. Mr. Laun said, "That is one of the men we are looking for." I said, "I am on his tracks. We will get him." The first thing that struck me was a new billycan, which we found in the return air course. A little further down I found the first body lying in the face. His arms were in the air. He looked as if he had been travelling towards the return shaft.
  1022. And he was struck with the blast?—Yes. He was knocked over on his back.
  1023. Was his head facing towards the trolley?—No; towards the return air shaft.
  1024. Where was the next man?—About 20 ft. to 30 ft. on the other side of him.
  1025. How was he lying?—In exactly the same position.
  1026. And the furthest man?—He was lying alongside the drive. The roof was so low that I had to crawl over him. His face was looking into the side of the return air course.
  1027. How far was the furthest man from the trolley?—I should say 120 yds., as near as possible; 100 yds. is a long way underground.
  1028. Did you see any lamps or equipment lying about?—I saw the remains of their billycans and clothes.
  1029. Where were they?—In the drive. There were also some miners' caps there. I found a cap a good distance away.
  1030. You came out then?—Yes. That was supposed to be the cleaning up.

ERNEST JULIUS LAUN, Inspector of Mines, recalled and further examined:

E. J. Laun.

5 October, 1921.

1031. *By the Chairman:* With respect to the rescue work, were any offers made for the loan of breathing apparatus?—Yes. The Minister for Mines wired asking if he would send a breathing apparatus from Ipswich, and I replied that we did not require it. Similarly, Mr. Tenant, the Chief Inspector of Collieries in New South Wales, wired stating that he had forwarded two oxygen cylinders and breathing apparatus from Newcastle. I replied saying that there was no need for it, and, if he could see his way clear, to intercept it and get it back.
1032. There were oxygen cylinders on the job?—Yes. Three came from Cairns and we had one at the entrance. The doctor and the ambulance men were looking after them.
1033. Do you know if the one at the entrance was used?—No. It had rubber connections and taps on it if required.
1034. There was no breathing apparatus used by the men?—No. The only thing used was the disinfectant apparatus.
1035. *By Mr. Kilpatrick:* Would the breathing apparatus have assisted you in the work of recovering the men?—No. We could not have brought the bodies out any quicker. You could not carry bodies out with a breathing apparatus unless you had four sets in use.
1036. Would it not have assisted you in locating the men?—I don't think we could have gone ahead much quicker than we did.
1037. Don't you think that a man who is an expert in handling breathing apparatus would have got to the men much quicker?—Yes. The first men who went in would have worked much quicker; but when it came to following all the gates and long distance workings, I think we got the air in as fast as a man could have got in with breathing apparatus.
1038. How long could a man work with breathing apparatus?—It is only a matter of a couple of hours. We spent days in the mine. They might have got one or two bodies with breathing apparatus, but they would not have recovered the whole lot, because we would not have enough sets of the apparatus.
1039. How long does it take to rig up a man who is an expert in the business with breathing apparatus?—I do not know. I am not familiar with it.
1040. Do you think that in a partial disaster, where, perhaps, men might be left alive in the mine, that it would be possible to get to these men and remove them quickly by means of the breathing apparatus?—Yes, it would be possible.
1041. In that case, do you think it would be wise to have the breathing apparatus on the top at all times?—But you do not expect to have these things occur.
1042. But we have evidence that they do take place at times?—There was a helmet at Mungana which we intended to bring down with us, but, when we examined it, it was found to be perished. It was in the store, and it was brought out and put on the truck, but one of the men condemned it as it was unfit for use because it was perished.
1043. Do you think it would be wise to have breathing apparatus installed in the mine for use if needed?—It would be all right to have it in the district.
1044. *By Mr. Want:* What time elapsed from the time you began the rescue operations until you recovered the last man?—The rescue operations commenced immediately after the explosion on the 19th September, and we came out of the mine with the last bodies about 3 a.m. on Friday, the 23rd September.
1045. How long would it have taken to have landed the breathing apparatus from the South at Mount Mulligan?—I do not think that any breathing apparatus could have got here before we finished the rescue work. Even if we had a diving suit we could only go as far as the hose would reach, because air would have to be pumped in through the hose. It would not reach any distance. If you wanted a diving suit to do any good you would have to have a hose thousands of feet long to enable you to go into all the levels. The nearest oxygen set is at Ipswich.
1046. Did the Minister for Mines inform you that he could land a squad in three or four days?—I am not aware that there was any time specified.
1047. That was stated in the newspaper. Regarding the stench arising from the bodies, did you have any difficulty in that direction?—On Wednesday morning when I came out I told Mr. Harris to go into the top seam, as we believed the bodies in there would be easier to get than anywhere else. The decomposition of the bodies was getting pretty strong on the Wednesday morning. When I reached the mouth of the tunnel I told the doctor and the ambulance men that we would have to do something to

E. J. Laun.  
5 October, 1921.

allay the smell from the men below. I asked them to provide us with some phenyle or lime. The ambulance man said that his experience was that he would just as soon have the smell of the body as the smell of the disinfectant. He added that the disinfectant did not destroy decomposition, which went on just the same, and you had the smell of the two combined. He considered that that was more disagreeable, and the doctor agreed with him.

1048. Did you find that in practice?—No. We knew we would have to do something, as the men would not carry on. They provided us with a kind of gauze face-mask, tied with strings round the back of the head and saturated with a diluted solution of phenyle. I got one which was pretty strong, and the phenyle burnt my chin. Without exception, all the men wore those masks when they were handling the bodies. They used to let the masks drop down when they got into the fresh air again.
1049. Generally speaking, how did the rescue workers conduct themselves?—We had some splendid fellows there. They stood up to it remarkably well. I might say that their evidence, given here, was not as good as their rescue work. They don't know the localities, and they do not know the mine, and they are hazy about the names of the places, but it was very hard to improve on the work they did. They would go anywhere you sent them and pick up anything. I am speaking now about the large majority of the workers. Of course, there were a few, as there are everywhere, who pretended to be working, but did not do much. They went into the mine and out again. They were in the fresh air all the time. But the good work of the others more than made up for the negligence of those few.
1050. Were any of the rescue party gassed?—Not with me. When we went up the small jig road on the north side the air was bad enough to turn over the little captive bird which Mr. Harris had, and two men who were with him suffered from the gas.
1051. Did they go out to it?—I did not see them. They were with Mr. Harris.
1052. *By the Chairman:* You also sprinkled the masks with eucalyptus?—Some preferred the eucalyptus on account of the smell. It deadened the odour.

#### Evidence of Mine Management and Mine Administration.

JAMES THOMAS WATSON, Superintending Engineer of the Mount Mulligan Colliery, recalled and further examined:

J. T. Watson.  
5 October, 1921.

1053. *By the Chairman:* We would like to get some evidence from you with reference to mine management and administration of the mine. Are you the sole agent for the Chillagoe Company?—I am the agent of the Chillagoe Company for Queensland.
1054. You have given us the area of the leases they hold?—Yes. I gave you a complete list of the areas held by the Company. I am getting some further information for the Commission.
1055. Can you tell me the height of the mine above sea-level?—The railway line is 1,200 ft. above sea-level.
1056. Can you describe the nature and thickness of the overlying strata?—The coal measures vary from 80 ft. to 200 ft. in thickness. That includes the shales, sandstone, fire clay, and coal. Overlying that there is an average thickness of 1,300 ft. of hard conglomerates and sandstone. That means that the coal under the mountain is 1,300 ft. under cover.
1057. Do you keep mine plans?—Yes.
1058. Do you know the date of the last survey?—It is not so long ago that it was made, because I remember my theodolite had been sent away for repairs. Mr. Evans asked me for it, as he wanted to make his quarterly survey.
1059. In accordance with the Colliery Regulations?—Yes. The survey was made certainly not more than six or seven weeks ago.
1060. Can you describe briefly the electrical fittings and appliances on top and underground, the electrical system generally, and the power supply?—The principal generator is a 400 K.V.A. generator. That is an electrical term which represents about 1 horse-power. That generator is driven by a Bellis Morecom compound condensing engine, although we do not use the condenser at present. The voltage is 1,050 alternating current. The main switchboard consists of a generator panel and two fresher panels. The switchboard is of cubicle type, and is made of boiler plates and fitted with all the ordinary recording instruments. In addition to the ordinary arrangements of a switchboard, there is a recording Watt meter, which registers the amount of power taken from day to day and month to month. We know exactly what power is running all the time. The cubicles are fitted with interlocking gear. It is impossible to get access to any live portion of the mechanism while the current is on. No access can be got to any live portion until the switches are opened and the

isolating links are opened also. It is so arranged that if there is a man working on the switchboard at any time he cannot close the doors, and it is impossible to close them until he comes out. The two feeder panels are fitted with no volt and overload release mechanism. In the event of any short circuit happening on either of the two main circuits, the breaker will immediately fall and cut that circuit out. The current is taken to the tunnel mouth from the main switchboard through a 3-core armoured cable, each conductor equal to 19/13 British standard wire gauge, and insulated for 3,300 volts. The cable is constructed in accordance with the full requirements of the British Engineering Standard Committee. It complies in all respects with that standard. In the mine circuit the current goes to a switch 30 yds. in front of the tunnel, and that switch has a complete cut-off from the mine circuit. It has to be put into position before the current can be turned into the mine. That is required by law—that there shall be a disconnecting switch at the entrance to every mine. That switchbox is also fitted with overload and no volt release. The current for the mine underground work is taken from that switchboard direct into the mine to a point about 350 yds. into a transformer. The transformer is able to transform from 1,050 volts on the high tension side to 415 volts on the low tension side, with a neutral point brought out so that we can also get a current of 240 volts on the low tension side for any lighting purposes, if necessary. We really have two voltages which we can apply if necessary. Close to the transformer, and directly connected with the low tension side of it, is another switch fitted with no volt and overload release action. From that switch 3-core armoured cables are taken out, each conductor equal to 7/14 standard wire gauge, with the insulation standard suitable for a 650-volt circuit. That cable is also a double steel tape armoured cable. From that main switch there are three circuits going, one to each of the three coal-cutting machines. It is the same class of armoured cable used throughout. Each of these subcircuits is controlled by an oil-immersed switch. Contact is made under oil, and fitted with fuses in a completely sealed cover. Each of the secondary circuits terminates in a terminal box consisting of three-pole switch and fuses completely enclosed in a gasproof case, and so arranged that it is impossible for anyone to get access to that switch while the current is on. This terminal box meets all the requirements of the British Home Office Regulations for use in fiery mines. At the end of the box there is a fitting to which the trailing cable is attached, so arranged that it is impossible to connect the trailing cable until the switchbox is closed and everywhere secure. The trailing cable that is usual in most mines is 100 yds. in length, but here we have only 50 yds. of trailing cable to a machine. That trailing cable is flexible, 3-core, and a highly-insulated cable suitable for use on 650-volt circuits. The machines are of the Sullivan type. We have three machines of that type in the mine. We have four machines altogether; three are used for the long wall sections and one for the bord and pillars. They were manufactured by the Sullivan Machine Company, of the United States. Each machine is operated by a 30 to 40 h.p. motor of the squirrel-cage type, fitted with a Star-Delta starter, and a cut-off switch between. The starting mechanisms and the motor itself are all completely enclosed in a gasproof case, and the standard of the machine is built to the requirements of the British Home Office for use in fiery mines. It is, therefore, utterly impossible for any spark or flash of flame to come from any part of the machine to the outside of the casing. Everything is completely enclosed, and absolutely gasproof.

- 1060a. *By Mr. Want:* Gasproof and foolproof?—Absolutely gasproof and foolproof. There is no more chance of a spark or flash of flame coming from a squirrel-cage motor than there is from a transformer. It is a moving transformer. There are no moving parts carrying any current. The current is in the stationary parts only. In the transformer room underground there is an electric-static ground detector fitted on the low-tension side of the transformer, and so arranged that it shall be continuously in circuit while any portion of that low-tension portion is in use. It has no connection with the high-tension side.
1061. What are the cutter-bar lengths?—In the bord and pillar system they have 6 ft. cutter-bars, and in the long-wall system 4-ft. cutter-bars.
1062. Do the long-wall machines travel both ways?—Yes. They travel both ways as required. The bord and pillar machines will travel either way, too.
1063. For what other purposes are you using electric current?—For lighting and pumping. There is a small winch in the mine, but that is on another circuit altogether. In the main powerhouse we have a motor generator set consisting of 50 h.p. alternating current motor squirrel cage belt-driven and direct-current generator of 42 kilowatt capacity. There is a belt

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connected to the motor and generator. The voltage of the direct current system is 220. The current from that is taken through an ordinary switch-board through an overhead cable to the mine to a main cut-off switch near the entrance to the mine. From that switch the mine circuits are carried, consisting of lighting circuits, pump circuits in the main dip, and the small electrically-driven winch working the dip and the top seam secondary haulage. The cables for underground purposes are 600-Megohm grade. This is accepted as sufficient insulation for any pressure up to 650 volts. The whole of the direct current system is connected to a leakage indicator on the main switchboard, which is continually in circuit. So that if any fault developed in the lighting-pump or winch-circuit, it is immediately shown in the main powerhouse. The two main circuit and sub-circuits are protected by fuses, and in some cases circuit-breakers in addition. There is nothing more that I can add, except to say that the whole of the electrical plant is up to the specification required by the British Home Office for electrical gear for use in fiery mines. That is the highest type adopted for mine use.

1064. What about the ventilation power?—Besides the main switch at the tunnel mouth, there is a three-way disconnecting and joint box, and three cables are taken from that to the main face. That is a 1,050-volt cable. The main fan is direct driven by a 100 horse-power 1,050-volt Slipring induction type motor. The current off the main comes through a switch of the same type as the one at the tunnel mouth, and the same type as the one at the transformer also, fitted with volt and ammeters and with no volt and overload release controlling the whole of the circuit. The speed of the motor is controlled by an ordinary tramway type controller, with the necessary resistance in the motor circuit. We can control the speed of that motor from half-speed by eleven intermediate steps up to full speed. The full speed of the motor is 725 revolutions per minute.
1065. You can vary that down to half-speed?—Yes, by eleven steps.
1066. You are supplying power to the town for lighting?—There is a secondary line coming off from the powerhouse to supply power to the township and the principal business-places and private houses.
1067. *By the Chairman:* You also drive the pump on the dam electrically?—Yes. Practically all the power is electrically driven in the mine.
1068. Will you describe your mechanical gear, pumps, fan, and haulage?—There are two types of pumping gear. The fan is a Turbon type manufactured by the British Turbon Fan Company. It is 35 in. in diameter, designed to give a supply of 85,000 cub. ft. of air per minute against a water gauge of 5 in. I might mention that at the time of the explosion the fan was running possibly 550 revolutions per minute, producing 42,000 cub. ft. of air per minute against a 2-in. water gauge. It was absorbing 52 horse-power out of the 100 horse-power available, so that it was not working at its full capacity.
1069. That was the usual working speed of the fan?—Yes. It has never been running full speed. It was never required.
1070. What about your haulage gear?—The haulage gear is an endless rope system going direct from the screens into the face of the main dip.
1071. *By Mr. Want:* Steam driven?—No, electrically driven also. There is just the main rope running into the mine and returning back out of it to the haulage gear. There are no subsidiary branches at present. The rope is 3½ in. in circumference, plough steel, six-strand, and the breaking strain is in the neighbourhood of 75 tons. That is operated by an endless rope haulage gear designed to transmit 100 horse-power, but driven at present by a 60 horse-power alternating current motor of the Slipring induction type, controlled by a tramway-type reversing controller and equipped with the necessary resistances. The intermediate speeds are between 1 mile and 2 miles per hour. Up to the present the speed of the rope has been slightly over 1 mile per hour. That haulage gear was so arranged that there was a friction clutch on the main drum, operated by a steam controlled connecting and disconnecting gear, which could be operated either from the machine house itself or by a boy on the top of the bank who did the clipping and unclipping at the foot of the incline. That lad could, by simply throwing a lever in or out, stop or start the rope at will. It was also fitted with a disconnecting gear, operated by a small push button near where he worked, so that in the event of its becoming necessary to stop the motor itself he could instantly stop it by pressing the button. It was not possible for him to start the plant again. That could only be done by the engine-driver in charge of the plant. He could stop the motor, but he could not start it again. Under normal conditions the motor never ceased running through the shift, the stopping or starting of the rope when required being controlled by the clutch. Skips were

attached to the rope at necessary intervals apart, depending on the output required. Attachment was made by means of a steel screw clip. This is the common type in use in coalmines. They are a very effective type, as very few cases of slipping occur. At the time of the accident the average distance apart of the skips was 3 chains. You could clip them on within 10 yds. apart, if necessary.

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1072. *By the Chairman:* What about the secondary haulage?—The secondary haulage in the top seam was a small portable winch driven by a 15 horse-power direct current shunt wound motor, fitted with all the necessary gear and necessary switches and fuses, and so on, for safeguarding the motor. The haulage was carried out by a 1½-in. circumference steel-wire rope attached in the ordinary way to a small drum, and contained a link for attachment to the hooks of the clips.
1073. *By Mr. Want:* Was that winch situated in a main intake?—In the main intake airway in the stone drive leading to the top seam. In addition to that main generating set we have a small lighting set, 26 K.W. capacity generator direct coupled to a 45 h.p. Bellis Morecom compound condensing engine, the condenser not being in use at present. That machine was used only for lighting purposes and pumping at night when the main power plant was not in use.
1074. *By the Chairman:* What about the pumps?—There are two pumps in the mine, one a Gould type three-throw geared ram pump, and the rams of that pump were about 6 in. by 4 in. There is a smaller Worthington pump 4 in. by 3 in. three-throw geared type ram pump both mounted on trolleys and arranged for electric drive. The larger pump of the two is operated by a 5 h.p. direct current 220-volt inter-pole type shunt wound motor. The smaller pump was usually connected to a 3 h.p. 220-volt direct current motor. Both motors are fitted with the usual starters, switches, and fuses.
1075. Are the pumps continually in use?—Practically every day the mine is at work one pump is used. Even if the mine is idle we never allow it to go more than three days without pumping. The mine produces 4,000 to 5,000 gallons of water every twenty-four hours. The whole of the water is used for power purposes at the mine.
1076. What about the water storage?—Below the township we have a small dam with a storage capacity of 1,500,000 gal. to 1,750,000 gal. It is a concrete dam of the reinforced cantilever type, built about seven years ago. The water from that dam is used purely and simply for power purposes as required. It is unfit for domestic purposes.
1077. Where is it situated?—At a place called Slip Creek, on the Woodville road. On the top of the mountain we have just completed within the last three months a new storage dam. It is of the gravity type concrete wall, with a storage capacity of anywhere between 6,000,000 and 8,000,000 gallons.
1078. That is also the town supply?—Yes. The whole of the water required for domestic purposes—drinking water for the mine and the town as well—is supplied from that dam. It is pure mountain water, and not subject to any contamination at all. I may add that that dam has never yet been filled, because it was not completed until after the last wet season. In fact, there has been no rain since the completion of that dam. At the time of the explosion there might have been 2,000,000 gallons of water stored there. The dam is situated about a mile from the screens in a direct line, and the water is brought down in a series of pipes and distributed to the various points required. The top of the dam wall is 800 ft. above the railway level. We break the pressure at the foot of the cliffs. The pressure does not exceed 200 ft. of head on any line of pipes. We have another Worthington pump 6 by 4 at the small dam. It is a three-throw geared type ram pump driven by a 5 h.p. direct current shunt wound motor.
1079. *By Mr. Want:* Will you give us particulars of your ventilating districts?—There are three separate splits in the mine, the intake air entering at the main tunnel entrance.
1080. What is your method of attack? How do you get to the coal, by tunnel or shafts?—By tunnel.
1081. Can you give us the length and grade of the tunnel?—The tunnel was driven in 540 ft. flat. It was 10 ft. by 7 ft. 6 in. inside and 540 ft. long to where it intersected No. 2 seam.
1082. What distance is the mouth of the tunnel from the screens?—Twenty-eight and a-half chains.
1083. And the grade of the tunnel?—There is an elevation of 180 ft. from the screens to the tunnel mouth. There are three different gradients. It is not uniformly graded throughout. The heaviest grade is 1 in 14.

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1084. What seams are you operating?—No. 2 seam is the middle one of the three workable seams that have so far been touched, and it is the one on which the principal development work has been done. It is referred to as the No. 2, or 27-in. seam. It is worked on the long-wall system.
1085. Straight face?—The machine faces are straight. The pick faces are stepped.
1086. It is the bottom one worked?—Yes.
1087. And the top, or upper seam, No. 1?—In the early stages of No. 2 the bord and pillar system was carried out on account of the danger of the overhanging cliffs.
1088. Approximately what would be the inclination?—The seam dips 1 in 3, at first. It gradually flattens out, but no gradient exceeds 1 in 3. The seam gradually flattens as it goes into the mountain.
1089. Can you give a section of the upper seam?—Starting from the bottom section there are 20 in. of coal and 3 in. of fireclay. The fireclay is rather friable, and breaks up into a fine dust. Then there is another foot of coal, then 15 in. of shale and fireclay, with a thin band of coal in the middle of it. On top of that there is 18 in. to 20 in. band of coal worked under the bord and pillar system.
1090. Can you tell us the width of the bords and pillars?—In some cases the bords were driven 12 yds. wide with double gates, following the Welsh bord system, but there has not been any of that done for some time. Mr. Evans preferred a 8-yd. bord with a single road. It is not very material, but that was the system carried on. With the exception of the main dip, the drive to the full dip of the seam is about 12 yds. wide, for the purpose of carrying the air across inside the packs.
1091. The top seam is connected with the bottom seam?—Yes, by a cross-measure or horizontal drift 80 yds. in length. The whole of the haulage is carried on in No. 2 seam.
1092. The coal from the top seam is put on the rope at No. 10 level?—At the middle slit.
1093. Have you made any analyses of the coal?—Yes. I have taken some analyses within comparatively recent times, and we have the records of those analyses. I have mislaid the information just at present, but I can get it for you before the inquiry closes. I will have the complete information then. The last test we made was in conjunction with the Admiralty expert, Commander Fowler. That test gave 58 per cent. of fixed carbon.
1094. What seam was that?—No. 2 seam. The full test was 58 per cent. of fixed carbon, 30.5 per cent. of volatiles, and slightly under 10 per cent. of ash. The remaining percentage was apparently combined moisture. I might mention that the lower portion of the 20 in. and 12 in. coal was good coking coal.
1095. Can you give us the analysis of that?—Yes. It showed 59 per cent. of fixed carbon, 27 per cent. of volatiles, and slightly over 11 per cent. of ash. The upper portion of the seam is much higher in ash. It will go 16 per cent. to 18 per cent. of ash, and will be correspondingly less in volatiles and fixed carbon.
1096. Are the coals hard or soft?—No. 2 seam coal is classed as a hard coal.
1097. Have you had much faulting?—No faulting of any note. There were one or two displacements of an inch or two, but no fault has ever been found.
1098. What proportion of the total output would be cut by the machines, approximately?—In No. 2 seam about 66 per cent.; practically two-thirds of the coal is machine cut. In No. 1 seam the whole of the coal is machine cut. No. 1 is a hard, dense coal, and it is utterly impossible to work with picks.
1099. Can you give us some idea of your drawing roads, and how you get the coal from the face?—The main gates were driven usually on the level in the seam to facilitate hand wheeling and horse haulage when required. There are both systems of wheeling in this mine. They were driven direct off the main tunnel and continued as required. Over No. 2 seam there is a 20-in. band of hard fireclay which was shot down into the gateways and used to build the packwalls of all the gates. That was a very hard fireclay, but there was a tendency to gradually break up into fine dust. By putting water on it that fireclay could be reduced to fine dust in twenty-four hours. So long as it was kept dry it made good packing, but with any mixture with water it would be of no use for packs.
1100. How many drawing roads would there be on each side of the tunnel?—The bottom gate was the main gate, and that was continued into within a few yards of the face. The cross gates are opened every 12 yds. That was the main intake air course brushed to an average height of about 5 ft. The intermediate gates were 12-yd. centres. Roughly speaking,

each face was about 100 yds. in length, and that had its own main gateway and a system of intermediate gates. They may vary a little on either side for a distance of 100 yds.

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1101. And the pack walls?—The pack walls were 9 ft. thick. The intermediate gates would be just as the men could build to make the pack wall stand, but in between they are sufficiently apart to fill the intervening area completely.
1102. You had no cundies?—No. There were no spaces in the gob at all.
1103. Can you describe the circulation of air in No. 2 seam?—The main intake air entered by the main tunnel and went direct to the bottom of the main dip. It split right and left, one split of air going on to the north side to what is known as Beattie's wall. It entered along the bottom level to the bottom end of Beattie's wall, and returned along a rise of the same course, then going to the rise all the time and returned through the main return to the top level at the head of the main dip, and crossed the main intake there by an overcast and joined the main return at the top of what is usually called No. 2 dip road, which runs parallel to the main tunnel.
1104. That is ascensional ventilation?—Yes. The left-hand split or south-side split went in along the bottom level, usually referred to as No. 12 or Taylor's flat, to the bottom working place in the pick wall. At the present time that face is 350 yds. from the main tunnel line. The same principle was followed there. The air rose round that long-wall face, rising all the time, and entered Fitzpatrick's machine wall at the lower end. It continued there right up to the top and returned out to the main return to the main tunnel at the end of No. 2 dip, again, where the two currents join again. From there it went direct to the fan.
1105. Would you say that there would be better air at the face of the long wall than the bord and pillar?—Yes. The long-wall system lends itself to more efficient ventilation than the bord and pillar. The men used to complain about the ventilation on the bord and pillar.
1106. Do the men work without shirts?—Yes. That is the usual practice with coalminers.
1107. Could you give us any estimate of the velocity at the faces?—No, I could not. I could only venture an opinion as to the velocity. In places it would reach up to 600 ft. per minute at the face. In the restricted areas it would increase.
1108. Will you describe the mine ventilating system for the upper seam?—The intake left the main tunnel at the entrance to No. 2 slit, and went along about 100 yds., roughly speaking. It then turned into the stone drive connecting with No. 1 seam. The air was turned off to the right at the head of No. 1 seam dip, ventilating the right-hand side workings first. Then it went across the main dip to the left-hand side of the dip, and from there to the workings on the left-hand side of the stone drive. It went down a small ventilating shaft to practically the highest point in the No. 1 seam workings, and again joined with the return air from the No. 2 slit in No. 2 seam.
1109. Was there any other connection between the top and bottom seam?—Yes. There was another shaft formerly in use on the bord above No. 2 slit. In the ordinary course of working, the No. 1 seam bord passed over that shaft, and it was used to ventilate that section of the mine, in addition to the air which entered the stone drive, but it has been out of action for some time. It was not in use at the time of the explosion.
1110. You do not think it was in use at the time of the explosion?—No. It would be probably bratticed off at the top end.
1111. *By Mr. Kilpatrick:* Were the usual tests with the hygrometer made in the mine?—So far as I know, they were. About three years ago Mr. Evans asked for a standard hygrometer, and it was procured for him. It was in regular use in the mine up to the day of the accident. Unfortunately it was in the cabin when the explosion occurred, and it was smashed.
1112. Have you any idea of the average temperatures recorded by the hygrometer?—The temperatures taken underground showed the dry bulb to go as high as 84 deg., but I think the normal temperature of the mine was about 80 deg. to 82 deg.
1113. Who was the registered manager of the mine?—Thomas J. Evans.
1114. Had you any registered underground manager at all?—Mr. Evans was the registered mine manager. I may say that we have nothing in Queensland to correspond with the underground manager in New South Wales. Mr. Grant, one of the deputies in Mount Mulligan, was also the holder of a first-class certificate for coal mines and metalliferous mines.

- J. T. Watson. 1115. Can you tell the Commission what type of man you would consider Mr. Evans, as the manager of the Mount Mulligan mine?—Evans was a capable man. He held a certificate of competency by examination.  
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1116. Where issued?—In Victoria or Western Australia; probably Victoria. He was registered in Queensland, too. He came under that system whereby the various State certificates are accepted. The certificates are interchangeable.
1117. Grant was the senior deputy?—Yes; although I know little or nothing about those arrangements in the mine. That was a matter that was in Evans's hands to suit his own ideas. It is a thing I never interfere with.
1118. Can you tell us what Grant's qualifications were?—He held a first-class certificate of competency for both metalliferous and coal mines. I think he obtained his coal certificate twelve or eighteen months ago.
1119. Did he have a deputy's ticket in conformity with the recent provisions of the Act?—I could not say.
1120. Parkinson was the other deputy?—Yes.
1121. He would be the man who would usually conduct the inspection?—I have seen Parkinson going up to the mine in the morning, because he used to pass my place, although Grant frequently made inspections also. That was a matter of arrangement between Mr. Evans and the two deputies. They worked it in the way that they found most convenient.
1122. Did Parkinson have any qualifications apart from that?—I don't know. I know there has been some correspondence about Parkinson, but I don't know how it stands at present.
1123. These are really the three men who had charge of the mine?—Yes. Evans had a good deal of experience as an official in various mines. For some time he was a deputy at the State mine in Victoria, and his father was an old mining manager in New South Wales for many years. In his early years Evans had had some experience in the Bulli Colliery. He certainly knew something of firedamp and fiery mines. He was in several gassy mines, including the Bulli mine.
1124. Can you tell us where the deputy station was in the mine?—It was recently moved. It is 100 yds. from the tunnel entrance, on the left-hand side going in. That is where the old transformer used to be.
1125. What is the time for starting work in the morning?—8 a.m.
1126. And what is the finishing time?—4 p.m.
1127. How did the men enter the mine—on foot?—Yes.
1128. And they came out the same way?—Yes.
1129. Was there a magazine near the mine?—There is a magazine about 200 yds. from the entrance to the mine. It is round in a gully, with a spur of the mountain between the mine entrance and the magazine.
1130. Can you give us a description of the magazine?—It complies with the standard required by the Explosives Department in the licenses which they issue. We got a plan from the Explosives Authorities, and the magazine was built according to the plan they supplied. It is an iron building, lined inside with wooden double walls, and complies strictly with the plan supplied. It has a lightning conductor and arrester on the top.
1131. Do you know what sort of explosives were used in the mine?—I have always insisted on the best possible explosive, and decided that no explosive shall be used in the mine except monobel.
1132. That was the general explosive in use?—Yes.
1133. Was any gelignite used?—Only on occasions when there was no other explosive available. I can only recollect two occasions when gelignite had to be used because nothing else could be obtained.
1134. What about detonators?—No. 6 detonators were used.
1135. Who issued the explosives during the last twelve months?—That was a matter I never interfered with. Evans used to arrange all that. Morrison, the blacksmith, issued the explosives since the endless rope haulage gear was in operation. Before that, Griffiths had charge of the explosives and used to issue them in the morning.
1136. Do you know anything of the method of distribution so far as explosives are concerned?—I have seen the men get explosives from Griffiths. The explosives were handed to the men as they required them, and the amount and cost were ticked against them and sent down to the office.
1137. Were the explosives issued at the magazine?—No. At the mine entrance. The man in charge brought the explosives round to the mine entrance and served them out there.

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1138. He brought a supply of explosives to the mine entrance?—Yes. He brought what he thought was sufficient for the day's requirements.
1139. Have you any knowledge of what was done with the left-over explosives?—I have always insisted on their being taken back to the magazine. They certainly should always have been taken back to the magazine.
1140. Can you tell us what tamping was used in the mine? Was anything sent into the mine for the use of the men for tamping below ground?—There is a clay pit there, and it is never used for any other purpose except tamping.
1141. Do you know of your own knowledge if such stuff was sent in?—I cannot say with regard to the last six or eight months, but some time ago I saw the men taking the clay at the tunnel entrance.
1142. How long ago?—I do not know how long ago. I have been in the mine very little during the last twelve months.
1143. Can you tell us what sort of tamping rods were used?—All the men were supposed to be equipped with wooden tamping rods with a piece of copper on the end. There were no iron or steel rods.
1144. Can you tell us if canisters were used for the storage of explosives by the men underground?—No. I do not know.
1145. Do you know anything about the method of firing, and whether they were firing with registered shot firers?—Some time ago Evans mentioned to me that a new regulation had been brought in, which required the appointment of shot firers, and then subsequently told me that that had been modified and that one man on each bord was recognised as a shot frer. So far as I know, that was the system he followed.
1146. You have no registered shot firer?—I don't know of any.
1147. Do you know if permission was given by the Inspector of Mines for explosives to be used in the way you have mentioned?—I do not know. The Inspector of Mines never referred any question of the mine business to me. He dealt entirely with Mr. Evans, who was in control of the mine.
1148. In accordance with the provisions of the Mines Regulation Act, only explosives provided by the Company were to be used. Do you know if that provision was carried out?—I think so. I doubt if any man took explosives into the mine which did not come through the magazine. I never heard of any.
1149. Do you know what quantity of explosives were usually stored in the magazine?—I think that the last time there was a shipment of monobel landed here, about two or three weeks prior to the accident, fifty cases of monobel for the mine and ten cases of gelignite were required for outside purposes. The magazine was nearly empty when that came along.
1150. Do you know if there was really any attempt made to carry out the provisions of the Act regarding explosives and the handling of explosives in the mine?—I could not tell you that.
1151. You really could not say anything at all about it?—No. It was entirely in Evans's hands.
1152. When you were in the mine, have your observations led you to the belief that things were being done in a way that they should not have been done, in so far as the provisions of the Act are concerned?—I cannot say that I can call to mind anything that I ever noticed in that direction. I do not think I have seen a shot fired in the mine for a long while past. I cannot call anything to mind just now.
1153. *By Mr. Want:* How often do you go below?—Not very often. I only go when required, and that when any special work is to be done, such as putting in new plant. Lately I have been going into the main tunnel, as I was arranging to put in new conveyers. It was only when special work of that kind was in hand that I went into the mine at all.
1154. *By Mr. Kilpatrick:* You understand that we have a Mines Regulation Act in Queensland?—Yes.
1155. Have you any knowledge of the provisions of that Act relating to collieries?—In a general way, I have.
1156. You don't know, as superintending engineer of the mine, whether those provisions were carried out or not?—I did not interfere in any way with the management of the mine.
1157. You know that there are provisions in the Act dealing with the regulation of coaldust on roadways, and on the roof and sides?—Yes. I know there has been something done recently in that direction.
1158. Was there any method of dealing with the coaldust on the roof and sides and floors?—There is no method in operation at present. In fact, I cannot see any practicable way of doing that.

- J. T. Watson. 1159. Was it done in any local places?—I cannot say.
- 5 October, 1921. 1160. Was it done in any place in the mine at all?—I could not say. The whole of the matter regarding the administration of the mine, so far as the regulations are concerned, was left entirely in Evans's hands.
1161. You did not interfere with these things at all?—No.
1162. You must have paid attention to these things when you visited the mine?—If anything was wrong I would notice that particular place. Outside one or two visits to the bottom of the main dip, I have not been much in the mine for the last twelve months. More than half of my time has been spent in Melbourne and Sydney, at the Head Office of the Company. I have been away more than half of my time in the last three years.
1163. Have you any knowledge of what has been said to be the practice here of using plasters or lay-ons' in the mine?—The only time I knew it was done was about three years ago. I happened to be in the mine and I found a man in the act of preparing one of those plasters, and I ordered him to stop it. I threatened him with immediate dismissal if I heard of him doing it again. I also instructed Evans to put a stop to that practice.
1164. You certainly consider such a practice was dangerous?—Yes. I would not allow a man to stay in the mine two minutes if I saw him using a plaster.
1165. Have you ever had any gob fires in the mine?—No.
1166. Have you seen anything likely to cause heating?—No. We tested in the most likely places, but never saw the slightest signs of heating.
1167. Did you ever find any gas in the mine?—I found no trace of firedamp, although I made inspections with the hydrogen lamp.
1168. *By Mr. Want:* Covering what number of years?—We have had the hydrogen lamp in use for the last seven or eight years.
1169. What parts of the mine did you test?—Where there was likely to be an accumulation of gas. I have tried it myself in the main return, and I have tried it in the rise in the drive at the head of No. 2 dip. There was a dead end which was quite shut off from the air for years, and I tried it there with a hydrogen lamp, but never got the slightest trace of firedamp.
1170. *By Mr. Kilpatrick:* Did the officials go round the mine and make inspections of the mine to see if they could find anything?—Evans and Grant used to go round the old workings. I used to ask them to keep a lookout for any chance of spontaneous combustion or firedamp, and I have reason to believe that they did so.
1171. You would naturally expect to get these things in the Record Book?—Yes, I would expect it to be in the Record Book.
1172. Did you ever examine the Record Book to see if there were any records of inspections there?—I never examined the Record Book for a long while.
1173. You do not know if the entries were kept there or not?—No.
1174. *By the Chairman:* You do not know, then, if any reports of coaldust on the roadways were made?—No. That was in Evans's hands, and it was never referred to me. The Record Book was never brought to me at all. I may say that I do not approve of the method of keeping mine records at present in use in Queensland.
1175. *By Mr. Kilpatrick:* Will you be prepared to give suggestions for making better records and improving things generally?—Yes.
1176. What was the system of working adopted at the mine? Were the men on contract?—The men were working on contract at a tonnage rate.
1177. The big majority of the men working on the coal faces were on contract?—Yes.
1178. How many men were there working in the mine on contract, approximately?—I think thirty pairs were cavilled during the last couple of quarters.
1179. Generally speaking, do you think that all matters in connection with the Mines Regulation Act, especially the observation of safety conditions in the mine, were carried out by those in charge?—So far as I know I have never seen anything in the mine to draw Mr. Evans's attention to, except minor details. I have had occasion to draw his attention once or twice to the provision of better ventilation, particularly in relation to returns, and it was always carried out. Usually, I did not interfere with Evans at all; in fact, he resented any interference with matters for which he was responsible.

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1180. *By the Chairman:* Did the men complain about the mine being dangerous?—It was very much the other way. They considered it one of the safest mines in Queensland.
1181. Did the miners ever appoint two of their number to make an inspection of the mine?—I know they made an inspection of the mine at intervals.
1182. Were those inspections the outcome of any grievance or any complaints they had to make?—No. Except in one case, where an inspection was made of a place which was said to be too hot, and where the wet bulb reading was too high and the men wanted to get a 6-hour shift.
1183. Except for an ordinary scrutiny under the award there has been no special inspection under the Act?—No.
1184. What sort of roof was there?—The top seam has a roof which requires timbering and needs watching, but in the No. 2 seam the roof, on the whole, is good.
1185. What is the extent of settlement on the gob and pack walls?—That is a question of time. There is a continual squeezing, and it reduces down to about half the original height.
1186. So far as your observations have gone in the last six or seven years, what is the greatest reduction of height you have observed?—About 60 per cent. of the height of the seam.
1187. Would there be undue pressure on the gobs?—There certainly would be heavy pressure on the gobs, because they are packed very tight. It naturally follows that the pressure must be very high.
1188. *By Mr. Kilpatrick:* The tighter the pack the better the working?—Yes, and the better the ventilation of the mine.
1189. *By the Chairman:* Do you know, of your own knowledge, that Mount Mulligan was a very dusty mine?—I would not call it dusty. It was not a dusty mine as regards coaldust. A small part of the dust was derived from over and above the coal.
1190. Was there a lot of stone dust?—Yes. I have occasionally made an analysis of the dust found on the roadsides, and also the dust that used to come out of the road at the screens. I found 40 per cent. to 60 per cent. of ash present in the dust, and a large percentage of that was due to the fritting of that fireclay, and also to the breaking up and disintegration of the crystalline calcium carbonate that occurs in the coaldust. That is also quite noticeable in the dust at that mine.
1191. The mine is a very dry mine?—Yes. It is only making 4,000 or 5,000 gallons of water every twenty-four hours.
1192. *By Mr. Want:* What lights did the pit men use?—All open lights; mostly acetylene.
1193. You were in the mine after the explosion?—Yes.
1194. Did you see any explosives lying about unprotected?—Yes. I saw several places where they had been scattered by the explosion. It looked to me as if the explosives were in their original containers—cardboard boxes.
1195. You have had a lot of experience in coal mines?—Thirty-five years.
1196. Can you say you were not appalled at the way explosives were laid about, apparently carelessly, in that mine?—I would not like to judge the men by what I saw after the explosion, because those things were undoubtedly scattered about by the explosion. I would hesitate to judge a man and say that he left his explosives about other than under normal conditions. I have never seen explosives left lying about in the mine under ordinary conditions.
1197. Can you tell us what separates the intake and the return to the top seam?—At all points where the main intakes and returns had to be separated double doors were used.
1198. Was there a double door there?—Where do you mean?
1199. Between the intake to the top seam and the main return?—Yes, double doors were there.
1200. You say you made a determination of the dust?—Yes.
1201. Did the dust give you any impression as to its particular fineness?—No; I would not say it was particularly fine, but there was a certain percentage of it fine.
1202. Could you see it flickering in front of the lamp?—No, I have never noticed that. I have noticed the discussions before the Institution of Engineers in regard to stone dust in coal mines, and I was anxious to see if that principle could be applied ultimately to this mine. The matter was receiving every consideration. I have my views still as to the utility of that system. It is suggested that fine stone dust should be distributed on the roads in coal mines.

- J. T. Watson. 1203. You do not know of any system of watering the mine which could be applied here?—No watering system is applicable here. In the first place we did not have the water to do it, and in the second place it would disintegrate the whole of the pack walls if water was used. The whole of the fireclay would break up to a powder. Further than that, it would render the mine much more uncomfortable than it is, as it would increase the wet bulb reading.
- 5 October, 1921. 1204. What would you say were the contributing factors making a dust dangerous?—When it contains a high percentage of hydro-carbon. That is the extremely fine dust which floats in the air current. It must be floating in the air current before any explosion of it can be brought about. It would have to be ignited by a powerful flame, with a good deal of energy behind the flame. I do not think it is possible to ignite coal-dust by an ordinary light.
1205. *By Mr. Kilpatrick:* You do not think that the ordinary naked lights are sufficient in themselves to cause an explosion?—No. It requires concussion as well as flame.
1206. *By Mr. Want:* You recognise that circumstances would arise where coal-dust is dangerous?—Yes, the conditions are so complex, but they are very rare.
1207. Are the conditions so complex that you never know when explosions are going to happen?—Yes. No man can judge beforehand.
1208. Who was responsible for the introduction of monobel?—I was responsible for it myself, because I knew it was the safest explosive we had in the South Coast coal mines, and I insisted on its being used here.
1209. Then the mine inspectors did not instruct that monobel should be used?—I don't know. The inspectors never discussed the mine with me at all. That was a matter between Mr. Evans and themselves.
1210. Generally speaking, do you consider coaldust a greater menace than gas?—Under certain conditions I would.
1211. Can you give us any idea of the geological age of the formation?—The coal measures are permo-carboniferous, the same as the Illawarra district.
1212. Has there been any alteration in the ventilation recently?—No. I cannot call to mind that there has been anything changed. The general system has been the same for the last twelve months. There may be local variations, but generally the system has not been departed from.

[The Commission adjourned at 1 p.m. until 10 a.m. the following day.]

### THIRD DAY.

#### MOUNT MULLIGAN.

THURSDAY, 6 OCTOBER, 1921.

The Commission met in O'Brien's Hall at 10 a.m.

PRESENT:

R. A. DUNLOP, ESQUIRE (*Chairman*).

HON. C. KILPATRICK, M.L.C.

W. WANT, ESQUIRE.

#### Evidence of Mine Management and Mine Administration—continued.

JAMES THOMAS WATSON, Superintending Engineer, recalled and further examined:

- J. T. Watson. 1213. *By the Chairman:* You promised us yesterday that you would get some further information with regard to the leases held by the Chillagoe Company at Mount Mulligan—Yes. There is a little uncertainty about some of the leases. I recommended dropping some of them, and I wired to Melbourne to know how matters stand. There are approximately 40 acres covered by the workings. The length of main roads, main gates, and haulage roads in the mine is 95 chains.
- 6 October, 1921. 1214. That includes the tunnel?—Yes. The other particulars I obtained for the Commission are as follows:—Length of main returns, 13 chains; return from the north side, 23 chains; jigs in use, 20 chains; secondary gateways in use, 80 chains; making a total of 231 chains altogether, practically 3 miles. They are all in No. 2 seam. In No. 1 seam the length of roadway is approximately 40 chains. The length of the faces in No. 2 seam at the bottom pick wall on the south side is 7 chains. Fitzpatrick's machine wall is 4½ chains, Beattie's machine wall on the north side is 6 chains, and the

old long wall face above Fitzpatrick's wall is 3 chains. I have not included No. 1 seam in that, because it is a bord and pillar. With regard to the analysis of the coal from the seams asked for by the Commission, the last analysis was made approximately in February of this year. The analysis of the coal from No. 2 seam is as follows:—Fixed carbon, 59.2 per cent.; volatile hydro-carbons, 29.4 per cent.; ash, 10.1 per cent.; moisture and sulphur, 1.3 per cent. That was taken in February last.

1215. *By Mr. Want:* Where was that coal taken from?—It was a sample taken from a number of different places, and all analysed together. It was an average of the seam that we were working on at that time. The Admiralty expert, Commander Fowler, took a sample in the main dip at the same time. I know that he got under 10 per cent. of ash and slightly higher volatile hydro-carbons. That was the only difference in the two tests. An analysis was also made of the coking portion of the coal in No. 1 seam: The coking coal is in the bottom bands only. The analysis is as follows:—Fixed carbon, 60.3 per cent.; volatile hydro-carbon, 27.6 per cent.; ash, 11.4 per cent.; moisture and sulphur, .7 per cent. That is about a fair average of the coal that is worked.
1216. Have you made any tests regarding the coking quality of the coal?—Yes. Both of those seams are of excellent coking quality. The other information which you asked for is marked on the plan.

JAMES HARRIS, Engineer, Mount Mulligan, recalled and further examined:

1217. *By the Chairman:* As engineer of the colliery, you are in charge of the power unit?—Yes.
1218. Including the electrical installation?—Yes.
1219. You are in charge of the mechanical appliances in the mine?—Yes.
1220. You are responsible for them?—Yes.
1221. Who has to do with the electrical plant besides yourself?—Mr. Norman Fraser is the electrician, and he looks after the electrical part.
1222. Your duty is to see that the electrical gear is in good going order?—Yes.
1223. Do you often test?—Lately I have seldom tested the electrical circuit, but left it to Mr. Fraser.
1224. The installation is such that a leak or fusing may be detected at any time by the plant itself?—Yes.
1225. *By Mr. Want:* Are necessary instruments provided for the electrician to carry out his duties and make tests?—We have a particularly first-class outfit.
1226. Are proper records kept?—There has been no special book kept.
1227. Regarding the installation generally, what condition would you say it was in?—First-class condition.
1228. Have there been any serious breakdowns at any time?—No, we have never had a serious breakdown since we have had the plant.
1229. Any fusing of cables?—No.
1230. Any blowouts?—We blew a few fuses.
1231. Did you break down an armature?—No. We have only lost one motor, and that was a small D.C. motor we lost five years ago.
1232. Were you always provided with everything you required in the way of equipment?—Yes, we always got what we wanted.
1233. Was the gear up to its work?—Yes.
1234. *By the Chairman:* Mr. Evans was in charge of the mine records?—Yes.
1235. We have got one Mine Record Book. Do you know if there are other books available?—Yes. I have brought three other books here.
1236. You have nothing to do with the explosives?—No.
1237. Have you ever caught the men underground interfering with the electrical installation in any way?—No.

[Three Mine Record Books, including current Record Book, tendered for identification and subsequently accepted as evidence and marked *Exhibit 17.*]

NORMAN ANDREW FRASER, 20, Electrician, employed at the Mount Mulligan Colliery, sworn and examined:

1238. *By the Chairman:* Can you state briefly what your duties are?—I have to attend to all parts of the electrical apparatus.
1239. Including repairs?—Repairs, new installations, and maintenance generally.

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James Harris.

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N. A. Fraser.

6 October, 1921.

- N. A. Fraser.  
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1240. What sort of electrical plant would you say was installed in the mine?—  
It is in first-class order.
1241. Is it a good plant of its type?—Yes.
1242. It is an efficient plant?—Yes, very.
1243. Have you had many breakdowns with it?—No. There are very rarely any breakdowns.
1244. Do you frequently test it?—Yes.
1245. How often?—The mains are always under test.
1246. *By Mr. Want:* Is there a name entered in the Record Book to show who is the electrician of the mine?—I believe so.
1247. Have you the necessary telephonic communication between the generator on the surface and the distributing station underground?—Yes, there is a telephone underground.
1248. Are any notices posted regarding treatment for shock?—Yes. There is one posted at the powerhouse.
1249. Has anybody been injured?—Not since I came here eighteen months ago.
1250. Have there been any breakdowns?—No. There were two stoppages, but they could hardly be called breakdowns.
1251. Is there a switch house at the mine entrance?—Yes.
1252. What would be the distance from the generator station to the tunnel mouth?—One quarter of a mile.
1253. Are you well supplied with testing instruments?—Yes.
1254. And the necessary accessories?—Yes.
1255. Do you know if the bedplates of the generators and transformer were properly earthed?—Yes.
1256. Are there any fault detectors?—Yes. There are two at the transformer station in the mine and one in the D.C. in the powerhouse.
1257. Did you inspect these?—They are inspected every day by the deputy.
1258. I suppose you had fuses blowing out occasionally?—Yes.
1259. Who replaced them?—I would replace them if I were there, otherwise one of the underground managers would do it.
1260. You operated the coalcutters in the mine with electric power?—Yes.
1261. Did you have any bother with them electrically?—No, beyond a general overhaul.
1262. What is the rating of your transformer?—100 K.W.
1263. Are the cables of sufficient size generally?—Yes, ample.
1264. Any heating?—No, not a trace.
1265. Have you had experience with coalcutters before?—No, not before I came here.
1266. Do you know if those machines were gasproof?—Yes.
1267. Do you know if the armourings of the cable were continuous?—Yes.
1268. And earthed?—Yes.
1269. Did you have uninclosed motors underground?—Only in the main intake.
1270. Before the explosion were all the main cables carried on proper insulators?—Yes, down the main dip and out from the main slit.
1271. Before the explosion, were all other cables carried on proper insulators?—Yes. The alternating current cables underground in the top seam were tied with marline and bunched.
1272. Did you make any tests of the insulation regularly?—Yes.
1273. With what result?—No deterioration at all.
1274. Did you record it?—Yes.
1275. Have you plenty of spares, including trailing cables?—Yes.
1276. Do you know if the machinememen examined the trailing cables daily?—They reported to me if there was anything wrong.
1277. Due care was taken to keep the signal wires apart?—Yes.
1278. On the morning of the explosion, the 19th September, were there any electrical disturbances noted?—None at all.
1279. Where were you at the time the explosion occurred?—In the machine shop.
1280. Were the breakers cut out in the powerhouse?—No.
1281. What did you do?—I went straight up the incline to the mine.
1282. What then?—I noticed the breaker was out at the mine. The one at the fan was also out.

1283. You were not the first there?—No. I was the first at the fan.
1284. Have you been in the mine since the explosion?—Yes.
1285. Did you notice any circumstance that would suggest arcing or fusing having occurred?—Not a trace of it.
1286. On this examination, in what condition generally did you find the installation?—Very nearly in perfect order.
1287. Can you say if the installation generally was up to the standard required in mines that give off gas?—So far as I am aware, it was.
1288. *By the Chairman:* You conducted Mr. Daniell through the mine?—Yes.
1289. You were present when he made his test?—Yes.
1290. Mr. Watson asked me to request you to describe the earthing arrangements on the high tension line?—A common earthplate is buried permanently in a damp place in the powerhouse. This was connected by a 19/12 bare cable. That is buried beside the armoured cable along the incline. All the tension boxes have been earthed to this cable, and also both switches at the fan and the mouth of the tunnel. This cable was continued on underground right to the transformer sub-station. The transformer itself and the sub-station switches and main switch were also earthed to the same cable. All the junction boxes on the high tension cable were connected with this earthing line. In the powerhouse the main generator, both dynamos, and the main switch doors were all earthed to the same place.
1291. I have been asked by Mr. C. F. V. Jackson, Chief Inspector of Mines, to find out from you what time the power was put on on the 19th September, and what amount of power was turned into the mine?—The engine was started at 6 a.m. It went straight down to the substation and it continued onwards out to the switch at the end of the main tunnel.
1292. What amount of power was supplied?—Very little power was used until the coalcutters began.
1293. *By Mr. Want:* Did you notice that yourself?—No.
1294. *By the Chairman:* What is the usual amount of power supplied?—It varies. I suppose 50 amperes would be supplied on the high tension side.
1295. *By Mr. Want:* You could not tell us what amperes were going at the time of the explosion?—No.
1296. You do not think there was any overload?—No, not so far as I am aware.
1297. You have seen the machines since the explosion?—Yes.
1298. How many machines were used in the mine?—Three.
1299. Judging by what you saw, how many were in operation at the time of the explosion?—Only one at the top seam.
1300. Only one machine suggests that?—Yes.
1301. Would there be any other material load on at the time?—Not on the machine circuit. The pump would be going in the main dip and the light too.

#### Evidence of men who worked underground.

GEORGE MORRISON, Blacksmith and Tool Sharpener, recalled and further examined:

1302. *By the Chairman:* On the 19th September you were smithing at the mine? —I was tool-sharpening.
1303. Previous to that date you had been in charge of the explosives?—Yes.
1304. Can you tell us when you were in charge?—Up to about a fortnight before the explosion.
1305. For what period were you in charge?—About four months.
1306. What class of magazine have you got?—The magazine is down at the back of the tunnels. It is an up-to-date magazine, lined inside with iron, and iron outside that again.
1307. Do you know if it complies with the requirements of the Explosives Act? —So far as I know it does.
1308. What is the capacity of the magazine?—I could not say.
1309. What does it usually carry?—It generally has fifty or sixty cases in it.
1310. What detonators are carried there?—About 2,000.
1311. And fuse?—A case of fuse.
1312. What class of explosives and what brand was stored there?—Monobel, and a few cases of gelignite. The gelignite is used mostly for outside work.
1313. What strength are the caps?—No. 6.

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G. Morrison.  
6 October, 1921.

- G. Morrison. 1314. And the fuse, was it single or double tape?—Blue-black Bickford.
- 6 October, 1921. 1315. What was the method adopted for distributing the explosives to the men at the mine?—The explosives were carried to the tunnel in the morning.
1316. Who did that?—I did when I was in charge.
1317. Can you say what quantities of explosives you carried over?—I used on the average about two cases a fortnight.
1318. How much would you carry over daily?—On the average, four or five packets.
1319. And what detonators?—We used to bring the detonators over as they were wanted.
1320. Were you in charge of the explosives after you got to the pit mouth?—Yes.
1321. You used to give the explosives to the men?—Yes.
1322. When you issued the explosives, did you record them on loose sheets or in a book?—I marked them off on a loose sheet of paper first, and then afterwards I put them in a book.
1323. The explosives were supplied by the Company to the men, who bought them from the Company?—Yes.
1324. You do not know if the men ever brought their own explosives to the mine?—No.
1325. You know that gelignite was used underground?—It was used in one case when the monobel had run out.
1326. How did the men carry their explosives to the face?—Generally in an ordinary packet, the way I gave it to them.
1327. *By Mr. Kilpatrick:* What was done with the left-over explosives?—There was a little box inside the tunnel, and the packet or so left over was put into that box.
1328. Was that in the manhole on the right?—Yes.
1329. Were the detonators left there too?—Very seldom, but occasionally detonators were left there.
1330. Who had charge of the explosives before you?—Griffiths.
1331. Who had charge of the explosives at the time of the explosion?—Martin O'Grady.
1332. To your knowledge, was the same custom observed by these two men as the custom you adopted?—Yes.
1333. Have you ever known of any tamping going in from outside for tamping the holes underground?—Yes.
1334. How long ago is it since any went in?—I could not say. Up to a couple of months ago I have seen tamping going in.
- 1335. Was it taken in on a wagon or skip?—Some of the men carried their own in.
1336. Did the management make any provision for taking in tamping for the stemming of the holes?—I could not say.
1337. You do not know of any provision having been made?—No.
1338. You say that you have seen men taking tamping inside?—Yes.
1339. What did they carry the tamping in?—In a billycan.
1340. *By Mr. Want:* What sort of tamping?—Sand.
1341. *By Mr. Kilpatrick:* Can you give us any specific instance where men took tamping in in their billycans?—Yes. I saw George Williams take some in, and also Elfimoff, too.
1342. Have you any knowledge of the men asking that proper tamping should be taken into the mine for use?—No.
1343. You worked in the mine some time yourself?—Yes. I worked for a month, off and on.
1344. At the face?—Yes.
1345. Did you see any explosives underground?—Yes.
1346. What was the method you followed in the use of explosives?—I just used them in the ordinary way.
1347. Just tell the Commission what the ordinary way was. You first bored a hole?—Yes, and charged it and tamped it.
1348. With what?—We used to tamp it with coal borings.
1349. *By the Chairman:* How did you use it; roll it up in paper?—Yes.
1350. *By Mr. Kilpatrick:* Was that the general custom throughout the mine?—I could not say.

1351. *By the Chairman:* What sort of stemmer did you use?—A wooden stemmer. G. Morrison.
1352. *By Mr. Kilpatrick:* How were the explosives stored below at the face?— We had ours in a wooden box. 6 October, 1921.
1353. Without any cover?—It had a cover.
1354. What sort of cover?—An ordinary loose cover like a loose board.
1355. Did you keep mining tools and other metallic substances in the box?—No.
1356. Only the explosives?—Yes.
1357. Do you know if any of the other men kept their tools in their boxes in which explosives were stored?—Not that I am aware of.
1358. Were any billycans used for the storage of explosives at the face?—I could not say.
1359. Were explosives left lying about entirely naked and exposed?—I have never seen any.
1360. Have you seen any metal scrapers in the mine at all?—I saw a few, but they were condemned here.
1361. Do you know if any of the men tamped their holes with these?—No.
1362. Do you know if anybody tamped the holes with any other metallic substance or rod?—No. I made some tamping bars myself when I first came here.
1363. *By Mr. Want:* What did you make the tamping bars of?—Wood.
1364. How far back from the face did you keep your explosives? In the gateways?—We had ours a long way back, because there was no one else working there but ourselves. We had ours in the next bord 30 ft. or 40 ft. away.
1365. You did not see any canisters used at any time for holding explosives?—I did not take that much notice.
1366. How long were you working below?—About a month altogether.
1367. *By the Chairman:* Martin O'Grady, who was magazine keeper at the time of the explosion, is dead?—Yes.
1368. *By Mr. Kilpatrick:* Did you use any plasters or lay-ons under the coal to break the coal?—Not while I was there.
1369. You did not do it yourself?—No.
1370. Did your mates do it at any time?—No.
1371. Who was with you?—F. Pattinson.
1372. *By Mr. Want:* In what district were you working?—In the south.
1373. Was there any dust there?—A little dust, but not much to speak of where we were.
1374. Did you do any damping or watering before firing?—No.
1375. Was it necessary?—In my opinion it was not necessary in that place.
1376. Was it a pick place?—Yes.
1377. Bottom wall?—First gate.
1378. What system did you adopt in getting the coal. Did you hole it?—Yes.
1379. Then shot it down?—I used to pick it down.
1380. Did you use explosives?—Very little.
1381. What did you use explosives for?—Brushing.
1382. You mentioned that you tamped the holes with borings. Where did you get the borings?—Out of the hole.
1383. Which hole?—The brushing hole.
1384. Was it a coal brushing?—There was a band of coal in the top where we bored in.
1385. I suppose you bored there because it was a bit tenderer?—Yes.
1386. Is there a fair amount of stone dust about?—Not a great deal.
1387. Is there any accumulation of coal dust on the roads?—Nothing to speak of.
1388. About how much explosive did you deal out to the men at one time?—A packet at a time.
1389. And how many detonators?—A small box containing one hundred caps.
1390. And fuse?—I took a couple of coils of fuse at a time.
1391. You never dealt more than those maximum quantities to any one man?—No.
1392. Did the men work in pairs?—In the majority of places they did.

- G. Morrison. 1393. Did you discriminate between those men to whom you gave explosives?  
—No.  
6 October, 1921. 1394. You gave it to either one of the pair?—Yes.  
1395. You had no list of registered shot-firers?—No.

FREDERICK JOSEPH LARSEN, Miner, living at Mount Mulligan,  
sworn and examined:

- F. J. Larsen. 1396. *By the Chairman:* Are you working now?—No. I have been off sick for  
a week.  
6 October 1921. 1397. Where do you usually work?—In the Mount Mulligan Colliery.  
1398. How long have you been working there?—Nine months.  
1399. Have you followed coalmining for any time?—No.  
1400. This was your first experience in coal mines?—Yes.  
1401. What particular class of mining did you do? Shift work?—Yes, I am  
a road man.  
1402. Were you working in any particular district in the mine?—In the  
bottom section of the mine.  
1403. Including the north and south sides?—Yes.  
1404. You were laying roads?—Yes.  
1405. Did you have a mate?—No. I was on my own.  
1406. You have seen men working in the face?—Yes.  
1407. Have you noticed them firing?—No.  
1408. Have you noticed them charging holes?—No.  
1409. Have you noticed the methods they adopted for storing their explosives  
underground?—Yes.  
1410. Will you describe how they were stored?—I have always seen fractureur  
lying in the gateways.  
1411. Near the face?—About 15 ft. or 20 ft., back from the face.  
1412. Has it been protected in any way?—I have never seen it protected.  
1413. You saw it just lying loose?—In the fractureur packets lying loose.  
1414. Did you notice what class of fractureur was used?—No.  
1415. Have you noticed any detonators there?—Yes, I noticed detonators and  
fuse.  
1416. Were they kept separate?—No. They would all be lying alongside one  
another.  
1417. The detonators would be lying in their little iron boxes?—Yes, in the  
little cap boxes.  
1418. *By Mr. Want:* How far would that be off the wheel of a skip passing?—  
2 ft. or 3 ft.  
1419. Were they on the floor or on the gob?—On the floor.  
1420. *By the Chairman:* Did you notice any paper lying around where those  
explosives were?—Yes.  
1421. A newspaper?—All kinds of paper. Advertising books, catalogues, and  
newspapers.  
1422. Do you know what they were used for?—They were used for tamping  
holes, I understand.  
1423. You have never seen a hole tamped?—No.  
1424. Have you seen any tools for tamping?—Yes.  
1425. What were they made of?—Wood. They were tamping sticks.  
1426. Did you see them made of any other material?—No.  
1427. *By Mr. Want:* You never worked on the coal?—No.  
1428. *By the Chairman:* Have you seen explosives lying on the floor ahead  
of a roadway that was being laid?—No, not ahead of the roadway.  
1429. *By Mr. Kilpatrick:* What time did you go into the mine in the morning?  
—8 o'clock.  
1430. You went in with the rest of the men?—Yes.  
1431. Have you noticed the method of distributing explosives at the mouth of  
the mine?—Yes.  
1432. How was it done?—It was handed out in packets.  
1433. And detonators in packets?—Yes.  
1434. And fuse in coils?—Yes.

1435. Have you noticed particularly what was done with the left-over explosives after they had been brought from the magazine?—I could not tell you. F. J. Larsen.  
6 October, 1921.
1436. Have you seen in the manhole inside the tunnel entrance any left-over explosives?—I have seen something in the box there.
1437. Did you see any detonators there?—No. I do not remember seeing any detonators.
1438. Did you see any fuse there?—Yes; I saw fuse there.
1439. Having seen fuse there, and explosives, would you assume that detonators left over might also have been put in there?—Yes.
1440. *By the Chairman:* Have you noticed how the men carried the fracture to the face?—They carried it in their hands in packets.
1441. Not in tins?—No.
1442. *By Mr. Want:* Did they carry the detonators in their hands or in their boxes?—In their boxes.
1443. *By the Chairman:* Have you seen tamping sand go into the mine?—No; I have never noticed any.

ARTHUR INGRAM GRIFFITHS, Clipper, employed in the Mount Mulligan Colliery, sworn and examined:

1444. *By the Chairman:* How long have you been at Mount Mulligan?—Since March, 1915. A. I. Griffiths.  
6 October, 1921.
1445. Have you been clipping all that time?—No.
1446. What were you doing besides clipping?—For five and a-half to six years I was driving the jig on the incline from the pit mouth to the screen.
1447. What else were you doing?—I was in charge of the explosives magazine.
1448. Is the magazine built in accordance with the requirements of the Explosives Act?—Yes, I think so.
1449. How far away from the pit mouth is it?—I could not say definitely.
1450. *By Mr. Want:* Would it be 100 yds.?—Yes.
1451. *By the Chairman:* Would it be 200 yds.?—250 to 300 yds. I never measured it.
1452. What quantity of explosives did you see stored in the magazine?—The magazine would be filled when we had sixty cases there.
1453. What class of explosives?—Arkite, lignite, and monobel.
1454. Did you carry any other explosives?—A small quantity of gelignite.
1455. What was the gelignite used for?—It would be used for development work, so far as I recollect.
1456. Did you keep an Explosives Book?—Yes.
1457. Where did the men get their explosives from?—They got them from me.
1458. Where?—I carried the explosives from the magazine to the pit mouth.
1459. Did the Company supply all that explosive at cost price to the men?—Yes, at cost price.
1460. You distributed the explosives at the pit mouth to the men as they were going into the mine?—Yes.
1461. What quantity did each man get?—Generally a 5-lb. packet.
1462. What quantity of detonators did you carry in the magazine?—They were not kept in the powder magazine.
1463. Where were they kept?—In a separate magazine.
1464. Where is that magazine?—It is kept on the water tunnel.
1465. What quantity of detonators did you keep?—One case.
1466. How far is that from the powder magazine?—Perhaps about 300 yds.
1467. How used the men to carry their explosives down the tunnel?—In a can.
1468. And the detonators?—Also in a can.
1469. What detonators did you supply them with?—A packet at a time.
1470. What fuse?—Usually one coil of fuse, and sometimes two coils, but very rarely more than one.
1471. How long were you in charge of the magazine?—From 1915 until I went into the hospital this year.
1472. When was that?—In April last.
1473. Did you ever notice men carrying explosives down the mine in any other way except in a can?—No.
1474. Did you ever notice men taking down tamping from the surface?—Yes. I have sent it in myself.

- A. I. Griffiths  
6 October, 1921.
1475. Was that unusual?—It was customary.
1476. You have never worked down below?—Yes.
1477. Where?—When I came here first I worked down the mine for three months.
1478. What district did you work in?—Just off the main dip on the left-hand side.
1479. Were you working in the face?—Yes.
1480. Getting coal?—Yes.
1481. Were you using explosives?—Yes.
1482. What class of explosives were supplied to you then?—I think it was arkite.
1483. How used you to use it?—I was only a learner. I was put in with another man, and I acted under his instructions.
1484. What did you do?—I holed under the coal and put the drills in, and we would get in about 3 ft. 6 in. and then charge the hole.
1485. How did you charge it?—We had to go to the main dip for clay.
1486. You tamped with clay?—Yes.
1487. What sort of tamping rod did you use?—Copper.
1488. All copper?—It was capped with copper.
1489. Have you noticed anyone in the mine tamping differently to that?—No.
1490. How far used you to store your explosives from the face?—At that time we had to carry it right out into the main dip.
1491. How far would it be from the face?—About 15 yds.
1492. Did you use a tin to store it in?—Yes.
1493. You used a billycan?—Yes.
1494. Did you notice explosives lying around loose in any other part of the mine?—No.
1495. Or detonators?—No.
1496. *By Mr. Kilpatrick:* During the time you were issuing explosives, did all the men put their explosives into a billycan?—Yes.
1497. Did you insist on it?—Yes.
1498. Did they never take it in any other form?—Yes.
1499. They may have taken it in in a packet without any can at all?—Yes.
1500. What percentage of men would take in explosives without any billycan?—In the early part of the working of the mine a lot of it was done, but latterly Mr. Evans got very strict about it and he insisted on the men carrying their fractureur and caps in a closed receptacle.
1501. Just immediately prior to your going to the hospital?—About eight months before.
1502. Up to the time you left that was the custom?—Yes.
1503. Except in some cases?—That is right.
1504. Would it surprise you to know that the custom has entirely changed since you left off issuing the explosives?—Yes.
1505. Can you give any reason why such a change should have taken place?—I cannot.
1506. *By Mr. Want:* Where were you working when you were below: at the bottom seam or top?—Bottom seam.
1507. Was it hard?—Yes.
1508. How did you win it? Did you cut it or hole it?—We cut the bottom pricking and put the drills in, usually about 1½ in. or 2 in. off the top.
1509. How deep did you hole?—As far as the pick would go in, about 3 ft. 6 in.
1510. What is the thickness of the coal there?—About 2 ft. 9 in.
1511. You would hand hole 3 ft. 6 in. deep. What would be the height of the hole in front?—It would be about 1 ft.
1512. Did you invariably hole 3 ft. 6 in.?—Sometimes; very often less.
1513. *By the Chairman:* That would be the greatest distance you would get in with a pick?—Yes.
1514. *By Mr. Want:* Sometimes you would only get in 6 in.?—More than that.
1515. How deep did you bore your holes?—3 ft. to 3ft. 6 in.
1516. Do you know what a gruncher is?—Yes.
1517. Was there any grunching done?—No.
1518. How many plugs did you put in a hole in that seam?—About two and a-half in a large hole.
1519. You never knew of an instance of grunching?—I never saw it.

1520. Were the officials up against that sort of thing?—Yes, they were.  
 1521. You say that Evans insisted on a closed can being used?—Yes.  
 1522. Did he have difficulty with some of the men in that regard?—I think he did with one or two.  
 1523. So far as you know, Mr. Evans insisted on all persons using a can?—That was his idea, that they should have cans.  
 1524. Did your shots usually bring the coal down?—So far as I am concerned, my shots did. We used the hammer and drill for a bit of it.  
 1525. Did you see a shot fired without bringing any coal down?—No.  
 1526. Did you have good parting in the roof?—It was a bit sticky where I was.  
 1527. Did the coal come down in large pieces?—Yes.  
 1528. Did you have to break it up sometimes?—No.  
 1529. It would break in the fall?—Yes.  
 1530. Did you work in a machine place?—No.

A. I. Griffiths.

6 October, 1921.

GEORGE WILLIAMS, Miner, living at Mount Mulligan, sworn and examined:

1531. *By the Chairman:* Where have you been employed?—I was employed here until a few months ago. I started in September, 1920, and finished in March, 1921.  
 1532. Was that the only experience you have had?—No. I have had over twenty years of coalmining experience.  
 1533. In what places?—New Zealand, New South Wales, and Queensland.  
 1534. Have you ever worked in a colliery with a similar set of conditions to this colliery?—I have worked on a long wall, and bord and pillar.  
 1535. What were you doing in this mine?—Coalcutting.  
 1536. Which district were you working in?—Top seam.  
 1537. Bord and pillar section?—Yes, and the pick wall, and also on Fitzpatrick's machine wall.  
 1538. *By Mr. Want:* You had been on the picks and followed the machine too?—Yes.  
 1539. *By the Chairman:* You used to get your explosives at the mouth of the pit every morning?—Yes.  
 1540. What quantities of explosives would you take below?—A packet was the general rule.  
 1541. How many detonators?—A box.  
 1542. And fuse?—Generally, a coil.  
 1543. Who would you get that stuff from?—Griffiths. Sometimes Morrison.  
 1544. From the magazine-keeper at that time?—Yes.  
 1545. That explosive was supplied by the Company?—Yes.  
 1546. You did not have to buy your own explosive to take into the mine?—No.  
 1547. What class of explosive was usually supplied?—Usually monobel.  
 1548. Was gelignite supplied?—Not in my time.  
 1549. How did you carry it to the face?—Just in the packet as I got it.  
 1550. You never carried it in any other way?—No. I just took it down as I got it from the magazine-keeper.  
 1551. How were the detonators carried?—When I got a box I just took it down as it was.  
 1552. You carried them down in your hand?—Yes.  
 1553. Did you ever notice anyone else carrying explosives down the mine?—Yes. It was the practice in that mine for everyone to carry his explosives down just as he got them.  
 1554. It was not the general practice to carry it down in a tin?—No.  
 1555. Have you ever seen it carried down in a tin?—No, not in this colliery.  
 1556. When you got the explosives to the face, how did you store them?—In the wooden box which it comes in.  
 1557. Did the box have a lid?—No.  
 1558. *By Mr. Want:* Did you take the explosives to the face?—Yes.  
 1559. Right to the face?—Ten yards back from the face.  
 1560. *By the Chairman:* Was there anything else in the box besides explosives?—I kept my caps in the box with the paper I used to make the cartridges, and I kept the explosives in another corner of the box.

G. Williams.

6 October, 1921.

- G. Williams. 1561. Did you keep iron or steel tools in the box?—No.
- 6 October, 1931. 1562. *By Mr. Want*: Did you have a file for your drills?—Yes.
1563. Where did you keep the file?—I left it near one of the props.
1564. *By the Chairman*: How did you use your explosives?—I bored a hole, and then tamped it.
1565. How did you tamp it?—I tamped it with sand.
1566. Where did you get the sand?—I carried the sand in with me. I got it from where they were making bricks.
1567. Did you see anyone tamping holes there?—I have noticed some.
1568. How did they tamp?—They tamped with the borings of the coal.
1569. Would they be miners getting coal?—Yes.
1570. Where would the hole be bored?—In the coal. Sometimes in the brushing.
1571. Why did you carry sand down?—Because I have always been used to using sand in other mines. As a rule, sand is supplied to miners for tamping. Sometimes they take the natural clay off the roof.
1572. *By Mr. Kilpatrick*: Did you ask any of the officials for sand?—Yes. I approached the officials here.
1573. Did you bring to their notice that sand should be sent into the mine for tamping purposes?—Yes.
1574. Did you ask Mr. Evans, the manager, particularly about the sand?—Yes, and I asked Grant.
1575. You asked Evans particularly to get sand into the mine for tamping purposes?—Yes. I asked him if we could not be supplied with sand.
1576. What did Evans say?—He said I was always after something, and if I wanted sand I would have to carry it in.
1577. *By Mr. Want*: Would you have accepted clay?—Clay would have been right enough for tamping, but I would sooner have sand. That was my experience.
1578. *By Mr. Kilpatrick*: Did you ask Mr. Grant the same question?—Yes.
1579. What did Grant answer you?—He said it was not the practice in Mount Mulligan to send sand into the mine.
1580. Mr. Parkinson was the deputy?—Yes.
1581. Did you ask Parkinson about the sand?—Yes.
1582. What did he tell you?—He said, "I know you should be supplied with sand. I do not know why you don't get it." That finished it, and I always used to carry it in myself.
1583. You have had experience in New Zealand, New South Wales, and Queensland?—Yes.
1584. Did you, at any time in your experience, see the system of tamping carried out as it is done here?—No. I have always been supplied with tamping until I came here. I either got sand or clay.
1585. For tamping purposes?—Yes. Some mines have a natural clay and you can get it off the roof. You would not be supplied with it there.
1586. What did you do when you charged a hole—you always put in sand or clay?—Yes.
1587. And you carried it in yourself at Mount Mulligan?—Yes.
1588. Did you see the men in the surrounding places act differently to you? Did they stem or tamp with any other substance?—I have seen them on some occasions.
1589. What other substance did those men use?—They used the borings out of the holes. When the machine bored the hole the dust came out. Some of the men made packages of this dust and put it in the hole the same as I did with the sand.
1590. In your big experience, so far as coalmining is concerned, would you say that the practice in Mount Mulligan was careless so far as the distribution of explosives and the method of taking them into the mine is concerned, and also in regard to handling same at the face?—Yes, I would say it was careless. The Mines Regulation Act prohibits all that kind of thing.
1591. *By the Chairman*: You used to stem it?—Yes.
1592. What sort of a tamping rod did you use?—I used a wooden tamping rod. There was no copper on it.
1593. Was it supplied to you?—No. We had to get our tamping rods ourselves.
1594. *By Mr. Want*: Was any over-boring done?—No.
1595. Any shooting out of the solid?—I have not noticed any grunching.

1596. You worked on the machines as well as the picks?—Yes.
1597. Did the coal come down in big pieces sometimes?—Yes.
1598. Would you say that slips or backs were frequent in Mount Mulligan?—No. They are not uncommon in other mines.
1599. Did the coal come down in pieces too large to be handled?—Sometimes.
1600. How did you break it up?—I bored a hole 18 in. deep into the solid part of the lump that had fallen.
1601. Did you have gads for bursting the coal?—Yes.
1602. In what seam was it that you bored the coal?—The top seam.
1603. What did you tamp it with?—With sand.
1604. Did you tamp it at all?—Yes.
1605. Did other miners carry on similar practices?—I have heard it said that they did it in different ways, but I never saw it myself.
1606. Did you ever see anyone put a plug on top of a lump of coal?—No. I have heard that it was plastered sometimes.
1607. Would you say that the faces were dusty?—In that seam it was rather dusty.
1608. As compared with other mines you worked in, would you say that Mount Mulligan was a dusty mine?—I have seen some mines just as dusty, and I have seen mines with not so much dust in as Mount Mulligan.
1609. Have you seen worse mines than Mount Mulligan?—Yes.
1610. *By the Chairman:* This mine is a very dry mine?—Yes.
1611. Did you water before firing?—No.
1612. *By Mr. Want:* When you insisted on getting sand for stemming, did you recognise the danger of firing the dust?—Yes.
1613. Have you worked in gassy mines?—Yes.
1614. Did you ever hear of gas here?—No.
1615. *By the Chairman:* Was the dust very heavy in the roadways and the main travelling ways?—Yes.
1616. I mean dust in suspension?—After you fired a shot you would see dust floating about.
1617. *By Mr. Want:* Were the roads dusty?—Yes.
1618. Was the ventilation good generally?—In the long wall seam it was fairly good, but right in the gateways there was no air at all. Most of the time we had trouble with the ventilation.
1619. The mine air was warm in that section?—Yes.
1620. Was it travelling?—You cannot tell when the air is travelling. The smoke used to hang there for hours.
1621. Was the ventilation good in the bottom seam?—Yes, it was good in the bottom seam.
1622. I suppose the gateways were ventilated by the leakages?—Yes.
1623. Consequently, they would not be as cool as the face?—No.

G. Williams.

6 October, 1921.

WILLIAM OWEN MATTHEWS, Machineman at Mount Mulligan Colliery,  
recalled and further examined:

1624. *By the Chairman:* How long have you been working here?—I started on the 15th or 17th June, 1920.
1625. Were you working on the day of the explosion?—No. The last shift I went on was on the 1st of August this year.
1626. You were laid up with a bad leg?—Yes.
1627. Were you working in the mine?—Yes. All the time I was working in the top bord, although I occasionally took on an odd job below.
1628. Were you working as a machine miner all the time?—Yes.
1629. Have you ever worked on the coal?—No.
1630. Are the faces in the top seam very dusty?—They varied at times. On one or two particular occasions the face was dusty. The reason for that was because it was hard to get the air in at that particular time. It was also dusty in the dip on the top seam, but it was all right as soon as we got the air through. Things are good in the top seam when you get through.
1631. Did you notice the men working in the coal there?—Yes.
1632. Do you know how they charge a hole and tamp it?—Yes.
1633. How do they do it?—They charge the hole in the ordinary way and tamp it.

W. O. Matthews.

6 October, 1921.

- W. O. Matthews. 1634. What with?—Borings.
- 6 October, 1921. 1635. What borings, stone or coal borings?—In the first two shots the miners sometimes bored their holes in the top of the stone at the bottom of the top coal. The purpose of that is to leave the top coal up and shoot the other down. There would be some stone amongst the borings, but they used to avoid the stone if possible.
1636. What instrument did they use to tamp with?—A wooden tamper.
1637. Do you remember seeing explosives stored below?—Yes.
1638. How were they stored?—The majority of the men on the top seam had wooden boxes. Two men in particular had wooden boxes with sliding lids. They were Peter Canoplia and Tommy Hutchinson. The majority of the men kept their explosives in wooden boxes.
1639. How far would these boxes be from the face?—What I considered a safe distance.
1640. Would they be on the floor of the gateway or roadway?—Yes, generally. The explosives were generally left where the men left their working clothes.
1641. Did they store tools, such as gads, files, and hammers in the wooden boxes with the explosives?—I could not say that. I never took particular notice.
1642. *By Mr. Want*: What depth did you cut the coal?—The cutter bar has a 6 ft. 6 in. cut.
1643. How many shots to the cut?—One in the middle and one in each rib, with two on the tops.
1644. What would be the average charge required in each hole?—The miners generally used to give seven to nine plugs in the middle hole. The rib shot on the roadside would be the second hole, and they would charge accordingly.
1645. Did the coal come down in big lumps?—In some of the bords the coal broke bigger than others. It seldom came down bigger than they could handle it.
1646. If it did come down bigger than they could handle it, what would they do?—They could break it with a pick.
1647. Could that be done in every case?—I never saw any other method adopted.
1648. Would any coal be too hard to break with the wedge?—No, I don't think so. I have seen the wedge used to split coal.
1649. You don't think there would be any necessity to use "lay-ons" or "plasters"?—No.
1650. Do you think that the men were aware that that practice was prohibited?—I never heard anything mentioned in connection with it at all in the top seam.
1651. You don't know if the management had any difficulty in that direction?—I never heard it mentioned in any shape or form. The word "plasters" was never mentioned there.
1652. *By Mr. Kilpatrick*: You are a machineman?—Yes.
1653. Is your machine usually in good condition?—I have been working for fourteen or fifteen months on that machine. The motor has never been looked at, and nothing ever went wrong. The only trouble we had in connection with that machine was on one occasion when the leads burnt out inside the controller. That was immediately fixed up. Another time we were going up the jig hill when the man running the machine overwound the cable and blew out the breaker, and the machine stopped. By doing so he stopped the current. Another time, when we were travelling, through carelessness on my part a full skip ran over the cable and cut it in two places. That blew the breaker and stopped the machine.
1654. Generally speaking, the machine was in good order?—Yes. If anything went wrong it was fixed up by the electrician straight away.
1655. You entered the mine in the morning along with the rest of the men?—Yes.
1656. Who were usually present besides the men? What officials?—Evans, Grant, and Parkinson.
1657. Where was the deputy's cabin situated?—It was where the transformer used to be, about 60 or 80 yds. inside the main tunnel on the right-hand side.
1658. What was the custom followed there? Did the deputy go there and report to the men there?—All the time I have worked here I only know of one occasion when we were held up. The deputy was late coming in. Every other day the other bosses were there.
1659. Can you tell us how the explosives were issued at the mine? They came from the magazine and were brought to the main tunnel mouth?—Yes. If a man wanted a packet of fractureur he would ask for one and it would be handed to him.

1660. And if he wanted a box of detonators?—The same thing would apply.
1661. And the same thing would apply with regard to fuses?—Yes.
1662. How did the men take those explosives down the mine?—They took them down in their arms.
1663. Without tins?—I never saw a tin used.
1664. All the time you have been in the mine you never saw a tin used to carry explosives?—No.
1665. Did those officials see the explosives issued in the morning?—They did not actually see the fracteur issued, but they would see the men passing the cabin with those things in their arms.
1666. You would assume that the officials would know that such was the custom?—Yes.
1667. You were working on the machine. Can you tell us the condition of the atmosphere in reference to dust while you were cutting with that machine? Is there a great deal of dust stirred up?—No; not in some cases. The dust from the top seam was certainly bad. There were dusty places there. About six months ago two men, named Harold Martin and Harry Anderson, were working there and they complained about the dust. They told Mr. Grant about the conditions. About that time they broke a water-pipe on the incline going down the dip. Mr. Grant told George James to take down a 5-gallon drum of water, and James took that water into the top seam.
1668. Grant issued instructions to that effect?—Yes. I saw the water being used there. After the miners cleaned up this bord they put two or three tins of water there to keep the dust down.
1669. There was a storage of water at a particular place for that purpose—a barrel, or cask, or something?—There was half-a-barrel of water there. When I left there I know there was some talk about getting a barrel of water into this particular place. Up the hill in the different bords the dust was bad, but that was remedied when a new shaft was put in. Immediately that was put in there was good air and practically no dust. There was sufficient air to carry the dust away from there.
1670. From the knowledge you have, can you say that the management recognised that dust was prevalent and something should be done to lay it, so far as certain places were concerned?—In this particular place Grant said that something was wanted.
1671. *By Mr. Want:* Can you give us some idea of the density of the dust? How far could you see through it?—If there is a good bord with a good air current passing through it, the dust is gone almost as quickly as the coal is cut.
1672. The dust did not impede your vision, then?—No. On other occasions the dust was certainly thick at times.
1673. *By the Chairman:* You have not worked in any other coalmine?—No.
1674. *By Mr. Want:* Did you work on the machines anywhere else?—No.
1675. And the greatest inconvenience regarding the dust was when the men were filling the cuttings?—Yes; and picking up the slack. The coal in the bords at the top end of the top seam was of a different nature to the other end altogether. The dip coal was of a drier nature while the up-hill coal was of a damp nature.
1676. What would that be due to?—Natural conditions. There was a drip of water in one bord. It was always dripping there.

[The Commission adjourned at 12.30 p.m. and resumed at 1.45 p.m.]

#### Evidence of Inspectors of Mines.

SYDNEY HORSLEY, Inspector of Mines, sworn and examined:

1677. *By the Chairman:* Where do you live?—Gympie.
1678. What are your qualifications?—I am a Master of Civil Engineering, Melbourne University; Hydraulic Engineer and Municipal Surveyor for the Victorian Government.
1679. You are at present in charge of the Gympie district?—Yes.
1680. What do you call the district which includes Mount Mulligan?—The Second Northern District.
1681. What is the extent of the Second Northern District?—It includes all the fields in Herberston, the Mulgrave, and Cooktown districts. Then there is the Third Northern District, which includes Chillagoe, the Etheridge, and Croydon. I was in charge of both the Second and Third Northern districts before I went to Gympie.

W. O. Matthews.

6 October, 1921

S. Horsley.

6 October, 1921.

- S. Horsley. 1682. When did you leave this field?—On the 23rd July last.
- 6 October, 1921. 1683. *By Mr. Want:* How long had you been here?—Since March or April, 1905.
1684. Are you the senior inspector?—I was the oldest inspector but one.
1685. Were you the senior inspector in the district?—I was the senior inspector in the Herberton District.
1686. *By the Chairman:* You had one other inspector under your direction?—Two.
1687. They were called junior inspectors?—Yes.
1688. Taylor was the first of those?—Yes.
1689. And then Mr. Williams?—Yes.
1690. Tell us how long Taylor was with you, and when he left?—He came in May, 1917, and left in March, 1920. Mr. Williams came in July, 1920.
1691. *By Mr. Want:* Were those officers under your direction?—Yes.
1692. Can you give us the total number of men employed on the fields, including both coal and metalliferous mines?—There is only one coal mine, and that is situated at Mount Mulligan. There were twenty to forty men employed underground when I was here.
1693. That number of men was employed when you left the district?—Yes. In my last report I stated that there were about thirty-eight men employed.
1694. How many men were employed in the metalliferous portion of your district?—That would depend on the years. In some years there were less than others. In the busiest time there were as many as 2,000 metalliferous miners employed, and in the slack time there would be under 500.
1695. How often were the various mining operations inspected?—Some places were visited only once a year, and others twice or three times, just as time would permit.
1696. I would like you to tell us something of your office routine. What was the procedure when the inspectors made an inspection? When you made an inspection I take it that you wrote a report about it?—Yes.
1697. Was that report made in duplicate?—It was copied.
1698. What did you do with the copy?—It was retained in the office.
1699. Did you transmit it to Brisbane?—I sent the original to Brisbane.
1700. You entered the report in the Record Book at each mine?—Yes.
1701. Did you take a duplicate of every report you entered in the Record Book?—No. I took notes of my inspection in my notebook.
1702. Did you transmit a resumé of those notes to Brisbane?—Yes. I sent the notes regarding the mine, and sometimes I made a report as regards the particular methods followed in the mine.
1703. In case there were breaches of the Act at any mine, I suppose it was necessary for you to consult Brisbane before taking steps to deal with it?—Yes, sometimes.
1704. What would you do in the case of a prosecution?—Where there was no inquiry involved, I took action myself. Where there was an inquiry involved, I would wait until the inquiry was over and await further information from Brisbane.
1705. Have you got power to prosecute for any breach of the Act?—Yes, except where an inquiry is involved.
1706. Do you hold a colliery manager's certificate?—No.
1707. Have you ever worked in a colliery?—No.
1708. Consequently, you have never been manager or on the staff of a colliery?—No.
1709. When did you last inspect Mount Mulligan?—At the end of May, 1920.
1710. Can you tell us what instruments you have in the office to enable you to carry out your inspection?—I had an anemometer, but it was not correct and I sent it back to Brisbane.
1711. When?—At the end of May, 1920.
1712. When did you get it replaced?—I did not get it replaced.
1713. You have been without an anemometer since then?—Yes.
1714. Have you any other instruments?—A compass and tape, and wet and dry bulb thermometers.
1715. Have you any lamps?—No.
1716. No safety lamp?—No.
1717. Where did you get the lamp to make your inspection?—We generally took candles in. We always inspected with candles ever since that mine was opened.
1718. Did you ever test the mine air at Mount Mulligan for gas, or cause it to be tested?—I always took a candle in and I never found any gas.

S. Horsley.

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1719. You would have known it if you did strike gas with a lighted candle?—  
There was never any gas. I took a safety lamp that Mr. Watson had on one or two occasions.
1720. What type of safety lamp was it?—I do not know one type from the other.
1721. Have you never tested for gas in the mine?—No.
1722. You never used a safety lamp in the mine?—No.
1723. Have you seen an ignition of gas in the mine?—No.
1724. Have you seen the results of the ignition of gas or an explosion in a mine?—I have seen the results of an ignition, but not an explosion.
1725. Where did you see the result of an ignition?—In Charters Towers.
1726. What was it?—There was a fire in the mine, burning timber.
1727. Do you know the regulations regarding the treatment of coaldust, as assented to in March, 1920?—I read them and I called the manager's attention to them.
1728. Can you quote those regulations or give us an outline of what is stated therein?—Dust had to be prevented by keeping the faces wet or in a state of dampness, so far as I can remember.
1729. Suppose you looked at some dust on the floor of a road in a coal mine, how would you know whether it was comparatively dangerous or not?—I have looked at it, and if it had a darkened colour I would know it was coaldust; that is all.
1730. The colour of the dust would be a guide to you?—Yes.
1731. If the colliery manager in your inspection district asked you to recommend any type of safety lamp, what would you recommend?—I would have to write for the information.
1732. Could you recommend any type of electrical approved lamp?—Nothing more than a closed incandescent lamp.
1733. Do you know that there are electric lamps specially approved for use in coal mines?—No.
1734. Do you know the class of explosive they were using at Mount Mulligan?—  
—It was generally monobel.
1735. Is that a permitted explosive?—Yes.
1736. To what class of permitted explosive does monobel belong?—I do not know. I never looked it up.
1737. Within the meaning of British and Australian mining standards, what is a gassy place?—I suppose where gas has been detected or found by ignition on coming into contact with a light.
1738. For what length of time?—I never came across any. I did not have any experience of it.
1739. You have not come across the definition of a gassy place?—No.
1740. Can you tell us what main conditions render dust dangerous. What are the main governing conditions that render coaldust dangerous?—I should say dryness in extensive workings, and dryness of the dust in the mine generally.
1741. Have you seen the miners come out of Mount Mulligan?—Yes.
1742. Were they black?—Fairly black.
1743. Like aboriginals?—Almost.
1744. What would that suggest to you?—Actual contact with coal and perspiration.
1745. Would it not suggest something else?—Fineness of the coal penetrating the skin.
1746. Do you know anything about breathing apparatus for use in rescue work?—  
—I had a smoke helmet on once. That was all.
1747. You could not describe any make of breathing apparatus?—No. I have seen it though.
1748. In considering coaldust, what percentage of incombustible material is recognised as sufficient to render it to some extent, at all events, inert?—  
I do not know.
1749. Suppose you found an amount of incombustible material in dust, what percentage would you demand before you regarded that dust as safe?—  
As long as it appeared white or red to me. So long as it was not a dark colour.
1750. How long did you say you were in charge here?—From 1905 till the end of July, 1921.
1751. Do you know that coaldust mixed with air is explosive?—I never saw it explode. I have heard of it.

- S. Horsley. 1752. Have you been below and through the workings of Mount Mulligan?—Yes.  
 6 October, 1921. 1753. Do you know the system of ventilation?—Yes. I have examined it. I have been through the workings and around them.  
 1754. Do you know how many ventilating districts there are in Mount Mulligan?—I could not say. It is a long time ago.  
 1755. Can you tell us what a ventilating district is?—It is a district cut off by a separate current. It is a part of the main current.  
 1756. Except in the case of a long wall, what is the maximum number of men to be employed in any ventilating district?—I do not know.  
 1757. *By Mr. Kilpatrick:* When did you inspect the Mount Mulligan mine last?—In May, 1920.  
 1758. Did you make any record of that inspection in the record book?—Yes.  
 1759. Are you sure that it is in the book under that date?—Yes. I have a record of it myself.  
 1760. Well, have a look at the record book and see if you can find it?—[*Witness looks through the record book.*] Yes, it is here.  
 1761. Will you read out the entry you have made there?—Yes. It reads as follows:—

“29th May, 1920.

“Tested new office anemometer against the mine ditto and found variations too large. I consider the mine instrument correct, and my new one very much wrong. Air travelling into the mine by the former is 34,350 cubic feet per minute. By the latter over 80,000 cubic feet per minute. The ventilation is good and sufficient.

“S. HORSLEY, Inspector of Mines.”

1762. I find you are correct so far as the date is concerned. That entry is in page 13 of the record book?—Yes.  
 1763. You tested the new office anemometer against the mine anemometer and you found that great variation?—Yes.  
 1764. Did you make an inspection of the mine on that occasion?—Yes.  
 1765. The book you were just looking at is the mine record book?—Yes.  
 1766. Your report is a report of an air measurement which was taken, but it is no report at all of an inspection of the mine?—While I was taking the air measurement I inspected the mine and went right round it.  
 1767. There is nothing stated in the record book about that. Can you tell us from memory what you found that day, and what were the conditions generally, seeing that there is no report in the record book?—I tried the smallest currents in the long wall faces and took the number of men employed. In one face there were two men working, and I found 600 c. ft. of air a minute. That was the smallest current.  
 1768. *By Mr. Want:* Did you examine anything else besides the air?—Yes; I examined the sides and roof.  
 1769. Can you state the condition of the dust in the mine, or if there were any explosives lying about, or anything of that kind?—I examined thoroughly in that direction.  
 1770. *By Mr. Kilpatrick:* Did you examine the general condition of the miners and the safety conditions generally?—Yes.  
 1771. Don't you think that was worthy of a report in the mine record book?—Yes, it was worthy of a report. Still, I had a look and I was satisfied with the mine.  
 1772. Was the magazine registered?—Yes.  
 1773. Is there a record of that register?—Yes.  
 1774. Where is it? In your office?—Yes.  
 1775. What was the method adopted in the mine at Mount Mulligan for firing shots?—By fuse and detonator.  
 1776. Those were the means that were used for firing the shots; but have you any knowledge as to how the shots were fired?—No. They were holing or undercutting when I was there, and breaking it down.  
 1777. Was there a registered shotfirer, as provided for in Division V., Section 8, of the Schedule of the Act?—There was one recommended some months ago.  
 1778. Was the shotfirer registered, and his name recorded in the record book in compliance with that section of the Schedule?—A shotfirer was not registered at first, but he may have been registered since.  
 1779. *By Mr. Want:* Were there any shotfirers registered during your term of office?—I do not think so.

1780. *By Mr. Kilpatrick:* Was there any registration of subordinate shotfirers, as required by the Act?—No. I think each man fired his own shot, or one of each party fired it. S. Horsley  
6 October, 1921
1781. Can you tell us if at any time a record has been made in the record book of either primary shotfirers or subordinate shotfirers?—Not that I am aware of.
1782. How many inspections have taken place in the mine since you last inspected it?—I don't know.
1783. Would it surprise you to know that none have taken place at all?—Yes.
1784. Mr. Williams inspected the mine on 10th March, 1921, and Mr. Laun on the 14th September, 1921, just a few days before the explosion. Those are the only inspections which have taken place in the mine since you last inspected it?—It is a big district to get round.

OSBORNE MAURICE WILLIAMS, Inspector of Mines, sworn and examined:

1785. *By the Chairman:* Where do you live?—At present I am living at Charters Towers, but my headquarters are at Mareeba. O. M. Williams.  
6 October, 1921.
1786. What is your district?—No. 3 Northern District.
1787. Don't you do No. 2 Northern District?—No.
1788. The senior inspector does that?—Yes.
1789. How long have you been in Charters Towers since you left this district?—Ten weeks.
1790. You were sent down there on special work?—Yes.
1791. Your inspection district has no colliery in it?—Not ordinarily. When I was here before Mr. Horsley had to go to Kidston to construct the State Battery there, and while he was away, I was in charge of this end of No. 2 and No. 3 Northern Districts.
1792. How long was Mr. Horsley at Kidston?—Pretty well all the time since my appointment in August of last year.
1793. He was on special work?—Yes.
1794. Do you remember inspecting the Mount Mulligan mine?—Yes.
1795. What date?—10th March, 1921.
1796. I noticed you put the date "March 10th, 1920." That is a slip. It should be March 10th 1921?—Yes.
1797. In that inspection, did you give due regard to the conditions underground?—I inspected the whole of the mine and made notes in my book.
1798. Did you give special attention to any one part of the mine more than the others?—Yes.
1799. What was that?—That was the state of the filling of the gob and the state of the explosives.
1800. *By Mr. Want:* You were not satisfied about the explosives?—No. I made an entry in the record book about them.
1801. *By the Chairman:* What was the entry you made in the record book?—It is as follows:—  
     "I have this day examined the workings of the Mount Mulligan Colliery and find that the storage of explosives underground is not satisfactory. All caps must in future be kept separate from other explosives."
1802. What date was that?—10th March, 1921.
1803. *By Mr. Want:* What led you to make that report?—During my inspection I noticed that the explosives were not satisfactory. I found packets of fractureur and half-boxes of caps lying in the gateway not protected.
1804. Alongside the road?—Yes.
1805. Near the face?—Yes. On the average, about 15 to 30 yds. from the face. I noticed that state of explosives in all parts of the mine. Some places were worse than others, and at the finish of my inspection I made that entry in the record book. I may say that I had a conversation with Mr. Evans regarding explosives. I told Mr. Evans that things were not satisfactory and they would have to be altered. I instructed him to have little boxes made to store the explosives. I also told him that the caps must be kept in one box and the fractureur in another. I found that when the men wanted explosives they used to get them at the pit head.
1806. *By the Chairman:* You did not see any tin canisters there for storing the explosives?—No.

- O. M. Williams.  
6 October, 1921.
1807. Did you see billycans with explosives in them?—No. In some cases the explosives were in packets, but as a rule the detonators and explosives were mixed up and not separated at all.
1808. Did you see any iron implements in the places where the explosives were kept?—On one occasion I did.
1809. Do you know the method of firing down below with respect to tamping?—Yes. They used tamping rods. I asked Mr. Evans what was the method of tamping, and he told me, but I never actually saw a shot fired.
1810. I notice in your report that you noted the temperature conditions in different parts of the mine?—Yes, and I entered them all in the record book.
1811. You gave the wet and dry bulb readings?—Yes.
1812. Did you make a test of the air outside the mine that day?—No.
1813. *By Mr. Want:* Did you report to your senior officer the conditions as you found them in the mine?—Yes.
1814. Who is your senior officer?—Mr. Horsley. After finding the state the explosives were in I had a conversation with Mr. Horsley and told him the state they were in. He asked me what I recommended. I told him that I had a conversation with Mr. Evans and that I informed Mr. Evans that he must have wooden boxes to store the explosives underground. I also told Mr. Horsley that the Mount Mulligan mine had reached a sufficient stage of development to warrant the appointment of shotfirers. Mr. Horsley agreed with me, and it was agreed that the next time I made an inspection that the appointment of shotfirers was to be enforced.
1815. Is there anything in the shot-firing rules exempting a mine for a certain time before the appointment of shotfirers?—Yes, I think there is a certain period, but I do not know the exact period.
1816. Will you have a look at the shotfiring rules on page 61 of the Act, and point out to the Commission where exemption is provided for a certain period?—[*Witness looked at the sections relating to the use of explosives in collieries and read them out to the Commission.*]
- 1816A. Is what you are reading relative to my question?—No, it is getting away from it.
1817. You have not read any sections relating to exemption?—No.
1818. Do you think it is there at all?—No. There is no exemption provided in the Act.
1819. Will you tell us what instruments you have at your disposal to enable you to carry out your inspections?—The instruments are kept at the Herberton office. Personally, I have no instruments.
1820. No hygrometer?—No.
1821. No lamps?—No.
1822. Did you ever work in a colliery?—No.
1823. Did you give any consideration to coaldust and gas?—Yes.
1824. What intervals would elapse between your inspections of Mount Mulligan mine, on the average?—They were made monthly or bimonthly. Prior to March of the present year the biggest portion of the mine was inspected monthly.
1825. Where are the records of those inspections?—In the record book.
1826. I cannot find them. Will you look at the book again?—[*Witness looks at record book.*] The last inspection I read was, on the 10th March, 1921. Here is a record of another inspection I made on 23rd April, 1921.
1827. That was not a mine examination at all. It was only an inquiry into an accident?—I inspected portion of the mine. I also made an inspection on the 11th November, 1920. The entry I made on the 23rd April, 1921, reads as follows:—  
 “I have this day examined the scene of the accident to F. Trenholme, and find that the accident was due to a fall of ground off a slip in the roof. In my opinion, no blame is to be attached to any person.  
 “O. M. WILLIAMS, Inspector of Mines.”  
 When, on the 11th November, 1920, I reported on an examination of the workings of the colliery and visited the scene of Mr. Taylor’s injuries, I also added the following:—  
 “Sufficient attention is not being paid to the filling of the gob in the bottom seam. When a coalcutting machine is not in use all power must be cut off at the nearest switch. A switchlight signal is to be installed at the top end of the long wall.”
1828. Roughly speaking, what would be the average interval between each inspection?—Once every three months for a general inspection.

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1829. On your last inspection at Mount Mulligan, did you notice any dust?—  
Not particularly so.
1830. Did you notice any dust on the roads?—Yes, there was dust on the roads.
1831. What about the roof and sides?—There was no great amount of dust on the roof and sides. The caps and crown were fairly free of dust.
1832. Since you have not had any experience of other collieries, you cannot compare Mount Mulligan with any other coal mine?—No.
1833. You have not been in any other coal mine?—No.
1834. You cannot compare the dust conditions in Mount Mulligan with the dust conditions in other places?—No.
1835. What impression did you get from the dust you saw here?—My impression was that there was a slight amount of dust present, but nothing to attract attention unless you were actually looking for dust.
1836. Do you think the methods of working have anything to do with the dust problem?—Yes.
1837. And the nature and section of the seam?—Yes.
1838. How would it affect them?—The method of working the seams would certainly raise more dust than would be raised under ordinary circumstances.
1839. Do you know the sections of the two seams operated in Mount Mulligan?—Yes.
1840. What impression did the section of the top seam give you regarding the dust?—My impression would be that there were equal parts of stone dust and coal dust there, because there is a good deal of very friable material running through the top seam.
1841. You would expect a large percentage of coaldust or incombustible dust in the mine?—Yes.
1842. In the lower seam?—Yes, but not so much stone dust.
1843. Would you expect the floors, roof, and sides of the gateways to be very dangerous?—I did not think so in my last inspection. One of my reasons for speaking about the explosives during any inspection was because I thought a cap or some fracteur might go off and raise the dust and start an explosion that way. Apart from that, I did not pay particular attention to it.
1844. Have you seen any record of any shotfirers?—No.
1845. You have not approved of any shotfirers?—No.
1846. No. 1 top seam is worked with a machine?—Yes.
1847. And shot down?—Yes.
1848. Is it all shot down together?—No, I don't think so. I have not actually been present when the shooting was going on.
1849. That seam contains some stone?—Yes.
1850. Was it hard or soft?—Medium.
1851. Do you think the coal would be broken on being shot down?—Yes.
1852. And dust would be distributed in the mine air?—Yes.
1853. Do you think the dust there would be inert?—It would in the top seam.
1854. Do you know anything of safety lamps?—No, only a general knowledge.
1855. Do you know anything about electric approved lamps?—No.
1856. You did not realise the hideous possibilities of the Mount Mulligan dust?—No, beyond attending to the explosives. Nothing beyond that.
1857. *By the Chairman:* Would you say that the dust in suspension in the face was heavier than in the gateways?—Near the machine it would be.
1858. And in the pick wall?—Yes.
1859. Have you seen the air heavily charged with dust travelling along the roadways during your inspection?—No.
1860. You have never heard of gas in the mine?—No, never at any time.
1861. What was the general readings of the wet and dry bulbs down below, approximately?—I think the dry bulb average was 87 degrees and the wet bulb somewhere about 82 degrees.
1862. That would make the mine a fairly dry one?—Yes, it was a dry mine.
1863. Do you know what the air outside would register for wet and dry bulb temperatures?—No.
1864. You don't know if any tests have been made of the air outside?—No.
1865. *By Mr. Want:* Do you think the practice of appointing metalliferous men to inspect coal mines is a good one?—I do not know.

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1866. *By the Chairman:* Do you think with dust in a mine such as the Mount Mulligan Colliery, conditions could arise to cause an explosion of coal-dust?—It just passed through my mind at the time I was attending to the explosives that the detonators or fracteur might cause an explosion.
1867. You did not consider that that condition of the Mount Mulligan mine rendered it highly dangerous?—No.
1868. You think it was just an offchance?—Yes.
1869. Do you know whether the manager complied with your request with respect to explosives, and so forth?—I see from my inspection of the mine since that my instructions were not carried out.
1870. Is there anything to indicate that the conditions are better or worse with regard to explosives?—The indications are that the conditions are worse.
1871. When you visit the mine for the purposes of making an inspection, is a notification given beforehand of your intended inspection?—No, never at any time.
1872. You just drop in casually?—Yes.
1873. *By Mr. Want:* But can you drop in casually?—Yes. The last time I came the management did not know I was here at all.
1874. *By the Chairman:* You were not expected?—No. They were surprised when I walked into the tunnel.
1875. Did you see the tamping at the face yourself?—No, it was pointed out to me.
1876. Do you know what the practice was for tamping?—I inquired, and I was told it was done with a tamping rod, and wooden rods were shown to me.
1877. Have you seen how the detonators were snipped on to the fuses?—No.
1878. You have made a thorough examination of the mine since?—Yes.
1879. You have seen evidences of contending forces down below?—Yes.
1880. What would you say was the cause of those forces. Would they originate in a coal-dust explosion or any other condition of the mine?—I should say it was caused by coal dust.
1881. *By Mr. Want:* Do you think if there had been a coal-dust explosion there it would have scattered the explosives?—In parts of the mine it would, according to the actual force of the blast.
1882. From what you saw of the explosives in the mine after the disaster, did it lead you to believe that the explosives had been scattered all over the place?—They were scattered in places, but in other parts they were not moved at all.
1883. Would you say that, in the majority of cases, in all probability the stuff was there just as it was before the explosion?—I can say that on the average half of the explosives have not moved. The other half have moved.
1884. *By Mr. Kilpatrick:* Did you see the explosives issued when you came to the mine at any time?—No.
1885. You did not go in the morning?—Yes, I was there about five minutes before the men started work. There were no explosives issued that morning unless they were issued before I came.
1886. From your experience in mines, what would you say was the average condition of the mine in regard to ventilation?—Good.
1887. The air currents were good?—Yes.
1888. In all sections of the mine?—Yes.
1889. Were the timbering and other conditions well attended to?—Yes, well attended to.
1890. Were the general average safety conditions well attended to?—Well attended to.
1891. All you found fault with was the regulation of the explosives?—Yes.
1892. Don't you think that in that case, seeing that there was so much danger in the thing, that you should have enforced the regulations at once?—So far as I was concerned they were enforced at once. At Fitzpatrick's machine wall I found the caps and fracteur so mixed up together that I immediately brought the men out from the face, and they immediately sorted out the different explosives. I then gave the manager instructions to see about the removal of the explosives and making the conditions safe.
1893. That was a verbal instruction to the manager?—Yes.
1894. It was not entered in the record book?—No.
1895. Don't you think it would have been better to have it in the record book?—I have never had any trouble with Mr. Evans in that respect. It was only a matter of saying you wanted a thing done and it was done.

1896. *By Mr. Want:* What type of man was Mr. Evans?—Mr. Evans was a very strict man. He was very strict in his attention to his work and looking after the conditions honestly. He was a man you could depend on. He was very strict with the men, and would not tolerate any dangerous practices. O. M. Williams.  
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1897. He liked to have things in order?—Yes.
1898. You think Evans had hold of the men?—Absolutely. He had a very firm hold. I particularly noticed that.
1899. *By Mr. Kilpatrick:* When did Evans go on his holiday?—I don't know the exact date.
1900. Approximately?—Some time in July. I don't know the exact date.
1901. *By Mr. Want:* When did he return?—I don't know. In the meantime I had to go to Kidston to look after the construction of the State Battery there, and from there I went to Charters Towers; so I am not aware when he left or when he returned.
1902. Is your department overworked?—No, I should say not.
1903. You don't know when Mr. Evans returned?—No.
1904. Have you any idea at all how long he was away?—No idea at all. I do not think he was away more than three months.
1905. Do you think he was away approximately three months?—I don't know. Not more than that.
1906. Who was manager during his absence?—Mr. Frank Grant.
1907. You knew Mr. Grant?—Yes.
1908. Was he a capable man?—Yes, a very capable man.
1909. And qualified?—Yes.

ERNEST JULIUS LAUN, Inspector of Mines, recalled and further examined:

1910. *By the Chairman:* You made an inspection of the Mount Mulligan Colliery?—Yes, on the 14th September. E. J. Laun.  
6 October, 1921.
1911. Was it a full examination?—No, it was not.
1912. *By Mr. Want:* Explain the conditions under which you made that inspection?—I was stationed at Charters Towers, and I was instructed to proceed to Kidston to undertake the construction of the State Battery there. While there I received a wire from the Under Secretary for Mines to go to Mount Mulligan and be present representing the Department in the taking of the inventory of the whole of the assets of the Chillagoe Company. There was some delay, and I went to Wolfram Camp and returned. The inventory was still not made, although, with the assistance of Mr. Lewis, we had it all put in writing. There was a good deal of influenza at the time, and the typist was laid up. On Wednesday morning, the 14th September, I had that time available, and I told the manager it was convenient for me to go into the mine. I spoke to Mr. Evans about it. If it had not been for the fact that the typist was ill I would have been in the office that morning; but, at any rate, I went up to the mine. Unfortunately, some portion of the switch gear in the powerhouse failed, and there was no current on at the fan at 8 o'clock. The miners returned home without working. Mr. Evans was at the powerhouse, and later on, when the trouble was fixed up, I still wanted to go in, although there were only a few men at work in the mine. I went in with Mr. Evans, and I had a look at the pick wall on the south side and the wall on the north side. I also had a look at the machine and dip on the top seam, and then came out.
1913. Did you make a minute examination of those places?—I observed all that was possible in the places I travelled into.
1914. You did not have a great deal of time at your disposal?—I had under three hours.
1915. Did you notice if those faces were very dusty?—The intake air was clean. There was no one working in the mine, and there was no dust on the timbers at all. The intake airways were all clean.
1916. And the faces?—They were very sweet. There was nothing moving to raise the dust.
1917. Do you think that mine is a dusty mine?—What I saw did not give me that impression. I did not see anything to create dust. There were no skips moving and no coal being broken, and no men moving at all.
1918. *By Mr. Want:* Why did you go down that morning?—It was partly to keep in touch with the mine and partly because I considered it was my duty, although I was not in my own district, to see if there was anything I considered unsafe. If I had noticed any breaches of the regulations I would have taken it upon myself to have attended to them.

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6 October, 1921.

1919. Have you anything to do with the inspection of that mine at all?—We are all gazetted as inspectors for the State, and if I had seen anything unsafe in the mine I would have noted it and put it in the record book.
1920. Would that be courtesy to the other inspectors?—There was no other inspector in the district, and I could not be said to be slighting him. If an inspector had been here he would be doing the work I was on.
1921. Were you the only inspector here during the rescue operations?—Yes.
1922. *By the Chairman:* Did you notice any explosives lying about on the day of your inspection?—No, I saw none. I was not in any gate. There were no explosives in the straight roads.
1923. You did not notice any explosives in the tunnel?—No.
1924. You have made an inspection since the explosion?—Yes.
1925. A very minute one?—Yes.
1926. Did you see anything down below to indicate that the explosives were not stored properly?—I should consider that I saw abundant evidence of it.
1927. Did you notice if any caps were lying adjacent to or mixed up with other explosives?—I saw them in the same box.
1928. Without proper protection between them?—Yes.
1929. *By Mr. Want:* I suppose you have been in a large number of mines?—Yes, metalliferous mines.
1930. Have you ever seen explosives treated with such familiarity as is apparent from an inspection of the mine at the present time?—No.
1931. *By the Chairman:* You don't know anything of the hygrometer readings of the mine?—No. I have never seen them.
1932. Would you say the mine was a very dry mine?—Certainly. It is dry because of the lack of water in the seam, and dry because of the climate.
1933. *By Mr. Want:* At the time of the explosion, who was really the inspector for this district?—I did not consider that I had any connection with this district other than attending to the work of supervising the erection of the Kidston State Battery and any special work given to me from Brisbane. I had no routine inspection to make. I might make special inspections at their request.
1934. Was the fan running on the day you were below?—Yes. The electric power broke down, but it was restored after the men had gone home. There were a few men only in the mine.
1935. Was there a good current of ventilation blowing?—Splendid.
1936. The men could work with their shirts on?—They could have done so in the places I went into. That was in the main roads. I went to the two bottom roads and the top seam.
1937. *By the Chairman:* Do you think the timbering conditions are right?—Yes, the roof was well supported. I saw nothing in the nature of insufficient timber. The mine was properly timbered.
1938. The pack walls looked all right?—Yes. The levels were secure and packed tight right up to the coal faces.
1939. You never heard of gas in the mine?—No. I spoke to Mr. Evans and Mr. Parkinson. I asked them that question, and they said they had never heard of gas or seen any trace of it.
1940. Did you see any safety lamp tests?—Not here.
1941. You were in charge of this district before?—Yes; but I never came to this portion of it. My district was further west.
1942. Do you know the safety-lamp tests?—Yes.
1943. What did Mr. Evans say about gas?—He said they had never seen or heard of a trace of it in this mine. I asked him did the miners report, and he said, "No." He said, further, that no one had ever said anything about gas being discovered in the mine.
1944. Did he lead you to believe that he would strike it at any time?—No. The idea I got from him was that there was no risk of getting it. He did not have the slightest expectation of it.
1945. *By Mr. Want:* Did you find the mine well found in stores, lamps, &c.?—No safety lamps were used below.
1946. There must have been lamps used?—I saw safety lamps in the cabin, but the miners were not using safety lamps. I presume the deputy would make his tests with them.
1947. What other instruments did he have?—He had an anemometer there, and a wet and dry bulb thermometer. They were in the cabin.

1948. Did you notice the electrical gear at all?—Just by way of passing. It seemed to me to be new and well kept. The fittings were all put together in a tradesmanlike manner. E. J. Laun  
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1949. Would you say the installation was sweet?—It was good.
1950. *By the Chairman:* Did you ever hear of anybody anticipating danger from the coal dust in the mine?—No, not before the explosion. I heard a rumour since then, but I did not take much notice of it.
1951. *By Mr. Want:* Do you know why monobel was introduced?—No.
1952. Did you know why permitted explosive was introduced?—No. I do not know anything about the conditions in this mine.  
[The Commission adjourned at 3.10 p.m. till 10 a.m. the following day.]

## FOURTH DAY.

## MOUNT MULLIGAN.

FRIDAY, 7 OCTOBER, 1921.

The Commission met in O'Brien's Hall at 10 a.m.

## PRESENT:

R. A. DUNLOP, ESQUIRE (*Chairman*).

HON. C. KILPATRICK, M.L.C.

W. WANT, ESQUIRE.

**Evidence of Mine Management and Mine Administration—continued.**

CLEMENT FREDERICK VIVIAN JACKSON, State Mining Engineer and Chief Inspector of Mines, sworn and examined:

1953. *By the Chairman:* Will you give the Commission a list of your qualifications?—I am a graduate of the Sydney University in engineering and mining and metallurgy. I am also a member of the Institution of Civil Engineers. C. F. V. Jackson  
7 October, 1921.
1954. You are in charge of all the mining inspectors in the State?—Yes. They come under my control.
1955. Do you know the inspection district in which Mount Mulligan is situated?—Yes. It is the Second Northern division.
1956. The inspectors all come under your instructions generally?—Yes, with regard to that portion of their duties relating to mine inspection.
1957. Can you state briefly how they keep in touch with you in respect to reporting on mines, and so on?—Yes. They forward a monthly report, and also special reports in regard to any matter that they wish to speak about.
1958. Do you know if any special form of diary is kept by inspectors?—Yes. During the last couple of months a diary of their movements has been kept.
1959. They submit these to you periodically?—They submit monthly diaries.
1960. Do you know what inspector is in charge of this district at the present time?—Yes, Mr. Murray Russell.
1961. *By Mr. Want:* Who was in charge at the time of the explosion?—Mr. Russell was appointed before then, but he had not come to the district.
1962. *By the Chairman:* He is still in Brisbane?—Yes.
1963. Mr. Laun is the inspector for the Charters Towers district?—Yes.
1964. Mr. Laun has been up here on special work?—Yes. He was at Kidston and he was sent to Mount Mulligan to do special work.
1965. *By Mr. Want:* Who was the inspector in charge at the time of the explosion?—At the time of the explosion all the inspectors were in process of transfer. Mr. Horsley was previously in charge of the district, and his relieving man is Mr. Murray Russell. Mr. Russell protested against his transfer to this district, and there was a delay in his departure. The matter was held under consideration between the Department and the Public Service Board, and he did not leave Brisbane when intended.
1966. *By the Chairman:* Mr. Laun was the only inspector in the district at the time of the explosion?—Yes.
1967. Mr. Williams, the junior inspector, was in Charters Towers on special work at the time of the explosion?—Yes. He was temporarily relieving Mr. Laun for a couple of months.
1968. Under those circumstances would you expect Mr. Laun to carry out the ordinary routine inspection of the district?—Under the circumstances in which he was placed we would not have expected him to take up the routine inspection unless he was specially instructed.

- C. F. V. Jackson. 1969. *By Mr. Kilpatrick:* What are Mr. Murray Russell's qualifications?—I think he qualified in the School of Mines in New Zealand. He had some experience as a mine manager in New Zealand, and he is one of the senior inspectors of mines in Queensland.  
7 October, 1921.
1970. What is Mr. Russell's age, approximately?—I could not tell you exactly, but he is a man between forty-eight and fifty years of age.
1971. Can you tell us how the inspectors are appointed?—Yes. The positions of inspectors are advertised, and they apply and send in their qualifications, together with particulars of their experience, and that sort of thing. The best of the applications are picked out and sent along to the Public Service Board, and they recommend the final appointment.
1972. Do the inspectors make full reports in connection with inspections anywhere?—Mr. Hunter, the inspector for the Southern district, introduced the system of sending me a copy of what he put in the record book. This has continued in the Southern district ever since. He is the only one who does that. The inspectors are all more or less the judges of the details themselves.
1973. Don't you think it would be better if such reports were sent to responsible officials in the Mines Department, so that a record of all inspections could be made there?—We might have a little more detail, but the inspector is supposed to act if he finds anything wrong. He generally confines his report to things relating to special matters where he cannot get the Act complied with, or where the Act is not altogether applicable to the occasion.
1974. Don't you think it is possible for the inspectors to act wrongly at times?—Yes. I think everybody is likely to be wrong at times.
1975. Do you not think that in all cases it would be better if some supervision was made over the report and the work of inspectors generally by the Mines Department?—Some supervision certainly is required, but an inspector of mines must be a man of judgment. He must be a reliable man and must be able to act on his own initiative, otherwise he would not make a suitable inspector.
1976. Don't you think it would be better to have a systematic method of reporting inspections and placing the records in the Mines Department?—Yes. I think improvements could be made by having more detailed reports. They have a form in their offices on which they keep their inspection records. Those forms might be sent on to the Department from time to time.
1977. Do you know that since March, 1920, there was no anemometer in the No. 2 Northern district to measure the volume of air going in or out of any mine?—I knew that the inspector had an anemometer in the first place. I did not know that it had not been returned to him.
1978. I suppose you are not in the position to tell the Commission where the anemometer is, even at this stage?—No.
1979. Are you aware that the district had no safety lamps?—I heard that statement made in evidence.
1980. Do you think that that was a good state of affairs to exist?—The inspector can always get the colliery safety lamp. If he goes to a colliery and wants a safety lamp, it gives him an opportunity of seeing whether the safety lamps used by the colliery are in order. That is why he asks for the colliery safety lamp. The inspectors can always call on the manager and see if he has the necessary instruments, and they can also use them.
1981. Do you think that is a good method of doing things—to depend on the colliery for the use of their instruments or lamps?—No. Perhaps it would be better if the inspector had a safety lamp of his own. For this purpose I think it is sufficient to be able to see that the colliery has got safety lamps.
1982. Did you know that the inspectors appointed here had never used a safety lamp?—No. I knew they were qualified for metalliferous mining, but I did not know their qualifications with regard to coalmining.
1983. You heard it stated in evidence that that was the case—that they never used a safety lamp?—Yes.
1984. Did you know that one inspector, if not both, had been appointed to this district, and neither had been in any colliery before?—I did not know they had not been in a colliery before. One was appointed before the existence of a colliery in the district.
1985. They were put in charge here so far as Mount Mulligan was concerned?—I knew that they had some mining experience, and I thought they had colliery experience.

1986. They never even had a look round a colliery?—No.
1987. They did not know anything at all about a colliery?—No.
1988. Do you consider that a fair thing to expect purely metalliferous men, however good they may be in that sphere, to inspect and control collieries?—Both of the inspectors here held diplomas, were well trained and experienced in the principles of mining, and it is very difficult to have purely colliery men in all the districts.
1989. You have only one Act in use in Queensland, and it applies to all classes of mining?—Yes.
1990. With provisions relating specially to collieries?—Yes. The Act has special provisions relating to collieries only. There are one or two separate chapters relating to collieries, and there are other references mixed up between the two classes of mining. The one Act covers the whole.
1991. Will you give the Commission your opinion as to the advisability of having a purely Collieries Act, apart from the other Act altogether—a Mines Regulation Act applicable to collieries only?—I certainly think it would be better for trained colliery men to inspect collieries, and perhaps it would be a good thing to separate the collieries from the metalliferous mines. The provisions of the mining laws in New South Wales separate collieries and metalliferous mines. They are built up on a different framework to ours. In New South Wales, however, they have an easier problem to deal with than we have. They have their collieries grouped together, whereas in Queensland we have a district in which there is perhaps one colliery and forty or fifty metalliferous mines, and in another district we have three collieries and a number of metalliferous mines. The only district which we have where the collieries are together like they are in New South Wales is in the Ipswich district. All the present inspection districts are mixed districts. Even in the Ipswich district there are some metalliferous mines. In all the districts except Ipswich the metalliferous mines preponderate. If an Act could be passed to make provision for separate regulations and separate conditions for collieries, I think it would be better. However, that is a matter for the Government to consider.
1992. *By Mr. Want:* So far as the safety conditions are concerned, are the collieries more dangerous than the metalliferous mines?—They are more dangerous for big accidents than metalliferous mines, but if you take the number of accidents, I think you will find that more occur in the metalliferous mines.
1993. *By Mr. Kilpatrick:* You heard the Commission read, and you will understand that one of the duties we have been asked to undertake is to try and prevent a recurrence of such disasters in the future?—Yes, I understand that.
1994. Do you consider that disasters of that kind can be fully guarded against?—I would not like to say that anything could be fully guarded against, but I think that precautions could be taken to minimise them to the greatest possible extent.
1995. The margin of safety could be made as big as possible?—Yes.
1996. In that case, do you think the provisions for the protection of life should be considered and brought up to date?—Are you referring to rescue apparatus?
1997. Yes?—I think our Act could be improved greatly by including provisions for keeping rescue apparatus available in individual collieries rather than at one central station.
1998. Don't you think that the Mines Department have had the power for some time under the amended Act of 8th March, 1920, to bring about such a reform?—That Act gives the Minister power to proclaim a district and get contributions from collieries.
1999. How is the present rescue brigade in Ipswich carried on?—It is affiliated with the ambulance brigade. It was established that way on my recommendation a number of years ago. It was affiliated with the ambulance brigade, and the ambulance brigade put up a building to house it. An advisory committee was then appointed to manage it. The representation on the advisory committee consisted of a representative of the ambulance brigade, one member representing the miners, one member representing the Department, and another member representing the colliery owners. It was thought that the ambulance brigade would take up the matter of raising funds. It was considered that the fact that the ambulance brigade would be of increased value to the Ipswich collieries would furnish them with a plea for collecting from all the collieries to support this rescue brigade. That, however, did not work, and it came back to the Department to find the money to carry it on and pay the trainees.

C. F. V. Jackson.

7 October, 1921.

C. F. V. Jackson.

7 October, 1921.

That went on for a little, and finally a further arrangement was fixed up, under which one-third of the cost of running the brigade and providing equipment was borne by the collieries, one-third by the Department, and one-third by the State Insurance Department. I might mention that the money is required for upkeep, for supplies, and for paying the trainees. The idea was to train men from every mine in the district to become efficient in the use of the equipment. That was kept up fairly well. The present arrangement provides for a division of the expenses in the way I have mentioned. There is a certain amount of dissatisfaction about it. It was put into the Act on very much the same lines as before, giving the Minister power to proclaim a district and establish a rescue brigade in any district, and call on the collieries to subscribe. That idea is now a provision of the Act. The first action taken under it was a proposal to replace the existing establishment at Ipswich with a new one more central to the mines. The plans and everything required for a new rescue station were all prepared. However, the matter was ultimately postponed owing to the estimate of cost being much higher than was expected. At the present time the old arrangement exists, which I have just described, and trained men are available there. It is useless to have such an institution without having men trained and accustomed to use the apparatus.

2000. The proposal to establish central stations has never been given effect to so far as the establishing of those stations is concerned?—No.
2001. Can you tell the Commission about the efficiency of the present rescue brigade carried on in Ipswich?—The men have regular practices, and they use the apparatus. I know the men have been called on one or two occasions where accidents have happened in mines, and they use the apparatus. The men trained there are efficient. I think there are six sets of apparatus there. At least four complete sets are required, because four men must be sent out when an accident occurs. It was proposed to send that apparatus up here at the time of the explosion, together with eight men. I think it was proposed to send eight men, because they must have a relief squad.
2002. What type of apparatus is in use?—The Fleus or Proto.
2003. Is the apparatus at Ipswich a good apparatus?—The four sets are good. It has been there a good long time, and they are ordering another six sets, I believe.
2004. Do you think it advisable to carry on the rescue brigade work under the present system we have there, or should it be brought up to date and put on a sound basis?—I never like the system of control. There should be an independent committee there. Instead of the advisory committee it wants a committee with independent power to direct and spend.
2005. Are you aware that the trainees themselves, the advisory committee, the mining officials themselves, and the organisation I represent—in fact, everybody concerned generally in Ipswich—are thoroughly disgusted with the whole thing, and think it should be put on a more up-to-date basis without delay?—Yes. I know they want improvements made.
2006. You are aware that repeated representations have been made to the Mines Department in that direction?—I know that representations have been made about the establishment of the new station which I referred to, and representations have been made for six new sets of apparatus.
2007. Going back to the time of the Cardiff disaster, and previous to that, too, have not representations been made to the Mines Department?—The time of the Cardiff explosion was the first time representations were made.
2008. The trainees made representations to yourself and to other departmental officials?—Yes.
2009. They stated how unsatisfactory the whole thing was?—Yes.
2010. And asked that it should be put on a better basis?—Yes.
2011. Do you think that such should have been done or should be done now?—I think it should be put on a better basis.
2012. And that the provisions of the Act in regard to the matter should be carried out?—The provisions of the Act say that the Minister may do it.
2013. I know that that word “may” is there. It should be “shall.” Do you think, as a mining expert, that the Act should be so amended so as to take it up in a thoroughly workmanlike manner and carry it out to a successful conclusion?—Something should be done to have the rescue apparatus available immediately there is a disaster.
2014. *By Mr. Want:* Previous to the explosion, do you know of any determinations of dust or analysis of mine air being made at Mount Mulligan?—No.

## General Evidence.

CLEMENT FREDERICK VIVIAN JACKSON, State Mining Engineer and Chief Inspector of Mines in Queensland, further examined:

2015. *By Mr. Want:* Have you made an examination of the Mount Mulligan mine since the explosion?—Yes. C. F. V. Jackson.  
7 October, 1921.
2016. Will you give us some observations of your examination?—Yes. What details would you like me to give?
2017. *By the Chairman:* We would like you to give a description of the mine and a description of the explosion as you think it occurred?—I will read my notes that I made on my inspections. On the 29th September I went down the mine in company with Inspector John Stafford and other inspectors. We went down the dip and proceeded as far as No. 11 drive, known as the "pump flat." There was great evidence of violence from the explosion, and there was a lot of timber and debris on the roadway. The mine cabin was wrecked, and all the brick stoppings on the south side were blown in, towards the return airway. I noticed no particular evidence of flame so far. All the destruction seemed to be due to the force of the blast.
2018. *By Mr. Want:* How far in was that?—Down to No. 11 south level. I went in to No. 11 south for a short distance and examined it inbye for about 100 yds. I reinspected that level later on.
2019. Can you indicate on the plan the course you followed?—Yes. [*Witness indicated on the plan the course followed during his inspection.*] My first impression in No. 11 for the first 100 yds. was that the force appeared to have gone inbye in that direction. I will refer to that later. I then proceeded on to No. 12 south level and made an examination in there for about 40 or 50 yds. My first impression there, also, was that the force had gone into that level. There was no evidence of great force at the entrance to No. 12. There was heavy dust deposited in that level. We then proceeded to No. 12 north level to inspect the north side.
2020. Did you see skips overturned there at that point?—A lot of skips were overturned down there towards the bottom of the dip. I proceeded in No. 12 north level and inspected the north side as far as the jig road. I noticed all the evidences showed a displacement of the timber and props, and that the forces went inbye and continued in to the bottom of the machine room.
2021. Was there any evidence of flame?—I did not note that there was any flame. We went up to the machine, and I noticed that it had apparently not been started at the time of the explosion.
2022. In what place was that? Was it in the bottom gate?—Yes. I noted no evidence here of much force from the explosion. That would be the bottom gate. We then proceeded up to No. 1 gateway off the jig, the next one above the machine.
2023. Did you make an examination of that main gate right up to the face?—Yes. We passed in there to get to the place I am speaking of.
2024. Did you see any explosives there?—Yes.
2025. What were they?—There was a quantity of monobel and some gelignite.
2026. Any fuse or detonators?—I did not note whether there was any fuse or detonators.
2027. Can you say how far they were from the face?—No. I did not make a note of the distance.
2028. Were they unprotected?—They were not in the container, as they should have been. I proceeded up the No. 1 gate road, off the jig, the next one above it.
2029. *By Mr. Kilpatrick:* No. 2 from the bottom?—Yes. I found explosives there.
2030. *By Mr. Want:* Gelignite and monobel?—Yes. I have a note that detonators were found there.
2031. Any evidence of flame there?—I have not noted that. I noted that the brushing had been fired probably some days before, and there was a truck half filled in that gateway.
2032. *By Mr. Kilpatrick:* It may have been fired on the morning of the explosion?—It might have been, but my impression was that it hadn't been fired on the morning of the explosion. That was my impression when I made that note.
2033. *By the Chairman:* Were explosives lying around loosely?—Yes.

- C. F. V. Jackson. 2034. Did you notice any containers?—No, there were no containers. The explosives were in a packet. I proceeded to the next gate road, which I take to be No. 2 off the jig. I noticed the junction box for the cables and machines, and I took particular notice that the switch was on. There was evidence of melting on the trailing cable to the machine.
- 7 October, 1921.
2035. *By Mr. Want:* Due to what?—I think it was due to external heat or flame. At any rate, the flame came from outside.
2036. Did you notice evidence of flame in this place?—I have that note that the insulation was melted.
2037. Any other evidence of flame?—No.
2038. Was any coking evident?—I have not noted coke in my book, so far as that inspection is concerned, but I did later on. I proceeded to No. 3 gate, and I have noted here "Hole charged for firing in brushing." The primer and fuse were outside the entrance to the gateway, lying on a truck.
2039. Did you see any other explosives?—I saw some with the wrappers charred.
2040. You concluded then that the flame had been across there?—Yes, I concluded they had been thrown there by the explosion and the flame charred the wrapper.
2041. Did you see any explosives in a box?—Yes. There were some in the box and some out on the floor, and they were charred. There was strong evidence of coking dust on the truck, caused by either flame or heat coming out of the gateway.
2042. You could not say what explosives were in that box?—I do not know the quantity.
2043. Do you think there would be a packet of monobel there?—I think it likely.
2044. And one hundred detonators in one tin?—Yes.
2045. And fifty detonators in another tin?—I have not noted the exact quantity. I think from what I saw in the other face that there was a packet of monobel, and it was scattered about by the force of the explosion.
2046. Was there any other evidence of velocity of the blast in this place?—I have noted it: "No evidence of great force."
2547. You said the explosives were in a box. How could they have been scattered if they were in a box?—There was a certain amount scattered all through the mine. I was speaking of the force of the explosion. I have in mind some extremely violent explosive blasts, but there was not force enough in any place around the faces to scatter it out of the boxes.
2048. *By Mr. Kilpatrick:* You would not think it possible for them to be blown into the boxes?—No.
2549. Would you believe that they were mixed up with spanners, pick, gad, machine handle, and other mining tools?—Yes. I saw some explosives in a box with mining tools.
2050. *By Mr. Want:* Where did you go to then?—I went up the next gateway; I went up to the end of that gateway and collected some dust samples.
2051. What was the number of that gateway from the bottom of the jig?—Four gates up, or five, including the bottom one.
2052. Any evidence of flame there?—Yes. I did not note flame in my book, but I collected some brown dust samples to determine if it showed evidence of coking.
2053. Did you note any evidence of coking at that place or the place below the entrance?—In the one I refer to as No. 3 I noticed strong evidence of coking on the truck.
2054. *By the Chairman:* Is that the truck that the primer and fuse were standing on?—Yes. I then went up to No. 5. Apparently, this place had been idle. The brattice was scorched at the entrance on the inbye side.
2055. *By Mr. Want:* Was it inflammable brattice or non-inflammable brattice?—I think it was non-inflammable. I then went up to No. 6, the next one above, but the air was too foul to enter the faces.
2056. Was there any smell there?—Yes.
2057. Would it be the results of explosion or afterdamp?—I think it was principally the after-explosion smell.
2058. What effect did it have on you, and on the lights?—It was extinctive to the lamp. I asked Mr. Stafford to test it with the safety lamp, and he did so and found it was extinctive. It was extinctive up towards the roof where the air was bad with gas, but when he tried nearer the floor he found that the air was much freer of gas.
2059. Did you get any indication of gas in the faces?—No.

2060. Would you say there was no gas there?—No, I would not say that. C F. V. Jackson.
2061. You would treat an extinctive gas on the top near the roof with suspicion? —Yes. It would have extinguished the flame if we had let it. 7 October, 1921.
2062. Did you take any samples of air from that particular place for analysis? —Yes. At a later inspection we took samples from that place.
2063. You intend to submit the results of those analyses as exhibits?—Yes.
2064. *By the Chairman:* Those analyses will be made in Brisbane?—Yes. I do not think it can be done except in Brisbane.
2065. *By Mr. Want:* Did you come out of that section then?—Yes. We then proceeded out along No. 10 level to the small jig up to the pick places. I call that the jig off No. 10. [*Indicates the position on the plan.*] We went up that jig to the face. There was very strong evidence of flame here.
2066. Did it suggest the direction from which it came?—Yes. I concluded the general direction. I have a note of that. My conclusion from the inspection was that the heat and flame travelled right round these northern faces from the bottom and up to the top of the pick place. Then it joined the return air. There was strong evidence of flame in those pick places, and evidence of burnt coal. Some fuse was found here.
2067. On the jig?—At the space on the top of the jig. There was a burnt coil of fuse, and a miner's cap with a lamp attached found here.
2068. Any coking?—I did not actually note coking.
2069. Did you make any other tests in this district with the hydrogen lamp?—No.
2070. You were using a hydrogen lamp during your inspection?—Yes, but we did not make any other tests there. We proceeded then out of No. 10 level and through the remains of a brick doorway. [*Indicates the position on plan.*] We noted that the bricks from these doors were blown 40 ft. to 50 ft. in.
2071. Showing that the blast was inbye from the dip?—Yes. There had been a door in that place, and that had been blown in, too. That is the conclusion of the inspection made on Thursday, 29th September.
2072. You call that No. 10?—Yes.
2073. Is that the number that is given to the place opposite the pump flat?—There is some confusion in the numbering. I call it No. 10.
2074. *By the Chairman:* It is really the one above No. 11?—Yes.
2075. It is above the one at the transformer?—Yes.
2076. It is the return airway from Beattie's wall face?—Yes.
2077. *By Mr. Want:* You came out to the dip?—Yes, and went to the surface.
2078. Did you look for the origin of the trouble?—Yes. We kept a lookout to see and note the origin of the trouble on that side.
2079. Did you reach any conclusion regarding that section or that district?—Nothing final on that inspection.
2080. When did you make your next examination?—On the following day (Friday, 30th September). We proceeded down to No. 12, Taylor's flat, south. We found, after going in a short distance, that all the evidence of the force was outwards. There was little evidence of flame.
2081. How far would that short distance be?—Sixty or 70 yds.
2082. *By Mr. Kilpatrick:* In the lower pick walls?—From the dip. The evidences of the force are outwards there. At a previous inspection we considered that the evidences of the force appeared to be inwards into No. 12 for the first 40 or 50 yds. We subsequently concluded that that was due to a reflex action after the explosion. There was a large settlement of brushing on the bottom side as we went into this level. [*Indicates position on plan.*]
2083. You mean the pack wall?—Yes.
2084. The pack walls are knocked about?—Yes. There is a long settlement of brushing. It settled on the packs. There is evidence of a strong force coming down the jigway. The dust had deposited on the back pack and on the truck standing at the bottom of the jigway.
2085. *By Mr. Want:* You said there was evidence of the blast having come down the jig?—Yes.
2086. Where then?—The evidence shows the blast came outward from the jig through No. 12 south.

- C. F. V. Jackson. 2087. Do you think that direction was maintained right to the dip road?—No.  
7 October, 1921. At the time of the explosion I think it was maintained there, but immediately after the explosion there must have been some reversion just at the corner.
2088. Did you go up the face, or into the gate?—We went up No. 1 gate into the face.
2089. Can you describe what you saw?—I noticed some charred paper on the roadside and evidences of flame. There was a big fall at the face over the end of the gob. That was the fall between the end of the gateway and the level below.
2090. Was that fall right up to the face?—Yes.
2091. Did you go on top of it?—Yes.
2092. Did you make any tests there with the hydrogen lamp?—Yes. I got Mr. Stafford to make a test with the hydrogen lamp in the high place over the wall.
2093. Did you get anything?—No.
2094. Where did the blast come from at that point?—I did not actually note it, but my notes going up there show that the blast came downwards. I then went into No. 2 gateway.
2095. Were you told that it was supposed that there was the dead body of a man under that fall?—Yes.
2096. *By the Chairman:* Did you smell anything to make you believe that there was a man in there?—Yes. I think that that information was probably correct. There was a truck in the next gateway. By its position I judged that the force exerted was from the top side in the direction of the level. I also noted that the truck had been partly filled. That was an indication that the men were at the face at the time. I then went to No. 3 gateway. There was a truck at the face there, and I made the same deduction that the men were there and that there had been no firing.
2097. *By Mr. Want:* Was there an indication of the blast?—Yes, in the same direction.
2098. Did you see any explosives about?—I did not note any.
2099. Did you follow the face up?—We went up to the next gateway above, went along the face, and then proceeded out to the jig.
2100. What is the thickness of the seam here?—A little over 2 ft.
2101. About how much brushing is taken down in the gateway?—Slightly over 2 ft. There is room to walk without much stooping.
2102. Did you notice the nature of the brushing?—It was clayey shale.
2103. Where did you go to then?—Along the road, and proceeded to the rise off No. 4 gateway to the seventh working face. [*Indicates position on plan.*] There is a little cross gate there to the seventh working place up.
2104. Were you still on the bottom pick face?—Yes.
2105. You came into the second top place?—Yes.
2106. You number it No. 7?—I call it the seventh working face.
2107. What observation did you make there?—This is the note which I made in my book:—  
 “Truck in road near face with heavy coarse coked coal on end away from face. None on down side. Strong on top side and much evidence of heat and flame having come over top of end of gob between this face and one above.”
2108. Were there evidences of flame right down that pick face?—Yes, right down.
2109. Would you say there were distinct evidences?—Yes. The evidence was the heavy coarse coke dust.
2110. Intense in places?—Yes.
2111. Of varying intensity?—Yes.
2112. Where did you go to then?—I proceeded along to the next working face above.
2113. What observations did you make?—The evidence here was that the gob was blown out on the road from the top side.
2114. The force seemed to have come over the top end, suggesting that the force had come down?—Yes.
2115. From the direction of the step faces?—Yes. There was a truck at that face, but very little evidence of coking or heat on the truck.
2116. Were any skips derailed in this section apparently by the force?—I have not noted any. There were skips, and a few rails here and there. I took

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it that they had been put out of the way by the rescue party. I proceeded out and in to No. 11, pump flat level inbye to the rise wheeling road, which goes into the pick places.

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2117. When you entered, were there indications of force there?—Yes.
2118. In what direction?—My observations there were the same as the one below. The first 50 or 60 yds. appeared to have been inwards, from the dip, but after passing this point they were outward.
2119. Was this the drawing road for the step faces and Fitzpatrick's machine wall?—Yes.
2120. What led you to believe the direction of the force was inbye for 50 or 60 yds.?—The position of the trucks, principally. That was my deduction on looking at the trucks standing there. There were evidences of loose material having been moved at the entrance to the level. They appeared to point that way.
2121. Would you say there was evidence of extraordinary violence along this gateway on the way in?—I think there was evidence of considerable violence about the middle. There was very little evidence of destruction in the first 100 yds. or so.
2122. Can you tell us what divided the main intake from the return on this gate, or how the insulation was affected?—I think there was a stopping of some kind of a door.
2123. One or two doors?—I think there were two doors—a double door. I have not made a particular note of that.
2124. Did you see any parts of the door?—Yes. We saw parts of the door and hinges.
2125. What direction were they from their original position?—I think the hinges appeared to have gone one way and the doors the other way. I have not got detailed notes of that.
2126. You went on into this district?—Yes. We went up the rise wheeling road which gives access to the pick faces, and examined the entrance into the faces.
2127. You went to the bottom of the wheeling road?—Yes. I noticed that all the gobs showed evidence of explosive force outwards, the filling material having been blown outwards on the lower side.
2128. What do you mean by the lower side?—From the downhill side of the gob above, and it was blown into the road below.
2129. Indicating that the force, in your opinion, had been downwards?—Yes.
2130. Did you go into all of those pick places adjoining Fitzpatrick's wall?—Yes.
2131. Did you make an examination of those places?—Yes.
2132. There was evidence of flame, more or less, and force?—I have not got a particular note about flame.
2133. Were any explosives there?—Yes. At the top place we saw explosives.
2134. Did they lead you to think that there was too much familiarity regarding explosives?—Yes. Not the fact that they were lying about, because I take it that they were blown about by the explosion, but the fact that they were not in proper containers. They were free and not properly protected at all.
2135. Did you see any other containers of any description?—No. In one or two places I saw a packet of explosive standing in an open box, but not what I would call containers.
2136. By the roadside?—Yes.
2137. How far is the pack wall off the roads?—It varies from 18 in. or so.
2138. The boxes were between the pack walls and the rails?—Where there was a box it was generally standing up against a pack wall.
2139. *By Mr. Kilpatrick:* Did you see any explosives in the main drawing road or on the side of the road in this section?—The first note I have is in this particular top place. I did not note any other places.
2140. *By Mr. Want:* Before leaving that face, what were your conclusions so far?—That the force was from above.
2141. You proceeded?—I proceeded down and out along the level, to the long rise wheeling road, giving access up the gateways to the machine faces.
2142. What is it?—Fitzpatrick's machine wall.
2143. Is it a straight wall?—Yes.
2144. And cut by the machine?—Yes.

- C. F. V. Jackson. 2145. How did you proceed to examine that district?—We went into the gate road to the machine face and the bottom places, and found at the end a truck with the lid of a tin embedded in it on the edge about half an inch deep on the inside end of the truck. I judged from that that the blast from the explosion had come over the end of the gob from the place above. The lid of the tin had been cut off by a tin opener, and it was blown edge-ways in. That indicated the force which had come.
2146. And evidence of flame?—I did not make any particular note of flame.
2147. And no particular violence?—I concluded that as the tin lid was embedded into the truck it was evidence of violence. I am just giving the principal extracts from my notes. We went to the second road then and up the face. We went up the face to No. 2 road. We found this road filled up and blocked about 100 yds. from the face by gob stuff. Considering what had been going on there, I concluded that it had been wheeled back and deposited there. There was a truck for that purpose in that place. From a further examination it appeared that the work of starting this new road to shorten the wheeling distance, the top of which we had just crossed, had been started and was in progress at this point.
2148. It was projected right through on the plan?—Yes. This work had been going on at the time of the explosion. It had been started and was under construction at the time. I was told that three men were found there, and they had evidently been working at it at the time. I was also told that Deputy Parkinson was found there. I also noted that there was great evidence of coking on the props and caps at the end of the road.
2149. How deep would the coking be?—I collected some small samples of coked dust as large as the bowl of a pipe.
2150. Did this coking occur for any considerable distance, or was it local?—It was local. I concluded that a great amount of dust may have been made there by the disturbing of the gob and the making of this new road. From there we traversed up the face to the next face, and we observed coking of the dust at the face here.
2151. Referring to the bottom road in this district, did you see any explosives there?—I have not got a note of it. At No. 3 I observed a further coking of dust.
2152. Any force apparent there?—All up there I noticed there was force apparent from the gob stuff having been blown out.
2153. *By the Chairman:* Were there any falls of roof there?—Yes. I think there was stuff down about the face all along there.
2154. Did you notice any of the cogs there?—There were some broken.
2155. *By Mr. Want:* Did you see a full skip that had been thrown off the road?—There was a skip in the place I have just been referring to. It had nothing in it; it had the end out.
2156. You did not see a full skip thrown off the road?—I have no note of that.
2157. Did you go up the face?—No. We proceeded out and inbye in No. 4 to the junction box of the cables to the machine. I noted this in my book:—  
 “Next to junction box of cable to machine. Switch here found ‘on.’ Went into face and found cable up face to end of No. 5 road and working place. Found here miners’ tools and truck full of coal and evidence of force in. Direction downwards against the air current.”
- I then proceeded out of No. 5 and went to No. 6. In No. 6 there was a truck partly filled with coal.
2158. *By the Chairman:* Large coal?—Yes, fairly large coal.
2159. *By Mr. Kilpatrick:* Hand-filled coal?—Yes.
2160. *By Mr. Want:* What size would the lumps in that skip be? Would they be as large as a man could lift conveniently?—Yes. There were some fair-sized lumps. The face had been nearly cleaned up around there.
2161. *By Mr. Kilpatrick:* With the coal?—Yes. We found the top half of an acetylene lamp, but could not find the bottom half.
2162. *By the Chairman:* A screw lamp or clamp-on?—It was a clamp-on lamp.
2163. *By Mr. Kilpatrick:* Was the fall of coal strong there?—Yes. We searched for the lower portion of the lamp, but could not find it.
2164. *By the Chairman:* Were there any indications of the direction of the blast there?—Yes. I judged that from the displacement of the truck. The indications were that the force came down and inwards towards the face.
2165. *By Mr. Want:* Did you note any evidences of blast-out from that second road from the top?—That is the next place below the machine?

2166. Yes?—No, I did not. I did not notice any direction there at all. I was following it up along the face. C. F. V. Jackson.  
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2167. *By the Chairman:* Did you notice the fallen coal, and notice whether they were big pieces or small?—Some good big pieces had fallen there.
2168. *By Mr. Want:* What did you think would cause it to fall?—I think the shock of the explosion would cause it to fall. Some coal had to be filled, but some had fallen.
2169. That coal had been undercut, had it not?—Yes. It had originally been undercut by the machine.
2170. Do you think it had been shot down?—I think the undercut coal in that place had been shot down and was in process of being filled into trucks, but there had been falls from the brushing stuff there that contains coal which had fallen at the time of the explosion.
2171. Did you notice any slips there?—No.
2172. Did you go to the top place?—Yes, I proceeded up the face to the Sullivan coal cutter.
2173. Where was the machine?—It was on the lower side of that road near the face, just below the roadway.
2174. Would you say it was in operation at the time of the explosion?—I should say "No."
2175. Any flame there?—No. I note here that on the bottom I considered there was evidence of explosive force of a reverse direction about here.
2176. *By the Chairman:* Up the face?—Yes.
2177. What was the evidence?—The cover of the machine was about 40 ft. up the face from the machine.
2178. The machine was set in to cut?—No. The machine was lying with the cutter bar at an angle ready to sump. The cover of the machine was 30 ft. to 40 ft. up the face. The spanner of the machine was also up there.
2179. Did you notice the trailing cables and chain of the machine?—Yes. There was a lot of loose chain and trailing cable under the corner of the machine.
2180. *By Mr. Want:* Suggesting that the force came uphill?—No. I do not think that the chain and cable gave evidence of force. It was principally the cover of the machine that I noticed. Assuming that it had been blown off, that was evidence of force.
2181. *By the Chairman:* Did you notice the jack of the machine—it had shifted?—It was not well set, but I would not say that it had shifted.
2182. *By Mr. Kilpatrick:* Don't you think that the cable and chain showed signs of some force having been exerted from downhill?—I did not notice force from the chain and cable, except that they were all bunched up at the bottom corner of the machine.
2183. *By the Chairman:* Was the trailing cable charred near the machine?—I did not notice. It was charred very little, if at all.
2184. *By Mr. Want:* Did you see any explosives in this place?—I did not note any at that inspection, but I did at a later inspection. When I went there the next time I made a note that explosives were there.
2185. Did you notice any food or drinking cans or tins there?—Yes, I noticed them. I made a note of them at a later inspection.
2186. You saw both food and drink?—I saw billycans.
2187. *By the Chairman:* Did you notice a full box of matches in a cardboard case?—I saw a box of wax matches at the face below standing at the side of the pack.
2188. *By Mr. Want:* You told us you found evidence of forces in the opposite direction?—Yes.
2189. Do you consider you found a possible centre?—Yes. We were possibly very near the origin.
2190. What did you do then?—We went back from the machine 10 or 20 yds. along to No. 7. There was no evidence of violence from the explosion, and I noticed that small articles on the roadside were undisturbed. There was a wagon standing on the jig road to No. 7 undisturbed. From there we went up above to No. 7 to the pick place.
2191. Did you notice evidence of force?—A little evidence of force. There was a billycan standing there full of water.
2192. Where was that?—In the first pick place.
2193. Whereabouts was the evidence of force?—Everywhere generally on the top side of the road.

- C F V. Jackson. 2194. Do you think that the billy of water was there before the explosion, or might the rescue party have taken it?—It looked like one of the men's billies. Every billy I saw was covered with a dust deposit, although that particular billy was not covered.
- 7 October, 1921. 2195. Were any men found round about here?—Yes, I think there were.
2196. *By the Chairman:* Mr. Grant, the First Deputy, was found about there?—Yes. In the second pick place I was told Mr. Grant's body was found.
2197. There was a fall of ground there?—Yes. In the second pick place there was very little evidence of heat or flame.
2198. *By Mr. Want:* You saw the position marked where Grant's body was recovered?—Yes.
2199. In your opinion, what had Grant to do there?—My opinion is formed after talking with those who were connected with the rescue operations. The impression I have got is that he was travelling that way to get to the lower place.
2200. *By the Chairman:* To get the names of the men along Fitzpatrick's wall from the top seam?—Yes.
2201. Where did you go out from there?—That concluded our inspection on that day, and we went to the surface.
2202. You went in again?—Yes, on the 1st October. On that day we proceeded down the dip to No. 10 north. We went to the No. 6 gateway where the air was too bad for us to get in there on the previous inspection. We took samples of the air and marked the sample No. 4.
2203. It has not been analysed yet?—No. We proceeded out to the main dip and in south along to the top air split to the stone drive, and on to the top seam workings.
2204. *By Mr. Want:* Was there any evidence of velocity of blast or flame on passing in there?—I noted that the force appeared to have gone inwards all the way from the main dip. That was evident from the trucks and the deposits on them. There was a hole in the floor of the stone drive, and I considered the evidence was that it had gone downwards and that the hole had been blown downwards.
2205. That is, that the force of the explosion had travelled through the stone drive into the top seam?—Yes, that was what happened. My notes say that the evidence was that the force had gone inwards from the dip. We went past the electrical winding engine at the top of the dip and followed down around the working place from that dip on the north side.
2206. Any evidence of flame?—At the entrance on the low side. The junction box was upside down and the handle broken off, and the trailing cable to the machine very much scorched. The trailing cable was hanging over a cap. There was evidence of considerable heat and, probably, flame, judging by the insulation. There was a scorched brattice there. We passed on down the dip to No. 2 place on the north where the machine stood. There was about 6 ft. of the face cut on the bottom side. We found the control of the machine was "in." We made a test there on the top side of the bord with a hydrogen lamp.
2207. Would you say that the machine had been in operation at the time of the explosion?—Yes. I concluded that the machine had been in operation at the time of the explosion. There was no result from the test made with the hydrogen lamp I just referred to.
2208. *By Mr. Kilpatrick:* No gas?—No. The cables near the machine were much scorched. We proceeded to the bottom of the dip. In the bottom place there was evidence of flame coming downwards. I concluded that the flame swept round the face to the bottom and up the dip. Judging by the evidence of coking on the bottom side of the props in the dip, that was my impression. There was very little evidence of force in this locality, only flame. I have a note, also, that the flame would have been travelling with the air. We turned up the dip to the bottom place off the south side. The heat and flame seemed to have gone in there and up to the main level or horse road. We proceeded along the horse road, following the air to the first working place off the horse road to the right. We tested this place with the hydrogen lamp for gas, but got no result. We examined the working face in this locality and found the men's crib and clothes undisturbed. The force appeared to have expended itself about here. I was told about the men who were found here. The general conclusion at the top coal workings was that the results observed were caused by force and flame coming in from the blast from the explosion that went up the main dip, and, after sweeping all the faces, expended itself in the main return air. The heat appeared greatest around the machine.
2209. *By Mr. Want:* Would you say there was evidence of much violence around those faces?—No. More heat than violence. Little or no violence.

2210. *By the Chairman:* The flame was travelling with the air there?—Yes. I concluded that it was. I C. F. V Jackson.  
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2211. *By Mr. Kilpatrick:* Did you ever see any sign of the deputy having been round the face that morning?—No.
2212. You did not notice any dates or names?—No.
2213. Did you see any signs of explosives lying in any of those places?—No. I have not got any note of any.
2214. Would you say that the violence of the blast in those places was sufficient to displace the wooden box or packets in which the monobel plugs were wrapped?—Not in the place along the horse road off the main road. There was nothing there.
2215. Nor in the dip?—I think there was some little blast down the dip, and flame.
2216. Any violence?—No.
2217. More flame than violence?—Yes.
2218. *By Mr. Want:* Did you see a full skip standing in the face of the heading in the top place?—I have not noted it.
2219. Were there any indications of the origin of the explosion in this seam?—No; I don't think so.
2220. Did you see the return or monkey shaft, as they call it?—I did not see right into it. I went up to it.
2221. Where did you proceed to then?—That concluded the inspection on that day. The next inspection we made was on the 2nd October. We reinspected the localities at the top of the machine wall, south side.
2222. *By the Chairman:* Fitzpatrick's wall?—Yes. We went in to the machine by way of No. 7 gateway and examined portion of the coal that was standing under cut at the corner. We noted that the coal between that point and the machine had evidently fallen after the explosion. I judged that because the top of the coal was clean. Portion of the brushing had also fallen over a shovel.
2223. *By Mr. Kilpatrick:* What place was that?—Between the under cut portion of coal right in the corner and the machine. I found no evidence of any shots having been fired there. A sample of the air was taken from No. 6 right up in the corner. Mr. Stafford made a hydrogen lamp test for gas, and reported, "No gas." There was no truck at the face here. The first truck was back some distance. I noticed some spent acetylene on the floor at this place. I also noticed a miner's cap, suggesting there was a man there at the time of the explosion, and leaving the inference that firing was not going on at that point. We passed down the face to the next one below the machine—No. 6. The trailing cable was close to the face all the way. There was a truck in the face here and shovels near the top half of an acetylene lamp referred to in a previous inspection. The top of this lamp had evidently been blown off. Coal was evidently being filled here, as the truck was half full, and there was a little coal to be cleared on the low side of the space. The acetylene lamp top was brought out in case it was wanted. That concluded the inspection on that day. We made a further inspection on the 3rd October, 1921. We proceeded to the bottom of the main dip No. 11 south and re-examined the bottom of the dip from No. 11 past No. 12 to the bottom. I noted only a few props down between 11 and 12, and below 12 to the bottom there was much more violence coming from the south side. Portions of stoppings, packing, &c., were blown out from the south side into the dip. There was a big deposit of coke on the bottom side of a prop in the middle of the dip just below the pump. We proceeded then to No. 11 on the long rise wheeling road, and collected samples of dust from the road, which I marked "Sample No. 7." We passed up, and in No. 7 gateway to the machine. I saw a packet of monobel explosive at the side of the road to the left. Near the packet was a box of caps and fuse and two miners' caps near the face. We passed down and re-examined the face of No. 6 where the acetylene lamp was found. There was half a box of caps and one and a-half plugs of monobel in a box on the side of the road. We re-examined the piece of coal standing in the corner above the machine. We passed up to the next road, and at about the first pick place we found undisturbed a packet of explosives on the roadside in a box. A test was made for gas with the hydrogen lamp near the spot where Grant's body was found. No gas was discovered. We then searched the old workings to find the staple shaft, and failed to find it. We returned back to the top of the rise wheeling road and into the level, the place where, I was informed, the bodies of the machine men were found. We followed this along and found it to be a continuation of the level from which the stone drive to the top seam was started. We found near where these men were found two parts of an acetylene lamp

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and a miner's small lamp. The evidence was that the explosive blast had come in this way through the stoping that was blown out where the stone drive was started. We then returned to the rise wheeling road. I noticed the stoping blown from the old workings just explored towards the rise wheeling road. We returned out to the dip and made an examination of the transformer house. We proceeded next to the area where the fire was up near the fan drift. We took samples of air in a tube, and of the return air from the top coal and south-side workings. They were marked "Sample No. 8." This sample did not include the whole return, and was retaken at the next inspection on the 5th October. On that date we proceeded down the dip to the middle split to the top coal into the winch. I observed the winch and noticed signs of intense heating in the switch. The door was open with the switch "on." I concluded that that might have been done by someone who inspected the switch after the explosion. I also noted that a watch, which was previously noted as having stopped at 9 a.m., had been altered to 9.25 since our last inspection. I traced the cables back to the entrance to the stone drive and found them broken there. They had evidently been joined there, and the joints were broken. We took samples of road dust in this part of the mine, then proceeded out and up the dip to the entrance to the main return. We went into the fire area and up the drive towards the fan, where we took another sample. This is "Sample No. 8," and we took it to replace sample No. 8 previously taken. That concludes my inspection. There is one thing I might mention, and that is, that near the top pick place on the south side there was what appeared to be the butt of an old hole in the coal. There was no coal about at all; nothing but the butt of the old hole.

2224. *By Mr. Want:* Tell us the direction of the force in the dip below the top seam flat?—I think the force came up the main dip.
2225. Did you have a look at the top seam itself?—Yes.
2226. Do you call it a dirty seam?—Yes.
2227. What time would have elapsed between the explosion and your inspection of Fitzpatrick's wall?—About ten or eleven days.
2228. Were there rescue and exploration parties all over the mine?—Yes.
2229. Do you think they might have moved some material during their operations?—Yes.
2230. Can you indicate in which direction the explosion wave was travelling, having regard to the ventilating system?—The main explosion wave travelled against the ventilation and against the current.
2231. What conclusion did you reach regarding the explosion? You must have reached some conclusion?—As to the point of origin I concluded that the most likely place seemed to me to be somewhere in the top south corner of the mine.
2232. What district would that be?—It would be somewhere on the top of Fitzpatrick's wall, or somewhere in that locality. I could not come to any conclusion as to the exact point. I should say that the point of origin, as far as my conclusions go, was somewhere about the machine on Fitzpatrick's wall.
2233. In the upper part of the district?—Yes. Somewhere about where the machine is.
2234. That wall was cut by a machine. Can you tell us if the machine was cutting in coal or shale?—It cut in some shale, in a dirty band at the bottom.
2235. Do you think there would be a fair amount of incombustible dust in those cuttings?—Yes.
2236. Regarding the top seam, would you describe it as a dirty seam?—Yes.
2237. What do you mean by that?—There were a number of intermixed bands of shale.
2238. Would these bands disintegrate on being shot down?—To some extent. They seemed to me to be fairly hard.
2239. Would any of them go to dust?—A certain amount of them would. They seemed to me to be fairly hard, but a certain proportion would go to dust.
2240. Would you regard this mine a dusty mine as compared with other mines in Queensland?—It is hard to say on an inspection like this, but I regard it as dustier than any of the mines, and much drier.
2241. Did you note an accumulation of coal dust in the workings?—Yes. There was a certain amount of dust in some of the roads. I got samples off the roads. There must have been a lot of dust in the gobs, judging by the deposits you see on the pick walls. A good deal of it has been disturbed by the explosion, but there must have been a good deal of deposit of dust at the time.

2242. What thickness of dust would there be on the roads? What would be the average thickness of dust in the gate roads?—The stuff on the gate roads was small coal and mixed dust. It ranged from dust to pieces of a fair size, say,  $\frac{1}{8}$  in. to  $\frac{1}{4}$  in. The sample I have got is a mixture of all these. It is not all dust. It is hard to say what quantity of dust would be in that. C. F. V. Jackson.  
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2243. The explosion occurred within  $1\frac{1}{2}$  hours of starting time?—Yes.
2244. It was cavilling morning?—Yes.
2245. Did you see any evidence of men not having reached their working faces on the south side?—No. I cannot say I did.
2246. Do you think the suspended dust in the mine atmosphere would be as great in the mine at that hour of the morning as it would be later in the day?—No. Generally, it would not be as great at that time in the morning.
2247. You told us that the machine at Fitzpatrick's wall was not working?—That is so.
2248. If it had been working it would be on the return side of all the working faces?—They were all working faces on the pick walls above. There may have been some dust created from the construction of the new road.
2249. Do you think that the fineness and dryness of the dust was more significant than the quantity?—So far as the propagation of the explosion is concerned, I think the fineness and dryness of the dust had something to do with it. So far as the initial ignition is concerned, I think quantity has a good deal to do with it.
2250. At the same time, suppose the quantity is small, do you recognise any danger in the fineness and dryness of the dust?—Yes, as a means of propagating an explosion.
2251. Was the ventilation of the mine good, generally speaking?—Yes, exceptionally good.
2252. Do you think that would have any bearing on the propagation of the explosion?—Yes, a considerable bearing.
2253. Do you know if powder was ever used in the mine?—No.
2254. Did you see any gelignite and monobel?—Yes.
2255. Can you tell us the dangers of using these two explosives together?—One of the precautions against explosions in mines is that two kinds of explosives are not to be used together. One explosive may be quicker acting and may discharge the other. Unforeseen things could happen if two kinds of explosive are used. They both may not detonate with the same force.
2256. Are there any wet zones in the mine at all?—No. The top seam appears to be a little bit less dry than the bottom seam. There are slight indications of moisture in the top seam.
2257. Your investigations showed that the explosion travelled practically through the whole mine and through the whole of the working faces with more or less intensity?—Yes.
2258. What precautions would you suggest to prevent a similar occurrence?—There are a number of precautions that could be taken. One would be to prohibit the use of explosives underground, and use a hydraulic wedge or some implement of that kind to bring down the coal. Another precaution is to have the shotfiring done in the mine by registered shotfirers in accordance with the regulations after the men had left the mine. That would reduce the risk to a lesser number of men. Another precaution is wetting the roads and faces, and a further precaution is to use stone dust to prevent the continuation of an explosion when it started. Another way of dealing with the matter has been suggested, and that is, to reduce the quantity of oxygen in the air ventilating the mine to a point at which gas and dust are less likely to explode. I do not think that has been introduced into a mine, but it is a feasible plan.
2259. Can you suggest a practicable way of accomplishing that?—No. The idea is to allow the air passing through the faces to have less oxygen in it. The oxygen is replaced by carbon dioxide. I think it would be possible to work out a scheme for doing it.

[The Commission adjourned at 1 p.m., and resumed at 2 p.m.]

2260. *By Mr. Want:* What is your opinion regarding dusting and watering regulations in Queensland?—I think they are fairly in accord with the Acts in force elsewhere, but the regulations about dusting, I think, might be made more specific.

- C. F. V. Jackson. 2261. Do you think a system of dusting could be followed up which would render a mine free as regards the propagation of an explosion?—I doubt it. Probably, by establishing dust zones you could prevent the propagation of an explosion throughout the mine, but I do not think you can insure it being done in such a way as to prevent an explosion in the first instance.
- 7 October, 1921. 2262. Do you consider the dropping of the brushing resulted in the automatic dusting of the gateways to some extent?—Yes. To some extent, it depends on the nature of the brushing, although it would be a limited extent. The effect of it as a stone dust on the roads would be limited.
2263. Do you regard a blown-out shot as a possible source of origination?—Only if there are very exceptional circumstances—extraordinary circumstances in combination.
2264. Can you define what those extraordinary circumstances might be?—An extraordinary cloud of dust immediately before the blown-out shot might for some reason cause the blown-out shot to ignite with the dust cloud, but it seems to me that there are such innumerable shots fired in a mine that there must be some particularly unusual and extraordinary circumstances for a blown-out shot to be the cause.
2265. Would you consider a lay-on or plaster a possible source of ignition?—Somewhat the same consideration would have to be taken into account there also. It is a practice that should not be allowed.
2266. Did you see a large block of coal in the road in Fitzpatrick's machine district, and did you notice that it had a comminuted surface?—I saw the coal there, but I did not notice the feature about it that you mention.
2267. You did not notice it was comminuted in one particular place?—No.
2268. You saw a skip there with some hand-filled coal in it?—Yes.
2269. If you had seen a comminuted surface on that block of coal, would it have suggested anything to you?—I would have made a careful examination if there was a suggestion of anything of that kind.
2270. Was the amount of coking in evidence in the mine less or greater than in the case of explosions generally?—I think less.
2271. How would you account for that?—There was not such intensity of flame in the different places.
2272. Why not?—Well, I suppose the explosion travelling in different places was fed by combustible material.
2273. Do you think there could possibly have been any gas present on the morning of the explosion?—Yes, I think it possible.
2274. Have you any reasons you can state for thinking that there was gas present, or do you think that gas was present?—I cannot say that I think gas was present, but from the history of gas in mines and explosions that have occurred in collieries which were believed to be absolutely immune from gas it is possible that there was gas at the time of the explosion. There may have been some gas in a small pocket, or some accumulation of gas.
2275. Did you arrive at the direction of the explosion wave from the coking, which was evident to some extent?—Here and there there was evidence as to which way the flame and heat affected the coal dust. The dust deposited on the caps and props was coked. Where the coking was, I take it as evidence that the flame had come in that direction and coked the deposit of dust there.
2276. Would you expect the coking to be on the side facing the blast?—Yes, facing that direction.
2277. *By Mr. Kilpatrick:* Would you consider naked lights a source of danger in the mine so far as dust is concerned?—I do not like the acetylene lamps. I do not think it is possible for a naked light to ignite the dust merely as a naked light. An arc has been known to ignite dust, and the electric flash and the acetylene lamps, it seems to me, are a dangerous kind of light.
2278. Do you think the acetylene lights are a source of danger in the presence of coal dust?—I don't like the acetylene lights.
2279. Does a dust-laden atmosphere increase the force of an explosion, due to whatever first cause?—Yes. Whatever the first cause is, at the seat of ignition the force would not be very great and would be quickly carried on by even a minimum amount of dust in the air. If there is firedamp and dust it is extremely dangerous.
2280. Would coal dust and the action of flame inducing instantaneous combustion make a bigger explosion than the first cause, whatever it may be?—The heat and flame, when the combustion temperature was reached, would cause a source of violent combustion.

2281. Would a small explosion of gas or firedamp cause a blast in certain circumstances?—Yes. I think a small explosion of firedamp would cause an explosion, and the dust would be subject to carry it on. C. F. V. Jackson.  
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2282. Is the exact part dust plays in explosions made clear? Has it ever been made clear, to your knowledge?—The theory of it is explained, but there are still points on which I am not altogether clear. The exact action in the dust is not clear.
2283. Would tamping with coal dust cause an explosion in certain circumstances?—Tamping with coal dust is most dangerous, I think. It might be likely to cause a flame that would commence the ignition of dust.
2284. Would wet tamping be better than tamping with dry material—say, with coal dust, for instance?—Yes. Wet tamping would be better. I think it would be one of the safeguards in shot firing. Where there is gas or dust, then, in order to prevent any flame from the shot, the best thing is to use water.
2285. Have you anything in your mind about what sort of tamping should be used to make it as safe as possible for the firing of shots in the mine—are you thinking of water cartridges?—Yes. The regulation about firing the shot suggests that where gas has been reported the shot must not be fired unless the explosive used is a kind that cannot ignite gas, or it must be used in such a way that it cannot ignite gas. What is intended is that the tamping shall be done with water cartridges. In some holes you cannot do that.
2286. Would it always be possible to remove coal by means other than explosives—say, by the use of picks, gads, or wedges and other tools, without the use of explosives at all?—I have seen a hydraulic cartridge for bringing the coal down. It is on the market. I do not think, though, that it would be possible to exclude explosives for the brushing and that sort of thing.
2287. It must be used for some forms of coal?—That is a question that has to be considered in regard to the seam.
2288. Take, for instance, the Blair Athol mine. It would not be possible to remove the coal from the thick seam there by means other than explosives?—I don't think so.
2289. Explosives would have to be used in some cases?—I think so. It depends on the particular circumstances.
2290. I suppose you know other places in Queensland where coal could not be removed by anything but explosives?—Yes. There are cases where it cannot be done without explosives, although it can be done in some cases.
2291. Seeing that such is the case, what means would you advise, as the head of the Mines Department, for over-reaching the danger from explosives?—We could amend the rules in one respect and make it compulsory that only permitted explosives are used in a colliery, and have no exception to the rule whatever. Then, with regard to firing, that might be done at a time when the men were not in the mine.
2292. Do you think that is practicable?—It might be more expensive, but it is practicable.
2293. Do you think that the expense should not come into one's thoughts when men's lives are at stake?—That is so. We want to look at the thing reasonably, but expense should not weigh against safety.
2294. Safety should always be considered first?—Yes.
2295. *By the Chairman:* You say it was possible for gas to have been present in the mine?—Yes.
2296. Do you think that gas would exist there after the explosion?—No, I do not think so.
2297. If gas were met with in the faces, the explosion would drive it out and the mine would not make more gas until it was worked again?—If a pocket of gas ignited it would disappear after the explosion. If a seam were giving off minute quantities of gas and some accumulated in the high places, then it should be shown in the samples I have taken from the mine.
2298. *By Mr. Want:* Did you see any indication of coal being burst from the solid during your investigation?—No.

JOHN STAFFORD, Inspector of Mines, sworn and examined:

2299. *By the Chairman:* Where do you live?—Ebbw Vale. J. Stafford.  
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2300. Where are you stationed?—I am the inspector of mines stationed at Ipswich, but I am also in charge of the Darling Downs and South-Eastern division.
2301. What are your qualifications?—I hold a first-class mine manager's certificate.

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2302. *By Mr. Want:* For collieries?—Yes. I also hold certificates for electrical and mechanical engineering, and I am a member of the Institute of Mining Engineers.
2303. How much experience have you had in coal mines?—Over thirty years.
2304. You made an examination of the Mount Mulligan Colliery subsequent to the disaster, in company with other inspectors?—I did.
2305. Can you tell us something of what you observed on that occasion?—It was quite evident that there had been an explosion of some description in the mine.
2306. *By the Chairman:* You heard Mr. Jackson give his evidence?—Yes.
2307. Would the notes he gave be similar to yours?—Yes, practically the same.
2308. *By Mr. Want:* Before you entered the tunnel mouth you saw evidences of an explosion?—Yes.
2309. Did it give you any idea of the intensity of the blast?—You get an idea, more particularly after you have gone down below.
2310. Did you go to the fan tunnel, too?—Yes.
2311. What conclusions did you come to regarding the position there?—The force of the blast that operated in the destruction of the intake had been operating there also.
2312. Were there distinct evidences of the blast having come out of both tunnels?—Certainly.
2313. How did you proceed in your examination? You went into the main tunnel?—Yes, down the main tunnel.
2314. Will you describe what you saw when you passed in?—The first thing that struck me that showed any evidence of the direction of forces was the stopings on the roadside. One could not pay too much attention to the timber owing to the fact that it had been disturbed during the rescue operations. The stopings gave a fair indication of the forces which operated.
2315. When you reached the intake at the top seam, were there evidences of violence there?—We did not stop at the top seam. There were evidences of violence at every entrance.
2316. Will you tell us what you examined and what you found?—We made notes of the stopings and their positions in relation to what we called the direction of forces.
2317. Did you notice the direction of forces between the tunnel mouth and No. 11 south?—Yes, the forces in the tunnel showed an upper tendency. In passing No. 11 south we only made a casual glance, because we had made our plans to go north. The first impression gathered there, however, showed a slight tendency to be inward from the tunnel.
2318. Downhill?—Inbye to the entrance of No. 11 and No. 12 south.
2319. Did you notice any difference in the way the forces had travelled along the main tunnel?—Upwards to the surface.
2320. From where?—They came out of 11 and 12 south. Some came down the stopings on the low side of the endless and up the dip. In my opinion, they jumped across to No. 12 north and travelled with the intake air in that direction and around those working faces back along No. 10 north, as far as the main return for that section, and up that way. I personally think they were dying in intensity in that direction. I do not think the velocity was quite as intense on that side as it was before it reached there, but there was evidence of considerable heating.
2321. Did you go to the faces of all the places in the north?—Yes, with the exception of one or two which we could not get into because of an extinctive mixture.
2322. What were your impressions regarding the intensity of the flame and the violence of the forces?—The forces were not as great on the north as on the south side. They were varying. The flame was more intense in some places than in others. In some places the temperature was high enough to produce scorching. In other places we saw slight evidences of coking, but there was no extensive coking in that section.
2323. Did you make any tests in that section?—Yes. With a hydrogen lamp. I tried in the highest point, but we could not get any gas there. We also took tests with an ordinary oil flame lamp there.
2324. With what results?—Negative.
2325. Did you come across anything that would lead you to believe that the explosion originated in that district?—No.
2326. You visited other districts in the mine?—Yes, we visited No. 11 south and No. 12 south.

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2327. You went along No. 12 south. Did you find any evidence of violence in the flat?—Yes.
2328. In what direction did you conclude the forces had travelled there?—Outbye.
2329. Any violence along the main gate further in?—Yes, considerable violence.
2330. Did you go to all the faces?—I went to all the faces. We crawled in wherever we could get from one gate to the other.
2331. Did you make tests for gas?—Yes, with a hydrogen lamp. A test was made on top of the fall in the main gate of No. 1 and the highest point. The results were negative. Tests were made in the place where Grant's body was found. Negative results there also.
2332. On that bottom wall, what impression did you have in regard to the direction of forces there?—Downhill. Naturally, they came in also along the gateways.
2333. To the jig?—From the jig to the face. They also went down the jig. That was due to the natural expansion of the gases.
2334. Did you see any evidence of coking?—Yes, but not continuous. It was scattered, as though the flame had been more intense at some points, and it had a tendency to reduce in others.
2335. Was there much coking?—No, not as much as you would expect to find.
2336. Can you give any reason for that?—The only reason I can adduce from that is probably the intensity of the flame was not sufficiently general throughout to properly coke the coal.
2337. Did you see any explosives?—I saw a considerable amount of explosives. Eighty per cent. of the bords had explosives in them.
2338. Did the position of those explosives suggest any carelessness in handling?—In my opinion, they did not comply with the regulations.
2339. Where did you go to from there?—After finishing that section we proceeded along No. 11. We came out of the top bord in No. 12 and went in No. 11. Ultimately, I went back through the bottom gate of No. 11 to the top of No. 12, travelling along the face.
2340. Did you go into the pick places?—Yes, into No. 11 pick places.
2341. You travelled all those faces?—Yes.
2342. Did you note the direction of the forces?—The direction was downward, till we got into the vicinity of the machine bord and the one below. Regarding the condition of the machine face, there seemed to be a tendency for an alteration there, and what I would call a calm area and separation of forces.
2343. Was there any direct indication of a variation of force or forces in an opposite direction?—You will remember that the cover was not on the machine. The forces there appeared to be different to what they were on the lower bords.
2344. Would you say unmistakably so?—I think so.
2345. When you noted a diversity in the direction of forces, what did you do?—We continued our inspection to the rise. We found on the top side that the forces had not been as great. We found men's clothing, some explosives, and light boxes and billycans which had not been overturned by the forces operating there.
2346. In locating the originating point of the explosion, what considerations did you follow out?—In the first case, it is laid down that where an explosion originally starts, the velocities are not as great, and the progress of the explosion is comparatively slow at the point of origin.
2347. Did you try to find a centre from which the forces radiated?—That was the first thing to do—to find the origin of the blast with a view to finding the cause.
2348. Did you see anything in this district to lead you to think you had found the centre?—I have already described those.
2349. In the bord below where the machine was, did you see a skip half full of apparently hand-filled coal?—I will refer to my notes to be sure. [*Looks at notes.*] In the road below there was a wagon with coal in, and partly tipped up off the road.
2350. Was that wagon off the road or was it in the road below?—I think it was tipped up in this case.
2351. Did you notice the coal that was in that skip?—Round coal.
2352. Do you think it was put in with a shovel?—More probably it was hand-filled.

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2353. Did you see a slip in the vicinity?—There was inclined to be a jointing roof with slippery sides on it. It was somewhere in the vicinity there.
2354. Did you see distinct evidence of a fairly large slip in that face extending from the roof to the floor?—No, I could not say.
2355. Lying in at the bottom?—No, I could not say.
2356. Did you see a quantity of machine-cut coal lying on the floor with a bit of brushing stone down on top of it?—Yes.
2357. Did you know that it had come away from a slip?—No. I thought that coal had been already shot down. My reason for thinking that it was down before the explosion was because the men's tools were in the vicinity of it, and the men were found close to it. It is not the habit of the miner to leave his tools there when he is shooting stuff down.
2358. *By Mr. Kilpatrick:* Were explosives also in the vicinity?—Yes.
2359. Very near?—Yes, but I am not prepared to say they were there before the blast. It is quite possible that they were blown there. There is nothing to lead me to say that they were there before the explosion.
2360. *By Mr. Want:* Do you think it possible that the coal came down without the use of explosives?—It is quite possible.
2361. Do you think it possible that there were lumps there too big for a man to handle?—There was one block of coal that had to be broken up.
2362. Do you know the methods of breaking up coal in some collieries?—I know of no other method than the use of the pick or wedge.
2363. Have you heard of a plug being used for that purpose?—No, I have never heard of it. I take it that you are questioning me regarding my position as an inspector of mines. I am not speaking of what happened a few years ago. If I had knowledge of it as an inspector of mines, I would certainly have had to take action.
2364. Do you think some men would do the like of that?—I believe they would.
2365. Did you see the comminuted area on top of that piece of coal?—No.
2366. Could you have taken three or four handfuls of slack there that morning?—There was some slack on the top of it.
2367. Did it not suggest anything to you when you saw a skip half-full of round coal and the comminuted area on top of that block?—It suggests, of course, that there might have been a plaster on it, but I could not say for certain.
2368. Would a plaster originate an explosion?—Under certain conditions it might do so.
2369. Under what conditions?—You would have to have circumstances operating that are entirely different to the average conditions in the mine, otherwise you would be continually having these explosions.
2370. *By the Chairman:* That is to say, if they were continually plastering?—There are occasions when it could be fired by a shot that had done its work, but a plaster is more likely.
2371. *By Mr. Want:* Do you suggest that the barometrical conditions would have a bearing on it?—They would have an effect on the dust and moisture in the mine air.
2372. You made inquiries regarding the circulation of air in Mount Mulligan?—I have not. I only know what I heard from the Superintending Engineer in his evidence here.
2373. Have you heard it said there was good air in Mount Mulligan?—Yes.
2374. Especially in this district?—Yes.
2375. You have been through these districts?—Yes.
2376. Through the ventilation split?—Yes.
2377. Did you see anything that would lead you to the conclusion that the percentage of oxygen had been materially reduced or would be materially reduced in the ordinary course of circulation in the mine?—Not under ordinary conditions. I would be inclined to think that there would be very little reduction in the oxygen contents. It lends itself to good ventilation.
2378. You recognise that a plentiful supply of oxygen helps an explosion along?—Yes, the oxygen keeps it alive.
2379. Or helps in original ignition?—Certainly.
2380. You have no idea of the velocity of the air along these faces?—No.
2381. Did you visit other parts of the mine?—Yes, the top seam.
2382. How did you go to the top seam?—In the middle split.

2383. In passing from the dip along this intake, what impression had you as to the direction of force there?—The same as applied to the others. I was inclined to think that there was a tendency for forces outbye, but on closer investigation I am inclined to the theory that they went in that way.
2384. Would there be two forces in an explosion, or more?—I do not understand that question.
2385. Could there be a forward wave and a backward wave?—Yes.
2386. Considering those possibilities, in what direction would you say the explosion wave travelled?—In the top coal there are two possible theories to be advanced.
2387. At the entry to the top coal?—Regarding the whole of the top seam—No. 1 seam. Certainly the indications, after leaving the entrance and getting to the stone drive, indicate inbye—strong inbye.
2388. It was travelling inward?—Yes.
2389. You mean that the force travelled inwards in the stone drive from the flat?—Yes.
2390. How far?—I think they went right round the face.
2391. And then?—Then down the staple shaft to the return. It is also possible, even looking at the condition of things below ground, that they could have come up that way.
2392. What would lead you to argue that way?—General principles. It is laid down in the history of explosions that an explosion has a tendency to die out when going with the air and increase in velocity with it. In this case, looking at it as a force coming from the main tunnel, we were travelling with the air in that direction.
2393. Yes?—That should have a tendency, of course, to lose in velocity going in that direction. But if they were united from the return to the bottom seam, they would be meeting the intake air and should gain in intensity coming outwards.
2394. Have you arrived at any definite conclusion as to which way the forces actually travelled in that stone drift?—The only indications I can place anything definite on were one or two instances where there were indications of light material, showing that they came from the tunnel main intake. If you take the winch at the top of the dip, we find there that the instruments on the switchboard were certainly forced towards the dip. The stuff was bent in that direction.
2395. Did you see the horse there?—Yes.
2396. Did you see the harness and collar?—Yes.
2397. Can you tell us where the harness and collar were in relation to the pony? —The wagon was outbye and the collar was inbye towards the return.
2398. Were there any peculiar conditions existing in the vicinity of the horse?—Do you mean the position of the harness in relation to the wagon?
2399. Was there any air supply there, or any connection with the workings there?—I think it was a horse road going into the machine places on that section.
2400. Do you think there ever had been any other connection there?—There was an old staple shaft there.
2401. Did you look at it?—Yes.
2402. What conclusion did you arrive at from your examination of it?—I am inclined to think that the forces went down there. The main staple shaft appeared to be undamaged, judging by the timber round there.
2403. Did you see the rise workings in that seam up the horse road?—Yes.
2404. Did you see any extraordinary conditions there?—No. I cannot say we did. One thing I noticed was that the facemen had travelled a good distance from their work.
2405. Did you go up to the staple return?—Not right up to it.
2406. Did you make any notes regarding the direction of forces in that vicinity? —The notes that we made were made in connection with the position of the wagon and where the horse was found. My conclusion then was that the forces had gone inbye. I think the wagon had been blown up on to the horse, because it offered the most resistance to the blast. It tore the harness off, and the horse probably struggled from the position he was in to the position where he was found.
2407. Do you think the forces may have travelled up that shaft?—It is quite possible.
2408. Do you think the position of the harness and collar points along those lines?—The position of the harness and collar could be made to fit in with either theory.

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2409. *By the Chairman:* Was there a handrail around that shaft?—I do not know.
2410. *By Mr. Want:* Was there a door in the vicinity of the upper staple which was used as a return at the time of the explosion?—I don't think there was a door there. The shaft had been covered over.
2411. I mean in the vicinity of the shaft or the staple that was being used as the return for the top seam at the time of the accident?—Yes. There was a door there.
2412. What happened to that door?—It was blown inbye.
2413. To or from that staple?—Towards the staple.
2414. What conclusion would you draw from that?—That the forces appeared to be inbye.
2415. Did the forces come up that staple?—They would have to be reversed if they came up that way.
2416. You think the forces may have travelled down there?—I am not going to be definite on it, although I was inclined to think they went down that way.
2417. Would it be possible for them to have come up?—Yes, it would be possible.
2418. Did you notice coking in that top seam?—Not a good deal. There were one or two instances where it was noticed.
2419. Did you notice the seam itself?—I did not find much evidence of coking in that section.
2420. Was there evidence of flame in most of the places?—Yes.
2421. Was there much intensity about it?—In parts there was.
2422. Did you see explosives up there?—Yes.
2423. Did you go to the workings on the right-hand side of the dip?—I went round the working faces in that section.
2424. What impression did you get there? Did you see a machine?—Yes; there was a machine that had evidently been cutting at the time of the accident. The machine was sumped in and was in a running position, with the trailing cable attached.
2425. Was there anything else to lead you to think it was in operation?—The cuttings, of course.
2426. Did you notice the feed chain?—Yes.
2427. Was it extremely tight?—I did not examine it closely.
2428. Was that the only machine that could possibly have been working at the time of the explosion in the mine?—I think so.
2429. To all appearances it was?—Yes.
2430. You have had some electrical experience?—Yes.
2431. What was your impression generally of the gear and apparatus installed at the mine?—The electric installation of the mine was right up to date. Every provision had been made to make the use of electricity below ground as safe as possible. But that does not prevent carelessness on the part of those who are using it.
2432. *By Mr. Kilpatrick:* Or supervising it?—And supervising it. Those operating it can be careless if they want to.
2433. *By Mr. Want:* Did you get any impression that there were any faults anywhere?—I could not see any.
2434. You could not see anything in the electrical installation to lead you to believe that it was the source of the explosion?—No; and I made several tests.
2435. You travelled the whole of the roadways in the mine, or most of them?—Most of them.
2436. Did you see much coaldust lying on the roads?—There was not as much coaldust as one would expect. You can account for that by the fact that the explosion had just taken place.
2437. It would be all consumed?—Yes. It all went out with the blast.
2438. It would not have all gone out with the blast?—No; you would expect some coke and some partially coked.
2439. Would you say that the small amount of coking found there was phenomenal for an explosion of this magnitude?—I would have expected more evidence of coking.
2440. Do you think that if there had been more combustible material on the roadways that the evidence of coking would have been more distinct?—It might have been.
2441. Have you noted the sections <sup>of</sup> the seams?—Yes.

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2442. You saw a good few bands of stone in the seams?—Yes.
2443. Did you look at the floors?—Yes.
2444. What did you conclude when you looked at the floor?—The machine is holing in coal that contains a good percentage of shale. It had that appearance. There is a big percentage of incombustible material in the composition of the holings.
2445. Have you noted the method of working the bottom seam?—Yes.
2446. Did that have anything to do with the amount of combustible dust lying on the roads: the method of working and thickness of the seam?—I think it would affect it. The machine-cut coal has a tendency to make more dust than the pick coal.
2447. Looking at the mine since the explosion, would you think such a disaster was possible, considering the amount of incombustible material contained in the seams given off by the brushing and also by the holings with the machine?—I do not think I can give an expression of opinion about that in the absence of analysis. What we may think is incombustible might prove to be otherwise.
2448. At all events, you would expect a lot of stone dust to be present on the roads?—Yes.
2449. Do you think the Mount Mulligan dust would have the faculty of dissociating itself from the stone dust and becoming dangerous by getting into suspension in the air?—I do. The system of mining facilitates that. We know that there would be a considerable amount of dust in suspension, and it is more likely to be coaldust than stonedust on account of the difference in specific gravity which would lift the coaldust.
2450. Where would you think the coaldust for the propagation of an explosion would come from?—If an ignition started it would be launched as an explosion, and it would increase as it advanced. It only wants a start.
2451. Do you think the roof and sides would be responsible to some extent?—Certainly.
2452. Do you consider this is a dusty mine as compared with other mines in Queensland?—I think the amount of dust would be above the average, with this peculiarity, that it is particularly dry also. I noticed that there was an absence of moisture in the mine.
2453. Would you say it was particularly fine dust?—Yes. It is particularly fine dust. It adheres very closely to the skin.
2454. When you get fineness and dryness, would you say that quantity does not count?—You only want the right mixture. The finer the dust the freer the circulation of oxygen is.
2455. Did you find evidence of intensity at the various flats where the coal was put on to the road and empties taken off?—You find some evidence, but I do not know that one can take it as intensity of flame. In other places along the gateways there were timbers which were dislodged. That was an indication that the timber shifted there had been subjected to intense blast.
2456. Would you expect coaldust to accumulate at the flats to the same extent as on the main roads?—I think so.
2457. Have you made any observations of the percentage of Mount Mulligan dust that would pass through a 200-mesh sieve?—No, but samples have been taken for this purpose.
2458. What is your opinion in regard to applications of stone dust and water to combat the evil of coaldust explosions?—I question very much whether putting dust in the mine will totally eliminate the possibilities of an explosion. Dust zones will prevent or localise the explosion. Watering, of course, is all right, provided the materials in the mine are suitable for it. There are some strata that would be much injured by watering. Watering would also affect the sides and roof.
2459. Do you think prevention is better than cure?—Yes.
2460. Do you regard it as a big problem to keep the sides and timber and all places in a mine free from coaldust?—It would certainly take some considerable attention to do that. There are many ways of trying to get at these things.
2461. You told us in the first instance that there was unmistakable evidence of force having travelled out of both tunnels. Is that a frequent occurrence in explosions?—There have been instances on record where the return has not been affected.
2462. Can you give any reason for it occurring at Mount Mulligan?—The only reason I can put down to it is that even in the return the percentage of oxygen is pretty high.

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2463. Were men shifting rails in the return that morning?—I do not know if you call it a return. I am not very conversant with the old workings.
2464. Were men lifting rails on the return side of Fitzpatrick's wall?—Men were lifting rails to the north of the long wheeling road.
2465. That would be the return side. Do you think that would raise the dust?—Yes.
2466. Do you think that dust would pass into the return?—Yes.
2467. Would that account to any extent for the explosion being directed to No. 2 tunnel?—No. I think there was probably sufficient dust in there, quite independent of that, according to some of the old workings which I traversed.
2468. You heard it was an exhaust fan in operation?—Yes.
2469. What was the distance from the stone drift leading to the top seam and the main return airway in the bottom seam along the same level?—I did not step it.
2470. Would it be half-a-dozen yards?—It would be more than that.
2471. Was there a door there?—Yes, and a brick stopping.
2472. What became of that door?—Demolished. There were two doors.
2473. Which way did they go?—Inbye.
2474. Suppose the blast had come out of the stone drive and that door had carried away, would it be possible for an offshoot of the explosion wave to pass out into No. 2 tunnel?—Yes.
2475. How does an explosion usually travel in regard to air?—The general principles laid down after scientific investigation into explosions show that they travel against the air.
2476. Otherwise, to the oxygen?—Yes.
2477. Did that happen with this explosion?—It depends on which way you view the origin. In some instances it must have travelled with the intake instead of against it to get to the north section.
2478. I am speaking of the main wave?—The main wave of the explosion went against the air.
2479. Did you go into the middle slit, or did you see what had been left of a couple of doors below the top seam flat?—Yes.
2480. I mean the drawing road to the step faces near Fitzpatrick's machine wall?—Yes.
2481. Were those two doors blown towards the dip?—I don't remember it.
2482. Have you got a note of it?—Yes.

[The Commission adjourned at 3.20 p.m. till 10.30 a.m. the following day.]

FIFTH DAY.

MOUNT MULLIGAN.

SATURDAY, 8 OCTOBER, 1921.

The Commission met in O'Brien's Hall at 10 a.m.

Present:

R. A. DUNLOP, ESQUIRE (*Chairman*).

HON. C. KILPATRICK, M.L.C.

W. WANT, ESQUIRE.

General Evidence—continued.

JOHN STAFFORD, Inspector of Mines, further examined:

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2483. *By Mr. Want:* You went into what is known as No. 11 level?—Yes.
2484. Did you see any evidence of force at that level?—Yes.
2485. What indications?—The indications of force were at that point where the wagons were stowed, and in the vicinity of where the switch was, and also where the doors were blown away.
2486. Any evidence of flame?—Yes, some flame.
2487. What did the indications suggest to you in regard to the direction of force?—On wading through my notes again, I find there is room for some doubt on that point. If you take the position of the wagons one can almost theorise on the forces in both directions, because of the position in which the wagons were stowed. The hinges of the doors, being of heavier material, were shot outbye, and the lighter material was blown inbye. The switch on the top side of the roadway indicates that the forces were coming down that road.

2488. Could the hinges have been left on the hooks and subsequently have been removed?—That could have happened.
2489. Did you recognise what had been the doors?—I do not think there was much of the door left to recognise. It was pretty well splintered up.
2490. Did you see the splinters?—Yes.
2491. Where?—Inbye.
2492. How far?—You could go in for a distance of 20 yds.
2493. From that, did it suggest to you that there had been considerable force travelling inbye?—I don't know. One cannot form a definite opinion on that. The timbers were light material, and it would not take as much force to lift them as it would take to lift heavier material.
2494. In your opinion, in which direction did the greatest force travel along this particular gateway or level?—I was of opinion that it came out. That was the opinion I formed.
2495. Did you make a minute examination of the stone drift leading into the top seam?—Yes.
2496. What conclusion did you reach in regard to the direction of force?—Inbye.
2497. Decidedly?—Yes, decidedly.
2498. Did you see the position of the horse?—Yes.
2499. Did you examine the staple pit in that vicinity?—Yes.
2500. What impression did you gain there?—I think the force was downward there.
2501. Did you see the empty skip there?—Yes.
2502. Would you expect the horse to be limbered to that empty skip?—I think he was.
2503. Would you expect that the horse was taking the empty skip towards the face?—Yes.
2504. Inbye?—Yes.
2505. Where is the skip in relation to where the horse is at present?—About 10 yds. outbye from the horse.
2506. Is the horse lying close to the staple pit?—Yes. With his head towards the staple pit, if anything.
2507. Did you see the harness?—Yes.
2508. Where was it?—On the top side of the wagon. It appears to me that it was forced that way. My opinion is that the wagon, being the lighter, was forced by the blast on to the top of the horse and probably broke the harness off him. Then the horse struggled away out of the harness to the position where he is now lying.
2509. *By the Chairman:* There is a brattice obstruction between the skip and the staple pit?—Yes.
2510. Did you notice where the brattice was?—Yes.
2511. Did you notice that it was tangled up amongst the harness?—There were some bits of brattice there. I could not swear that they came from the brattice in there.
2512. *By Mr. Want:* Did you see the limbers?—Yes.
2513. They are fastened on to the skip?—Yes.
2514. In which direction are they twisted?—Outbye.
2515. Did you see the horse's collar?—Yes.
2516. Where is it?—At the head of the horse inbye.
2517. The position of the skip, limbers, and harness on the outbye side was 10 yds. from the horse?—Yes.
2518. How far was the collar on the inside?—Twenty yards. In from the horse.
2519. Would it be 25 yds.?—It may be that. I did not measure it.
2520. What would that suggest to you?—It would still suggest to me that the force went inwards along there.
2521. Would it not suggest that some force had come up that staple?—No, I would not take it that way. My opinion is the other way.
2522. In that case, how would you account for the limbers made of 1-in. iron being bent from the front of the skip round the side in an outbye direction?—I would use the same argument as I did before. I think the wagon was forced on top of the horse.

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2523. You said there were 10 yds. between the horse and the skip?—Yes. The horse struggled after he was free from the harness. That is a line of argument that one can take up, in my opinion.
2524. Did you hear that that shaft was covered up before the explosion?—I have heard that it was covered up.
2525. Did you see any material that composed a covering on that shaft?—Not that I would be sure of.
2526. *By the Chairman:* You examined the bottom of the staple shaft?—No.
2527. *By Mr. Want:* You were right through the workings?—Yes.
2528. Did you see much coking?—No, not a great deal; not what one might call coked coal.
2529. If you collected all that was possible to collect of the coking in the whole of the workings, gateways, main roads, and all, how much coke would there be, approximately?—That is impossible to say.
2530. Would you get a skip full?—That is a question one cannot answer, because I did not see the coke in every face.
2531. So far as your examination went, would you get half-a-skipful of coke?—No, nor a quarter of a skip. I suppose that a bucket would carry out all the coke I observed.
2532. Do you regard that as phenomenal?—I would expect more coke.
2533. Regarding the prevention of similar occurrences in future, what would you suggest in regard to explosives?—Regarding explosives, there is one thing that would prevent a similar occurrence, and that is to prohibit the use of explosives underground or limit the time for firing those explosives.
2534. Would you say that only permitted explosives should be used in a dry and dusty mine?—Certainly.
2535. And naturally the shot-firing regulations should be observed?—Strictly.
2536. And administered strictly?—Yes.
2537. What are your views in regard to lighting in dry and dusty mines?—Of course it is well known that an open light will ignite dust. I am not in favour of acetylene lights at all, especially the large lamps used at the mine.
2538. You think that approved lamps only should be used?—I think so.
2539. Do you like the electric light?—The electric light is a good light. If you had electric lights through the mine generally, you would have to have other lights as well for testing purposes.
2540. *By Mr. Kilpatrick:* Do you think that naked lights had anything at all to do with the recent disaster?—I would not like to offer an opinion on that point. The evidence is not clear at all to me on that point.
2541. What are the disadvantages of safety lamps as compared with naked lights, or are there any disadvantages?—They have advantages as well as disadvantages.
2542. I am not asking for the advantages. I am asking for the disadvantages?—The disadvantages are that the amount of light given is not equal to the open light. Certainly, I think the percentage of accidents due to defective roofs might have a tendency to increase through men not being able to make the same observations with a safety lamp as with a naked light.
2543. Anything else?—So far as safety is concerned, I do not think so.
2544. Are you aware that the use of safety lamps invariably causes a disease of the eyes amongst men using them?—Yes. It is supposed to do that, but I do not know that it has any bearing on this inquiry.
2545. You express an opinion in regard to certain lights, and we have to come to a certain conclusion regarding these lights, and that is why I want your opinion?—I am not going to offer an opinion on that point.
2546. Are you aware that the use of safety lamps causes a disease of the eyes known as nystagmus?—I would not say that.
2547. Have you read anything about it at all?—Yes, I have.
2548. You have had no practical experience in that business?—I have had experience in the use of safety lamps generally.
2549. From what you have read as to medical examinations, what did it lead you to believe?—There are medical works in reference to nystagmus. There is certainly evidence to that effect.
2550. With regard to the use of explosives in the mine, you made a thorough examination of the workings and roads. Did you find any instance, so far

as the irregular use of explosives was concerned?—Yes. I did not see anything irregular in the method of using the explosives, but only in the handling.

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2551. The handling and method of distribution were irregular?—Yes.
2552. And also the method of storing at the faces?—Yes.
2553. You, as inspector of mines in the Ipswich district, would not allow anything of the kind to take place there?—Certainly not.
2554. You have had considerable difficulty in limiting accidents caused by the use of detonators, more particularly in Ipswich district?—Yes. We have had to go into the matter very thoroughly to try and eliminate accidents from that cause.
2555. What is the method pursued in the Ipswich district. You might tell the Commission the method of distributing the explosives there and their handling below, how they are taken into the mine, and anything else incidental to the question?—The issue of the explosives is done from the magazine. Explosives are not issued to a miner unless he has a properly covered container to store them.
2556. Describe the containers mostly used down South?—The containers are mostly tin containers, each having a hinged lid. Some of them have a recess in the top for carrying a box of caps.
2557. Do you think that it is a good thing to have?—No. The caps should be in separate tins.
2558. You think all detonators should be kept in separate tins?—They would be much better in separate tins. From my reading of the regulations, they should be kept separate.
2559. That is the method of distribution?—Yes. Explosives are only issued to the registered shotfirers or subordinate shotfirers registered at the colliery.
2560. Shotfirers are appointed for a district?—Yes, there are district shotfirers provided for, and subordinates.
2561. And these consist of?—A man in each bord, and usually one or two officials for each district, as the case may require it.
2562. Did you find in Ipswich that accidents with explosives were very few?—Yes, very few.
2563. What quantity of explosives do the men usually take in to the mines in the Ipswich district?—I have met cases where more than the regulation allowance has been issued, but in the majority of cases I think they keep as well within the regulations as they can. They issue a day's supply, or as near as they can regulate it.
2564. It is possible that more than a day's supply is issued sometimes?—That is possible. It is hard to keep sometimes to what one actually wants.
2565. Don't you think it is better to issue the exact amount required in properly constituted canisters, instead of allowing the men to carry explosives out of the mine each night?—The less you carry explosives about, the better. In my opinion, other dangers arise by keeping explosives underground. They are affected by the moisture and humidity of the atmosphere and they deteriorate if kept too long. Detonators, especially, deteriorate and the sawdust gets moist. The tendency is then for miners to use instruments to clean them out.
2566. The explosives are usually used within a reasonable time after being taken in to the mine?—I cannot always guarantee for that. The men may have some at the bottom, and they may be there some time before being used.
2567. You have had some accidents recently in the Ipswich district through the handling of explosives and detonators?—Yes.
2568. To what do you ascribe these accidents?—The evidence at the inquiries does not show anything definite, but my personal opinion is that there has been some carelessness on the part of those handling them.
2569. The evidence at the inquiries disclosed the fact that the men were carrying the detonators from one place to another at the time the accidents took place?—That was not the case with one accident.
2570. What was the cause that contributed to that particular case?—I don't think the cause was actually placed in that particular case.
2571. What case was that?—Jackson, of Blackheath. The evidence went to show that he was just shaking the sawdust out of it when it went off. There was no one else present at the time.

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2572. *By Mr. Want:* In the whole of your investigations in this mine was there more than one place that suggested itself to you as a possible origin of the explosion?—I had two positions in my mind. One position is the top workings in the vicinity of the machine on the south side, and there is a possibility of the origin in the top No. 1 seam.
2573. Whereabouts?—It is difficult to place it, but I recognise there are great possibilities there from observations. There are some dusty places in the mine, and there is one place at the winch haulage near the direct current motor. That motor is not enclosed, and there is a possibility there of commutator troubles.
2574. Where was the dust there?—Inbye, with the air that travels in that way from the main roads. The horse travelling along must certainly raise the dust. There was also a machine working at the time, and there is a possibility that dust was raised there.
2575. Where is that motor situated?—Just at the top of the dip.
2576. If the initiation of the explosion took place at the motor, what direction would you expect the force to travel in the stone drive?—In that case it would come out.
2577. Your evidence is to the effect that it went in?—Yes, that is my opinion. But there is a possibility of a secondary explosion being set up there, which would give some indication that it also went inbye.
2578. You think it is possible that an explosion wave might have travelled outbye?—It is possible in the first instance.
2579. Is there anything near the machine which would suggest an origin in that vicinity?—Nothing that you could see. Personally, I think the strongest evidences point to the south side at the top of the machine wall from No. 11 level as the seat of origin.
2580. Suppose two centres were operating, one at the face and one at the haulage roads, which would you say would be the initial explosion?—The one at the haulage road.
2581. Would you expect an explosion begun or initiated on the haulage road to travel the face?—Yes, it would travel that way.
2582. With the ventilation?—Yes, I believe that is quite possible, in all probability with diminishing energy in that direction, varying, of course, with the state of the atmosphere as regards oxygen percentages present.
2583. You don't suggest that that has been the case here?—Do you mean starting on the haulage road.
2584. You have no evidence of two distinct centres here?—No definite evidence.
2585. But you have definite evidence of one centre?—Yes.

WILLIAM OWEN MATTHEWS, Machineman, recalled and further examined:

W. O. Matthews.  
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2586. *By Mr. Kilpatrick:* You assisted in the rescue work and the recovery of the bodies?—Yes.
2587. During that time, did you make any observations as to how matters stood in the mine in regard to the explosion?—Yes. At the time no one looked for the cause at all, but I noticed the timber scattered about higgledy-piggledy everywhere.
2588. You accompanied the Commission as guide on their first inspection on Friday, 30th September?—Yes.
2589. Where was the examination made on that day. We started from the mouth of the tunnel and went inwards. We visited the pick places in Fitzpatrick's wall and the dip.
2590. The tunnel was badly knocked about?—Yes.
2591. Did the Commission take notes as to the state of affairs at the entrance to the top coal seam?—Yes. They had a good look round there.
2592. The conclusion come to was that a blast had been exerted from inbye side at that point on to the dip?—Yes; that is the conclusion the Commission came to.
2593. From that point we went down to where the transformer is placed?—Yes.
2594. And found that the transformer had been slightly displaced?—It shifted a little bit.
2595. The brick wall immediately on the bottom side of it had been displaced in a downward direction?—Yes.
2596. Did your observations confirm that idea?—Yes.
2597. *By Mr. Want:* Did you see any timber suggesting that?—The only timber I took notice of was in the top seam.

2598. Did you see any timber suggesting that the force travelled on the road leading to the top seam?—I noticed the state of the props near where Bob Thompson was found, and I noticed the blast came in that direction. W. O. Matthews.  
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2599. *By Mr. Kilpatrick:* From the point that we inspected, from the transformer to the pump, was there evidence of violence there?—Not a great deal.
2600. Evidence of flame?—Yes, there was evidence of flame at the pump. An electoral roll was picked up, and it was charred.
2601. Was the pump badly damaged?—No, it has been running ever since.
2602. Did it need any repair?—Not to my knowledge.
2603. From that point to No. 12 on the south side, what are the indications of violence or flame?—There was considerable violence at that point.
2604. Exerted from where?—It appeared to come out of No. 12.
2605. What were the first walls we went into?—The pick wall and Fitzpatrick's machine wall. We went into the pick wall first.
2606. Were there any evidences of coke grit on the inbye side of the timber?—Yes. I think there was at that point.
2607. Any evidence of flame?—Yes.
2608. That is the main gateway to that section?—Yes.
2609. Did you find any detonators, fuse, or explosives in that level—No. 12?—There was a coil of fuse there, and I think some explosives were found there too. I know that explosives were found in several places.
2610. Did you see a hydrogen lamp test taken at the face?—Yes.
2611. And the result was no gas?—No gas was found there.
2612. In No. 2, above that, were there any evidences of coke dust?—Yes. There was a big fall in the roof there.
2613. Did you see that place tested with a Hailwood safety lamp?—Yes.
2614. No gas was found?—No.
2615. How would the blast be coming there?—I think it came down.
2616. Are the same indications observed right through up to the top gateway?—Yes, on the jig road there.
2617. Would you think that the blast came downwards from there?—Yes.
2618. Right down those places?—Yes.
2619. *By the Chairman:* You saw the Commissioners examine every bord there?—Yes.
2620. *By Mr. Kilpatrick:* From that point we proceeded to No. 11?—The numbers are different now to what I knew them.
2621. *By the Chairman:* No. 11 leads to all the workings on Fitzpatrick's wall?—That would be the pump flat above the pump place.
2622. Is that the place we visited next?—Yes.
2623. Starting at the entrance to the main road, what were the indications as to the direction of the blast?—I don't remember.
2624. Did you see any signs of double doors?—Yes.
2625. *By Mr. Kilpatrick:* Those doors had been displaced?—Yes.
2626. In what direction were they blown?—One appeared to be blown one way and one the other. The hinges were blown one way and the doors smashed badly, and it is hard to say which way they were blown.
2627. Which way was the woodwork of the doors blown?—In.
2628. *By Mr. Want:* Did you notice it at all?—Yes.
2629. If you have taken any notes you can refer to them. Did you take any notes about that at all?—No. I was pointing out these things to the Commission, and Mr. Bird, the Secretary, and the members of the Commission were taking notes. I noticed that the furthest indoor was blown in.
2630. Were the doors a heap of splinters?—Yes.
2631. *By Mr. Kilpatrick:* Inbye or outbye?—One was inbye and the other outbye.
2632. *By Mr. Want:* You are not sure?—I am not positive about that point at all. At the time I went in with Mr. Laun. I know they were beaten about that point, and they could not make it out at all.
2633. *By Mr. Kilpatrick:* Right into the face and back from the face, what was the direction of the blast?—It is hard to remember all these things,

- W. O. Matthews. 2634. *By Mr. Want:* Do you remember what the direction was in the pick face?  
—The blast there came downhill by the gobs and the gobs were blown clean across the road.
2635. Taking them place by place so far as the step walls are concerned, can you tell the Commission what would lead you to form that opinion?—I noticed particularly in these two gateways that the gobs were blown clean across the road on the top side of the gateway. There were plenty of signs there as to which way the blast came.
2636. Did you see any skips?—Yes. The front end of a skip there seemed to be battered out.
2637. *By Mr. Kilpatrick:* Were the skips blown downhill?—Yes. I am clear on that point about the skips.
2638. Did we then proceed along the main road to Fitzpatrick's wall?—Yes.
2639. Can you tell us what was found there in regard to monobel and other explosives?—Yes.
2640. Do you remember that we marked the place "Dangerous"?—Yes. If I remember rightly, there were some loose caps and loose dynamite lying about there.
2641. *By Mr. Want:* Dynamite and monobel?—Yes. Gelignite and monobel were picked up in a box, and the box marked "Dangerous."
2642. *By Mr. Kilpatrick:* Do you remember that two full boxes of detonators were picked up?—Yes.
2643. Some were scattered and others placed in boxes?—Yes.
2644. Did you see any monobel and fuse there?—Yes.
2645. Did you see mining tools in the box with the explosives?—Yes.
2646. What did you find there?—A gad, machine handle, file, and other things.
2647. Lying in the same box as the explosives?—Yes.
2648. What was the direction of the blast there?—It came down the road.
2649. Was it very violent?—Yes. That road was generally upset all the way down.
2650. Was there evidence of coking on the plugs of monobel you refer to?—Yes.
2651. Before going to the top of Fitzpatrick's wall do you remember going to the bottom level?—Yes.
2652. What state is the bottom level in; did you notice the state of the gobs?—No, I cannot say I did.
2653. Don't you remember that the blast had been very violent there and had blown the gob right over across the road?—No.
2654. Where did the Commission proceed from that point?—I think they went to the top of the wall.
2655. Right to the top place?—I think so. What did they find there?—They found a machine there.
2656. *By Mr. Want:* Did you see the place where Grant's body was found?—Yes. It was found at the pick place above the machine.
2657. Was there any indication of force there?—I did not notice it.
2658. On leaving the top gate road to go into where Grant's body was found, did you notice any evidence of force?—I don't know.
2659. Did you notice if any of the gob had shifted?—I don't remember taking any notice of it.
2660. *By Mr. Kilpatrick:* Did you see Grant's body?—No.
2661. Did you hear anything about it?—I heard that it was knocked about too much.
2662. Did you hear whether he was badly burnt?—He was burnt very little.
2663. Did you visit the pick place near Fitzpatrick's wall?—Yes. The place is marked there.
2664. Did you see a box of caps lying unused and undisturbed in any way?—Yes.
2665. Was there a machine in the top place of Fitzpatrick's wall?—Yes.
2666. What was the state of the machine there?—She was lying out there under the coal.
2667. *By Mr. Want:* Had she been working at the time of the explosion?—No. The cover was blown off the machine about 30 ft. up the hill.
2668. You found it there?—I looked for it two or three times before I found it. There was also a heavy wrench up there—a "farmer's friend" wrench which belonged to the machine. I also saw the kingpin of the machine there. It came off the top side of the machine.

2669. *By Mr. Kilpatrick:* In your opinion, how would the blast have been exerted to have displaced the machine cover, the kingpin, and the wrench, and carried them to where you found them?—It must have come from downhill. It must have blown uphill. W. O. Matthews.  
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2670. How did you find the bottom end of the machine?—The chain and cable were very much tangled up. They were driven right into the machine; also the jack handle. When I went round with Mr. Daniell on his inspection, he was testing the machine, and we had to use all our strength to pull the cable out and get it away from the chain.
2671. These things had evidently been driven into the machine from a downward direction?—Yes.
2672. We next went down to the second top place from Fitzpatrick's wall. What was found there?—There was a fall of coal there.
2673. A fall of stone, too?—Yes.
2674. There was a slip showing there?—Yes.
2675. Was there a wagon standing on the end of the rails?—Yes, in the gateway below. I am not too positive.
2676. *By Mr. Want:* Do you remember a skip half full of lump coal there?—Yes, big coal.
2677. Was that the place Mr. Kilpatrick spoke about?—No.
2678. *By Mr. Kilpatrick:* It was further down the wall?—I would not be positive about it. In one case there was a skip half full of big coal.
2679. You cannot remember distinctly where it was?—No.
2680. *By Mr. Want:* You remember there was a skip hand-filled?—Yes.
2681. *By Mr. Kilpatrick:* There was a fall of coal and stone, and it was necessary to go out of the road and proceed in that way to the next road below?—Yes.
2682. *By Mr. Want:* Before leaving that place, was the top side of the place cleaned up?—There was something there.
2683. Did you see some large coal lying there?—Yes.
2684. Did you see what looked like a lot of slack on the top of that lump of coal?—No, I never noticed it.
2685. Did you see anything that would indicate to you the possibility of a plaster having been put on it?—No, I never noticed any.
2686. *By the Chairman:* Did you notice the cog at the corner of the gobs?—Yes, I remember there was a difference of opinion amongst the party about that cog, and as to whether the blast came uphill or downhill.
2687. *By Mr. Kilpatrick:* We went into the road into the third place from the top?—Yes.
2688. Were notes taken there to show that the blast came from any particular direction?—Yes.
2689. From what direction did it come?—It came downhill.
2690. We went through all the rest of the places?—Yes. I noticed there was a full skip at one place, and it was lifted bodily off the rails, although the rails were not disturbed at all. The skip was picking up rails.
2691. *By Mr. Want:* Was that in No. 3 from the top?—It would be a gate or two down from where you referred to the coal in the face.
2692. That would suggest the force came from the rise downhill?—Yes.
2693. *By Mr. Kilpatrick:* All the evidence right down there past the walls was, so far as the displacing of skips and packs and timber was concerned, that they had been knocked out by a blast coming from uphill?—I don't remember.
2694. From the top of Fitzpatrick's wall to the bottom of it?—From the appearance of the timber, it would be difficult to say which way it went. From the cogs it seemed to me that the blast had blown downhill.
2695. *By the Chairman:* Which way were the gobbings spewed?—Downhill, in every case.
2696. *By Mr. Want:* Did you see all the Commissioners and the Secretary taking notes all the way round?—Yes. I heard the Commissioners calling out various things, and I saw Mr. Bird write them down.
2697. *By Mr. Kilpatrick:* Do you remember that the Commission made an inspection of the mine on Saturday, 1st October, guided by yourself?—Yes.
2698. Where was that examination made?—We visited Beattie's machine wall, and later on visited Fitzpatrick's machine wall again and inspected two or three bords there.

- W. O. Matthews. 2699. We visited the north side?—Yes, we went in No. 12 north to Beattie's wall.  
 8 October, 1921. 2700. Did you see any evidence at the entrance of the road to show where the blast had come from, as shown on the cog?—No. I never took particular notice of the cog. There had been a fall of roof at the entrance to No. 12.
2701. Did you see any explosives picked up on the road?—Yes.
2702. Can you describe what they were and how they were protected, if they had any protection at all?—There is no doubt that fracture was lying about in a very bad way.
2703. Was there any gelignite on the road?—Yes.
2704. And detonators?—Yes.
2705. Monobel and fuse?—Yes.
2706. Were they protected in any way at all?—Some of them were in the packets they came in.
2707. Were there signs of flame right into the face?—Yes, everywhere. One of the cables was charred.
2708. Was the machine there?—Yes.
2709. It had been cutting?—I do not know.
2710. *By the Chairman:* Did you see any scorched paper in the face?—I think the cable was burnt a little along there and showed sign of flame.
2711. *By Mr. Kilpatrick:* Was there evidence of flame and coking in No. 2 place from the bottom?—I think there had been flame there.
2712. Did you see a packet of monobel and several plugs of gelignite and fuse found there?—Yes. Fracture was found at all those places. Some of it was in the packets unopened, just as it had come in.
2713. Had there been a brushing shot fired in that particular place?—Yes. There had been one fired. In another place there was a hole bored in the brushing.
2714. *By the Chairman:* Was any brushing stowed in No. 2 gateway?—No.
2715. *By Mr. Want:* Do you remember a skip that had the top blown off it just before you went into the face?—Yes.
2716. Do you remember where the top of that skip was?—Up the hill a bit.
2717. Do you remember how far?—I cannot remember.
2718. *By Mr. Kilpatrick:* Was there evidence of coking and flame on that road—No. 2 from the bottom, the first one off the jig?—I am not positive about it.
2719. Did you see evidence of flame in No. 3?—The party agreed that flame had been shown all through there.
2720. Did you see the cables at the junction box were charred?—Yes.
2721. Did you see some paper badly burnt there?—Yes.
2722. *By Mr. Want:* Did you see the scorching on a coil of cable?—Yes.
2723. *By Mr. Kilpatrick:* Going on to No. 4, were the evidences of flame severe in this place?—There was a coil of fuse there which was burnt entirely away.
2724. Did you see some evidence so far as explosives were concerned?—Yes.
2725. When we got to No. 5, do you remember Mr. Want particularly taking an inventory of some explosives found there?—Yes.
2726. Do you remember that the explosives were in the same box with some mining tools, including spanners, file, machine handle, pick, &c.?—Yes. I remember that quite well. Mr. Want called out the list and Mr. Bird copied it down.
2727. Was there a hole bored in that face and charged with monobel?—Yes.
2728. What was the length of the hole?—There was only a 14-in. hole there.
2729. *By Mr. Want:* How did you know it was charged with monobel?—I saw that hole previously. I used a scraper to find out how far it was bored, and the scraper went in 14 in. That is how I knew the hole was charged.
2730. *By the Chairman:* Did you see Mr. Kilpatrick scrape the hole?—Yes. And I also saw the colour of the stuff which came out after he scraped it, and that is how I knew it was monobel.
2731. *By Mr. Kilpatrick:* Did you see a detonator attached to a fuse on a skip outbye?—Yes.
2732. *By the Chairman:* There was a primer there?—Yes.
2733. What was it?—Monobel.
2734. *By Mr. Kilpatrick:* Did you notice the skip on which the primer was found?—Yes; it was lying on its side.

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2735. Did you see evidence of coke on the skip?—Yes.
2736. We went to No. 6 and found practically the same evidence?—I did not go with you there, as I was explaining to Mr. Jackson when we met his party where we found the gas.
2737. There was a test made with the hydrogen lamp, but no gas was found?—That is so.
2738. Did you hear anything said about afterdamp?—The remark was passed that there was a smell of afterdamp.
2739. *By Mr. Want:* Did you see all the places visited by the Commission tested for gas?—Yes. We went in with the safety lamps first, and when all was clear the other lights came in.
2740. *By Mr. Kilpatrick:* There were no signs of gas?—No.
2741. There was another inspection on Monday, 3rd October?—Yes.
2742. We went to the top seam?—Yes.
2743. Did you notice at the entrance to that seam that there was evidence of considerable force having been exerted there?—The blast apparently came out from inbye. There was a skip at the clipping station immediately below. The driver must have been in the act of tightening the clip, because the pin was in the clip. Bob Thompson was the clipper there.
2744. Was his body found there?—Yes. He was thrown across the dip and down the hill.
2745. It looked as if the blast went upwards and downwards there?—Yes, it did.
2746. Did the blast travel up the road to Beattie's wall?—Possibly, it did.
2747. Would you say which way the blast came?—I really think the explosion came from the south side. There was very little damage on the north side.
2748. We proceeded to the top seam?—Yes.
2749. Is there a hole in the floor there?—Yes. They are the old workings of No. 2 seam.
2750. Is that hole very near to the drive?—Yes.
2751. Was there a cover on it?—It was covered with brattice cloth.
2752. Covered over for the rescue workers?—Yes.
2753. The drive on No. 2 seam is in close proximity there?—Yes, at the corner, and the stone drive is above it. I think that hole was blown out.
2754. *By Mr. Want:* You think it blew up?—Yes, it blew up all right.
2755. *By Mr. Kilpatrick:* Did you hear in the course of your investigations that that place was giving way before the explosion took place?—No. If you were taking a skip from the flat you would get a good run downhill to that hole.
2756. *By Mr. Want:* Did you hear Mr. Harris tell the Commission that Mr. Grant told him that that was a tender spot?—Yes.
2757. And that the road had sunk in that particular place?—I heard it mentioned.
2758. Consequently, it would not require much force to break through?—No.
2759. Before you went into the stone drift, did you notice where the double doors had been?—Yes. I noticed they were smashed.
2760. You would assume from that that the blast went into the return?—Yes.
2761. Did you notice any evidence of force in the stone drift?—There was a little bit of a fall in the roof, and it damaged the timbers in the stone drive.
2762. Can you say which way the force travelled?—It came out along there.
2763. You remember we went to the winch. Were there signs of coking there?—I heard some say that there was coking, and Mr. Watson took some crystals off the cable there.
2764. *By the Chairman:* Do you think the blast which came up there split and came in through an outbye along the drive?—It might have come from right and left, and carried away those two doors.
2765. *By Mr. Want:* Do you think from what you know that there would be any leakage of air there before the explosion?—I don't think so.
2766. *By Mr. Kilpatrick:* All the places in the top section were visited?—Yes.
2767. Was there evidence of violence there?—Yes.
2768. Any evidence of flame where O'Boyle and Spiers were found?—Yes. The cable was charred there.
2769. Going on to No. 2 you noticed that the machine had sumped?—Yes.

- W O. Matthews. 2770. The machine was running at the time of the explosion?—Yes.  
 8 October, 1921. 2771. Coking was evident on entering this face?—Yes.  
 2772. The main dip was next visited. Any signs of violence there?—No signs of violence at all.  
 2773. Do you remember where Butcher, Beattie, and Martin were found?—Yes.  
 2774. Would you assume they were running at the time of the explosion?—Yes. They were 15 yds. from their places.  
 2775. There was sign of flame where Mansfield and Lewis were found?—Yes.  
 2776. Have you any knowledge that these men endeavoured to get away?—Yes. They were 120 yds. from their working place. They came back against the air.  
 2777. Do you remember that twelve and a-half plugs of gelignite were found there?—I think they were found there.  
 2778. Also a file and knife within 18 in. of the rail and 2 ft. distance from the skip?—Yes. I know the remark was passed about the explosives being close to the skip and rails.  
 2779. *By Mr. Want*: Did you see the deputy's initials there?—I saw his initials and date on the prop. I saw "19/9/21. T.P."  
 2780. It was the first morning of the caving?—Yes.  
 2781. Did you see a packet of monobel picked up there?—Yes.  
 2782. And some gelignite and detonators in an open box?—Yes.  
 2783. They were all within 2 ft. of the rails?—Yes.  
 2784. Did we go to the monkey shaft after that?—Yes.  
 2785. Did you see any evidence of flame there?—Yes.  
 2786. Did you see the door to regulate the return air?—It was blown away and smashed.  
 2787. Which way?—It was blown in from the shaft.  
 2788. Which way did the forces come?—They must have come up the shaft, because there is no evidence of violence where the pony is.  
 2789. *By the Chairman*: There is a loose board on top of the shaft?—Yes. It is still there.  
 2790. *By Mr. Want*: Is it a heavy board?—Yes, 8 ft. by 1½ in.  
 2791. *By Mr. Kilpatrick*: It might have been displaced and fallen back again?—Yes.  
 2792. *By Mr. Want*: You remember we passed a dead horse?—Yes.  
 2793. Did you see the skip?—Yes.  
 2794. Do you think that the horse had been taking that skip inbye at the time of the explosion?—Yes. From the way he was pinioned there is no doubt he was going up hill with that skip, taking the empty skip in.  
 2795. The monkey shaft is within a couple of yards of where the horse is lying?—Yes.  
 2796. Where is the skip?—Four or six yards on the outbye side.  
 2797. And the harness?—It is beside the skip, mixed up with some brattice cloth. The collar and bridle are up the drive.  
 2798. And the limbers?—Attached to the skip.  
 2799. Were the limbers bent?—Yes. They are 1 in. round and they were bent the opposite way.  
 2800. They were blown round the skip in an outbye direction?—Yes.  
 2801. Do you suggest that the force that bent the limbers were travelling outbye?—I think so. There is a big cut on the horse like as if he were cut with an axe.  
 2802. *By the Chairman*: He might have struck the roof to cause that?—He must have struck something sharp.  
 2803. *By Mr. Want*: You think the force travelled outbye?—Yes. The explosion came up there, and it may have split there, because the collar was found uphill, and it may have been carried there by a lesser force.  
 2804. *By the Chairman*: Is there a broken sleeper up there?—Yes.  
 2805. A pine sleeper?—Yes.  
 2806. Is it broken inbye or outbye?—It is broken inbye up the hill.  
 2807. *By Mr. Want*: That sleeper suggests to you that something else struck it and broke it?—Yes. It must have been broken by something with a good deal of force, because the rail is out of position there.

2808. Do you think the horse was right in the line of the force coming up the shaft?—Yes. He must have been close to it, if not actually at the shaft. *W. O. Matthews.*  
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2809. *By the Chairman:* Was there a brattice obstruction there?—There used to be a door there, but it altered the circulation and it was taken down and a brattice put up. The last time I was there I did not see any brattice at all.
2810. You saw the brattice tangled up with the harness?—Yes.
2811. If the brattice had been in the position suggested, would it have been blown back on the harness?—Yes.
2812. *By Mr. Want:* At the time of the explosion, can you tell us how the place on the left-hand side below the horse road was ventilated?—No.
2813. The air came in the stone drift and down the dip?—Yes.
2814. Where then?—It split at that corner and went up the hill past the pouy, and then went down the straight dip.
2815. The air travelled down the dip and into Henry's place, and returned up thereon to the horse road?—At the time I left, the heading was not through there.
2816. Did you see where the brattice was?—It was tangled up round the skip on the outbye side of the shaft.
2817. Where was that place in relation to Fitzpatrick's wall?—No. 2 seam must be immediately underneath it.
2818. *By the Chairman:* Would Fitzpatrick's wall be immediately underneath No. 1 seam?—No. Fitzpatrick's wall is a long way from there.
2819. What part of the workings would be under No. 3 seam?—I cannot remember.

[The Commission adjourned at 12.30 p.m.]

#### SIXTH DAY.

#### CHILLAGOE.

TUESDAY, 11 OCTOBER, 1921.

The Commission met at the Court House at 10 a.m.

#### PRESENT:

R. A. DUNLOP, ESQUIRE (*Chairman*).

HON. C. KILPATRICK, M.L.C.

W. WANT, ESQUIRE.

#### General Evidence—continued.

JAMES THOMAS WATSON, Superintending Engineer, Mount Mulligan Colliery, recalled and further examined:

2820. *By the Chairman:* You have made an inspection of the Mount Mulligan mine since the explosion?—A partial one.
2821. You have been through the mine?—Yes.
2822. You arrived at some conclusion in regard to what you saw in the mine?—Yes. There were general evidences of forces in there.
2823. Can you tell us what was the focus of the primary explosion, and which direction it travelled?—I am not prepared to say which was the primary explosion at the present stage.
2824. Can you tell us something about the relative humidities there, and barometrical readings?—On one occasion when Inspector Horsley visited the mine we made barometrical tests on the surface and in the mine.
2825. Can you let us have those records?—Yes. On the 11th July, 1916, Mr. Horsley and I visited the mine and made the records. At the tunnel entrance at about 10 a.m. that day we found the dry bulb reading was 77 deg. and the wet bulb 66 deg. These tests were taken with a standard instrument with a certificate. We then went to the face of the first bord on the right, marked on the plan as the top level on the right-hand side. We found the dry bulb reading there was 80 deg. and the wet bulb reading 74 deg. We went to the bottom level on the left-hand-side, now known as No. 11, or pump flat, and on the face of it we found the dry bulb to register 83 deg. and the wet bulb 75 deg. At the bottom Welsh bord on the left-hand side, not far from the stone drive, we found the register there was on the face: dry bulb, 82 deg.; wet bulb, 75 deg. At the bord in No. 1 seam, just where the stone drive intersected No. 1 seam on the bord to the right of the face, the readings were 81½ deg. for the dry bulb and

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76 deg. for the wet bulb. We then passed on to where the stone drive leaves that slit, about 2 chains beyond it, and we found the readings to be: dry bulb 84 deg., wet bulb 76 deg. At the top of No. 2 dip, at the site of the recent fire, we found in the main return that the dry bulb reading was 82 deg. and the wet bulb reading 74 deg. At the main return on the fan we found the readings to be: dry bulb 82 deg., wet bulb 74 deg. That was identical with the reading taken further down. At the main tunnel entrance again, at 2.15 p.m., we found the dry bulb to be 81 deg. and the wet bulb was 66 deg. The water gauge at the fan was 2.3 in.

2826. Have you any readings taken in the main dip?—That reading that I gave for the bottom level left-hand side is identical with the main dip.
2827. Have you any record of the barometrical readings taken outside the mine?—I have a standard instrument at my place, which I frequently notice, and on the morning of the explosion I happened to notice the reading.
2828. Do you remember what it was?—28.55. That is just about our normal reading.
2829. Can you give us some idea of the air quantities delivered through the mine?—I have some records which I have taken. Roughly speaking, it is about 36,000 cub. ft. per minute.
2830. *By Mr. Want:* Regarding hygrometer reading, would that show somewhere about 50 per cent. of relative humidity?—A little higher than that in the faces. For example, 76 deg. is the highest wet bulb reading and 84 deg. the highest dry bulb reading. That would be approximately about 64 per cent. humidity.
2831. You made an examination of the mine since the explosion?—A partial examination.
2832. Your examination is not yet complete?—No.
2833. What would you say was the most remarkable feature of the explosion?—In what respect.
2834. No doubt there were remarkable features. Can you tell us one remarkable feature about it?—The contradictory evidence of force was one. Even that was not remarkable, because it is common at all explosions. Some of the evidence of forces on this occasion was very hard to explain.
2835. Was there anything remarkable about the evidence of coking?—There was a remarkably small amount of coked dust.
2836. Can you give us an idea of the amount of the coking that was attributable to the explosion?—All that I saw, if it were collected together, would not be  $\frac{1}{4}$  cwt.
2837. You think two or three hatfuls?—There might be more than that, but if it were all scraped together it would not amount to more than  $\frac{1}{4}$  cwt.
2838. Did your investigation show a possible point of origination?—It indicated at least two centres of explosion.
2839. Will you discuss these points regarding the possible origination of the explosion and the direction of forces therefrom?—Take the first place we noticed, and the assumption that the explosion originated in the face of Fitzpatrick's wall. On the assumption that the force originated there, it died out in all directions from that centre.
2840. Where would that be?—Near the top end of the machine face. I refer to the bord below where the machine was standing.
2841. What would that suggest to you; that that was the origination of the explosion?—There was evidence of the divergence of forces in all directions from that point. The evidence seemed to be conclusive to me that there was a divergence of forces there to the north, to the east, and to the west. They could not go to the south, because it was in solid coal that way.
2842. Where was the suggestion of original ignition there?—I would not like to commit myself to that without making a more detailed examination.
2843. *By the Chairman:* Did you notice a fall of coal there?—It was quite evident to me that the coal at that particular place had fallen immediately it was cut by the machine.
2844. *By Mr. Want:* You don't think it was shot down?—No. The holings had not been cleaned up.
2845. Did it come down in a big piece?—Yes.
2846. Did you think it was necessary to break that big piece of coal?—Yes.
2847. Was there anything about it that suggested how it was broken?—It was broken in fairly large lumps.

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2848. Was there anything to suggest it had been broken by some force subsequent to its fall?—I would not like to say that there was.
2849. You would not like to say without further investigation that a plaster was put on it?—I would not.
2850. *By the Chairman:* You did not examine it critically?—No. I was not in a fit condition to examine it that day.
2851. *By Mr. Want:* You told us that the force went to the rise?—The weakest force went to the rise.
2852. Did you follow that force to its diminution?—Yes. It greatly decreased in violence. That is in accordance with what we would expect in an explosion travelling with the air. It decreased in violence on the top level and died out on the main level.
2853. How far would that be from the main intake?—Not more than 150 yds. or so. There were two definite forces.
2854. *By the Chairman:* Was there strong evidence of force in the pick place above Fitzpatrick's wall above the machine?—No, not very strong.
2855. *By Mr. Want:* To get to the main intake it would be necessary for that force to cross over the main return?—Yes. It would have to cross the main return to get to the main intake.
2856. There was evidence that the force was downhill?—Yes. The evidence was clear enough that the force worked downhill right to the faces of the pick wall on the right-hand side; that is, the south-side bottom wall. There was clear evidence of force downhill all the way.
2857. Right to the solid coal?—Yes.
2858. Then from there?—Then for some little distance along the levels there was evidence of force, but to my mind it was quite clear that the explosion died out in that direction.
2859. *By the Chairman:* Along the bottom level?—Yes.
2860. *By Mr. Want:* Did you see evidence of flame?—Yes. Right through the mine there was evidence of flame.
2861. Was it uniform?—No, very variable.
2862. Were there any forces leading from gateways which would suggest the point of origin?—It came out into the gateways directly in front. There was evidence of force outwards down to the pick wall.
2863. *By the Chairman:* Violent in some places?—Yes.
2864. More violent than the nearer gates?—No, not more so than in the nearer ones. About three or four gates from that point there was the greatest evidence of violence.
2865. There was a fair fall of earth there?—Yes. The pack walls were disturbed.
2866. *By Mr. Want:* Did the force go outwards along No. 11?—No. The state of the double doors would show that.
2867. Was there any evidence of flame at the double doors?—Yes. There was evidence of flame everywhere.
2868. *By the Chairman:* Were those doors blown in by the blast?—Yes, inbye. The force came from the opposite direction.
2869. The primary force died before it reached those doors?—Yes.
2870. *By Mr. Want:* You suggested that there was another point of origin?—Yes, at the entrance to the stone drive.
2871. Leading from the middle slit into the top seam?—Yes.
2872. Will you describe the direction of the forces evident there?—They were very strong in the direction of the main return to the fan. They were very strong out along the No. 2 slit to the main tunnel, also along the No. 2 slit itself. Then is passed to where the double doors were. There was very strong evidence that those doors had been driven inbye.
2873. Is the main return in a line with that?—Yes, in a direct line.
2874. And in a line with the stone drift?—Only a few yards off. There were also evidences of force going into the stone drift from that point.
2875. What evidences?—There is evidence of the effect of the explosion on the floor of the stone drive into the bord underneath it.
2876. Would that be an indication of direction?—No, but it was evidence of a strong force, but not direction.
2877. *By the Chairman:* You say that tender place was driven downwards?—Yes.
2878. Why was that?—The rails across the opening had not been disturbed in any way. If the force had been up, the rails would have been driven up also.

- J. T. Watson. 2879. Would it require a big force to drive it through there?—Yes.
- 11 October, 1921. 2880. What was the depth of the roof between the two places?—An average of 4 ft.
2881. *By Mr. Kilpatrick:* Have you heard that it gave way there before the explosion?—There was always a settlement there.
2882. *By Mr. Want:* Further in the stone drive?—The evidence of force there was clearly inbye. The timber is displaced by the force, and it shows it to have been inbye. The evidence at the winch is that the force was inbye. The force is very clearly indicated in towards the face. The packs are displaced there, and the position in which those machine men were found shows that they clearly met the force face to face and were driven downwards.
2883. Do you know of any circumstances that would suggest a cause of ignition at the entrance to the stone drive?—No. Keeping to the assumption that the original ignition occurred at the other wall, there may have been a secondary explosion, but there is no evidence to show there was anything at that particular point which would cause it.
2884. *By the Chairman:* There is a staple shaft there?—Yes, the nearest one to the stone drive. The evidences of force are contradictory there, but to my mind they were downward.
2885. Might the forces not have been in both directions—primary and secondary?—The first force may have come from Fitzpatrick's wall with reduced intensity, and the second explosion went the other way.
2886. After the first force?—Yes.
2887. There was a brattice cloth across the opening just before reaching the monkey shaft?—Yes.
2888. Going inbye?—I am not sure where that brattice was situated.
2889. It is now lying between the horse and the skip?—I know where it is now.
2890. You do not know whether it was hung or not before the explosion?—It must have been, but I cannot remember just now.
2891. It has been driven from its position and tied up with the skip and harness. The whole of the cloth is there?—I saw a piece of brattice there.
2892. That would indicate that the explosion came up the shaft and went outbye?—I did not take much notice of it.
2893. *By Mr. Want:* Did you see the limbers on the skip?—Yes.
2894. What did the position of the limbers suggest?—It suggested that the skip had been driven against the limbers.
2895. Did it suggest that the force was travelling inbye?—Yes.
2896. *By the Chairman:* You think that the skip was driven on to the horse?—I know how a horse would behave on such an occasion. A horse goes mad at a time like that, and he would jump clean out of his harness. The evidence was that that was just what the horse did. He jumped out of his harness and left the skip behind him as soon as he heard the force coming.
2897. *By Mr. Want:* Do you think the horse heard the forces coming, and he would be blown away, or jumped away apparently from it?—He would jump, and, perhaps, he was thrown to the side of the skip.
2898. And the weight of the horse falling beside the skip would have bent the limbers?—Yes. The weight of the horse would bend the limbers. We know what happens when a horse plays up under ordinary conditions, so we can imagine what it was down there. He could bend the limbers very easily.
2899. You think it possible that the horse may have moved forwards?—No. I think that the horse broke his neck when he jumped.
2900. *By the Chairman:* Did you notice the position of the harness and the collar?—Yes. The harness is on one side and the collar on the other side.
2901. A long way off?—Yes.
2902. Did you notice the position of the skip?—Yes. It was slightly damaged.
2903. What damaged it?—Where the limbers were attached the skip was also slightly bulged in, as if it had got a blow from the back.
2904. *By Mr. Want:* Was there any coking on that skip?—I don't think so.
2905. You spoke about evidence of force travelling inbye at the stone drift?—Yes. That was proved by the displacement of the sets of timber in the stone drive itself.
2906. Did you notice a leg underneath the crown, not exactly knocked out of position, but displaced?—I noticed several cases like it.
2907. Would that be invariably a guide as to the direction of force?—No.

2908. That would depend on the way the crown or the prop were struck?—Yes, and if it were struck at the top or bottom. That would influence it a good deal. J. T. Watson.  
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2909. If the prop were struck on the head with a missile blown inbye it might indicate direction of force, and if struck near the foot by a missile carried outbye it would show the same thing?—I would expect to find the timber displaced.
2910. If the bottom of the timber were struck that way it would cause the prop to lean over?—The bottom would be displaced, too.
2911. Was the examination of that drift detailed or minute enough to enable you to say definitely as to which direction the explosion went?—Yes. I have no doubt whatever that it went in. I cannot reconcile any other direction of force. If you look at the plan and No. 11 south, I cannot reconcile the position of the switch at the bottom of the shaft with the force having come up there. That switch was very strongly put in position.
2912. The cables were carried up there?—Yes.
2913. Would there be any leakage of fresh air from the top seam down to the bottom?—Yes. There was a slight leakage.
2914. Would it be natural for the flame arriving at the bottom of that shaft to make for the main intake of fresh air?—It all depends if there was sufficient force. The forces would radiate in that direction.
2915. I am speaking of propagation with a great deal of force?—In that case it would make invariably towards the intake air.
2916. From that point up that monkey-shaft it would be as short, or shorter, as out No. 11 on to the top?—Which force are you talking about?
2917. Suppose the propagation of flame occurred up through this monkey-shaft to the top seam?—It started somewhere at the monkey-shaft.
2918. Yes?—I should have expected it to have gone out of No. 11 main gate.
2919. *By the Chairman:* There was a heavy board over the staple pit?—It was a mere cover.
2920. It was weighted with earth?—I could not say. I have not seen it for a long time.
2921. *By Mr. Want:* Can you connect these two suggested origins—that is to say, you would think one would be consequent on the other?—I think one would be consequent on the other, naturally, but I am not prepared to say at this stage which was the initial force. I can explain the evidence of force equally well by assuming that the ignition took place at the stone drive.
2922. From your experience, which do you think was the more likely to be the primary ignition?—In the absence of any cause, seeing that we have no evidence of an explosion of coal dust at the face, it is hard to determine which was the initial force.
2923. Would you say that all the evidence shows that ignition took place at the working face?—Yes. There is evidence of an explosion there.
2924. Would you say it was subsequent to the explosion at the stone drive?—It is impossible for any man to say that now.
2925. *By the Chairman:* Are the evidences of violence equal?—No. I think the greater force was in the stone drive.
2926. Would that be because the force was more confined there?—No; it is because it is right in the fresh air and the main intake.
2927. Is it not natural for a force to grow in intensity and velocity from the point of origin?—No. It is the other way about.
2928. By propagation?—There may be propagation of a series of explosions, but in the case of any explosion it naturally must follow that it decreases in intensity as it radiates from the centre.
2929. *By Mr. Want:* Were not the effects of the explosion more pronounced at the mouth of the tunnel at Mount Mulligan than at any other part of the mine?—Yes, they were very pronounced there.
2930. From that would you say that the explosion had grown after it left the seat of origin?—I would say that the consequential force passed out of the mouth of the tunnel immediately after the other.
2931. The evidences showed that the forces travelled out on to the dip?—Yes, clearly.
2932. What direction did they take from there?—They divided at the entrance to No. 2 slit and came out of the tunnel. The less violent of the two forces went down the dip, and the other went to the mouth of the tunnel.

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2933. Did you follow the evidences of the forces down the dip?—Yes, right to No. 12, and into No. 12.
2934. *By Mr. Kilpatrick:* On the south side?—Both sides.
2935. *By the Chairman:* It jumped the road?—No; it went straight down the dip.
2936. *By Mr. Want:* When the lighter force went to the south side, what happened there?—It went inbye into No. 12.
2937. Definitely inbye?—Yes.
2938. And in the north?—Inbye also.
2939. Did you follow the evidences of the force in the north side?—Yes, in the faces. I was satisfied that the flame had travelled over that section, but the forces had decreased in violence, which I expected it to do while travelling with the air.
2940. *By the Chairman:* You would expect the primary and secondary explosion to escape through the fan drift?—There were a series of explosions; there is no doubt about that. They all occurred within the fraction of a second. One second would cover the whole thing. Taking the whole extent of the mine, we know that the speed of an explosion gets up to 100 miles a minute, and it travelled not more than half a mile. It is very easy to figure that it would not take long to go right out.
2941. *By Mr. Want:* Is there any other connection between the top seam and the bottom?—Yes. We use it for a return air course for the top dam. It is a staple shaft.
2942. How far is it from Fitzpatrick's wall to that return air pit?—Within 150 yds.
2943. Are there any evidences of flame at the bottom of it?—I did not examine the bottom of it.
2944. There are evidences of severe flame in the region of the haulage motor in the top seam?—Yes.
2945. What would cause that?—The explosion outside of the entrance to the stone drive.
2946. Were the evidences of flame more intense at the drive than at the motor?—Yes.
2947. Would you expect more dust at the lies or flats?—Yes; it would be largely stone dust.
2948. Do you think that a subsidiary current or blast consequent on the explosion may have driven the dust on the right-hand side towards the motor?—There was a pioneering cloud of dust raised ahead of the flame itself at varying distances, and it was probably due to a wave of concussion disturbing the air in front of it. This would raise the dust in the unused parts of the mine, and the flame would follow and ignite it.
2949. As the dust on the sides and roof and timber is combustible, an explosion might be propagated?—Yes, provided the dust is in the air, in suspension.
2950. *By the Chairman:* You think that the explosion which occurred outside the stone drive travelled uphill to the monkey-shaft?—The flame went up there, undoubtedly.
2951. Are there evidences of forces there?—A very moderate force; hardly noticeable. It could not have been very severe, because the men who were there had travelled for 100 yds.
2952. There was a door blown away there?—It was blown down the hill, but that could be explained by a force coming in the opposite direction.
2953. It is not possible that it went up the monkey-shaft, or it would have removed that board there?—I think the force went down the shaft.
2954. *By Mr. Want:* Do you believe that increased ventilation increases the risk of a dust explosion?—I am satisfied that it does that.
2955. *By the Chairman:* Can you give us the relative quantities of air going into the mine?—I can only give it as an estimate. I should say that from 8,000 to 10,000 cub. ft. of air per minute went into the right-hand split on the north side; the other two splits about equally divided the remainder.
2956. *By Mr. Want:* Will you say, from investigations made on the morning of the disaster, that there was any coal dust to propagate an explosion?—Coal dust can propagate an explosion under certain conditions. That has been noticed in every large explosion. The whole of the air did not travel to the faces, because there were leakages into the gates and other places.
2957. Are there any wet zones in the mine?—No. The mine is very dry.
2958. Has any attention been given to the provision of wet zones in the mine?—No, because there is no water to do it. It would be impossible to make wet zones there, because the roads could not be kept open.

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2959. How is that?—The fireclay which is used to make the packs would disintegrate. In twenty-four hours after watering those packs they would cease to exist. They would not stand at all after watering.
2960. Is that due to mechanical or chemical action?—To mechanical action.
2961. Can you tell us what rules are to be observed before firing shots in dusty places?—I do not know much about the Queensland regulations, but I can tell you the shot-firing regulations of other parts of the world.
2962. Don't you know that the contiguous area must be watered for a certain distance before a shot is fired?—It is 20 yds. in New South Wales.
2963. What distance are the pack walls from the face?—12 ft.
2964. Consequently it would be necessary to water the pack walls to comply with that regulation?—Yes.
2965. What are your ideas regarding the distribution of dust to overcome the liability to explosion?—On the evidence of the Mount Mulligan explosion I have got very little faith in the distribution of the stone-dust theory.
2966. *By the Chairman:* Do you think there is sufficient stone dust mixed with the coal dust at Mount Mulligan to prevent an explosion under ordinary conditions?—Yes. If there is anything in that theory at all, there could not have been an explosion at Mount Mulligan.
2967. *By Mr. Want:* You think that prevention is better than cure?—Yes.
2968. How would you prevent it?—I will give that in detail later on.
2969. *By the Chairman:* Do you think that the blast would raise the stone dust?—It would raise all the fine dust, both stone and coal.
2970. *By Mr. Want:* On the morning of the explosion, or at the time of the explosion, were any influences that you know of at work that would make the upper portion of the mine the possible seat of origin because it was particularly dusty?—No. I would have thought it would have been less than usual, because it was cavilling day and it seemed to me quite clear that a number of men had not reached their working places and had not started work at all.
2971. Was there anything to indicate that work was going on at Fitzpatrick's wall?—Apparently they had been filling a skip in the second bord from the top.
2972. Was any work being done on any of the roads?—Not in Fitzpatrick's wall, that I know of.
2973. Was anything going on that would stir up the dust?—No.
2974. Do you think that the air circulating along that face was possibly clearer than it would have been later on in the day?—Yes. As the day went on there would be more dust in the air.
2975. Do you think mine officials recognise the small quantity of dust necessary to propagate an explosion?—I am not sure that the mining officials in general think about it at all, because a good many people treat it with contempt and hold the opinion that dust is not explosive. I am not only speaking of subordinate officials, but people in high positions, who hold that dust itself does not explode except under unusual conditions.
2976. *By the Chairman:* Would you name one or two conditions that might arise?—Yes. An explosion might arise from an extra dusty atmosphere, from a blown-out shot, a badly overcharged shot, or the accidental ignition of explosives. There are many causes, but I cannot reconcile the position that existed in that mine with the possibilities of a coal-dust explosion there, seeing the quantities of dust that are required to bring about an explosion.
2977. You don't think there would be sufficient dust in suspension to ignite from a plaster or lay-on?—The amount of actual dust in suspension in the air was not so great as to bring about an explosion from an ordinary flame. If it was, the men would not work in it. The men would not work at all in an atmosphere laden with sufficient dust to cause an explosion.
2978. Did you make a test in the return way after the explosion?—I tested for gas only.
2979. *By Mr. Want:* Don't you think that the fineness and dryness of the dust is likely to propagate an explosion, even when the quantity is small?—The fineness and dryness of the dust have an important influence on its explosive quality. There is a minimum quantity required. It has been proved over and over again that coal dust alone is explosive under certain conditions.
2980. Then it reduces itself to a matter of mixture?—Yes, it is purely a matter of the minimum quantity of dust and mixture.
2981. *By the Chairman:* You know that samples of air were taken on the return airway?—Yes, I understand that Mr. Jackson, Chief Inspector of Mines in Queensland, took samples.

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2982. Would you say that the samples had been taken in such a position that, had there been gas developing at any of the faces, traces might be found?—The method of analysis taken by Mr. Jackson will only pick up a small percentage of gas and firedamp. Under the method of analysis adopted in Queensland with a Hempel burette, they cannot get the delicate percentage which they can obtain in other parts. Under their system of analysis they can never detect firedamp below  $\frac{1}{4}$  per cent., and the ordinary hydrogen lamp will detect that.
2983. You found no trace of gas?—No, if you refer to firedamp.
2984. *By Mr. Want:* In certain circumstances, would the hydrogen lamp show dust in the atmosphere?—Yes. I tested that with the hydrogen flame.
2985. Mount Mulligan is not an extensive mine?—No, not as coal mines go.
2986. Do you know that small coal mines are more susceptible to dust explosions than large mines?—There is a theory to that effect.
2987. What do you think of it?—I am not prepared to accept it in toto. There is one district in America where that theory was held, with evidence to support it. That is the only place I know of in the world.
2988. Have you made any determination regarding loss of oxygen while being transmitted in the air through the mine at Mount Mulligan?—No. We have never had the apparatus to make that determination.
2989. Would you expect the oxygen to be materially reduced in the circulation of the mine air in that case?—No.
2990. You said there was a lot of incombustible matter in the dust in the roads?—Yes.
2991. Do you think the results of the explosion could have been worse than they were because of that fact?—Yes. Had it been purely coal dust on the roads the results could have been much worse in mine damage.
2992. *By the Chairman:* Stone dusting is only a palliative, in your opinion?—Yes.
2993. *By Mr. Want:* Have you ever had the dust sieved at Mount Mulligan?—It was only done for the purpose of analysis, but that would hardly be a fair test.
2994. Do you know if there was any large quantities of dust gathered on the roads, lies, and flats?—I never knew of any.
2995. *By the Chairman:* Do you think that the method of over-filling the skips is conducive to dust in the mine?—It might add a little to it, but it is hard to stop men from doing that. Naturally, when a man is filling a skip he will put as much on it as he can get.
2996. You mined the whole of the bottom seam?—We took out the whole 27 in. of coal and the dirt underlying the coal. The machine does not cut into the coal itself in that face.
2997. It goes into the pricking?—Yes.
2998. *By Mr. Want:* What percentage of carbonaceous matter would there be in the pricking?—20 per cent.
2999. *By the Chairman:* Does it cut through that pricking clear?—It cuts entirely in the pricking.
3000. *By Mr. Want:* And it is gobbled or stowed?—Yes.
3001. *By the Chairman:* What are the constituent parts of the pricking?—Inferior coal, fireclay, and very fine brown shale. It is extremely friable. The total thickness is very nearly 2 ft.
3002. *By Mr. Want:* You said that it had never been proved that the origination of a dust explosion had taken place at a working face?—Yes, that is so.
3003. Did your investigations at Mount Mulligan lead you to believe that we have a unique case there?—On the present evidence it looks like it, but I would like to make a more detailed inspection of that area before committing myself to any definite opinion.
3004. *By the Chairman:* When would you start that inspection, and how long would it take?—As soon as the Commission is finished. It will not take many days. I intend to have two or three days in the mine immediately I get the chance. I intend to make an inspection in the neighbourhood of the stone drive also.
3005. *By Mr. Want:* How does the analysis of the South Coast coal compare with Mount Mulligan?—There is not much difference between the North Bulli seam in the Illawarra district of New South Wales and the No. 2 seam at Mount Mulligan.
3006. Is the nature and formation of the seams the same?—In a general way, yes.
3007. You had gas in the Illawarra district?—They have had gas in the mines there for very many years.

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2008. The dust there is very fine?—The dust there is derived entirely from the coal.
3009. Are the seams fairly clean?—Yes. There is no dirt in the seam at all.
3010. Would you expect to be bothered with gas later on in Mount Mulligan?—I would never be surprised to get it, seeing that we have got 1,300 ft. of covering over the coal. The coal is clearly becoming more bituminous as we get into the side of the mountain.
3011. *By the Chairman:* It is not porous coal?—No, extremely dense. It would never surprise me to get firedamp there.
3012. As a matter of fact, you have made arrangements in your installation of the electrical gear for that?—Yes. It is designed to work in gassy mines.
3013. *By Mr. Want:* Do you regard as practicable the keeping of the roof, sides, and chambers in such a state that the propagation of an explosion would be impossible?—I do not know any practicable means of doing that.
3014. Do you think that stone dust scattered into the intake air would distribute and tend to make the dust on the sides and roof of the chamber incombustible?—Stone dust is a mere palliative and of no value, in my opinion, in the prevention of explosions.
3015. *By the Chairman:* Would the effect on the health of the men working in the mine be apparent if you introduced stone dust into the mine?—Speaking for myself, I would not like to work there under such conditions.
3016. *By Mr. Want:* Would not that all depend on the nature of the dust?—Yes, but any dust is deleterious.
3017. *By the Chairman:* Would it set up lung troubles?—Yes. It has been said that shale dust has no effect on the men, but I have my doubts about that, because we know that flour dust has a serious effect on men.
3018. Has coal dust any serious effect on men?—No; coal dust has no effect at all.
3019. *By Mr. Kilpatrick:* Would watering it have any effect?—No, not at Mount Mulligan.
3020. You don't think that stone dust would do any good there?—The introduction of stone dust, combined with a periodical reversal of the air circulation, might have some effect, but I do not attach any value to the stone-dust theory at all. I might quote the remarks of Sir Henry Hall, one of the chief inspectors of mines in Great Britain, on that point. Sir Henry Hall was many times a Royal Commissioner appointed to investigate explosions, and he is one of the highest authorities in Great Britain on the subject. He is also supported by Mr. J. Gerrard, another inspector of mines in Great Britain. I have a work here by John Harger on "Coal and the Prevention of Explosions and Fires in Mines." On page 117 of this work, I find that Sir Henry Hall uses these words:—
- "We have discussed the question as to whether preventive zones might meet the case; but those who have seen the terrible force of the explosions at Alltofts must recognise that, once an explosion of coal dust was initiated, the terrific force must involve a considerable loss of life before the preventive zone was reached. I have absolutely abandoned all hope of preventing loss of life by limiting zones. Coal dust explosions must be nipped in the bud."
3021. *By the Chairman:* And your opinion coincides with theirs?—Yes. On the evidence of what I have seen in New South Wales in various explosions, I am satisfied that a limiting zone is valueless.
3022. Have you seen limiting zones?—Yes. There were natural limiting zones in Mount Kembla. There were areas of wet ground where the roof, sides, and floor were permanently wet. In one case in Mount Kembla one of these zones was a quarter of a mile long. It did not prevent loss of life, all the same.
3023. *By Mr. Kilpatrick:* You mean that an explosion can take place and be carried over that area?—Yes, and bring about loss of life as if the limiting zone were not there at all. We had clear evidence in Mount Kembla that the permanently wet zone did not prevent the propagation of an explosion.
3024. *By the Chairman:* It did not help to propagate it?—No, but it did not stop it. Sufficient force was carried over it to raise the dust outbye and initiate the whole thing over and over again. I think extensions can only be prevented by getting right on the spot where they are likely to arise.
3025. *By Mr. Kilpatrick:* Have you any method to suggest which you will give to the Commission later on?—Yes.
3026. *By Mr. Want:* What is your opinion regarding the reduction of ventilation at firing time in a coalmine?—Mere reduction of ventilation is not material. If the quality of the mine air can be reduced by reducing the oxygen contents and increasing the CO<sub>2</sub> contents, then explosions can be made absolutely impossible.

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3027. What would you say about reducing the ventilation at firing time?—That has been in practice in some American mines for years past. You cannot do it in Great Britain, except by special legislation, and you cannot do it in Queensland except by special legislation.
3028. *By the Chairman:* How would you reduce the oxygen in a mine?—By the introduction of nitrogen and CO<sub>2</sub> into the air.
3029. *By Mr. Want:* Is it necessary to shoot coal at Mount Mulligan?—Yes, it could not be worked in any other way.
3030. Getting back to Fitzpatrick's wall, would you say that the explosion wave travelled the shortest route to the main intake?—It appeared to me to travel direct against the air, and in going with the air it died out in a very short distance. The evidence of that at all points was perfectly conclusive to me.
3031. The forces on the other seams were subsidiary to the main wave?—I think that the flame which travelled to the north side was merely a continuation of the explosion in the main tunnel.
3032. *By Mr. Kilpatrick:* It appeared to come out of the entrance to the top seam?—Yes.
3033. *By Mr. Want:* You gave evidence about the force in No. 11 level being inwards?—Yes.
3034. How did that occur?—By the force operating from the main tunnel.
3035. Was it partly due to a vacuum or depression being produced in the wake of the first explosion?—There is no evidence of a vacuum having been created. I have never seen it in mine explosions, and I do not believe there is any such thing.
3036. Is it possible there may have been a reduction in the pressure, owing to condensation?—At the moment of the explosion, and for some minutes afterwards, the high temperature of the gas at that point would more than compensate for the reduction in quantity at the faces.
3037. When the gases cooled, you would expect them to decrease in volume?—Yes. There is no question about that. The temperature was fairly high in there for hours afterwards.
3038. You did not examine that coal at Fitzpatrick's wall minutely?—No.
3039. Do you think if a lay-on were fired there that it would precipitate or initiate an explosion?—It may bring about an explosion, but, as I say, I have not examined it closely. It is a possibility, but I have not examined it closely enough to express an opinion on it. There is another possibility which I have not touched on yet, and that is the use of acetylene lamps in the mine. We know that each man carries an acetylene lamp, and they carry about 2 lb. of carbide with them. When the lamps burn badly the miners used to throw out an ounce or two of partially exhausted carbide. As it was in a damp condition when they threw it on the ground, it was possible for that carbide to give off enough gas to bring about an explosion if ignited. I have seen those big acetylene lamps give a lot of trouble on the surface.
3040. *By the Chairman:* There was part of an acetylene lamp found in that section?—Yes. The upper part of an acetylene lamp was found near that spot.
3041. Did you notice it particularly?—Yes. Someone drew my attention to it at the time.
3042. It was not knocked about?—No.
3043. The other half of that lamp has not been found?—No.
3044. *By Mr. Want:* You told us in your earlier evidence that it was possible for you to get down into the main intake very quickly after the explosion?—Yes. I suppose I was in that tunnel within ten minutes.
3045. You followed the air in again?—Yes, for a certain distance.
3046. What was that, something like a reversal?—It was the natural ventilation and the excessive heat producing natural ventilation up the return tunnel. The return tunnel is 100 ft. higher than the intake. As there was a great amount of heat in the mine, there would naturally be a current in that direction.
3047. To clear the mine?—To clear the main dip as far as I went.
3048. You do not think that the pressure inside the mine would be materially reduced immediately after the explosion?—No, there was no evidence of it to me. The current of air passing into the tunnel was a very gentle one. I could only detect it by picking up a little dust and dropping it to the ground again.

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3049. *By the Chairman:* You saw the fire in the mine?—Yes. I saw where the fire had been.
3050. Was that fire an aid to the ventilation?—It aided it very materially.
3051. *By Mr. Want:* You have known explosions to occur in other places and for men to follow in immediately?—No, I have not known cases of men going into a colliery straightaway.
3052. Have you not known of explosions where men have been in the mine again within half an hour?—Not on a large scale.
3053. On a small scale?—Yes. On a small scale, but it was because the normal ventilation of the mine had not been interfered with.
3054. Have you known explosions to occur where the normal ventilation had been interfered with?—You could not get very far in within half an hour, at any rate.
3055. Could you get down 800 ft.?—It is possible in a shaft with two compartments.
3056. Can you give us your ideas of the lighting of dusty mines?—That is one of the suggestions that I intend to put before the Commission later on. I intend to make several suggestions for the prevention of explosions.
3057. *By Mr. Kilpatrick:* Can you tell the Commission your plans for the immediate future of the mine at Mount Mulligan?—Yes. It is intended to completely alter the system of working. As a matter of fact, part of the new plant was on the ground.
3058. *By the Chairman:* In what direction?—By the putting in of conveyers. Some of them will have belts and some are to be of the vibrating type.
3059. *By Mr. Kilpatrick:* Is it your intention to have a manager appointed at the mine?—Yes, almost immediately.
3060. That comes under the scope of this inquiry, all right. Do you mean to appoint an underground manager?—I am inclined to.
3061. I think you mentioned in your former evidence that there was no provision in the Queensland Act for the appointment of an underground manager?—Not on the same lines as in New South Wales.
3062. I think that, in the special rules, provision is made for that being done in Queensland. You will find it in Sections 25 and 26, and also in Rule 9?—But you have no certificate in Queensland for an underground manager.
3063. There is a certificate for an underground foreman?—Since when?
3064. It has been there for a long time?—I have not heard of it.
3065. *By Mr. Want:* It has been there for ten years?—No; the only provision is for a mine manager and deputy.
3066. *By Mr. Kilpatrick:* The Board of Examiners has power to issue first and second class certificates?—I understand a second-class certificate would be issued to a man in charge of a certain number of men.
3067. A man can take charge of a mine without holding a certificate at all if he has less than twenty men employed?—Yes. A man can act as manager in Queensland with a second-class certificate under certain conditions. A man cannot do that in New South Wales, and he cannot do it in Great Britain.
3068. *By Mr. Want:* Is there not a provision in the New South Wales Act which allows a man with a second-class certificate to take charge of a mine if he does not employ more than twenty men?—You can get a permit for a mine which has only twenty men, or under twenty. I would like to see the Queensland Act made a little more definite in that respect, and particularly in regard to the issue of certificates. That is another matter which I will mention also in my recommendations.
3069. *By the Chairman:* Mine inspections were made daily at Mount Mulligan before the day of the explosion?—Yes.
3070. What was the method adopted in reporting all safe?—That is a matter I am not able to say much on. Do you mean what was the general practice at the Deputy's cabin in the morning?
3071. *By Mr. Kilpatrick:* In the last amendments of the Mines Regulation Act there are certain regulations for the prevention of coal dust?—I think they are totally ineffective. They are not sufficiently definite.
3072. Would you say, as superintending engineer, that as far as possible you will see that the provisions of the Mines Regulation Act are strictly enforced until the Act can be amended or otherwise?—I would be prepared to go a lot further than those provisions of the Act, because I do not think they are sufficiently definite or sufficiently explicit to prevent accidents

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- happening. Even if you carried out the provisions in the Queensland Act rigidly, explosions could still happen. I would go a good deal further than that. You will see my recommendations when I come to them.
3073. You expressed the opinion that one of these acetylene lamps might have caused the explosion?—I think so.
3074. Do you think that a small acetylene lamp would do that?—Not the small headlight. I do not refer to the acetylene lamps that the men used to wear in their caps. There is not sufficient carbide in those small lamps to do much mischief.
3075. Do you think there is any possibility of an oil lamp causing an explosion?—No. My main objection to naked lights is the loose discipline which they encourage in a mine.
3076. *By Mr. Want:* The miners spill their damp carbide on the ground?—Yes.
3077. And the resulting gas from carbide is explosive?—Yes. Acetylene is a forceful explosive.
3078. *By Mr. Kilpatrick:* You have heard in evidence that explosives were very badly handled in the mine?—Yes, I have heard that stated, but so far as I saw and so far as I have heard, there was nothing in the arrangements in that respect contrary to the regulations. Apparently some of the men took in explosives in their original containers, but they were quite within the regulations. I do not think that you could succeed in a prosecution against the men for handling explosives in the mine as that regulation now stands.
3079. Do you think that the method of carrying the explosives into the mine in the bare packet is in conformity with the regulations?—It is not in conflict with the regulation.
3080. What about the detonators?—Apparently the detonators are not covered by that particular regulation. If a man carries the detonators in the tin in which he receives them he complies with the regulation absolutely. But I do not approve of that method of handling them. I would not allow any man to carry in a detonator except he is the person appointed for the job. Loose detonators ought to be absolutely prohibited in mining.
3081. You have stated that explosives lying about might have caused an explosion?—Yes. A man might accidentally ignite them from an open light.
3082. Are you prepared in the absence of other regulations to see that these things are better handled than what they were before?—I will take care of that. The manager appointed will have strict instructions as to what is to be done in that respect. I will go a great deal further than the regulations provide for in the handling of explosives.
3083. You will, in fact, see that the supervision is more effective in the mine?—I will alter the method entirely.
3084. *By Mr. Want:* Did you make investigations regarding the structure of the coal, as compared with that of other mines?—Yes. No. 1 seam is a hard seam of extremely dense coal. There has been no variation whatever in that seam. In No. 2 seam, in the early stages, it was also a hard coal and dense, but there has been a decided change recently in the physical structure of the coal, and a slight change in the composition. In the main dip and in the pick wall on the left-hand side of the mine the coal is more friable in character than it used to be, and can be worked without explosives at all. As a matter of fact, for a long while past the men in those places have not used explosives in getting coal. I anticipate that the conditions mentioned will continue. From now on, the cover will tend to increase in thickness, if anything. It will certainly not decrease.
3085. Do you know of any circumstance at Mount Mulligan before the explosion by which the discipline of the underground men might have been affected?—No; I cannot call to mind anything that would affect the position in that respect.
3086. *By Mr. Kilpatrick:* Do you think there was any rivalry existing between Evans and Grant which might make for ineffectual management?—There was certainly always a feeling between them. I hate to have to say it now, but I must tell you what I know.
3087. We quite understand that?—You understand that. There was not always the good feeling between them that there might have been. I would not like to say too much on the point, because the men cannot answer for themselves.
3088. You know that feeling was existent?—Yes. It never interfered with their work, to my knowledge. I should have taken action if it had interfered with their work.
3089. It may have escaped your notice?—Yes. I never interfered with the working of the mine.

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3090. Do you know if the men themselves took sides so far as these two responsible officials were concerned?—No, I never heard of that.
3091. *By Mr. Want:* What suggestions have you got to make to prevent similar occurrences in future?—I have got quite a number of suggestions to make. I will speak first of what I think are the very first essentials, and I will go right through my suggestions. To start with, I think there should be a separate Coal Mines Regulation Act on the lines of the British and New South Wales Acts. The coal mines' regulations should be kept apart altogether from metalliferous mines.
3092. You think that would be an advantage?—For one thing, it brings the provisions of the Act more clearly before the persons responsible. They will then not have to wade through a lot of matter that has nothing to do with them as they have to do at present.
3093. Do you think it would make for more effective supervision?—Yes, it would make for more effective supervision and greater safety in mines, and it would bring the Queensland regulations into line with the New South Wales and British Acts.
3094. Both as regards supervision of staffs and inspection?—Yes. I think the coal business of Queensland has reached a point where it should be dealt with by separate legislation, and not tacked on to something else. It is becoming a big thing in Queensland.
3095. *By Mr. Kilpatrick:* And likely to be bigger?—The coal industry is growing and extending in every district in Queensland.
3096. *By Mr. Want:* Do you think it is absolutely necessary that all men who have the supervision of collieries should have colliery training?—I do. No man should be granted a certificate to take charge of a mine unless he has had at least five years' underground experience. I say that without hesitation. I do not care what other training a man has had.
3097. *By Mr. Kilpatrick:* As a manager?—Or as an official underground.
3098. Or as an inspector?—Yes. I should say that five years' experience in a coal mine should be the absolute minimum.
3099. *By Mr. Want:* Five years underground to obtain a certificate as manager?—Yes. That is on the lines of the New South Wales Act, and also the British Act. The only exception is made in cases of men who hold certain University degrees, and they are allowed to sit for certificates after three years' experience. I would not alter that.
3100. Do you think it advisable for inspectors to have had experience as managers?—I would not say that that was absolutely necessary. It is certainly advisable, but cases might arise where it would shut out good men. I have known cases myself where very efficient inspectors never held a position as manager. I know one or two men who had never been managers of mines, and they made very efficient inspectors.
3101. *By the Chairman:* An inspector's line of work is more critical than constructive?—Yes. I might add that an inspector of mines should not be asked at any time to give orders underground. By giving orders it implies responsibility. If a man is in a position to give orders to men, he should be prepared to accept full responsibility for those orders. If the giving of orders by the inspector is permitted, it leads to conflict between the inspector and the manager.
3102. *By Mr. Want:* Does that occur sometimes?—It does occur in certain places.
3103. *By Mr. Kilpatrick:* In Queensland?—No. I have never heard of it here, but I have heard of it occurring in New Zealand, to my personal knowledge. There should only be one authority in a mine, and that is the manager.
3104. *By the Chairman:* In dealing with men?—And in dealing with the responsibility for the working of men. The inspector has the right to see that the regulations are being complied with. He has that right, of course; but he should not have the power to take away responsibility from the manager by taking it on himself to give orders. It is not fair to the inspector and not fair to the manager.
3105. *By Mr. Kilpatrick:* The regulations in that case could be made very comprehensive?—They should be very clear.
3106. *By Mr. Want:* What is your next suggestion?—My next suggestion is that there must be adequate and effective special rules clearly defining the duties and responsibilities of officials and workmen in collieries. To my mind, the rules in Queensland are not nearly comprehensive enough.
3107. Do you think that the special rules in Queensland are expected to cover too many mines?—Yes; and they are hopelessly out of date.

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3108. In what respects?—In every way, particularly the definition of the duties of various people. The duties of officials and workmen should be clearly defined. With regard to a lot of the rules now in existence, you would never succeed in a prosecution because they are so badly worded and so ambiguous. The rules are not nearly comprehensive enough and not clear enough.
3109. What about the electrical rules?—They are practically the British rules, with modifications.
3110. *By the Chairman:* Do you think they are efficient?—Yes, they are efficient.
3111. *By Mr. Want:* What is your next suggestion?—My next suggestion is the absolute prohibition of the use or possession of any but explosives on the British permitted list. I would not allow any man to have in his possession or use any explosive not on the British permitted list.
3112. Where?—In any coal mine.
3113. Would you object to any but permitted explosives in stone drifts?—Yes. There are permitted explosives suitable for that work also.
3114. *By Mr. Kilpatrick:* Such as?—Saxonite.
3115. *By Mr. Want:* Is it as strong as the other explosives?—Not as strong in nitro-glycerine content. That is where their strength lies.
3116. Will you give the relative strength of saxonite to 60 per cent. gelignite?—That should not be permitted underground at all, because the temperature of ignition is too high and its explosive force is too great to use in a colliery. I think it was the Belgian Firedamp Commission and also the Prussian Firedamp Commission which came to the conclusion that any explosive having a flame temperature exceeding 2,200 deg. centigrade should not be used in a mine. Well, 60 per cent. gelignite goes considerably over that. I would make that regulation as clear as one of the Ten Commandments. I would say that nothing but explosives on the permitted lists should be used. There could be no argument then.
3117. Who should have charge of those permitted explosives and the handling and use of them?—I will come to that in its turn. That is one of the things I would like to see clearly defined in the regulations.
3118. *By Mr. Kilpatrick:* What is your next suggestion?—All explosives should be fired electrically. No shot is permitted to be fired in any British colliery or safety-lamp mine in New South Wales except it is fired electrically. That eliminates the danger caused through loose detonators.
3119. How can that be best carried out?—The next suggestion will give you the knowledge as to how it can best be carried out. It reads as follows:—  
 “No shot to be fired in any colliery except by a certificated shotfirer or higher official, and only after regulations provided have been strictly carried out. Penalty for offence against this regulation should be made severe, and strictly enforced.”
- In my opinion, the duties of a shotfirer are such that he requires to be much more qualified than a deputy under ordinary conditions. That is why I say that the shotfirer should be a certificated man.
3120. Do you think that that can be carried into effect?—It is carried out in practice in New South Wales. There is no certificate required here at present but they intend to bring it in. At present no shot can be fired except by shotfirers authorised by the manager.
3121. *By Mr. Want:* Are not the deputies examined as to their ability to fire explosives?—Yes, to some extent they are examined as to the handling and use of explosives, but not in the effects or knowledge of actual tests and their relation to possible explosions. The penalty should be strictly enforced against both workmen and officials. The next suggestion I make is as follows:—  
 “In collieries where machines are used for undercutting or holing, the coal machines should be worked on afternoon shift only, except when the ordinary work of the colliery is not being carried on, when they may be worked on day shift.”
- I put this forward as a suggested regulation which should have the force of law.
3122. *By the Chairman:* They deal with coal mines?—Any coal mine where a machine is being used.
3123. *By Mr. Kilpatrick:* Are you anticipating any industrial trouble?—I think that could be got over if the men realised that it would considerably increase the safety of the operations in mines, and they should be prepared to accept any provision tending to greater safety.
3124. Is that the practice in New South Wales?—In some mines it is, but it is not universal.

3125. Is it the practice in Great Britain?—It is not universal, although a great many managers are coming round to it. J. T. Watson.  
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3126. *By Mr. Want:* What do you think of the proposal to keep the coal dust down by watering when the machine is cutting?—It would mean a man standing with a hose directed right into the machine cut. The machine throws the dust out, and I do not think it is possible to keep that dust down by any system of watering. The next suggestion I have to offer reads:—  
“In collieries where machines are used, no shot shall be fired whilst the ordinary working of the mine is being carried on.”  
That means that the certificated shotfirer should do his shotfiring when the machines are not working. I am speaking of machine mines only in this connection.
3127. That is to say, when as few men as possible are in the mine?—Yes, when only competent officials are in the mine.
3128. *By Mr. Kilpatrick:* After the work has ceased?—Yes, after the work has ceased for the day. It would mean afternoon shift for the coalcutters and shotfirers, but one shotfirer can fire a great number of shots with an assistant, if he has got nothing else to do.
3129. I have seen the method adopted?—A number of shots can be fired by a shotfirer in a shaft. I attach a good deal of importance to both of those suggested rules. I have had a fairly big experience, extending over twenty-five years, regarding the use of machines and their effects on the ventilation of mines.
3130. Are there any machines in use in New South Wales?—In North Bulli they had them, but not now.
3131. What practice do they follow there?—Explosives are only used in North Bulli.
3132. *By Mr. Want:* Do you know if they are using the machines at Black's colliery at Cockle Creek?—No, I do not think they are. They are working long wall there. It was a pick wall the last time I was there. The next suggestion I put forward is as follows:—  
“After firedamp has been found in any mine, the use of any but approved safety lamps should be prohibited.”
3133. Do you mean “found by the ordinary deputy's lamp?”—Found in any way. The mere presence of firedamp would be enough for me, because if you get it with a hydrogen lamp you have no guarantee you will not get an accumulation of it sooner or later.
3134. That would cover the electric lamp?—Yes, every class of safety lamp.
3135. *By Mr. Kilpatrick:* The use of electric lamps would be the best means of men overtaking their work?—Yes.
3136. *By the Chairman:* From the point of view of efficient service?—There are two points that the managers make mistakes about. One is their rooted dislike to providing the best lamps. They think that anything is good enough for a light. They do not give the best results. I believe in putting in the highest possible amount of light consistent with safety. The modern electric lamp does that.
3137. *By Mr. Want:* Apart from its inability to detect gas, do you think that the electric lamp is as safe as the gauze lamp?—Perfectly safe.
3138. Safer than the gauze lamp?—Yes. I have known a pick to be put through the ordinary gauze lamp. If you have a 2-volt electric lamp it is as good as any lamp you can get. I used one of that type in the mine the other day. That could be made of metal instead of wood, and it would meet every condition the men could possibly want in the mine. These lamps would be provided by the management, and they would be returned by the men as they come out of the mine.
3139. *By the Chairman:* The supply of electricity could be obtained from the manager?—Yes. The lamps would remain under the control of the manager. The workman would take it out of the lamp cabin in the morning and hand it back to the lampman at night.
3140. *By Mr. Kilpatrick:* These are for use in all coalmines?—No. In dry and dusty mines, where firedamp has been found, permitted lights only should be used.
3141. That will have the same application so far as the light is concerned?—The intention of it is more in the direction of the maintenance of proper discipline in the mine. A man will not be entitled to take any kind of lamp he likes if this rule is enforced.
3142. *By the Chairman:* What is your next suggestion?—The next one is an alteration of the existing practice in Queensland regarding the reports and inspections of officials of the Mines Department.

- J. T. Watson. 3143. *By Mr. Want:* In what way?—I look on the present system as a farce.
- 11 October, 1921. 3144. What do you suggest?—I would suggest the adoption of the practice now being followed in Great Britain, New Zealand, New South Wales, and most of the American States.
3145. *By using a different set of books?*—Each report of an inspection required under the Act should have a separate book set apart for it. Take the deputy's inspection at the commencement of work every morning, which is the most important inspection of the lot. The deputy's report book should be kept at a station at the entrance to the mine, as at present. I do not object to that particularly, but the reports should be made in duplicate, or a carbon copy of the report made when the deputy writes it. The same practice should be followed in an inspection of the old workings, in the manager's daily inspection, and in the inspection of machinery, and so on. I would do it all in the same way. After writing the report a copy should be sent to the mine office. Say the inspection was made at 7 a.m.; that report ought to be filed in the office before dinner time that day. In the case of a very large mine, the manager does not go underground daily, because it is a physical impossibility for him to do it. That is so in New South Wales. Under the system I suggest he has access to all the reports of the mine every day, because they are filed in the office as a permanent record. In New South Wales we used to keep those records for five years.
3146. *By the Chairman:* Would you keep inspection books for the inspector of mines and the deputy?—I have a definite opinion on that. I held a position as an inspector of mines for some years in New South Wales, and I never wrote a report at a colliery, and I do not think that any inspector should be asked to do it.
3147. Would you alter the present system?—Yes, I would.
3148. What would you substitute?—A detailed report should be sent to the Chief Inspector of Mines.
3149. Of every inspection?—Yes.
3150. Would that be a stereotyped report?—No. I would leave it to the personality of the inspector himself. I do not believe in stereotyped reports at all. The inspector becomes mechanical, and it has a tendency to make a man give you only the information required by the report.
3151. Has not the other form of report caused a man to overlook certain mining conditions?—No, I do not think so.
3152. *By Mr. Want:* If you look into the record book in use in Queensland mines, there are various items detailed which are required to be reported on?—I was dealing with the inspections by inspectors of mines. The practice exists in Queensland as well as in other countries where the miners have the right to appoint one or two of their number to make periodical inspections of the mine, and where that practice exists I fail to see the necessity for an inspector of mines to make a report on the mine in the colliery report book.
3153. *By the Chairman:* What about the inspections by the men?—That should be provided for. They should report direct. They are immediately in touch with the men, and most men are satisfied when two of their number make an inspection of the mine and certify that everything is all right. Personally, I have nothing against the system of the two men making an inspection of the mine and making a report. I quite believe in these periodical inspections by the men.
3154. *By Mr. Kilpatrick:* And enter their reports in the book?—Yes.
3155. *By the Chairman:* Do you think the inspector of mines should call the attention of the manager to any breach of the regulations?—If there is any breach of the regulations it was our invariable practice to write, drawing attention to the breach of the regulation, and the letter was posted by registered post to the manager. That was our usual practice. We expected an immediate reply, and we usually got it. There is a clause in the New South Wales Act which provides that in the event of the manager disagreeing with the interpretation by the inspector, then means are provided in the Act by which you can find out who is right.
3156. *By Mr. Want:* Don't you think it would save time and postage if the inspector wrote his report at the mine immediately?—No. I think the matter is too serious to regard time and postage as anything at all.
3157. Do you not think that a report written immediately after the examination was made is more effective than a letter written about it afterwards?—No, I do not. For the purposes of record, I do not attach any value to it at all. I will tell you why. If the inspector's report was adverse in any

particular point, say that an explosion followed, then an unscrupulous manager could destroy that report, and what proof has the inspector that he had made it?

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3158. Did you make yours in duplicate when you were an inspector?—That was not our method. I prefer the system whereby the inspector writes direct to the manager.
3159. *By Mr. Kilpatrick:* The manager would be just in the same position so far as the letter is concerned?—No, because the inspector has got his receipt for the registered letter and a copy of it, and it is a hard matter for a man to get away from the receipt for a registered letter. That was our invariable practice in New South Wales. When it was serious enough to demand a letter, we registered the letter.
3160. *By Mr. Want:* Did you find the managers were reluctant to comply with your requests?—No, I did not. There were odd cases, of course.
3161. *By the Chairman:* You suggest that a case might arise where a man might be convicted of a serious crime because of neglect of some sort, and he might be inclined to destroy the record?—Yes. In New South Wales a manager might not accept the interpretation put upon it by the inspector, and we would submit the matter to arbitration provided for in the Act. I would not always expect a manager to agree to what an inspector wants. We are all more or less human and fallible, and when we express opinions we do not expect to get the manager to agree to everything the inspector suggests. The onus of responsibility is on the manager if anything happens.
3162. *By Mr. Want:* Doubly so. It is always on him?—It is on him after his attention has been called to it. I do not suppose that managers would argue the point about it. I never knew a manager who would not agree to any reasonable suggestion, except one man. He belonged to the old school, but I do not think the modern type of mine managers are like that.
3163. *By the Chairman:* Have you any other suggestions?—The next suggestion I have to make is to raise the standard of qualifications required by colliery managers and inspectors of mines. I am referring now to Queensland.
3164. *By Mr. Want:* You think that the standard in Queensland is not equal to the other States?—No, it is not.
3165. Have you any reasons for thinking that?—Yes. Several cases have come under my notice. For several years I was one of the examiners for New South Wales, and cases came under our notice of men with Queensland certificates who wanted to get registration in New South Wales.
3166. Colliery managers?—Yes, and cases also came from Victoria.
3167. How long ago is it since that happened?—In 1910. We had applications from men from Victoria and other places asking to be registered in New South Wales.
3168. Certificates of competency have not been necessary in Queensland for more than twelve years?—I think it is something like fifteen years ago that I refer to.
3169. You said that you had men from Queensland making application for certificates in New South Wales?—I am not prepared to say whether they were from Queensland or not, but I know we had to deal with applications, and invariably they were refused unless the man had experience of gassy mines in other parts of the world.
3170. Can you show me anything which leads you to believe that the standard in Queensland is not as high as the standard required in New South Wales?—Yes. The nature of the examination itself is not so high.
3171. Have you seen a copy of the examination questions in Queensland?—Yes. I saw them in the case of one of our officials, Mr. Grant.
3172. You do not think those questions are up to the standard required by the examiners in New South Wales?—I do not.
3173. Have you any other suggestions?—I think the higher qualifications suggested for inspectors should command higher salaries in Queensland.
3174. That is a matter for the Government?—My next suggestion reads as follows:—  
“Elimination of the existing regulations regarding the standard of quality and moisture contents of mine air, and substitution of provisions more in accord with modern developments.”  
I think the standard of quality fixed encourages ignition at the face.
3175. *By Mr. Kilpatrick:* Are you dealing with the provisions in regard to the purity of air?—Yes. We should eliminate the present regulations and substitute something more on the lines of modern practice and modern research.

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3176. *By Mr. Want:* Do you propose that the percentage of carbon dioxide should be increased?—That is one possibility, and the decrease of oxygen is another. That should be done when shots are being fired in the mine. When there is no shotfiring going on, we could leave things as they are.
3177. How would you propose to arrive at that condition?—There are a good many methods of doing it. There are makers in Great Britain who are prepared to supply plants for the introduction of inert gases. I believe that giving fresh air to a man is the cheapest thing you can provide him with, but while shotfiring is going on I certainly think the percentage of oxygen should be materially reduced. There is no case on record of an explosion traversing a road where the percentage of oxygen was below 19 per cent. In many cases when the percentage of oxygen was 20 per cent. it prevented the extension of the explosion by reducing the quantity of air.
3178. Is it not difficult to state the quantity of oxygen in the air immediately before an explosion?—No. The manager knows fairly well the quantity of air in the faces from day to day. There is no mistaking the air that contains less than 20 per cent. of oxygen, by its effects on lights.
3179. *By Mr. Kilpatrick:* You know all about it, then?—Yes, there is no mistaking it.
3180. What is your next suggestion?—I am looking forward to the day when they will bring the regulations in Queensland into line with the practice now obtaining in all the great coalmining countries of the world, and I suggest that in future all mines should be ventilated by a fan so arranged that the ventilation can be reversed at will.
3181. You would not allow furnace ventilation?—It is a statutory provision in Great Britain, France, Belgium, and most of the American States, and also in New South Wales, that ventilation by fan can be so arranged that it can be reversed at will. There is no hardship about that, because any existing fan can be adapted to that without any serious alteration or expense.
3182. Any fan in use now can be adapted to it?—Yes.
3183. *By Mr. Want:* One way would be by the installation of doors?—Yes. All new fans should be provided with proper arrangements.
3184. The fans should be placed in such a position so as not to be liable to be damaged by an explosion?—That is provided for now, but it is not explicit. It is open to a good deal of argument as to where the fan might best be placed.
3185. Take the Mount Mulligan case. Do you suggest anything that might be done there?—The only thing is that the fan might be carried further away, but I doubt if that would have very much effect.
3186. What about placing the fan at right angles to the drift?—That would not improve it at all. The fan at the Dudley Colliery was placed at right angles to the shaft, and 40 yds. from the shaft, yet the Dudley fan was blown to smithereens in an explosion, and you could hardly tell whether there was a fan there.
3187. Was the fan placed at a distance?—Nearly 40 yds. in the case of the Dudley Colliery. The fan was badly damaged and the fan chamber blown down, and it was impossible to restore the ventilation for days. Those are the principal suggestions I have to offer. There is a good deal in the two first suggestions I have offered—that adequate and effective special rules should be adopted, clearly defining the duties and responsibilities of officials and workmen in collieries. If these rules are adopted they will be for the benefit of the men and the management, and the inspectors of mines will agree to them. They will bring the Queensland regulations into line with the regulations ruling in other parts of the world.
3188. *By the Chairman:* You do not suggest any regulation in regard to watering?—Yes. It will come in the Act itself. The regulation in regard to watering is embodied in the suggestions I have made, and the rules should be on the lines of the New South Wales Act.
3189. Is the deputy's inspection embraced by your scheme of rules?—Yes. The deputy's inspection in the morning before commencing work should be carried out with a locked safety lamp. The examination of the roofs and sides should be carried out with a safety lamp, and he should satisfy himself that there is no condition existing that is likely to be dangerous. Generally his duty should be to examine the place and see that all is safe before the men are allowed to enter.
3190. Will you give any attention to ventilation?—Yes. It comes under the general provisions for safety. If there is no ventilation then the deputy should say so.

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3191. *By Mr. Kilpatrick:* How many men would you allow him?—In this district it should not go more than seventy men to each deputy. In New South Wales he is allowed up to seventy men. In New South Wales it is as much as the deputy can do to get round in four hours. You go further than that in Queensland. The inspection is made within two hours in Queensland and within four hours in New South Wales. I think it is quite safe to make the inspection within four hours.

3192. Is there anything further you would like to add to your evidence?—Yes. The question is raised on page 102 of the work before referred to by John Harger. It is laid down there that the factors that influence the behaviour of dust are very numerous. These include the composition of dust and the length of time it has been exposed to the air; the fineness of the dust; the purity of the dust; the composition of the air as the proportion of oxygen, carbon dioxide, and firedamp differs in different parts of the same mine; and also the means of ignition. The variety of factors makes the problem very complicated, and it is essential that each should be considered. Then on page 103 it deals with the influence of the percentage of oxygen in dust ignitions. It is laid down here that—

“In the absence of gas, a dust explosion has never been known to originate at the working face.”

That is a perfectly definite statement by Dr. Harger, a member of the Institute of Mining Engineers of Great Britain.

3193. *By Mr. Want:* He does not say that it is impossible?—He says that it has never been known to originate at a working face. He would be foolish to say that it was impossible.

3194. And if we had a conviction that such a thing took place at Mount Mulligan we would be foolish to hide it?—Yes. Then on page 104 Dr. Harger states:—

“In this country alone more than fifty million shots are fired in mines each year, and nearly all of these at the working faces, yet not a single dust explosion is known to have originated at the workings. On the other hand, comparatively few shots are fired in the intake haulage ways; yet most of the explosions have originated in them.”

3195. I have a copy of that work and will make reference to it later?—The first recorded explosion where dust was proved to have played the only part was the Camerton explosion in Great Britain over twenty years ago. That was a mine which had been working for many years, and no firedamp had ever been found, even in the analysed air. Yet a very serious explosion occurred through the blowing down of some roof in the main intake. It was over a mile back from the working face. There is a further quotation I would like to read, on page 105, which says—

“(1.) Dust ignitions are unknown at the working faces, and, in the absence of gas, seldom, if ever, traverse the workings and returns.”

I may say something of the conditions existing at Mount Mulligan are adverse to that opinion. The explosion undoubtedly traversed the main return, and it undoubtedly traversed the north side of the mine. He qualified that by saying, on page 106—

“Considering these sets of facts simultaneously, the author formed the hypothesis that they were closely connected, the reason why dust ignitions did not occur at the working faces and returns being that the air in these parts contained less oxygen.”

3196. I have a case here about the Universal Colliery, in South Wales. There were eighty-one persons killed there in 1901. The quotation reads as follows. [*Mr. Want quoted from page 35 of Report of Committee of Inquiry, Coal Dust in Collieries, N.S.W.*] :—

“Universal Colliery, South Wales, 1901. Eighty-one persons killed. An extensive dust explosion, by which all the persons in the pit at the time except one lost their lives. The explosion. . . . There was evidence of mine being dry and dusty. The cause was obscure, but Professor Galloway came to the conclusion that it originated from the firing of a shot in a roadway close to the face, without any attempt being made to water the locality.”

?—The Universal Colliery was a mine which gave off considerable volumes of gas and was never free from firedamp.

3197. That is the report of the Committee of Inquiry in New South Wales?—It did not mention that it was a gassy mine. There is undoubtedly firedamp everywhere in that mine. The Universal Colliery was one of the gassy mines of South Wales, and is to this day. Where you get firedamp the danger is intensified manyfold.

ERNEST JULIUS LAUN, Inspector of Mines, recalled and further examined:

- E. J. Laun  
11 October, 1911.
3198. *By the Chairman:* You made a full examination of the mine at Mount Mulligan?—I made several.
3199. You made one continuous examination?—I made several examinations in company with Mr. Jackson and Mr. Stafford, and I was present with the members of the Commission when they made another inspection.
3200. You made a minute inspection yourself?—Yes.
3201. Did you notice anything particularly about Fitzpatrick's machine wall in the second gate from the machine?—Yes, but not at the first inspection. On the second occasion, when I went into the colliery and you were there, I noticed particularly the shape of the coal lying in the face.
3202. *By Mr. Want:* Tell us what you saw in that bord just below where the machine was?—There was a truck partly filled with lump coal standing there. There were tools lying a short distance from the face, and on the bottom side of the road there was a quantity of coal lying close to the face.
3203. Had that quantity of coal apparently fallen off after being cut by the machine?—It had been uncut and was probably a fall. There was a lump of stuff 6 ft. by 8 ft. below the straight lie, and the road was occupied with lump coal.
3204. Did you see a slip there?—About 6 ft. or 8 ft. below that again I saw a slip where the rails would be if they were projecting into the face. There was a fall of rock from the roof. On the bottom end there was lump coal at the lower end.
3205. Did you see a slip?—Yes.
3206. Did that slip come down from the roof?—I do not know what was underneath the coal. I looked at the roof, and I formed the opinion then that it had fallen after the explosion, because it was not covered with brown dust coal.
3207. You think the roof fell after the explosion?—Yes.
3208. And the coal was down before the explosion?—Certainly. I could tell that by the brown dust on it. It was possibly coke dust.
3209. Would you say that the products of the explosion, or some of it, were lying on top of the lump of coal?—Yes; but the top end of the coal was very fine and crushed and broken up.
3210. Do you mean to say that part of the lump had been shattered?—The top end towards the rails was fine coal. It was not very large. It was not even egg size. It was more like marble size.
3211. Do you think it could have been caused by the fall?—At the time I saw it, it had no special significance for me at all. Afterwards I thought over it, and I wondered why it should be found lower down the working place and why there should be lumps of coal in the skip. I did not scrape very deep into it, but it was soft and it was about 4 in. deep of fine, loose coal.
3212. Comminuted?—Yes, very much.
3213. Would a lay-on have comminuted it like that?—I would expect so, or it could have been produced by holing in. I would not have expected there to be sufficient explosive in it to smash it to that extent.
3214. Do you think it was probably caused by the action of the explosive?—I should infer that.
3215. You could not explain it in any other way?—No.
3216. *By Mr. Kilpatrick:* Was it near the front of the coal?—Right on the top end.
3217. On the end furthest away from the face?—No. The fine coal went very nearly to the face. Evidently the thing had been smashed from the top and end and not from the upper side.
3218. *By the Chairman:* What was the area of that shattered stuff?—Three feet square, approximately.
3219. You found it was 4 in. deep?—Yes.
3220. *By Mr. Want:* Do you think that that coal in the skip had been hand-filled?—Certainly. There was no fine stuff with it.
3221. Did the general conditions suggest that there was no more loose coal after they had put that lump coal into the skip?—So far as I know, there is no handling coal lying there now. Only the shovelling coal remains.
3222. *By the Chairman:* That piece of coal was partly shattered?—Yes. It is a big lump of coal 6 ft. long by 2 ft. to 3 ft. wide.
3223. It could not be shifted out and dumped into a skip?—No.
3224. You would expect miners dealing with a piece of coal that size to break it up?—They would have to do so. They could not have shifted it otherwise.

3225. Did you notice in the stone drive certain peculiarities as the result of the explosion; can you theorise about that?—The first time we went in we had been informed that there was a blow-up, and when the inspection party went in it was perfectly clear that the bottom of the drive had gone down by either gravity or explosion. That gave an idea of the direction of the force along the drive. In the stone drive itself I cannot say that I saw anything that was perfectly clear as to which way the explosion had drifted.

E. J. Laun.  
11 October, 1921.

3226. Did the legs lean in a certain direction?—I did not take much notice. I did not make any notes about the stone drive.

#### Evidence on Electrical Installation.

FREDERICK EDWARD DANIELL, Chief Electrician, employed by the State Smelters at Chillagoe, sworn and examined:

3227. *By the Chairman:* Do you remember hearing of an explosion at Mount Mulligan on the 19th September?—Yes.

F. E. Daniell.  
11 October, 1921.

3228. Were you requested to make an examination of the electrical gear after the explosion?—Yes.

3229. And you made an examination?—Yes. I made an examination of the electrical apparatus on the 2nd and 3rd of October.

3230. Did you start at the powerhouse?—No.

3231. Can you give us the result of your examination?—Yes. I have written it out. It is as follows:—

Mount Mulligan,  
3rd October, 1921.

The Chairman,  
Royal Commission,  
Mount Mulligan Disaster.

SIR,—According to instructions received from the Chairman of the above Commission, I proceeded to Mount Mulligan on the 1st October, 1921, to inspect and report on the electrical installation of the Mount Mulligan coalmine, and beg to report as follows:—

On Sunday, the 2nd October, I entered the main entrance of the mine, and examined the transformer, and found the three main conductors disconnected. Two of these main conductors were used for direct current work, to replace alternating current wires out of commission, the third main conductor being used for a temporary telephone. Also I found the main circuit-breaker in circuit.

I then proceeded to the north wall coal-cutting machine, tested the trailing cable, and found a reading of four megohms between conductors and four megohms to earth. The test of this machine controller in off-position showed a reading of fifty megohms and fifty megohms to earth. With the controller at the "on" position the reading was zero, with a reading of twenty megohms to earth.

I then proceeded to the monkey shaft and tested cables from transformer to disconnecting box, and got a reading of fifty megohms between conductors, and also a reading of fifty megohms to earth.

I then tested the underground cables from disconnecting box to gate end box, to what is known as Fitzpatrick's machine. I found the fuses of this machine intact, obtained a reading of twenty-five megohms between conductors and fifty megohms to earth.

I also tested the trailing cable of this machine and obtained a reading of four megohms between conductors and the same reading to earth. This machine, with controller on the "off" position, a reading of fifty megohms between and ten megohms to earth. With controller on "on" position, showed a reading of zero, and ten megohms to earth.

On Monday morning, the 3rd of October, I re-entered the mine and proceeded to the top seam machine. The controller of this machine was found on the running position. I tested the trailing cable and obtained ten megohms between conductors, and ten megohms to earth. With the controller on the "off" position I obtained a reading of fifty megohms, and to earth fifty. With the controller at the "on" position the reading showed zero, and twenty megohms to earth. At the gate end box of this machine the fuses were intact.

I am, Sir,  
Yours obediently,  
F. E. DANIELL.

3232. *By Mr. Want:* Did you examine the haulage motor?—No, I never saw it.

3233. In going into the top seam you must have passed it. It was a little direct current motor for hauling out of the dip?—I never saw it. I did not know it was there.

3234. Consequently you cannot make any observations about it?—I do not know anything about it. I did not know that such a thing existed.

3235. Did you come across anything that would suggest arcing or fusing?—No, not anywhere.

- F. E. Daniell.  
11 October, 1921.
3236. So far as you saw, what would you say about the electrical installation?—It was in perfect order electrically, as tests go.
3237. Have you had any experience in coalmines?—No. I had never been in a coalmine myself before that day.
3238. *By the Chairman:* The electrical installation at Mount Mulligan was fool-proof?—Practically, yes.
3239. It could not show any signs of having been interefered with in any way?—No.
3240. Mr. Watson requested me to ask you if your tests showed all the machinery was in good order?—Yes.
3241. It showed the machine where you got zero was in perfect working order?—Yes.

[The Commission adjourned at 1.15 p.m.]

SEVENTH DAY.

CHILLAGOE.

WEDNESDAY, 12 OCTOBER, 1921.

The Commission met at the Court House at 9.30 a.m.

PRESENT:

R. A. DUNLOP, ESQUIRE (*Chairman*).

HON. C. KILPATRICK, M.L.C.

W. WANT, ESQUIRE.

**Evidence of Rescue Workers—continued.**

ROBERT ALLEN, Miner, employed at the State Smelters at Chillagoe, sworn and examined:

- R. Allen.  
12 October, 1921.
3242. *By the Chairman:* Do you remember going down to Mount Mulligan on rail motor?—Yes, on Monday, 19th September.
3243. You were one of the rescue party?—Yes. We reached Mount Mulligan at 2.30 a.m. on the Tuesday, and went into the Mount Mulligan at 3 a.m.
3244. *By Mr. Want:* Are you a coalminer?—Yes. I had worked previously at the Mount Mulligan mine.
3245. *By the Chairman:* Do you remember going into No. 12 south level?—Yes, off the bottom of the dip.
3246. Do you remember the end of that roadway?—Yes, through the road on the long wall.
3247. What did you do at the end of the first gate there?—I went there to get a man out. He was covered over.
3248. He was under a fall of ground?—There was a fall of coal there and a fall of stone as well.
3249. Did you notice him particularly?—Yes. He was in a different position to the others I located in the No. 10 level.
3250. Was he burnt?—No.
3251. *By Mr. Want:* Do you know his name?—No. In the excitement a man did not bother about getting their names, but I remember that he was smashed up.
3252. Were there any other men recovered from there?—Yes. There was a man in a crouching position.
3253. Where?—On the right rib coming out.
3254. How far up the roadway from the face?—Not more than 20 yds.
3255. Was he burnt?—No.
3256. Did you get any more men in that roadway?—No. They were the only two I located there.
3257. Was that man injured?—Not as bad as the men in the other places. They were blistered and burnt.
3258. *By the Chairman:* Which way was the man lying who was picked up in the roadway?—He was lying as if he had been going to get an empty skip, or to see after more skips, because I noticed a skip full of coal in this place.
3259. *By Mr. Want:* When you say "rib" you mean the pack wall?—I mean the rib. That is coalminers' language.
3260. *By the Chairman:* Was the second man you found a working mate of the first man?—Yes. That was the impression I formed. One man was in the face while the other was wheeling.
3261. He would not bring in an empty skip before the full one was taken out?—No, there was not room.

3262. *By Mr. Want:* He might have gone out for a drink?—I have seen a man go out and look for an empty skip. He could run it into a dead end while he pushed the full one out, and then he would shove the empty one in. R. Allen.  
12 October, 1921.
3263. Do you think he ran out away from danger?—No, I don't think so.
3264. *By the Chairman:* You saw the last three men brought out?—Yes. I was told they were Fitzpatrick, Canoplia, and James.
3265. Where did you pick them up?—They were on the top level on the south side.
3266. Were they knocked about and burnt?—They were. They were knocked about more by the fall of roof or something like that. They were different to the men I have just been speaking about. One man had the top of his skull smashed but his hair looked all right.
3267. Did you help to get more men out before that?—Yes, down on the No. 10 level. I found three men there. I recognised two as Hutton and Fred Pattison. I thought the third was Harrison, but I was mistaken.
3268. Did you get any men on the machine wall on the right-hand side?—Yes. There were seven men got in there.
3269. Were they burnt?—Yes.
3270. Were you in the top seam?—Yes.
3271. Were the men burnt there?—Yes.
3272. *By Mr. Want:* Was the organisation of the rescue parties good?—Yes. There was a certain amount of excitement as the men rushed through. They had rather a strenuous duty to do to keep the men back, but otherwise, in my opinion, everything was as good as you could expect.

## EIGHTH DAY.

## MAREEBA.

THURSDAY, 13 OCTOBER, 1921.

The Commission met at the Court House at 2.30 p.m.

## PRESENT:

R. A. DUNLOP, ESQUIRE (*Chairman*).

HON. C. KILPATRICK, M.L.C.

W. WANT, ESQUIRE.

## Medical Evidence.

HERBERT FRANCIS PERKINS, Medical Practitioner, residing at Mareeba, sworn and examined:

3273. *By the Chairman:* Do you remember the 19th September?—Yes. H. F. Perkins.  
13 October, 1921.
3274. You heard something that day?—Yes.
3275. Where did you go?—To Mount Mulligan.
3276. You were at the Mount Mulligan colliery?—Yes.
3277. You saw bodies being brought out of the pit?—They were out before I got there.
3278. Whom did you see?—I saw Evans and others.
3279. Will you describe the nature of Evans's injuries?—When I saw Evans he was only partially conscious. The most obvious injury he had was caused by a stick that had penetrated the upper portion of his breast. There were other bad injuries in the head also.
3280. Were they bruises?—He had deep contused wounds in the head and face.
3281. *By Mr. Want:* He died later?—He died a week afterwards.
3282. Was he burnt also?—Yes. He was burnt about the limbs and trunk.
3283. *By the Chairman:* Who was the next man you saw?—A man called Martin O'Grady.
3284. Can you describe the nature of his injuries?—He had a fracture of the base of the skull. He also had burns and minor wounds on his face and chest.
3285. Was he dead when you saw him?—No, but he died immediately afterwards.
3286. Did you see anyone else?—I saw a man named Ruming. He was dead before I arrived. I saw him afterwards in the goods shed at the railway station.
3287. Was he badly knocked about?—He was badly burnt and had his right leg blown off entirely. He was so terribly injured that it is hard to say what caused his death.
3288. Did you see any of the others?—No.
3289. You heard that those men came out of the tunnel?—Yes.
3290. *By Mr. Want:* None of them were apparently victims of afterdamp?—I do not think so. The three men I saw died from injuries.

JAMES ROBERT McCLEAN, Medical Practitioner, residing at Atherton, sworn and examined:

- J. R. McClean. 3291. *By the Chairman:* Do you remember the 19th September?—Yes.  
 13 October, 1921. 3292. When did you go to Mount Mulligan?—On Tuesday, the 20th September.  
 3293. You saw the bodies being brought from the pit?—Yes.  
 3294. Can you describe some of them?—Yes.  
 3295. You have no idea what part of the pit the bodies came from?—I saw the numbers on the bodies, and I noticed Nos. 14 to 19. The first man I saw had a contused wound running down the forehead. There was also a fracture of the skull. I do not know what his name was. Another one had a fracture extending across above the right eye. Both these men were badly burnt about the head and face and arms. I took it that both men died from shock and burns and wounds. I could not say which was the essential factor, but the whole of them acted.  
 3296. Did you see any others?—I saw practically all the others. It was impossible to say what was the cause of death, but in several instances I noticed fractures. I noticed Roly McCormack. He had a fracture about 4 in. long above the left ankle and injuries to his back, but whether they were caused by the explosion or by a fall of earth, I could not say. There was evidence of burning and minor wounds also.  
 3297. Did you see any bodies that were not burned?—Yes, but they were too decomposed to examine them much. I noticed from the hair that they were burnt.  
 3298. *By Mr. Want:* Judging by what you saw, can you say what percentage of the deaths was due to burning or injuries or to afterdamp?—No, I could not say.  
 3299. Were there any evidences of monoxide poisoning?—No.  
 3300. *By the Chairman:* Decomposition set in after Wednesday?—Yes. It would be impossible to say whether a man died of asphyxiation without taking a specimen of his blood. Just by looking at the body you could not say if death were caused by asphyxiation or shock.

NINTH DAY.

CAIRNS.

SATURDAY, 15 OCTOBER, 1921.

The Commission met at the Court House at 10.30 a.m.

PRESENT:

R. A. DUNLOP, ESQUIRE (*Chairman*).  
 HON. C. KILPATRICK, M.L.C. W. WANT, ESQUIRE.

Medical Evidence—continued.

PHILIP SYLVESTER CLARKE, Medical Practitioner, residing in Cairns, sworn and examined:

- P. S. Clarke. 3301. *By the Chairman:* Do you remember the 19th September last?—Yes.  
 15 October, 1921. 3202. You heard something?—Yes.  
 3303. What did you hear?—Dr. Perkins reported to me that there had been a mining disaster at Mount Mulligan.  
 3304. What did you do?—Mr. Hogan, of the ambulance brigade, communicated with me, and asked me to go to Mount Mulligan with the ambulance car on the special train leaving at 3 o'clock.  
 3305. You went to Mount Mulligan?—Yes. It was about 10.30 p.m. when I arrived there.  
 3306. You went straight to the pit?—Yes.  
 3307. Did you see any bodies being brought out?—Yes.  
 3308. Could you tell us the names of the men you saw and the nature of the injuries they received?—I do not know their names. There were eight bodies brought out while I was there during the night and following morning. They presented the appearance of having been badly scorched with the flame.  
 3309. Were there contusions and wounds on the bodies?—Yes. They were badly wounded. Two of the heads of the men I saw were badly smashed, as if they had been crushed by falling timber or stone.  
 3310. Were you there when the two men were brought out alive?—No.  
 3311. Did you see them afterwards?—Yes. I saw both O'Grady and Evans.  
 3312. You have heard that they since died?—Yes.

3313. They were both badly knocked about?—Yes. Evans had injuries about the chest, head, right arm, and leg. He also had burns.
3314. Did you notice any symptoms of carbon monoxide poisoning?—Yes.
3315. With whom?—Evans. The pink colour of his lips showed that he was suffering from carbon monoxide poisoning. I examined him at the Mareeba Hospital on the following day.
3316. Could you tell from the other bodies whether they suffered from the effects of carbon monoxide?—Yes. They suffered from monoxide poisoning.
3317. Did you notice how many?—Three out of the eight.
3318. Was O'Grady one of them?—Yes.
3319. You do not know where those bodies came from in the pit?—No, I do not know the exact locality.

P. S. Clarke.  
15 October, 1921.

## TENTH DAY.

## BRISBANE.

MONDAY, 31 OCTOBER, 1921.

The Commission met in No. 1 Committee Room, Legislative Council, Parliament House, at 10 a.m.

## PRESENT:

R. A. DUNLOP, ESQUIRE (*Chairman*).

HON. C. KILPATRICK, M.L.C.

W. WANT, ESQUIRE.

## General Evidence—continued.

EDGAR CECIL SAINT-SMITH, Government Geologist, sworn and examined:

3320. *By the Chairman:* You were at Mount Mulligan shortly after the explosion?—Yes. E. C. Saint-Smith  
31 October, 1921.
3321. When did you get there?—On the Friday of the week of the explosion, the 23rd September.
3322. You knew there had been an explosion there?—Yes.
3323. Did you go into the pit?—Yes.
3324. When?—On the 24th.
3325. Could you give us some idea of the geology of Mount Mulligan?—The Mount Mulligan coal measures are situated under a mesa of Triassic sandstone, 1,000 to 1,300 ft. in thickness, overlying from 50 to 150 ft. of Permo-carboniferous rocks. Underlying the coal measures are large beds of micaceous grits and shales containing *Lepidodendron*—evidence of their Carboniferous age. The coal measures proper have been preserved through trough faulting, the higher formations having protected the lower from denudation. The coal measures dip west and the underlying Carboniferous grits here dip to the east at a steep angle. The dip of the coal measures runs from 1 in 3 on the eastern side to practically flat going westerly, being 1 in 7 towards the bottom of the dip in the main haulage.
3326. *By Mr. Want:* How far from the mouth?—The 1 in 7 dip is about the lower portion of the dip haulage. The coal measures dip 1 in 3, and they then go 1 in 7, and I would not be surprised if they ultimately rose, going westerly. The coal seams are composite in character, consisting of bands of coal with laminated bands of fireclay and carbonaceous shale. There are five seams, or so-called seams, but for practical purposes—that is, for working—they are reduced to three. The top seam lies a few feet under the base of the overlying sandstones. Underneath that seam, about 27 ft. below, is what is known as the middle or No. 2 seam. It is on this seam that the major portion of the work has been carried out. Thirty-two feet below the base of No. 2 seam is what is known as the third or bottom seam, the amount of work on which is negligible.
3327. It has really not been worked?—No.
3328. *By Mr. Kilpatrick:* What is between those two lower seams?—Fireclays, sandstone, and shale. The bottom seam is close to the base of the measures and the middle seam is intermediate in position. The coal in the top seam is very variable in composition and inclined to be very high in ash, but the coal from the middle or No. 2 seam is clean coal, and averages about 11 per cent. in ash. The coal from all three seams will make coke. This mine was inspected by me from a geological point of view about six years ago, and a very marked improvement in the quality of the coal is now noticeable, particularly on the pick-wall face and along the Fitzpatrick's wall section of the No. 2 seam workings.
3329. *By the Chairman:* What is the roof of that seam?—Sandstone and shale, the latter being the immediate roof.

- E. C. Saint-Smith. 3330. *By Mr. Want*: The brushing is done in the shale?—Yes.
- 31 October, 1921. 3331. *By the Chairman*: What is the thickness of the brushing, on the average?—From what I saw it would be from 1 ft. to 18 in. That shale with sandstone bands would be lenticular in shape, thick and thin at intervals.
3332. *By Mr. Want*: What is the thickness of the seam?—About 2 ft. 3 in.
3333. There may be a bit more brushing than you say?—Yes.
3334. *By the Chairman*: That is what Mr. Watson calls fireclay?—Yes.
3335. Mr. Ball made an analysis?—Yes, in 1917, in connection with the manufacture of firebricks for their coke ovens, and an analysis was made of fireclay taken from that portion, which I now tender:—

Silica	.. ..	61	per cent.
Ferric oxide	.. ..	3	per cent., equal to 4.78 per cent. iron carbonate
Lime	.. ..	0.4	per cent., equal to 0.71 per cent. of calcium carbonate
Magnesia	.. ..	Trace	
Alumina	.. ..	20.2	per cent.
Sulphur trioxide	.. ..	0.34	per cent., equal to 0.67 per cent. alkali sulphate
Alkalis	.. ..	2.18	per cent., equal to 3.27 per cent. alkali carbonate
Water	.. ..	1.18	per cent.
Loss on ignition	.. ..	11.6	per cent.
		99.9	per cent.

Loss on ignition may be due in part to expulsion of carbonic acid gas from carbonate of iron, lime, and the alkalis (also present as sulphate), and to the driving out of water of crystallisation, but totalisation of contained carbonaceous matter is most likely the prime cause.—L. C. Ball on "Mount Mulligan Fireclays," Q.M.J., Vol. XVIII., 1917, pp. 445-6.

3336. We are told that that fireclay or shale disintegrates very rapidly when subject to the action of water?—Yes.
3337. As a stone dust in coalmining, what would you say of its quality?—I would say that it would be fairly good.
3338. It is fairly high in silica?—Yes.
3339. It is all free silica?—Mostly. It should be fairly good stone dust.
3340. Would that have a tendency to set up conditions conducive to contraction of phthisis by miners?—No. It is a fireclay of sedimentary origin, and probably the particles are rounded and not the sharply angular silica which causes miners' phthisis.
3341. Do you know anything of the recent analysis of the material now being mined in No. 2 seam?—The average analysis would be about 58 per cent. fixed carbon, 30 per cent. volatiles, and from 10.4 per cent. to 11 per cent. ash, with a very low moisture content. The moisture is almost negligible. It is a very dry coal. The whole of the coal in these seams is particularly dry.
3342. The top seam varies a good deal in coal quality from the bottom seam?—Yes.
3343. The top seam is interspersed with clay and shale bands?—Yes.
3344. And the different bands in the top seam vary in quality?—Yes. Some of them are dull splint coal.
3345. Have you any analyses of the coals in those seams?—Yes. The average analysis of the coal now being won from the top seam would be about 59 per cent. fixed carbon, 27 per cent. volatiles, and the ash from 10 per cent. to 17 per cent. I am speaking of the clean coal.
3346. Can you tell us anything about the strength of the overlying strata?—Yes. The Triassic sandstones overlying the coal measures are particularly strong. I have never seen in any mine in Australia—except the South Coast collieries of New South Wales, where like conditions obtain—with such a perfectly strong roof. The mine is structurally strong, and even the explosion has not affected it to any serious extent.
3347. *By Mr. Want*: Do the general features of Mount Mulligan remind you of the South Coast?—Very much. The strata overlying the middle or No. 2 seam is largely sandy shale, and is inclined to wind off, producing small falls in the roof, which would not extend far vertically or over any great extent.
3348. *By the Chairman*: The Carboniferous grits and shales underlying the measures, are they part of the Hodgkinson slates or are they distinct?—The finding of *Lepidodendron* would make them about the same geological age.
3349. Do you know anything about the gas conditions in Mount Mulligan?—Yes. I was in Mount Mulligan some six years ago, and at that time no gas was present in the mine.

3350. Do you think there is any gas in the mine, from the observations you have made?—Certainly not. E. C. Saint-Smith.
3351. Do you think it is likely to become a gassy mine at any time?—No. 31 October, 1921.
3352. *By Mr. Kilpatrick:* What is your reason for arriving at that conclusion?—Had there been any pockets of gas, or anything like that, some at least would be still remaining. Accurate tests were made by Mr. Watson and myself in various parts of the mine after the explosion, when the whole place had been opened, and not a trace of gas could be found with the hydrogen flame. The roof has been shaken very much, and had any pockets of gas collected in the roof its presence would have been indicated, but there was not the slightest sign of gas on the return airway.
3353. What chance is there of finding gas in the future?—Very little, if at all.
3354. *By Mr. Want:* Don't you think that 1,300 or 1,400 ft. of strong measures might have some influence in that direction in the future?—It would depend partly on whether faulting or corrugation of the strata had taken place in the mine. I see no reason for the occurrence of great accumulations of gas, if they have not occurred in the past. The mining has already exposed a fair sample of what might reasonably be expected in the future as operations extend.
3355. *By the Chairman:* It will be a uniform mine right throughout its working?—I think so.
3356. *By Mr. Want:* What would be the length and width of the field altogether?—The width of measures from the adit level westerly would be about  $2\frac{1}{2}$  miles, and the length north-westerly about 8 miles. The Mount Mulligan coal measures would cover an area of, roughly, 20 square miles.
3357. It is a very dry climate there?—Yes.
3358. Did you notice any similarity between the coals of Mount Mulligan and of the south coast of New South Wales?—Yes, they are, roughly, the same in volatile hydrocarbons, and fixed carbon, and the coal has much the same appearance.
3359. *By the Chairman:* Most of the coal is a bright, hard coal?—Yes.
3360. *By Mr. Want:* You saw the coal dust?—Yes.
3361. Did it strike you as being particularly fine?—Extremely so. One point worth recording is that the coal dust or soot that resulted after the explosion in the northern workings was remarkably fine—almost impalpable; when it got on your skin it was just like grease paint; but on the southern side of the workings, and also at the top seam, an ordinary wash was sufficient to remove it.
3362. *By the Chairman:* On the Saturday morning you went into the Mount Mulligan mine. What was happening in the mine that morning?—I arrived by train the previous day, and I immediately placed myself in the hands of Mr. Laun, who was thoroughly tired out. He asked me if I would go over and see Mr. Watson, the General Manager, and make arrangements. One body still remained below, and I volunteered in recovering it and also to assist to locate a fire thought to be burning in the mine. Several bodies were below when I started by train for Mount Mulligan, but when I got there they were all out except one. Mr. Watson was then in bed with a temperature of about 104 degrees, and we thought he was raving somewhat. He was insistent there was fire in the mine. We made arrangements to get the big fan going by the Wednesday to try and recover that body by Wednesday afternoon. Afterwards it was found that the fan shaft was bent and it was not possible to do that. Mr. Watson was very ill, but I promised him we would immediately make a search for the fire which he had deduced was present. I asked him why he considered there was a fire. He said on the morning of the explosion white smoke came out of the fan drift—pyroligneous—indicating the burning of wood, and followed by bluish smoke—indicating the burning of coal. I promised him we would make a search immediately for such fire. On Saturday morning Inspector Laun, Chief Engineer Harris, miner Matthews, and myself went into the mine. At my suggestion we took with us a box, to collect what books we could from the deputy's cabin. We were in search of the record book of the mine. After about an hour's search we succeeded in finding the record book of the mine at the bottom of a heap of debris. It had been protected, apparently, by the explosion throwing all the other books and material in the cabin on top of it.
3363. *By Mr. Want:* What did you do with the book?—We put it in a box with other books, and put it away safely in the cabin until we returned. We were anxious to locate the fire.
3364. *By the Chairman:* It was not knocked about much?—No. It apparently had been lying on top of the counter, and when the explosion wave rushed into the deputy's cabin it apparently turned everything upside down

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- and put this book down on the bottom. All the old record books were knocked about considerably and scorched in places, but not the current record book of the mine, which was in perfect order. We then proceeded along the main cross measure drift to the brattice at the top split and tested for gas there, finding everything safe. We proceeded along the top split, and at the junction of the return airway we noticed a peculiar smell as of burning coal. We hunted round but could not find the actual site of the fire, but by feeling round we located hot stones. This latter represented material from the roof, which had fallen on top of the burning coal and so hidden it.
3365. *By Mr. Want:* Had the falls from the roof damped it somewhat?—Somewhat. We then went back to the level and procured tools, and set to work to clear away the rock to see where the fire was. We then tested for gas, and found no trace. Inspector Laun and I then timbered up the place temporarily, as the roof was very dangerous, overhanging where we considered the fire was. I then found a place near by in the stone drive on the fan drift, which would be safe, in which to stack burning coal. Inspector Laun then went out and informed Mr. Watson that the fire had been located, and he also informed Mr. Chairman Dunlop, who soon afterwards arrived with a relief party. The relief party carried in water by buckets; and Mr. Dunlop, Mr. Harris, and myself dug out and removed the burning coal and stacked it in the fan drift. Approximately 10 ton of fire was carried out in this way.
3366. Where did you carry the water from?—From the surface. The fire was found to be 15 ft. in length along the main southern rib of the coal and a distance of about 4 ft. into the coal, and about 3 ft. below the level. The strata underlying the coal was extremely hot, and we were afraid that the heat would be transmitted to the No. 3 seam below. After taking out the coal till bright faces of coal were showing, we were satisfied that the latter, although still very hot, was not alight, and it was safe to leave it. The next day an examination was made of the coal and it was found to be still very hot, but safe. On Monday a careful examination was made by Mr. Watson, whom we accompanied, with a hydrogen lamp, but not a trace of gas was detected.
3367. You tested the main return?—Yes, and also the air in the crossover at the main haulage dip.
3368. *By the Chairman:* You made a detailed examination of the mine afterwards, with Mr. Laun, and you know the direction of the forces and probable foci of the explosion?—I considered myself, and Mr. Laun agreed, that there was only one focus.
3369. *By Mr. Want:* Were you right through the mine?—Yes. That focus of violence is marked on the map made by Inspector Laun and myself.
3370. What caused you to come to that conclusion?—That was the only point in which we considered there was violence in more than one direction, violence both uphill and downhill and also outwards from the face.
3371. Could you tell us the evidence of violence that you saw there?—Yes. The spot marked on the plan is in the next gateway down from Fitzpatrick's machine.
3372. No. 6 from the bottom?—Yes.
3373. Would that be the gate below where the machine was lying?—Yes.
3374. Did you see any evidence of force around the machine?—Yes. The cover of the machine itself was blown uphill some distance, and on the lower side the pack wall was blown out in the opposite direction for a considerable distance to a depth of 1 ft. along the levels below.
3375. How far had that cover been blown uphill?—About 30 ft.
3376. What would be its weight?—About 1 cwt.
3377. Would it have been quite impossible for it to be lying there when the explosion occurred?—It would be quite impossible, because it was the protection of the machine gears—it must have been blown there.
3378. *By Mr. Kilpatrick:* Did you notice the cables of the machine, too?—Yes.
3379. Did you notice that something had happened to them?—I did not notice that anything had happened to them at all. The machine was not in work.
3380. *By Mr. Want:* Did you notice any slack or refuse blown up against the lower side of the machine?—I do not remember noticing any.
3381. *By the Chairman:* Did you notice the position of the machine jack?—I considered that there had been a fall of coal on to the foot of that machine.

3382. *By Mr. Want:* Had the face where the machine was been cleaned up?—*E. C. Saint-Smith.*  
Yes. The machine was set up ready to sump, but it was not in operation. 31 October, 1921.  
The machine men were a long way away, in another portion of the mine, collecting rails, at the time of the explosion.
3383. The coal had been partly filled away from there?—Yes.
3384. That was on the road below the machine?—Yes.
3385. How far away?—Through the next gateway down.
3386. Thirteen to 14 yds?—Yes, about that; it is the next gateway down.
3387. You saw a skip half full of coal there?—Yes.
3388. And some of the brushing had been loosened?—Yes.
3389. Would you say that the coal had been shot down, or had it fallen of its own accord?—I should say it had come down by the violence of the explosion, and not of its own accord.
3390. What was the size of this coal your are speaking of? Would it be about 4 ft. wide?—Between 3 ft. and 4 ft. wide.
3391. And about 10 ft. to 12 ft. long?—Yes, about 10 ft. or slightly less.
3392. I understood you to say earlier that that coal had apparently fallen down. It had been apparently undercut by the machine?—Yes.
3393. The coal was down when you saw it?—Yes.
3394. Had it been shot down, or was there anything to indicate that it might have fallen immediately it had been cut; were there any slips or anything like that?—I did not notice anything.
3395. Was that coal in large pieces?—Yes.
3396. Pieces too big for a man to handle?—Yes, much too big.
3397. It would be necessary to break them?—Yes.
3398. Did you see anything to show what had been done in the way of breaking it so that a man could handle it?—The top of that coal is rather fractured.
3399. *By the Chairman:* In one place or many places?—Over an area of about a couple of feet.
3400. Is the coal finely powdered up, there?—I did not notice that. It was fairly fine. I thought at the time it was rather peculiar.
3401. Was it egg size, or marble size?—Some of it was smaller than that.
3402. *By Mr. Want:* Why should there be a focus there?—There must be a focus somewhere, and that is the only place where I saw signs of a primary origin.
3403. If it were there, there would be some reason for it, visible or otherwise?—Yes.
3404. In what way can you account for it?—The only possible explanation I can give is that it was caused by the firing of an explosive charge.
3405. Do you think that, instead of splitting that block with wedges, a shot might have been put on it to smash it?—I do.
3406. Did you see a skip standing in that roadway?—Yes.
3407. Was there any coal in it?—It was about two-thirds full. It was mostly lump coal.
3308. *By Mr. Kilpatrick:* All of it?—The top of it, what I saw.
3409. *By the Chairman:* Do you think that a plaster shot had been placed on top of that block of coal?—I would be more inclined to think that than anything else.
3410. *By Mr. Want:* Would you be surprised to hear that there was a slip coming out of the roof and running in towards the foot, intersecting the machine undercut farther down?—I did not notice it.
3411. You noticed a space there between the lump and the face and the roof?—Yes.
3412. It would take a small man to get through there?—Yes.
3413. *By the Chairman:* You know that coal was breaking very freely behind the machine?—Where the machine was actually cutting.
3414. Downhill, down that wall?—Yes.
3415. *By Mr. Want:* Have you heard it said that very little explosive was used at that machine wall to bring the coal down?—Yes. But from the absolutely reckless way in which explosives were generally lying about the mine, I would not be surprised at anything that was done with explosives.
3416. You have had a fair experience of mines?—Yes.
3417. You have been in scores of them?—Yes.
3418. And you are not unused to explosives?—I am used to them.

- E. C. Saint-Smith. 3419. Do you think that explosives were handled in a careless manner?—Yes, generally.  
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3420. You do not think that the scattering effects of an explosion would be responsible for placing them where they were found?—Certainly not.
3421. You believe that in some instances they were scattered in that way?—Yes.
3422. But that, generally speaking, or in the majority of cases, the explosives had not been moved by the explosion?—Yes. In large areas there is practically no sign of explosive violence. Everything is apparently in its original place.
3423. Would you say that the evidence was that the violence had been confined chiefly to the main intakes?—Yes, speaking generally.
3424. And evidence of flame throughout the face?—Yes, particularly on the northern workings of the No. 2 seam (Beattie's wall).
3425. Did you examine the top seam?—Yes.
3426. Give us your impression of that, starting from the tunnel road. Were there any falls between the tunnel and the top seam drift?—Yes. There is a considerable fall from the roof in the stone drive.
3427. I mean along No. 10, before you get to that?—I have not committed that detail to memory, but the notes furnished by us probably give the information.
3428. *By the Chairman:* Do you remember the stone drive particularly?—Yes.
3429. Do you remember that at the entrance there is a tender place in the floor? Yes.
3430. *By Mr. Want:* Was that tender place blown up or down?—Down.
3431. What would you consider caused it to go down?—Caving below would be one cause.
3432. And the pressure above?—It might have been an assisting cause.
3433. *By the Chairman:* Then the pressure, either inbye or outbye, would have the same effect?—Yes, but the evidence is conclusive that it has gone down.
3434. There was a motor and winch in that stone drive?—Yes.
3435. Did you notice anything about them?—Yes. They appeared to be in perfect order. There was a watch, belonging to the man Cole, lying on the winch, which had not stopped for a long time after the accident.
3436. *By Mr. Want:* Did you see a horse?—Yes, close to the monkey shaft.
3437. Where does that connect with?—It connects the bottom and the top seams.
3438. Near No. 11?—Yes. It comes out to the side of No. 11.
3439. Did you see the position of the skip, the limbers, the horse, the harness, and the horse's collar?—Yes. There is a skip there with the limbers bent suddenly round from the southern side.
3440. *By the Chairman:* The limbers are fastened inbye and have been bent outbye?—Yes. The pony was lying a short distance from the skip, with his head towards the skip.
3441. *By Mr. Want:* What is that short distance—5 or 6 yds.?—Yes, about that. And the body of the boy driver was found 6 yds. further in. The pony has a very deep cut on his withers, but whether his back was broken or not I cannot say. It does not look as if his back was broken.
3442. Did you see the collar?—Yes.
3443. Where?—About 30 yds. farther in beyond the horse. That would be south.
3444. Inbye?—Yes.
3445. And the harness would be outbye?—Yes.
3446. And the limbers had been bent round the side of the skip?—Yes.
3447. *By the Chairman:* What were the limbers made of?—Wrought iron.
3448. About an inch and a-quarter?—Yes.
3449. *By Mr. Want:* It would take considerable force to bend them that way?—Yes, a very considerable and suddenly applied force.
3450. Did you conclude what had caused the limbers to be bent?—Yes. I consider that the pony, in his struggles to release himself from his harness, had bent the limbers round the skip and had freed himself, then struggled a short distance away, ending up with his head towards the skip.
3451. *By the Chairman:* Did you notice that there was a brattice between the monkey shaft and the skip?—Yes.
3452. Did you notice where the cloth was from the brattice?—There is no record of that in our report.
3453. *By Mr. Want:* Did you see any mixed up with the harness?—No. I was very glad to get past that pony, as we had no masks on.

3454. *By the Chairman:* Going inbye, uphill from the monkey shaft, did you notice a sleeper in the roadway broken?—No. E. C. Saint-Smith.  
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3455. *By Mr. Want:* Apparently that horse was taking a skip to the face at the time of the explosion?—Yes.
3456. You tell us that the horse and limbers and harness were outbye and the collar inbye; what would that lead you to believe?—That there had been a force coming up the monkey shaft, which was right alongside.
3457. *By the Chairman:* And it split; went inbye and outbye?—Yes.
3458. *By Mr. Want:* The inbye part would account for the collar being inbye?—Yes.
3459. And the outbye part of it would account for the horse and harness limbers being outbye?—I would not like to say that.
3460. Would you expect the horse to stop in the position in which he was at the instant of the explosion, or expect him to move; that is, if he was not killed outright?—I would expect him to move.
3461. He must have turned round, according to what you have said?—Yes.
3462. He was facing inbye at the time of the explosion?—Yes, and he was facing outbye afterwards.
3463. Do you think there was any chance of his being blown round and of the collar being blown off him?—I think he struggled into his present position.
3464. Do you think he was blown against the roof?—Either against the roof or against the side of the packwall.
3465. The cut on his withers is right on top?—Yes, right on top of the withers; a very deep gash.
3466. It is very likely he was blown against the roof?—From the position of the cut and its size, I should say he had been.
3467. He must have been almost directly in the blast?—I think so. I think it came up the monkey shaft.
3468. *By the Chairman:* And the truck in the level would be behind him?—The blast would tend to blow him away a bit, and the truck would be left along the level a bit.
3469. *By Mr. Want:* Could you follow the indications of force from that staple pit outbye?—Yes. Would that be along No. 11 level?
3470. No, I mean in the top seam?—No. 10.
3471. Do you think it came up that staple shaft on to the dip road and out past the motor along the stone drive?—Yes.
3472. Do you think it went out of the stone drive?—Yes.
3473. On to the level?—Yes.
3474. There was evidence of the exertion of considerable force at the mouth of the stone drive?—Yes. There is a fall in the roof there.
3475. And you know that the main return is no distance to the right at that point?—Yes.
3476. Did you see the doors down between the main intake and the return there?—Yes.
3477. Were they blown away?—Our notes read:—

“South (left) workings: Proceeding towards the top seam along the slit south from the main dip, it was observed that a truck of coal, bearing token No. 3, was standing just inside the level. A fall of roof some 6 in. thick occurred over a length of roughly 20 ft., commencing at a point 30 ft. in from the dip. A further fall of roof occurred over a length of 12 ft. by a height of 3 ft. along the middle of this slit road into the stone drive.”

At page 11 of these notes we say—

“In the stone drive connecting the top and bottom seam workings, the appended data were collected:—

“25 ft. along this stone drive going westerly there is an extensive fall from the roof, as well as a fall from the floor of the drive into an old bord below on the bottom seam. This fall is roughly 20 ft. in length and up to 3 ft. in height, and the cavity which commences at the eastern end of the fall is from 6 to 8 ft. in length, for the full width of the drive. Ten feet farther along the drive a second smaller fall occurred.

“From just beyond this lastmentioned fall to as far as the interception of the top seam, the timbering is intact. The electric hoist used for working the top seam dip appears to be undamaged. The body of W. Cole (No. 38) was found on the northern side of the drive at a point 4 ft. west of the winch. A watch was found on

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the winch, and showed that it had stopped at 8.36. This electric winch could not have been in actual operation at the time of the explosion, seeing that the empty rope is at the bottom and no skips had been hooked on.

“At the end of the slit where the stone drive turns away to the right to the top seam there are two doors on the bottom seam. The first one has had part of its brickwork blown southerly, and the stopping at the bottom of the main upcast is blown easterly against the rib.”

3478. It would be reasonable to expect the explosion to travel out of both tunnels in that case?—Yes. I consider that the first explosion was out of the fan tunnel, and the major explosion out of the main adit.
3479. *By the Chairman:* The minor with the air and the major against it?—Yes. the major explosion really followed the normal course of explosions, in that it went to the intake, or against the incoming air.
3480. *By Mr. Want:* Would you say the fan tunnel in this case was practically in the same straight line as the intake to the top seam, and the shortest way to the surface for an explosion travelling out of the top seam was straight up the fan tunnel?—Yes, certainly. A lot of explosive gas must have got into the fan itself, otherwise the temporary housing over the top of the fan drift at the surface would have blown away and saved the fan. There must have been a heavy rush of gas or combustible material of some sort into that fan, because the light wooden housing acts as a safety valve for the fan.
3481. Due to the explosion?—Yes. Probably coal dust had been swept along there unexploded, exploded in the fan, and blew the fan itself away. That pine housing ahead of the fan should have blown off and allowed the dust, &c., to escape.
3482. Would you be surprised to hear there is evidence to the effect that the indications of force were inbye in the stone drift?—Yes, I would be surprised.
3483. Do you think the explosion wave travelled outbye?—Yes.
3484. And if there were evidences of its having gone inbye they would be due to subsequent forces?—After an examination of the mine we were convinced there was only one focus worth considering.
3485. You traced evidence of force from that staple pit. Could you trace evidence of force to it? Do you think the explosion wave came up that staple pit?—Yes.
3486. Where from?—From the bottom seam, where I considered the primary explosion was generated.
3487. *By the Chairman:* It came down the wall and up the monkey shaft?—Yes.
3488. *By Mr. Want:* That monkey shaft was covered over before the explosion, was it not?—I do not know.
3489. Did the electric cables come up there?—The armoured cable comes up: the one from the surface.
3490. Would you expect that stoppage or cover to be absolutely tight, that was over the top of that shaft?—I should not expect it would be tight. I take it it would be covered by brattice, or something of that nature.
3491. Supposing there were an explosion at the bottom of that staple pit, which would be the shortest way to the mouth of the main intake?—The nearest direction would be up the staple pit itself, I should think.
3492. Would it be shorter up into the top seam, or out along to the main dip?—I never measured the distance; I should say much about the same.
3493. You think it would as readily travel one way as the other?—Most decidedly.
3494. *By the Chairman:* Did you see the cable switches at the bottom of that monkey shaft?—Yes.
3495. Did you notice that they were blown down or disturbed in any way?—Yes, I have made a record of that. The note we made at the time was this—

“Near the bottom of the monkey shaft which leads from the top seam to the bottom seam workings are two switch boxes used on the cables leading to both the bord-and-pillar machine and also the longwall machine on Fitzpatrick’s wall. The switch on the cable leading to the bord-and-pillar machine has been blown downhill (in the direction of the dip). This piece of heavy machinery could hardly have been torn away from its support and thrown down into its present position except by some violent explosive force, as the returning air current would probably not be sufficiently powerful to wrench such a substantial object.”

3496. That is evidence that the blast has come down the monkey shaft?—At that point. E. C. Saint-Smith.  
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3497. So there is conflicting evidence about the direction of the blast: up or down the shaft?—Yes.
3498. Theorising, would you say there might have been two directions of force about that point, one after the other: a primary and a secondary?—It is possible.
3499. *By Mr. Want:* Do you remember particularly how that switch was anchored?—Yes, one of the switches was fastened on to the mine timbering.
3500. That would be the switch on to the machine in Fitzpatrick's wall?—At this particular point where the switch was blown down there are two boxes.
3501. Could you describe the erection of the one blown down?—No.
3502. Was it bolted on to timbers?—I never made a note of it at the time. I cannot remember.
3503. What about the other one you speak of?—I remember the other distinctly. It was bolted on to the mine timbers. It seemed to be rather a bad way to bolt it on; the roof coming down would cause the timber to move.
3504. Had that been displaced?—No. It is broken towards its base.
3505. Would it give you any indication as to the direction of force there?—No. That particular machine would not; the other one would.
3506. You do not think it is possible that a missile travelling up would account for the position of that switch?—Yes, it is possible.
3507. Why do you say it is evidence of its having been downhill? Is it conclusive evidence?—That was the opinion we formed at the time.
3508. *By the Chairman:* What is that switch like: an ordinary switch?—Yes, a rather heavy piece of machinery; rectangular.
3509. Its length was up and down?—Yes.
3510. A force travelling one way striking at the bottom would have the same result as a force travelling the other way and striking at the top?—Yes. I am not prepared to say which way that went. The main thing that Inspector Laun and I wanted to emphasise was there was a heavy force at that point to wrench that thing from its position and throw it down. It was not a light force; it was a heavy force.
3511. *By Mr. Want:* Did you notice the doors on that level?—Yes.
3512. What happened to them?—At page 18 we say—

“Leading into Fitzpatrick's machine wall. The first (wooden) door, about 100 yds. in from the main dip, has been blown outward (towards the dip) with violence, though the lighter splinters of pine and fragments of the old brattice stopping between the door frame and the wall have been blown inwards again by reversion. The second (wooden) door, located some 35 yds. further in, was completely demolished and all the small timber composing it shattered into matchwood; a heavy iron hinge was found at a point 17 yds. towards the dip from this doorway, but a quantity of fine splinters was found driven behind a prop against the pack wall in the opposite (inwards) direction by reversion. A notably greater quantity of brown (coke?) dust remains on the southern side of the boards remaining in the doorway at the floor than is present on the northern (outwards) side.”

The explosion went out towards the dip, apparently, and the reversion brought the light splintered matchwood back again in the opposite direction.

3513. What were the evidences of force on the main dip in the vicinity of No. 10?—At page 5 we say—

“Main Dip.—The roof has fallen in at the brow over an area of 6 ft. by 8 ft. to a height of 1 ft. since rescue operations ceased.

“The first brick stopping on right hand (northern) side of the dip below the brow was blown inwards (*i.e.*, northerly), as also were the Nos. 2, 3, and 4 brick stoppings down the dip on the same side. A recent fall of the shale roof some 6 in. thick has occurred below the No. 4 stopping. Immediately adjoining the top (east) side of the No. 1 left entrance into the top seam workings the roof has fallen in for about 15 ft. by 20 ft. by 2 ft. in thickness. The No. 5 heading on the right hand (northern) side of the dip has no brick stopping, and no inspection was made beyond the brattice, the same remarks applying to the No. 1 left-hand opening immediately opposite, as also the No. 6 right-hand side opening.

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“At the middle slit where the body of R. Thompson (No. 4) was found, the roof has shelled off, particularly into the southern workings. No brick stoppings were used hereabouts. No damage was noticed along the dip below where Thompson's body was found for a distance of 30 yds., with the exception of two sets blown over.”

3514. Which way?—We never noted. I do not think it would be possible to say the way the timber was moved about, because of the rescue operations.

3515. Did you not see two sets of timber downhill?—We noticed two sets were blown over. I would not care to say, from memory, which way they were blown. This continues—

“But at the No. 7 right-hand side opening the brick stopping is now lying on the rail side, owing to having been held up by the pack wall beyond it.”

3516. *By the Chairman:* You know where Thompson's body was found?—Yes.

3517. You know he was clipping on a truck at the time of the explosion?—Yes.

3518. How was he blown, downhill or uphill?—The position of all of the bodies is shown on the plan.

3519. *By Mr. Want:* You would not be surprised to know that that body was 3 or 4 yds. downhill on the right side?—No.

3520. Did you notice the clip on that skip?—No.

3521. You did not see that the clipper's pin was sticking in the clip?—No, I never noticed it.

3522. No. 12, going off the dip: What evidence did you get there of direction, and what conclusion did you arrive at?—At page 8 we say—

“A marked feature of most of the workings and roads in this portion of the mine is the amount of scorching and burning observable, indicating great heat hereabouts during the course of the explosion, though the presence of unburnt papers, &c., in places suggests strongly that the flame leaped forward in long bounds.”

3523. That is inbye you are speaking of?—Yes.

3524. Can you pick it up from the dip in the lies—No. 12 flats?—At page 7 we say—

“At the next right-hand (north) opening, known as No. 12 right, a road leads north to the bottom of Beattie's wall; the roof here has fallen in subsequent to the explosion.

“A very slightly scorched old electoral roll (for Cunningham) was seen on the floor of the dip at the entrance to No. 12 left (known as Taylor's flat, which latter leads to the pick wall face).

“The bodies of two wheelers, viz., F. Gielis (No. 8) and S. Liversidge (No. 9) were found on the far (south) side of two full trucks of coal some 20 ft. south from the dip along this lastmentioned No. 12 left.”

3525. Did you come to conclusions as to the direction there: do you think the force was inbye or outbye?—I had an impression that the force came down the dip into that level.

3526. Have you the same impression about the north?—Yes.

3527. You think that the explosion travelled down the dip?—Yes. It appears to me to have come out from Fitzpatrick's wall right, struck the dip, and some of it went down and split in the bottom; one portion went into No. 12 left and one No. 12 right.

3528. *By the Chairman:* Do you think the main explosion wave came out of the top seam drift and went up through the tunnel?—Yes, I think the explosion travelled from Fitzpatrick's wall, went up into the top seam, and came down from that into the main drive.

3529. *By Mr. Kilpatrick:* From the machine, what direction did it take?—Went straight down to the bottom.

3530. *By Mr. Want:* Right along the face?—Yes, that is what it looked like.

3531. *By the Chairman:* Right down to the main gateway?—Yes; down to the wheeling road, anyway.

3532. *By Mr. Want:* Going out on to No. 11, to those doors, there is brickwork there?—Yes.

3533. Those doors naturally would open towards the dip, for the full coal to pass out?—Yes.

3534. If there were a pressure exerted from a restricting area at the doorways, would it tend to force the explosion wave up the staple pit?—Yes, up the staple shaft.

3535. Earlier in your evidence you made some remarks regarding explosives. E. C. Saint-Smith.  
You saw a quantity of explosives after the explosion?—Yes. 31 October, 1921.
3536. Whereabouts?—Over most of the working faces of the mine.
3537. Surely not exactly at the working faces?—Rather close up to them.
3538. How far away?—Only a matter of feet in places.
3539. Would 6 or 8 yds. be something like the average?—Yes, it would be a fair average.
3540. Can you tell us whether they were contained, and if so, how they were contained?—Mostly they were not contained. They were lying about loose—gelignite, monobel, fuse, and caps all together in some instances.
3541. *By the Chairman:* And tools beside?—Yes, near by, at times.
3542. Did you see any boxes?—I saw a little tin box about 4 in. by 3 in., which had apparently been used to put detonators in, but the lid was off.
3543. *By Mr. Want:* Did you see any wooden boxes?—No. I saw monobel in the ordinary cardboard containers, and gelignite without any containers. I saw a plug of gelignite alongside a wrecked junction box. The wrapper had been burned off it.
3544. Did you see any collection of detonators?—Yes, in some places.
3545. How much?—About a handful.
3546. Do you know the tins in which they are issued—about 100 each?—Yes, I have seen them.
3547. Did you see any of those?—Not that I could recognise. I saw a tin. I do not know whether it was the tin in which they were issued. It was about 4 in. by 3 in. by 2 in.
3548. Full?—Partly full.
3549. Did you see more than one tin in one place?—No.
3550. Did you see gelignite and monobel in one place?—Yes.
3551. And how far off the iron rails would they be lying?—Anything from 6 in. to 18 in.
3552. Were they on the floor or in the gob?—They were on the floor, usually.
3553. *By Mr. Kilpatrick:* On the side of the roadway?—Yes.
3554. *By Mr. Want:* Do you think a piece of coal might have rolled off a skip and set a detonator off?—It would be possible.
3555. Did you know Mr. Evans?—No.
3556. Have you heard anything of him?—Yes. He was supposed to be a very efficient and well-trained coal manager.
3557. You have heard he was a capable man?—Yes.
3558. Have you heard that Mr. Grant, his assistant, was a properly qualified man?—Yes.
3559. Could you understand the existence of that state of affairs under the supervision of those two men?—It would be difficult to understand. The only trouble with that mine, it appears to me, was that it was so safe that recklessness was possible. The mine was, if anything, too safe.
3560. You do not suppose for an instant that Mr. Grant or Mr. Evans were unaware of the possibilities of trouble?—It would be difficult to see how they would be quite unaware of it. We took the precaution of reading all the inspector's reports in that record book, and I think Inspector Williams drew attention to explosives lying about some considerable time before.
3561. *By the Chairman:* Did you notice that the sawdust in some of the detonators was scorched?—No.
3562. Did you notice that explosives, gelignite, and monobel plugs, had the paper wrappers burned right off them?—Yes, particularly the gelignite.
3563. Did you see strong evidences of coking on the explosives?—In some cases you could see coke dust on them, having settled after the flame passed through the mine.
3564. Did you notice, on the jig road, in Beattie's wall section, a truck on which a primer prepared was resting?—Yes. I put it there.
3565. *By Mr. Kilpatrick:* Where was it found?—On the floor near the skip.
3566. *By the Chairman:* That skip was standing in a gateway?—Yes. The fuse was found on the floor, but the rescue parties had been through. Inspector Laun and I saw it there and put it on the skip for safety. It was an ordinary detonator with a fuse attached.
3567. There was no plug there?—No.
3568. Did you notice the hole in the brushing, in the end of that gateway, not fired?—No.

E. C. Saint-Smith. 3569. Did you notice that in that same gateway, No. 5, a wrapper on some monobel had been burned?—I made a note as follows:—  
31 October, 1921.

“At the entrance to the No. 5 gate on the jig road, a coil of fuse was found burnt out. The brattice stoppings on the Nos. 5 and 6 gates were scorched.”

There was fire all through the workings on that side.

3570. In the main tunnel, in the deputy's cabin, did you find any explosives, or do you know if any were found there?—We did not find anything beyond a coil of fuse.
3571. Did you notice any in the first manhole on the right in the main tunnel?—I was told there were some there.
3572. *By Mr. Want:* Have you been down the collieries on the south coast of New South Wales?—Yes.
3573. Did you see any dust?—No appreciable dust.
3574. More or less than at Mount Mulligan?—At the present time there is practically no dust, I think, in the Mount Mulligan mine; it was probably mostly burned out by the explosion.
3575. *By the Chairman:* You had not been there for six years?—No.
3576. Was there any there then?—Nothing out of the ordinary. The mine is three or four times as big now as when I saw it previously.
3577. It is a very dry mine?—Yes, extremely dry.
3578. And they are working with coal machines at three faces?—Yes.
3579. That would have a tendency to produce dust?—Yes. It would have a tendency to produce dust that under normal conditions would be safe, unless they were cutting into the coal in No. 2 seam. In No. 2 there is a pricking that the machine probably gets into. The pricking here is coal mixed with shale.
3580. *By Mr. Want:* Would you not expect a fair amount of carbonaceous matter in the pricking?—Yes, usually. Some of it is almost all coal. It depends on whether the machine is going into the fireclay or the coal as to what sort of dust is produced. I should say that the majority of the dust produced in Mount Mulligan would be stone dust.
3581. Do you know that the machine cuttings were thrown into the gob?—No.
3582. *By the Chairman:* What do you think of the practicability of watering that mine as a means of laying the dust?—I think it would require very careful experiment. The watering of the mine, except for the purpose of laying the dust on the floor would be inclined to cause collapses of the roof and sides. That material is fireclay, which is liable to rapidly disintegrate under the action of water.
3583. *By Mr. Want:* At present the packing is built with the brushing from the roof?—Yes.
3584. Could the packwall be built with the floor brushing?—Yes. It is practically the same.
3585. And the action of the water on the floor brushing would be practically the same?—Yes. In most places this fireclay is liable to occur as such, but you could not say that throughout the mine it would be all fireclay or all sandstone or shale. It varies. Still, it should be safe enough to water the floor.
3586. *By the Chairman:* What do you think could be done to get rid of the stone dust?—I think that the reversal of the air current on the off-shift would be the most feasible thing. It is really the finest powder that produces the explosive dust, and that settles on the lee side of the timbers, and by reversing the air current it would be set in suspension and would be forced out of the mine next time.
3587. *By Mr. Want:* Do you think it would be forced out of the mine or be deposited in another place?—I think the major portion would leave the mine. At the present time it is protected on the lee side.
3588. *By the Chairman:* The fire in the mine would tend to set up artificial ventilation?—Yes. That is what enabled Mr. Watson to predict the presence of a fire and its location. He predicted it within 30 ft. It was a very shrewd piece of deduction.
3589. *By Mr. Want:* Were you in the mine after the fire was put out?—Yes.
3590. Was the ventilation interfered with?—We could not safely go into the mine unless the fan had been going for an hour or two hours. We could not live in that atmosphere without a fan. The fan was going when we put the fire out, but the moment we got out it was shut off. That the big fan had been destroyed was a fortunate thing for the mine, seeing that the fire was there. It was right on the return airway, or otherwise it would probably have burned right back through the mine.

3591. *By the Chairman:* What started the fire?—The flame, rushing up the return airway, probably caught on some splinters on the mine props, which latter caught fire, and the fire then burned down to the coal on which they were standing. E. C. Saint-Smith.  
31 October, 1921.
3592. There were two or three burning stumps?—Yes. The timbers had sole pieces under them, and they were also alight.
3593. *By Mr. Want:* You think the explosion lighted some timber?—Yes, the evidence is conclusive.
3594. Did you see that fall in No. 2 road pickwall, on the bottom at the south side, No. 12?—Yes.
3595. It was supposed that a man was buried there, but they did not recover a body?—No.
3596. You searched that wall. I understand?—Yes. Laun and I were anxious to recover the body there. I understand a body of miners went inside afterwards and shovelled away all the rock, but found only a damp spot, but no body.
3597. Did you see any evidence that a man had been there?—Two men were working on that face, and only one body was recovered. On the second face there was rather an appalling stench arising from underneath a heap of stones, and we were rather used to the smells given off by a dead man or beast, and felt confident a body was still there.
3598. Could you tell by the smell?—In every case. Ten days after the explosion, no matter where a body had been recovered, you could tell the spot within an inch, so long as he had been lying dead there for two days. In one case we have corroborative evidence from the Chairman, who subsequently buried a man's hand; the actual stench arising from the places where burst bodies had been lying left no doubt. In many instances I found portions of a scalp with hair attached, and we got the corroborative evidence in that way afterwards. There is no doubt, in my mind, that the positions of most of the bodies shown on the plan are correct within a few inches. In many cases Laun recovered the bodies himself.
3599. *By the Chairman:* What do you think of the rescue operations?—I think that going into the mine afterwards was one of the bravest things imaginable.
3600. I am referring particularly to the conduct of them; for instance, not a man was lost?—That is an extraordinary fact. I myself picked up a detonator that one of a rescue party had trodden on, and which had been bent right up to the fulminating charge. And falls of earth took place right up to the very last day I was in the mine. I was hit by a fall in the main adit. Falls took place right from the time of the explosion, while the rescue parties were at work, more particularly in the main adit, when bodies were being taken out. The fact that there were no such losses shows that great care was taken by those in charge to see that men were not killed. It is really marvellous that men were not lost.

JOHN BROWNIE HENDERSON, Government Analyst for the State of Queensland, sworn and examined:

3601. *By the Chairman:* Do you know Mr. J. Stafford, Inspector of Mines, Ipswich and Darling Downs District, South-Eastern Division?—Yes. J. B. Henderson.  
31 October, 1921
3602. Did he hand you some samples for analysis at any time recently?—Yes, on the 24th instant.
3603. You have had the analyses made?—Yes.
3604. Will you give us the results of those analyses?—Yes. They are as follows:—

PROXIMATE ANALYSIS OF COAL, DUST, &C.

	Sample No. 1.	Sample No. 2.	Sample No. 7. 200m. Sieve.	Sample No. 9. 200m. Sieve.	Sample No. 10. 200m. Sieve.	Sample No. 11.	Sample No. 12.
Moisture .. ..	Insufficient material for analytical purposes.	Per cent. 2.9	Per cent. 1.2	Per cent. 1.9	Per cent. 1.2	Per cent. 1.7	Per cent. 1.5
V.H.C. .. ..		15.5	25.8	24.5	25.9	23.4	26.0
Fixed Carbon ..		56.9	45.0	40.5	48.2	55.0	57.8
Ash .. ..		24.7	28.0	33.1	26.7	9.9	15.5
		100.0	100.0	100.0	100.0	100.0	100.0
Density at 15° ..		1.549	1.292	1.664	1.567	1.328	1.441

A microscopical examination of samples Nos. 1 and 2 did not reveal any signs of "Coke" or "Coking" in the particles.

J. B. Henderson.

31 October, 1921.

## SIEVE SEPARATIONS.

	Sample No. 7.	Sample No. 9.	Sample No. 10.
	Per cent.	Per cent.	Per cent.
Retained on 60 mesh .. ..	77.6	71.4	38.5
„ 100 mesh .. ..	6.9	8.0	25.7
„ 150 mesh .. ..	6.9	4.6	12.8
„ 200 mesh .. ..	1.1	2.0	3.2
Passed 200 mesh .. ..	6.1	12.0	10.5
Loss (moisture and fine dust) .. ..	1.4	2.0	9.3
	100.0	100.0	100.0

Weight taken for testing 800 grams, 500 grams, 109 grams.

The sieves used in this separation were the standard sieves made according to the standard prescribed by the Institute of Mining and Metallurgy.

## ANALYSES OF MINE AIR SAMPLES.

	Sample No. 4.	Sample No. 5.	Sample No. 6.	Sample No. 8.
	Per cent.	Per cent.	Per cent.	Per cent.
Carbon Dioxide .. ..	1.50	3.08	0.42	0.20
Fire-damp .. ..	Nil	Nil	Nil	Nil

The apparatus used would have detected 0.02 per cent. of firedamp, so firedamp, if present, was in less than that proportion.

3605. You do not know where these samples came from?—I was told they were from Mount Mulligan; and the covering letter asked me to do certain things, which I have done. I could not complete the analysis of No. 1. There was only about 1 gramme weight, which was insufficient for complete examination. I used it for the microscopical examination.

JOHN STAFFORD, Inspector of Mines, Ipswich and Darling Downs District, South-eastern Division, recalled and further examined:

J. Stafford.

31 October, 1921.

3606. *By Mr. Want:* You went to Mount Mulligan and took samples?—Yes.

3607. To whom did you submit those samples?—To the Government Analyst.

3608. *By the Chairman:* We want to know where those coal dust samples were taken from. Will you give us that information?—Sample No. 1 was dust at the end of No. 4 gateway, No. 12 north level.

3609. What was it?—I was suspicious of it and took it for the purpose of determining whether it had been coked.

3610. Where was No. 2 taken from?—It was from the end of the wagon, at the bottom of the jig, off No. 12 south level.

3611. *By Mr. Want:* And the sides of the skip?—Off the end of the skip.

3612. Cöke dust?—It was a brownish-looking composition, probably partly coked.

3613. *By the Chairman:* No. 7?—Road dust, junction of the long rise road, off No. 11 south level.

3614. No. 9?—Dust from the roadway at the top of the dip, of the No. 1 seam.

3615. *By Mr. Want:* Near the motor?—On the brow of the dip, where the junction of those roads is.

3616. *By the Chairman:* No. 10?—Dust from the screen on the surface.

3617. No. 11?—A sample of No. 2 seam coal.

3618. Where was it taken from?—From a wagon. I do not know from which face it came.

3619. Where was the wagon standing?—On the surface.

3620. No. 12?—From No. 1 seam.

3621. From the faces?—Yes; average run of mine coal; both taken from a skip filled in those places.

3622. Then the mine air samples. What is No. 4?—Sample of air taken from the top of the jig, off No. 10 north level; as far up as we could get.

3623. No. 5?—Return air from top seam, south side.

3624. Did you take that in the main return airway?—Before the air joined the main return; in the top seam and the south side section—south side return.

J. Stafford.

31 October, 1922.

3625. No. 6?—Top side of No. 7 machine bord, No. 11 level.
3626. Which side—north or south?—That would be the south side.
3627. No. 8?—Return for the whole of the mine.
3628. *By Mr. Want:* Did you take any dust off the roof or sides?—Very little to get; practically cleaned out with the explosion.
3629. *By the Chairman:* What was No. 3 sample?—Just put in as a sample of heavily coked coal, picked up off the ground.
3630. Where was it taken from?—The end of gateway at the face off No. 2 machine bord, No. 11 south: top of the ground. That coke was about  $\frac{3}{8}$  in. thick.
3631. Have you seen these analyses?—No.
3632. You heard a statement made by Mr. Watson, in giving evidence, that there was not an apparatus in Queensland that was sensitive enough to detect under  $\frac{1}{4}$  per cent. of firedamp. Have a look at the note at the bottom of these analyses. Have you any reason for doubting Mr. Watson's statement?—Yes. I have had analyses as low as 0.01 and 0.02 taken from the Ipswich district. I knew at the time, of course, the statement was wrong.
3633. Very fine coal dust is more liable to explode than coarser stuff?—More liable to get in suspension.
3634. What mesh would you say would be the dividing point between classes of dust—explosive and non-explosive? Do you know any standard mesh?—The standard is usually about 200. Once an explosion starts it will lift much heavier stuff. Two hundred is usually the standard taken for gauging dust.
3635. *By Mr. Want:* I would like to ask you a question in relation to your earlier evidence. In the case of long wall working, how would you interpret that rule which requires that only one shot at a time shall be fired in coal?—I have recognised there was some difficulty in overcoming that, but I think at the same time it would be a hard matter under the present system to keep it in check with subordinate shotfirers; it is quite possible for two men to be firing a shot at the same time.
3636. You think it would be very difficult to keep within that rule if shots were fired as they have been fired?—I think so.
3637. Do you think that rule would be easily kept if one man were responsible for the firing?—Yes; that is the best way to keep the rule in longwall working.
3638. And if a shotfirer were appointed, naturally you would prefer that all the firing should be done from the return side?—Yes.
3639. So that the dust raised from that shot, if any, would have passed away before the one below would be fired?—If you fired it on the low side the dust would follow you up.
3640. *By the Chairman:* The firing of shots electrically would control that?—One shot only, of course.
3641. *By Mr. Kilpatrick:* Would it be possible to do it with a shotfirer during the day when men were working?—I do not see why it should not be done, but it would not be as convenient as if done on the afternoon shift for that sort of work.
3642. *By Mr. Want:* You know places where it is done in the Southern States?—It is the case in New South Wales.
3643. *By the Chairman:* Samples 4, 5, 6, and 8, mine air: Did you have proper tubes for taking all of those?—No. 4 was taken in a bottle, sealed with wax after having been taken. No. 5 was taken in a bottle; No. 6 was a tube, and No. 8 was a tube.
3644. The places where these samples were taken would be the most likely places in the mine to discover firedamp in the air if there were any present?—Nos. 4 and 6 would probably be more likely to reveal a mixture of firedamp than the others which were taken from the mine return. These are from isolated spots.

## ELEVENTH DAY.

## BRISBANE.

THURSDAY, 10 NOVEMBER, 1921.

The Commission met in No. 1 Committee Room, Legislative Council, Parliament House, Brisbane.

PRESENT:

R. A. DUNLOP, ESQUIRE (*Chairman*).

HON. C. KILPATRICK, M.L.C. WILLIAM WANT, ESQUIRE.

## General evidence—continued.

JAMES THOMAS WATSON, Superintending Engineer, Mount Mulligan Colliery, recalled and further examined:

J. T. Watson.  
0 Nov., 1921.

3645. *By the Chairman*: I understand you have some further evidence to offer with regard to the origin of the explosion?—Yes, and of the existing conditions prior to the explosion. First, I want to tender an affidavit made by James Harris, Mechanical Engineer, Mount Mulligan Colliery, together with a plan prepared by him, covering the second place from the top of Fitzpatrick's long wall.

[Affidavit and plan tendered and marked *Exhibit 18*.]

3646. This affidavit is a statement, under oath, made by James Harris, of an inspection made on 29th October, 1921?—Yes, sworn before Mr. A. L. Nevitt, J.P., in Cairns, North Queensland. Harris is unable to travel; otherwise I would have brought him down with me.

3647. Did you make an examination with Harris?—Yes, I made a complete investigation of that place.

3648. You were present with him when he made this examination?—I was present during the first portion of it, on the first day. We found the original cavil-sheet. On reference to that you will find that Morgan and Casloff cavilled places No. 8 and No. 11 on Fitzpatrick's wall. That cavil is in the handwriting of Mr. George Hawes, the secretary of the Miners' Union at Mount Mulligan. No. 11 is the place referred to in Harris's affidavit—the second place from the top.

3649. It also has been called in these proceedings No. 10, No. 2, and No. 6?—It has not been called that by any of the Company's officials.

3650. Mr. Laun has referred to it as "No. 10"?—I am afraid Mr. Laun does not know the arrangements.

3651. *By Mr. Want*: Where did you get that cavil-sheet?—Amongst the effects of Mr. George Hawes.

3652. *By Mr. Kilpatrick*: Is it in George Hawes's handwriting?—I think so. It was written at the mine. It was found amongst his effects, anyhow.

[Cavil-sheet tendered and marked *Exhibit 19*.]

No. 12 on Fitzpatrick's wall was cavilled by Bell and Ostle. That is partly machine and partly pick place. It is the top place on the wall. The machine turns round, and part of the coal—to the edge of the coal—had to be got with the pick; so that those two men cavilled one place only. No. 10 was where the junction box was. According to this sheet (*Exhibit 19*) that was cavilled by Jack Henry and Harold Martin.

3653. That must have been a "swap"?—Yes.

3654. Whom did they swap with?—Hynes and Lomax.

3655. *By the Chairman*: Where were they?—They had cavilled a place in the top seam—No. 3 and No. 4, according to this sheet. Henry and Martin had worked two quarters in that place, and they swapped back—so we have found since.

3656. *By Mr. Want*: Have you evidence to that effect on the sheet?—No, not on this sheet. I found that out myself.

3657. Henry and Martin were working on the top seam the previous cavil?—Yes, in the very place which Lomax and Hynes cavilled. No. 9, Fitzpatrick's wall, was cavilled by Templeton and Loughrie.

3658. *By the Chairman*: In that No. 9 the two bodies were identified as those of Adcock and Thompson?—Well, Templeton and Loughrie were the two men who were working in it. Adcock was not a miner at all. Adcock was the man who was found in the dead end at No. 6; he was a shift man. Hynes and Lomax were both identified, and both bodies were found in No. 10 place.

3659. Laun said they were found in No. 9?—He has miscounted; he is one out each time. Instead of being found as is shown on his plan (*Exhibit 8*),

J. T. Watson  
10 Nov., 1921.

near the face, they were found very nearly out to the main gate of the wheeling road—the long, slanting road going up from which the gates were driven. Hynes was found within 10 yds. of the entrance to the gateway, inside the entrance; and Lomax was a little further in, in No. 10 place.

3660. *By the Chairman:* Where do you say Henry and Martin were found?—Henry and Martin were found in the top seam. Henry was in that face, you will remember, where the skip was blown into the gob.
3661. *By Mr. Kilpatrick:* That is the place going to the rise?—It was going to the rise, apparently; in fact, there was a break through to the rise. There were only the four pairs of men; they were cavilled on that machine face.
3662. The plan shows that six were found there?—But Parkinson and Adcock were found up there; Parkinson was the deputy, and Adcock was a shiftman.
3663. Those two others were accounted for?—[*Witness looks at plan.*] No. 12, Bell and Ostle; Morgan and Casloff, 8 and 11; and Templeton and Loughrie, 6 and 9. Henry and Martin cavilled 7 and 10, but they swapped with Lomax and Hynes; so that Lomax and Hynes were working in 7 and 10. That accounts for everything from 6 to 13.
3664. It shows two extra men even here in No. 7?—There were no men in No. 7, which was cleaned up, as a matter of fact.
3665. You say that there were four bodies found there?—There were three men there, and one in the wheeling road outside the gate. Parkinson was found in that place. He is shown in the wrong place on Laun's plan (*Exhibit 8*).
3666. Where was he found?—In Fitzpatrick's No. 8; it is shown as No. 7 here. That No. 7 is a dead end, and there was only one man found in that; that was Adcock.
3667. You have got the four pairs of men?—Yes; and we have the deputy and the shiftman.
3668. There is one man over?—Yes, one man over. He was not working on that face.
3669. No. 53, on the wheeling road, was a lad?—Yes, that is supposed to be young McCormack.
3670. What was he doing?—He was pushing up.
3671. Assisting the men?—Yes.
3672. *By the Chairman:* There is one body extra shown on Laun's plan; he is accounted for?—Yes.
3673. *By Mr. Want:* Do you say that there was only one body recovered from there?—That is so; that is a dead end. Adcock was brushing up from No. 6 to No. 7. It is possible that the other man may have been a shiftman helping Adcock; we can never find that out.
3674. Where was that crossgate being driven to?—It was intended to come right through to No. 11, main level. The plan is incorrect in another particular—as to the position in which the body of Grant, the other deputy, was found. Grant was found in a new slant road off the top slit main road. He is shown on the top of this longwall face, and there was no one up there at all. Grant was actually found on the other face of the old top slit.
3675. *By Mr. Kilpatrick:* That was above Fitzpatrick's wall?—Just above; just to the left off that slit. [*Indicates position on plan.*] It is quite evident that Laun was not familiar with the district, and probably did not realise the importance of it. Morgan and Casloff, according to the cavilling-sheet, cavilled 8 and 11. The No. 8 face is cleaned up; there was nobody in that face on the morning of the explosion; it was cleaned right up. Both men were found in No. 11. The tools belonging to those two men were found in the face, and the numbers on the tools correspond with their number—No. 8 was their token number. We also found some of their tokens in that face. There is no doubt whatever in my mind that those two men were working in that face at the moment of the explosion. There is a skip standing at that face partly full of lumps of coal, over the end of the rails.
3676. *By Mr. Want:* The whole four wheels?—The whole four wheels. It is impossible to shift it without using a good deal of force. It will take three or four men to shift that skip. There are very definite indications that that skip had been driven in towards the face.
3677. *By Mr. Kilpatrick:* Would it surprise you to know that that skip was on the rails?—It has never been shifted since I was there with you; it is just over the end. The whole thing has been carried downhill, the rails

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- and everything else with the skip. It has been carried up against the bottom pack wall. It is very close on to the end of the rails; it has just dropped over.
3678. *By Mr. Want:* Was there anything besides the position of the skip leading you to believe it was blown inwards?—Yes, there is a quantity of wrappings off the explosives driven into the cracks in front of the skip, as if the paper had been carried up with a good deal of violence against the front of the skip, and some of the paper is sticking on the front and in the cracks of the skips.
3679. How big are the pieces of paper?—Small pieces; but it is distinctly paper; it is the same greasy paper as that which comes on the explosives. Of course, I believe the paper was driven there by a secondary force, and not the primary force. Harris definitely states in his affidavit that he found Morgan's body at the front of that skip; and the evidence is there on the skip itself—that there was a man found there.
3680. *By Mr. Kilpatrick:* Is there any smell there?—A very strong smell. The skip is stained with the juices from the body, and part of the flesh is still adhering to the skip. He was driven up against that skip with a good deal of violence.
3681. *By Mr. Want:* You were in that face at the time the members of the Commission were in Mount Mulligan?—Yes.
3682. Did you notice any smell at that time?—I did not take any particular notice, because I was unfit to do anything at that time. I was not in a fit condition to make a close examination of anything. Casloff's body was found some distance out from the face; almost out towards the main wheeling road.
3683. In that same gateway?—In that same gateway. I believe the plan is incorrect also in that particular; it does not show any men at all in that gateway. When Morgan was found, a wooden tamping stick was found just alongside his left hand.
3684. *By Mr. Kilpatrick:* Was Morgan's body mutilated in any way?—Yes: Harris said that he was rather badly knocked about and badly burnt. He was the only man in the mine with full whiskers, and was very easily identified.
3685. No portion of his body was missing?—I do not know that there was anything missing, only the skin and flesh, which is on the skip still. On examining that face closely on the right-hand side—the bottom, the low side—of the skip road, where there is a lot of big coal down at the face, we found the end of a shot hole. That shot hole had clearly been bored through the coal which was on the ground before the coal came down, and just entered into the fireclay above the coal. That portion of the hole, 6 in. or 8 in. in length, is still to be seen in the fireclay, looking straight up.
3686. *By Mr. Want:* Did you see that?—Yes, I saw it myself and examined it very closely. That hole had never been charged with explosive, and certainly had not been fired, because there is no trace of any bulging or shattering at the end of the hole at all.
3687. *By Mr. Kilpatrick:* You can trace the hole right through the coal?—You can see where it came right through and entered into the fireclay.
3688. *By Mr. Want:* What brought the coal down?—From the evidence at the face I am of the opinion that the coal fell after the explosion; and also, from the evidence at the face of that place, I think Morgan was in the act of going into that face with the charge for that hole; from the position in which he was found and the circumstances under which he was found, that he was actually carrying in the charge to charge that hole.
3689. *By Mr. Kilpatrick:* And it exploded in his hand?—That is my opinion; that it exploded in his hand, either accidentally, from his lamp, or some other means.
3690. Don't you think the evidence would have been on Morgan's body if such had been the case?—I think the evidence was there, from Harris's description of the way in which he was driven.
3691. Have you heard of similar accidents in Queensland—of a charge going off in a man's hand?—No, not in Queensland, but in other places. I have investigated similar accidents, where naked lights were in use.
3692. Was it invariably the case that some portion of the man's body was shot away?—Not necessarily.
3693. Would you believe that three or four accidents have occurred recently in Queensland of that description, and it was invariably the case that some portion of the hand or arm was shot away?—That might be possible. I do not think the body was examined closely enough by anybody to tell.

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The fingers or the hand might have been badly shattered. It has to be remembered that when that man was found, decomposition had set in and he was not closely examined. I do not think the doctors made any detailed examination, either. As far as I know, they did not.

3694. Don't you think the rescue workers would have taken an accurate description of anything of that kind?—I do not think they did take an accurate description. I do not think they bothered anything about it. They were anxious to get the men, and were not worrying about the details as to how the men were found.
3695. *By Mr. Want:* Do you think Morgan had that tamper in his hand at that time?—I do.
3696. It is not broken, is it?—No, it is not broken, but I think he actually had it in his hand. Further, the tools are lying just as they were lying in the place. It is quite evident a shot had not been fired, because the man was found 10 or 11 ft. away, and the shovels and picks, &c., are lying near the face. A man does not fire a shot on top of his tools.
3697. *By the Chairman:* Did you see the top of this lump of coal?—I did.
3698. One end of it was shattered, and there was fine coal on top. How do you account for that?—I think that was blown there by the blast.
3699. *By Mr. Kilpatrick:* You think it was lifted on top?—I do.
3700. What would cause the setting-off of a charge in a man's hand?—A man might have a light on his head. Some men have the hand acetylene lamps. Sometimes sparks fall from them. Some men use other types of lamps; they do not all use the acetylene. Some of them use the old-fashioned pit lamp.
3701. Can you remember how Frank Butcher was identified?—No; that was in the top seam.
3702. It would not surprise you to know it was because of some deformity as far as his fingers were concerned?—I believe that was the case.
3703. Do you think if that had been so in Morgan's case it would have been paid attention to?—Not necessarily. In the same district subsequently we found the whole skin of a man's hand. I think the Chairman was there when that was found. There was no mention of that in any of those cases. Actually the full shape of his hand was found. I do not think the rescue workers wasted any time; the smell was too bad to waste any time in looking round.
3704. *By the Chairman:* Get back to this shattered coal. In the evidence we have before us it is said that this coal was part of the block, sitting in a hole 3 or 4 in. deep on top of the lump coal, and there is an area of about 3 sq. ft. of it.—I do not quite follow that.
3705. Laun, in his evidence, said he felt this coal, and it was sitting in a hole in the block of coal about 3 or 4 in. deep, as if it were at one time part of the block of coal.—I do not agree with that.
3706. *By Mr. Want:* Is the top of the lump comminuted to a depth of 4 in., with an area of 3 or 4 ft.?—It is nothing of the kind.
3707. *By Mr. Kilpatrick:* Can you tell us what quality and make that fuse was which was being used?—It was Bickford blue.
3708. What is its rate of burning?—Roughly about a foot a minute.
3709. Were any tests made of it?—I do not know that any particular tests were made. Nobody had any trouble with that fuse.
3710. Have you ever heard of fuse jumping anywhere?—Yes, I have.
3711. Have you heard of its having jumped and injured Casloff at the Tyrconnell mine, at Kingsborough?—No.
3712. *By the Chairman:* Do you remember his having been in an explosive accident at Tyrconnell mine?—I do not remember Casloff having been away from Mount Mulligan.
3713. He was injured twice in the Tyrconnell mine. Did not you have a strike over Casloff at one time, and he left for a short while?—He may have; I would not like to say one way or the other. There was some trouble over him.
3714. It is a good while ago—four or five years?—I do not remember his ever having left.
3715. Was it possible for a blast to have been fired with a short fuse, which jumped, and went off quickly?—I do not think so; not with Morgan. Morgan was one of the best men in the mine, and one of the most careful.
3716. *By Mr. Want:* You do not think a charge went off accidentally on the top of that coal?—No, I do not. I think the charge, if it went off at all, went off in his hand.

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3717. *By the Chairman:* You think that coal came down after the explosion. Laun says he made a particular examination of that block of coal and found dust on it?—Naturally you would find that after the explosion.
3718. He said there is a fall of roof on that coal still?—No, the fall of roof is further towards the dip. The fall of roof is covered with dust, except that which fell a considerable time after the explosion.
3719. *By Mr. Kilpatrick:* The fall of roof is apparently on the top of the coal?—No, it is to the low side of the coal, on the bottom end, not within 4 or 5 ft. of where that hole is. I looked particularly, and my opinion is that the whole of the coal and the roof fell after the explosion.
3720. *By the Chairman:* How were the cogs there?—They are very indefinite in that particular place. They seemed to me to have the same indications as the skip—as though the greatest force came in; and that is quite in keeping with my statement that it was a secondary force that caused that.
3721. *By Mr. Kilpatrick:* Are there any cogs in that particular place?—No, I do not think there are any cogs; there are the packs.
3722. There are cogs in the place below, are there?—Yes. I remember distinctly the cogs in one place were blown downhill; I cannot say whether it was ten or nine.
3723. It would not surprise you to know they are in both places?—They may be.
3724. *By the Chairman:* Do you know where Morgan was standing when the explosion occurred?—You can only deduce from his position; he was just about at the end of the skip—the inside end, next to the face.
3725. You think Casloff went away?—I think Casloff ran out. He was out about 140 ft. from where Morgan was found. Where he was found is marked on the plan.
3726. These men were cavilled in two places—8 and 11?—Yes.
3727. Why should they be together?—Because No. 8 was cleaned up.
3728. *By Mr. Kilpatrick:* It is the custom for the two men to be together all the time?—Yes, always.
3729. *By Mr. Want:* Did you notice any machine cuttings under that lump?—Yes.
3730. They had not been cleaned up?—No.
3731. Is it customary to clean up the machine cuttings before a shot hole is charged?—They are supposed to do so. I am afraid they have not always been doing it. One of our troubles has been over dirty coal—filling on top of the dirt instead of cleaning up.
3732. *By Mr. Kilpatrick:* Did you have much trouble with the men?—Not on the whole. I do not think, on the whole, you could have got a better class of men in the country.
3733. Did your management have a great deal of trouble with them?—Not that I know of. On the whole, I think they were working fairly satisfactorily. Certainly we did not have anything like the trouble they had in New South Wales.
3734. *By the Chairman:* That skip is not badly knocked about?—No, but all the same, there has been a good deal of violence in the immediate neighbourhood of it.
3735. Is the coal dust on it coked?—Yes, definitely, outside and inside; and on the props some distance out from the face there is coke—on the inbye side of the prop.
3736. *By Mr. Want:* Thin?—No, it is thick. It is a fairly thick cake of coke dust; in some cases nearly a quarter of an inch thick on the side next to the face.
3737. There was a lamp and a cap found near Casloff by the rescue workers?—I do not know about that. Casloff was found right outside.
3738. *By the Chairman:* There was an acetylene lamp outside the face?—Yes.
3739. That would probably be Morgan's lamp?—Very likely.
3740. What do you think went off in Morgan's hand—the detonator?—No, I think the whole charge.
3741. *By Mr. Want:* How many plugs do they use in a hole like that?—I should say, from the position of the hole, that the charge would be anything from 8 to 12 oz.
3742. Did you make any stipulation in regard to the weight of monobel that was to be used?—No; there are no regulations in force in regard to that.
3743. *By the Chairman:* The trailing cable of the machine in that face was affected?—Yes.

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3744. Was it knocked about?—It was knocked about a little with the force exerted, because it was thrown under the machine and twisted and stretched a good deal. That trailing cable, I am afraid, is of no use. It is not broken; there is a little fray on the edges, and it is badly stretched.
3745. It is under the fall of coal?—Not under the fall of coal; it has been pushed as far to the gob as they could get it.
3746. *By Mr. Want:* Do you know that inspectors are given power to order permitted explosives to be used in Queensland?—I do not know that they give them that power. In any case, the inspector never exercised the power. Monobel was used under my instructions, but not under the inspector's instructions.
3747. *By the Chairman:* Do you think it likely that the men working in that face would shift that skip before they started to charge a hole?—No, not in the position it was. It would blow towards the gob; it would not blow towards the skip.
3748. *By Mr. Kilpatrick:* It was not in a direct line with the men?—No.
3749. *By the Chairman:* These tools do not appear to have been moved?—I think he would certainly shift his tools before he would fire his hole.
3750. *By Mr. Kilpatrick:* The same thing would apply to the tools as to the skip; if they were not in a direct line with the charge there would not be any danger to them?—No. Men are more careful, as a rule, with their tools than they are with the skips. It is only human nature.
3751. *By the Chairman:* How long did it take you to make this examination?—The best part of a day. I was there considerably over five hours in that one place.
3752. Mr. Harris was with you all that time?—Yes.
3753. Anyone else?—Yes, Matthews was in with us.
3754. Could you smell the stench at that place at that time?—At the end of the skip it was very strong. If you got close to the end of the skip, where that little bit of flesh was adhering, it was very strong. You could see the distinct brown stain still on the front of the skip.
3755. Did you go up that gateway or up the face?—I went up that gateway, and nearly got caught.
3756. You did not go near where Casloff's body was found?—No; Casloff was found in the gateway near the wheeling road.
3757. You think Laun is mistaken about this coal dust on the coal?—Yes, I think he is.
3758. I think that you said something about it in evidence?—Yes. I noticed some coal dust on it, but I did not closely examine it at the time.
3759. *By Mr. Want:* Brownish dust?—Yes, it looked like brownish dust coming from the explosion.
3760. If the coal fell simultaneously with the explosion, would you expect brownish dust to be on it?—Yes, because it takes some considerable time after an explosion for the dust to settle down in a mine.
3761. *By the Chairman:* You said, in answer to Question 2843, at Chillagoe—  
 "It was quite evident to me that the coal at that particular place had fallen immediately it was cut by the machine."  
 ?—Yes, I thought so at the time, from the slit in the roof, but after examining it closely I came to another conclusion.
3762. Do you know that the coal was chasing the machine in this face?—Yes. There would be no object in putting in that hole we found if the coal had fallen. At the end of the hole only 6 or 8 in. of the coal is left. A man does not bore a hole in coal after it has fallen. The hole was undoubtedly bored through the coal.
3763. Is it bored in such a position as to break that coal in the regular way?—Had it been fired it would certainly have broken the coal; but in my opinion the shot was never fired.
3764. Where do you think the hole was started—half-way down?—No; about a foot from the roof.
3765. Do you know where these men kept their explosives in that gateway?—Yes, the explosives were packed outside of the skip. There was very little explosive in that place.
3766. How far away from the face?—About 12 ft. outside the skip. They are in little boxes.
3767. Did you notice what explosives were there?—I know there was very little. There were two plugs of monobel and half a box of caps and some fuse

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- that had been ignited. The fuse had been burnt there, at that particular place.
3768. Do you know whether Morgan always did the shotfiring?—As far as I know, he did, because Casloff was always more or less frightened. Morgan was the recognised leader of the two men; although I find that Casloff was a shotfirer appointed by Evans; he is registered as a shotfirer, as well as Morgan.
3769. What is the date of that appointment?—There is no date given with the names. I can give you an idea. I have here a formal notification signed by Mr. Evans, appointing Morgan a shotfirer, dated 10th January, 1919. I will put that in as evidence. First of all, I draw attention to the record book put in as evidence by Mr. James Harris (*Exhibit 17*) which gives a list of shotfirers appointed in accordance with the rules issued under "*The Mines Regulation Act of 1910*," Division V., in Mr. Evans's own handwriting. I also tender the authority, dated December 1919, signed by Mr. Evans, appointing Morgan a shotfirer.
- [Authority tendered and marked *Exhibit 20*.]
3770. *By Mr. Kilpatrick*: Have any similar entries been made since that time?—I have not found any. I have reason to believe that a number of these registration forms were made out quite recently in the office for Mr. Evans. They used to be typed in the office, the names being left to be filled in, and to be signed by Mr. Evans.
3771. *By the Chairman*: According to the context, these names would be registered somewhere about December, 1920?—Yes, somewhere about that time, judging by the surroundings. I know that a number of these forms were always prepared. Over 100 of them had been typed out and handed to Mr. Evans to be filled in as required.
3772. Nearly every contract miner in the mine was appointed a shotfirer, according to this?—Apparently.
3773. *By Mr. Want*: Is that in accordance with the regulations?—I do not know that the regulations make any special provision in regard to that; I think it is very indefinite.
3774. Rule No. 9, under "*The Mines Regulation Act of 1910*," contained in Division V.—"Use of Explosives, in Collieries," states—  
"*Persons allowed to charge and fire explosives.*  
"9. No person other than a shotfirer appointed as aforesaid shall be allowed to charge or fire explosives, and only a shotfirer or a person authorised in writing by the manager shall be appointed for every portion of the mine allotted to a fireman or deputy for purposes of inspection, but if the number of shotfirers so provided is found insufficient for conveniently firing the shots in any part of the mine, the manager may make application to the inspector, stating the number of additional shotfirers required, and the reasons therefor, and the inspector may sanction the appointment of such number or additional shotfirers as may appear to him necessary under the circumstances."
- ?—I think there was a subsequent amendment to that. I have a recollection of the Miners' Association taking action in the matter, and getting one of a pair of men appointed in each place.
3775. Was not Rule 9 inserted after representations were made?—Something of the kind was done. I have a distinct recollection of it.
3776. *By Mr. Kilpatrick*: In view of all the evidence, do you think that that is the place where the explosion originated?—I think the explosion originated at or about there.
3777. Do you think the theory of two possible seats of origin tenable?—Yes. I have still got a very strong opinion about the one at the entrance to the stone drive, but I believe it was secondary.
3778. Secondary to the one at Fitzpatrick's wall?—Yes.
3779. They could not occur simultaneously?—No; the one was the direct cause of the other.
3780. *By the Chairman*: Have you altered your opinion at all about the blast travelling up that staple shaft or down it at the first explosion?—No, I have not. The evidence is very contradictory. I had a good look at the switchbox at the bottom, and it is distinctly blown down; but I am satisfied from the evidence I have seen there that there has been more than one force; it has been both up and down.
3781. *By Mr. Want*: Do you think that a stone going down that staple shaft would knock that switch out?—No.
3782. *By the Chairman*: Have you found out whether that shaft was covered since?—Yes; I found it was very heavily covered with planking and dirt.

3783. *By Mr. Kilpatrick:* That could scarcely have been blown down the shaft?—  
No. There is evidence of force in both directions, one primary and one secondary.
3784. The primary would come up the shaft?—Yes; the secondary was the more violent of the two. There was an extremely violent explosion at the entrance to that stone drive; much more violent than any other explosion in the mine.
3785. *By Mr. Want:* What reason could you hazard as to how an explosion could occur there?—As a secondary explosion.
3786. Dust?—Yes.
3787. *By the Chairman:* There would be more dust on that lie than usual?—Possibly. It is the one that leads right into the mine.
3788. *By Mr. Want:* It would actually be part of the explosion itself, in that case?—There is no question that the explosion was a series of explosions; there was not one explosion only. I have come to the conclusion, on further examination, there was also another explosion in No. 11, where the conflicting evidence was shown at those doors.
3789. The main road coming out from No. 11?—From Fitzpatrick's wall.
3790. *By the Chairman:* Do you think there was another in No. 12?—It is possible there was, at the entrance to No. 12.
3791. *By Mr. Want:* Do you think any explosives were lying at the entrance to the stone drive?—No, I do not think so. It was the cavilling morning. Some men had not actually got to their places. The men's tools were not in their proper places. Some men, I believe, were actually in the act of moving when it occurred. Some men were recovered from the north side of the mine who did not belong there; they had gone in there after their tools, apparently. Dealing with that question of explosives, looking through the report books I found there is an entry which was made on 6th August, 1917, by Mr. Grant Taylor, Inspector of Mines at that time, ordering the manager to provide an underground magazine in which men could store explosives. This occurred in my absence in the South. I remember distinctly that on my return to the mine I found a magazine underground and I ordered Evans to remove it at once. The entry states:  
 "I have this day examined the workings of the Mount Mulligan coal mine.  
 "The following items require to be supplied:  
 "Sanitary accommodation underground.  
 "Underground magazine in which men can store explosives."
3792. *By Mr. Want:* In what quantity?—It does not specify. The entry continues—  
 "An examination is to be made continuously of roofs of travelling ways for coal and fireclay 'winding' and same to be removed.  
 "A weekly test of temperature by wet bulb and dry bulb thermometers to be made on each working face and recorded in record book."  
 This entry was evidently continued afterwards. He says—  
 "The use of coal dust borings for tamping is to be discontinued and clay supplied for same.  
 "I was accompanied in this inspection by a representative of the miners and the mine manager. The miners' representative's report is attached on the back of this page."  
 The miners' representative's report is—  
 "I have this day, in company with manager and Inspector of Mines, inspected the underground workings of the colliery, and found, to my opinion, the travelling roads and working places safe. I found on two occasions powder and caps laying loose in a wooden box, in two different working places. The men were cautioned by the Inspector for same.—R. O'Neill."
3793. *By the Chairman:* When O'Neill says "powder" he means monobel?—Yes.
3794. Did you ever use powder below?—Not to my knowledge. Right through the report books there is a continuous series of reports by the miners' checkweighmen. [Report book tendered, and marked *Exhibit 21*.]
3795. *By Mr. Kilpatrick:* This could not be any means be a copy of the former cavil?—No, that is the last. Morrison got it and handed it to me. There were in that men who were not in the mine at the prior cavil. They were men who had just come up a week or two before.
3796. *By Mr. Want:* Do you know when the cavil was drawn?—I think it would be drawn on Friday, 16th September. It was arranged between the mine manager and the men. I do not know anything about that.

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3797. *By the Chairman:* Now that you have reached this stage of the examination and inspection, do you think the lighting arrangements for the men at the face are as good as they could be?—It was a common practice in Queensland, and it is a matter that you cannot interfere with too much without causing trouble. Personally, I do not like the acetylene lamp.
3798. You think an electric light would be the thing?—I do—an electric lamp, a lamp that is safe and at the same time will give a decent light and bring in the discipline safety lamps entail; that is the main point I have in view.
3799. *By Mr. Kilpatrick:* The illuminating power of the lamp would weigh largely with you?—Yes. Personally, I would give a miner the best light I could give him, consistent with safety.
3800. *By the Chairman:* You would do that from your own point of view?—I would, from my own point of view, in the interests of the Company. A man who is given a bad light cannot do a day's work.
3801. *By Mr. Kilpatrick:* The safety lamp would not be much good to anybody?—It is not so bad for a miner, but it is for a roadman or a wheeler. There is no question about that. With the miner it upsets his work a little.
3802. *By Mr. Want:* What is the candle-power of an approved electric lamp?—You could get a good type of light, 2 c.p., which would last ten hours. A miner requires only an eight hours' light.
3803. *By the Chairman:* How would that compare with the acetylene lamp in the matter of expense?—It would be a lot cheaper. The Company should supply those lamps and maintain them.
3804. *By Mr. Want:* Under the Act, could there be any other way?—No other efficient way. That is the only practicable way.
3805. *By the Chairman:* You would be prepared to strongly recommend a light of that description?—I intend to do it.
3806. You do not anticipate trouble with the men over it?—I do not think so. I think the men have more sense than to make trouble over a thing which is in their interests. I would be prepared to fight the case rather than allow the use of acetylene lamps again.
3807. Your theory of the explosion is that the acetylene lamp was a contributory factor?—It is. I believe Morgan had that lamp in his hand. It is a clumsy thing to carry, and probably in changing it over he accidentally ignited the stuff in his hand.
3808. What would he light, the fuse?—I think he would have the stuff loose in his hand carrying it from the box to the face.
3809. *By Mr. Kilpatrick:* How would it be possible for that to be done if the cap were clipped on to the fuse?—They always make their primer up at the box.
3810. How would it be possible for a spark to get at the primer?—I am not referring to the cap. It would get at the explosive itself. It could ignite the paper on the explosive. I have investigated some rather curious accidents in regard to explosives. A spark undoubtedly will explode any explosive if it is more than one plug. One plug might simply burn without explosion, but if there is more than one there is always a risk of explosion.
3811. You mean the quantity has some effect?—It has a lot to do with it.
3812. *By the Chairman:* What is the reason for that?—It is a question of temperature. As soon as a plug reaches a certain temperature the remainder is likely to explode. I have known men foolishly hold a stick of gellignite to a light, light it, and throw it away. It is a silly thing to do; but men do silly things sometimes.
3813. How do they clip the caps on the fuse?—Some use pliers, some tap it on with the end of a stick, or press it on with their finger nail.
3814. Lots of them bite it on?—I have never seen a man fool enough to bite it, but I have heard of that having been done. I think that is about the height of folly. I have a record of an accident investigated some years ago, where a man had his head blown off. Undoubtedly he had been doing something of that kind.
3815. *By Mr. Kilpatrick:* You think the pliers should be used always?—I do not go much on the pliers, as long as they use something wooden, and lightly press the end. I do not like the pliers; they are not in it with a piece of wood, if a man is careful.
3816. *By Mr. Want:* You know the regulations demand that pliers be used?—Yes, I know that. Regulations are not always sensible.
3817. *By the Chairman:* There is some conflicting evidence as to the first discharge of the explosion in the open air?—Naturally, that follows. People were all more or less excited. No two men observe alike. No two men who saw a dog fight in the street would agree as to which dog bit first.
3818. You think that the first explosion was at the fan drift?—No. My own evidence was that it came out of the main tunnel first; the fan drift

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was secondary. The reason why I fixed it definitely that the explosion from the end of the stone drive was a secondary explosion was because the secondary explosion came out of the fan drift. There were two distinct explosions out of the main tunnel. There is just one other matter I would like to refer to. Certain statements have been made about the men carelessly handling explosives. It is unfair to these men to base a charge of carelessness after an explosion has occurred. Skips are displaced in the mine in all directions, timber is knocked out, chocks are knocked out, and pack walls are blown out in all directions, evidencing violent force in all parts of the mine. It is not a fair thing to say that men were careless because you find explosives blown about after an explosion. They are light, and are contained in boxes of a light character, and would naturally be blown about.

3819. *By Mr. Kilpatrick:* Who would you primarily blame for carelessness?—I should say it was the miner who was to blame for the way in which he handled his explosives.
3820. Would you not say that the management is responsible?—The manager cannot watch every man. The miners are primarily responsible, and the manager secondarily. There are special rules requiring a man to be careful in all that he does. The evidence of Mr. O. M. Williams, the Inspector of Mines, was to the effect that Mr. Evans was very strict.
3821. *By the Chairman:* There is evidence that the distribution of explosives at the mine mouth was not all that could be desired?—There is a good deal of difference between the two witnesses; Griffiths had been six years at it, and the other man only a few months.
3822. Then there is the evidence of miners who received the explosives and carried them down?—It seems to me that the practice throughout Queensland generally is very loose in regard to those things.
3823. *By Mr. Kilpatrick:* Does it not seem to you that at Mount Mulligan the regulations were not kept up at all, as far as the explosives were concerned?—It does not seem that way to me.
3824. Would you not think it strange that explosives were found in a manhole within 10 yds. of the mouth of the tunnel—was not that dangerous?—I should say that that was not the fault of the man in charge. Some of the men are too lazy to carry the explosives back.
3825. Who was in charge of the manhole?—The manager. He was there every morning, as far as I know.
3826. Do you not think, looking at all the evidence, that things were done in a loose way?—Yes, in some directions they were; but the men have got into that habit generally in Queensland. There is no control over the explosives, or the methods of using them, anywhere in Queensland; that is my experience.
3827. It would not surprise you to know that such is not the case?—It may not be the case in some places, but it is in a lot of places. I have been in one or two Queensland mines.
3828. Would you be willing to believe those who have, perhaps, more experience than yourself, as far as the practice in connection with mining in Queensland is concerned?—Yes, in regard to their own mines. I can only speak in regard to mines I have been in.
3829. *By the Chairman:* Do you know that in metalliferous mines charges are prepared on top before they are sent down and used?—They are in some cases, but not in many. It is not practical to do that in coalmining; it would introduce further danger.
3830. *By Mr. Want:* There is some risk, is there not?—Yes.
3831. *By Mr. Kilpatrick:* I do not think it is a good custom?—Neither do I.
3832. *By the Chairman:* It is a very good custom in metalliferous mines?—The only safe practice is to have a proper shotfirer, and make him responsible for the explosive.
3833. *By Mr. Want:* We have that now?—It is not satisfactory; we have not got it now, because one man of every pair can be appointed as shotfirer, and it is not satisfactory.
3834. If approved by the inspector?—I do not approve of the thing at all; I would make it much more drastic.
3835. *By Mr. Kilpatrick:* Do you think it would remove the difficulty by bringing out the explosives at night?—Personally, I would make every man bring his explosives out. I would not allow a man to store it in the mine; although we have evidence that an inspector actually ordered it.
3836. That was an underground magazine, I understand, he ordered?—It was for the purpose of allowing the men to store their explosives when they left off for the day; this underground magazine was provided in which to put the explosives instead of bringing them out.

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3837. Do you think it is a dangerous thing to bring explosives out of a mine every night?—No, I do not. It is done in every mine in New South Wales where safety lamps are in use. No explosives are allowed to be in the mine overnight.
3838. Yet we have heard from you in evidence this morning that the carrying of explosives is dangerous?—Openly. If a man carries explosives in his hand openly, it is certainly dangerous, if you have a naked light in your hand.
3839. What about a detonator box?—A detonator box is safe enough; it is metal. I am not afraid of detonators, but the explosives themselves.
3840. Yet a man could fall quite easily, and lights being about, they could be set off?—It is possible, but not probable. I would not allow that type of detonators in a mine; I would not allow anyone to use the ordinary open detonator.
3841. Do you think that some sort of a leather case could be devised, whereby a dozen caps could be stored in compartments?—I would not allow those kind of caps at all. I never intend to allow another cap in the mine; it will be done by electric detonators. I have very strong opinions on the question of detonators, and the use of them by an ordinary miner. I do not like them.
3842. *By the Chairman:* If you introduce electric firing of shots you will have to have proper shotfirers?—That is my suggestion to the Commission—that only competent shotfirers shall handle the detonators and fire the shots. The universal practice in safety-lamp mines in New South Wales is that the shotfirer is the only man who handles the detonator.
3843. *By Mr. Kilpatrick:* Would it be possible to carry out that practice in every coalmine in Queensland?—I think so. It is carried out in the biggest coalmines in Australia, and I do not see why it cannot be carried out in Queensland.
3844. *By the Chairman:* Is it more expensive from the expediency point of view?—More expensive to the Company.
3845. Not to the miner?—No.
3846. I understand that you would like to ask Mr. Saint-Smith one or two questions—in what direction will they be?—According to the newspaper reports in the North, Mr. Saint-Smith expressed the opinion that from what he saw he considered that there had been a good deal of carelessness in the handling of explosives underground, and I would like to ask him one or two questions bearing on that.
3847. Mr. Saint-Smith is not our witness, and it will be in the nature of a cross-examination?—Yes, it is, to some extent.
- The Chairman:* Mr. Saint-Smith may answer the questions if he likes, but I will not force him to do so.
- Mr. Saint-Smith:* I have no objection to answer any reasonable questions; I am anxious to get at the truth of the matter.
- The Chairman:* Very well, Mr. Watson, you may question Mr. Saint-Smith. All these questions will be asked by Mr. Watson through the Chairman.

EDGAR CECIL SAINT-SMITH, Government Geologist, recalled and further examined:

E. C. Saint-Smith.  
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3848. *By Mr. Watson* (through the Chairman): You saw the mine after the explosion?—Yes.
3849. You were not in it immediately prior to the explosion?—No.
3850. You have heard since that the men had cavilled, and were just starting on a new cavil that morning?—That is right.
3851. You know the practice of coalminers when they cavil and change, shifting all the tools and all their belongings from one place to another?—Yes.
3852. In making your inspection of the mine, did you notice skips knocked about in places?—Yes, several, in many places.
3853. I will deal with the No. 2 seam; did you find evidence of force in every place examined in No. 2 seam?—Not in every place, but in the majority of places in No. 2 seam. The explosion seemed to me to have gone forward by bounds in parts of the mine which had been untouched by force.
3854. I am speaking of the working places. Take Fitzpatrick's wall—you saw that?—Yes.
3855. Was there evidence of force in every place on that wall?—Yes.
3856. Very much force?—Oh, yes; I considered that was the focus of the primary explosion.
3857. You saw skips knocked about, timber displaced, and pack walls displaced?—Yes.
3858. Does the same thing apply to the pick wall face below Fitzpatrick's wall?—Not to the same extent.

3859. You prepared the plan (*Exhibit 8*) in company with Mr. Laun?—Yes. E. C. Saint-Smith.
3860. Does the fact that the men were found right alongside their working faces in this particular wall suggest anything to you?—It suggests they were killed instantly by the explosion or were suffocated quite unconsciously. 10 Nov., 1921.
3861. From what you saw, what would you say?—I should say some of them were suffocated.
3862. You know the effects of carbon-monoxide poisoning?—Yes.
3863. How far do you think a man could go after an explosion before he would fall down?—About 100 yds.
3864. In this case you saw every man right up against his face?—Yes.
3865. Do you think, if a man survived the shock, he would not have shifted some distance, if he had not been suffocated?—I take it he would.
3866. Was there any force in this face?—Yes, particularly on the top portion of the bottom pick face.
3867. Did you see any explosives in any of those places on Fitzpatrick's wall?—That information is given in the written statement tendered by Mr. Laun and myself. (*Exhibit 2*.) I cannot remember the details of that now. We made notes regarding nearly all the places where explosives were lying about.
3868. You saw evidence of force, displacing skips, knocking out timber, and displacing the pack wall. Would you expect light material like explosives to be lying as they were before the explosion?—Some explosives, particularly detonators, were strewn about by the explosion. I saw detonators, gelignite, monobel, and fuse in heaps, which could not have been blown together in that particular way. In addition to that, one would naturally expect those things to have been in separate containers made of wood. That was not so. It should not have been possible to blow them about like that.
3869. If they had been in wood containers, would not they have been blown about by the force in those places?—Provided the lids were off.
3870. Take Morgan's and Casloff's place. Did you find the lid of that box?—No.
3871. Would there be a tendency for light material like explosives to be scattered about by an explosion?—Most certainly, if they were in the direction of the blast; provided they were lying loose in the first place.
3872. Provided they were in a box would it happen?—Not very likely.
3873. Not when it blew pack walls out?—The box itself would have to be shattered. A force sufficient to shatter a box would also set off a detonator, I take it.
3874. Are you aware that in some places the rescuers lifted the explosives and put them on one side?—I heard so.
3875. Do you know in what places that was done?—No, it was just a general statement—in No. 2 seam.
3876. Is it a fair thing to charge men with carelessness in leaving explosives about, after a violent explosion had passed through and disarranged everything in the place? Could you form a fair opinion of what the mine actually had been like before the explosion?—I was quite convinced in my own mind there had been carelessness. With the position things were in, it was inconceivable that recklessness had not been displayed.
3877. Did the men commit any breach of regulations, in your opinion?—If they did not, it is time the regulations were amended to make it a breach.
3878. Does the regulation make any provision at all for the handling of explosives at the face?—I am not conversant with the mines regulations; it is not within my province.
3879. Do you know anything at all of the rules in force in Queensland?—No.
3880. Are you aware that if a miner finds in the mine anything which is dangerous, his first duty is to report it to the manager?—I understand so.
3881. If a man were doing something which was wrong, and someone knew about it, who would be at fault if it were not reported to the manager?—The miner himself.
3882. Do you remember the time at which that explosion occurred?—Yes.
3883. Something about 9.25 a.m.?—Yes.
3884. Are you aware of the time at which the men started work that morning?—I understand it was 8 o'clock.
3885. Do you know the extent of the mine?—Yes.
3886. Would it be possible for the manager to get all round those places before half-past 9 that morning and satisfy himself that the men were handling the explosives correctly?—It would be quite impossible.
3887. Did you notice any places on the right-hand side in the No. 2 seam—the north side of the mine?—Yes; detailed information is given in our written statement. (*Exhibit 2*.)

- E. C. Saint-Smith. 3888. Did you see any evidence of force in the faces there?—I saw evidence of a considerable fire.
- 10 Nov., 1921. 3889. Any evidence of force?—I cannot remember the details, but they are given.
3890. Was there any evidence of violence on the northern face?—Yes, brattice blown out, and that sort of thing.
3891. Do you not think the force there would have been strong enough to displace light articles like explosives?—Certainly. I am quite satisfied that, in places throughout the mine which I saw, where explosives were loosely stored—not in containers—they would be blown about. I was surprised they were not blown further in those cases.
3892. The main question is: In view of the fact that there had been force all through that mine—heavy things like skips, weighing 5 cwt., half-full, full, and otherwise, being blown about; props displaced; chocks blown out; pack walls knocked out of place; and so on—would it be a fair thing to charge men with having negligently handled explosives, seeing they are a very light material? In fairness to the men, would you say they were careless?—I must say that in some cases I would have to say there was carelessness; but not throughout the mine.
3893. Isolated cases?—Yes, certainly.
3894. Can you call to mind any particular case?—No, I could not. The whole system of distribution and storage of explosives seemed to me absolutely reckless. I have been a metalliferous miner, and we would not have permitted the same condition of affairs to obtain in a metalliferous mine. I was surprised to see so much gelignite used, too.
3895. You heard the reason given in evidence, why gelignite was used; there was no monobel available. I suppose you are aware they are using gelignite in most of the Queensland mines to-day?—I am not pleased to hear it.
3896. Do you know it is so?—No, I have not been down any of the southern mines lately.

[This completed the examination of witnesses, and the Commission adjourned *sine die*.]

## Exhibits.

### Exhibit 1.

WRITTEN STATEMENT TENDERED BY JAMES HARRIS, ENGINEER, MOUNT MULLIGAN COLLIERY.

Mount Mulligan,  
3rd October, 1921.

On Monday, 19th September, I went out on the works at 8 a.m., and, after seeing all the men at work, I inspected the power-house plant and found all to be in good order. I then visited the brick plant and main store, and was returning to the coke works when the mine explosion took place.

Safety lamps were immediately procured, and, in company with Mr. Watson and two labourers, we entered the main tunnel. At the deputy's cabin we found the manager, Mr. T. J. Evans, also a clipper, Mr. M. O'Grady; after they were conveyed to the surface we pushed forward down the main heading to No. 2 slit, where the body of R. Thompson was found. After making sure that life was extinct we again pushed on, but, after going some thirty yards, we met with gas and were compelled to return.

I then took charge of a gang for the purpose of installing a small fan on the main return airway, and Mr. Watson got a gang together to clear a road along the main heading.

After an hour and a-half the fan was set to work, but after exhausting air for two hours we found the conditions in the main heading worse than before the fan was started.

The fan was now shifted into the main tunnel and used to blow air into the mine, and the return airway fully opened. The air now began to clear, and we were able, by adding eleven-inch air pipes to the fan delivery, to get down the dip and brattice off openings on both sides.

After two hours we were able to get down to No. 2 slit, and sent out the body of R. Thompson. The air now being fair, we were able to reach to No. 10, and the body of clipper T. Hawes was found and sent out. We now tried to get to the bottom, but CO was again met with, so we decided to let the fan run for an hour before venturing further. During this spell Inspector of Mines Mr. E. Laun arrived.

On again entering the mine we were able to get to the bottom of the main dip, and sent out another five bodies. Brattice cloth was now placed across the main dip below No. 10 for the purpose of driving the air in No. 10 to ventilate this section, known as Beattie's Wall.

Mr. Laun now pushed on with rescue work, and the writer returned home for rest.

Returned again at 8 a.m., and in company with A. and H. Plunkett, supported by a strong relief gang, we visited all the top bords on Beattie's Wall. CO was found to exist in dangerous quantities, as the painted finch turned on his back in every face, and the safety lamps went out; however, a safe return was made to the main heading, and that part of the wall cleaned up.

On reaching the fresh air the two Plunketts and F. Vogler showed signs of being overcome with the gas, one of the Plunketts being rather bad. Vogler not being with us in the lead should not have been effected. Although I, personally, took the lead, and visited all the top working faces I felt no ill effect of the gas.

Mr. Laun now continued and cleaned up this face.

### TAYLOR'S FLAT.

We now concentrated our attention to this flat, which led into the bottom pick wall. The fan was now shifted down on to Taylor's Flat, and the air pipes laid along the drive. The shifting of this fan was much expedited by the good work done by the Chillagoe engineer and his gang. After letting the air blow in here for some time the writer, in company with W. Matthews, made an examination into the jig flat and found the air clear but fairly warm. After getting out two bodies from this section the writer was relieved by Mr. Laun. On returning, the rescue work on this wall was almost complete, and it was arranged with Mr. Laun that I should try and recover the bodies from the top seam section.

### TOP SEAM SECTION.

To get into this section it was necessary to change the ventilation. The fan was stopped and the brattice removed from No. 2 slit and a brattice placed across the main heading below the No. 2 slit. Good air was found to be travelling along the slit, but, on arriving at the stone drive, I found the air coming out of this section and not going in as expected. A brattice was now placed across the main return to the fan drift, and the air turned into the stone drive leading to the top section. On entering the stone drive we found a hole had been blown through from the stone drive to the old workings in No. 2 seam, and that all the air was going down into it. Some delay was caused here, as we had to send to the surface for brattice cloth. When all was in order W. Matthews, in company with C. Austin, made an inspection with safety lamps, and reported all in order. The writer, in company with Warden Dunlop, then went forward, and, with the stretcher-bearers, started to send out the bodies. Thirteen bodies were sent out of this section, and we were satisfied that all were cleaned up. The explosion in some parts of this section appeared to be very mild, but was accompanied with a fair amount of flame.

### FITZPATRICK'S WALL.

Preparations were now made to start rescue work on this wall. The brattice was taken down from the main dip and placed across the No. 2 slit, and the fan started to blow air in along Taylor's flat. All men were withdrawn for the time to give the air time to circulate the faces. Mr. Laun now took charge again and the writer took rest.

On returning, I found the work of removing bodies still in progress, and this work was continued throughout my shift. Mr. Laun and shift cleared up all the bodies that were in sight on the following shift.

As there were still bodies left when I again took up duty, it was necessary to start from the bottom of the pick wall and make a complete search up along all the faces and cut-off roads. Although we spent six hours in a vigilant search we did not find a body. This completed my search for bodies, as Mr. Laun found three more on his next shift.

### MINE FIRE.

Acting under instructions from Mr. Watson, in company with Mr. Saint-Smith, Inspector Laun, and W. Matthews, we went into No. 1 slit to the main return air-way. At this point a small fire was located. This was successfully dug out and shifted down the stone drive, all being well watered. A visit to the scene on Monday proved the fire to be out.

### PLANT.

The whole of the plant comes under my jurisdiction, and, at the time of the explosion, was to the best of my knowledge in good order.

JAS. HARRIS.

## Exhibit 2.

WRITTEN STATEMENT TENDERED BY F. J. LAUN, INSPECTOR OF MINES, AND E. C. SAINT-SMITH, GOVERNMENT GEOLOGIST.

Mount Mulligan,  
The Chairman, 29th September, 1921.  
Royal Commission,  
Mount Mulligan Colliery Explosion.

SIR,—We beg to tender you herewith the complete notes made by us regarding the effects of explosion, direction of same, &c., in the underground workings of the Mount Mulligan Colliery, in connection with the violent explosion which took place at about 9.25 a.m., on Monday, 19th September, 1921. The notes furnished hereunder were made, in each case, at the actual sites described. In order that as much detailed information as possible might be obtained for the information of your Commission, the examination was commenced on Saturday, the 24th instant, by us, and continued till yesterday afternoon, the 28th instant. The data given represent our agreed-upon observations in every instance. Several heavy falls of roof occurred during our inspections.

With the object of making more readily intelligible the relative positions of the bodies, working faces, blown-out stoppings, focus of violence, &c., the accompanying two blue prints from tracings prepared by Mr. H. C. Mainwaring, Surveyor to the State Smelters, Chillagoe, is tendered herewith. This tracing has been made from the plan—on a scale of 1 inch to 1 chain—in use by the Chillagoe Limited, which latter company own and work the colliery now under review.

The principal workings have been made in the No. 2 (or middle) seam. As there is still a third seam below the No. 2 seam, this bottom seam should be known as such, but, in view of the fact that but a very negligible amount of work has been done on the lowermost of these three seams, the middle or No. 2 seam has always been known as the bottom seam, and the No. 1 seam above the latter is known as the top seam. These names of Top and Bottom seam, respectively, have therefore been preserved on the attached blue prints.

As the bodies were recovered by the various rescue parties they were numbered by the Police officials at the main tunnel-entrance, the following being the order in which they were brought to the surface. The names of those men whose bodies were identified are marked thus †. These numberings have been used on the plans.

1 † T. J. Evans	} No. 1 to 3, inclusive, recovered from Cross- Measure Drift.
2 † M. O'Grady	
3 † N. Ruming	
4 † R. Thompson	
5 † T. Hawes	
6 † T. Adams	
7 † L. Joachimzik	
8 † F. Gielis	
9 † S. Liversidge	

10 † H. Bollen
11 † P. Minogue
12 † J. Carney
13 † T. Camm
14 † J. Long
15 † T. Hutton
16 † F. Pattinson
17 † T. Taylor
18 † F. Latimer
19 † R. Leary
20 † E. Hutton
21 <i>Unknown</i> —Probably Geo. Hawes
22 † E. Riseley

Nos. 10 to 22, inclusive, recovered from Beattie's Machine Wall, North Side Workings (on bottom seam).

23 <i>Unknown</i> —Probably J. Reay
24 † P. Marks
25 † J. Drier (junior)
26 † J. Drier (senior)
27 <i>Unknown</i>
28 <i>Unknown</i>
29 <i>Unknown</i>
30 † J. Regan
31 <i>Unknown</i>
32 † H. Harrison
33 <i>Unknown</i>
34 <i>Unknown</i>
35 <i>Unknown</i>
36 † J. Nixon
37 † H. Jackson

Nos. 23 to 37, inclusive, recovered from Pick Wall, South Side Workings (on bottom seam).

38 † W. C. Cole
39 † G. James (junior)
40 † S. McColm
41 <i>Unknown</i> —Probably H. Martin
42 † F. Butcher
43 † J. O'Boyle
44 † R. Spiers
45 † J. Henry
46 † J. Carson
47 † H. Mansfield
48 <i>Unknown</i> —Probably J. Lawson
49 † J. O'Halloran
50 † J. Fogarty

Nos. 38 to 50, inclusive, recovered from Top Seam Workings.

51 † W. Ostle
52 † W. Thompson
53 <i>Unknown</i>
54 <i>Unknown</i>
55 † W. Fisher
56 † S. Seymour
57 <i>Unknown</i>
58 † T. Adcock
59 <i>Unknown</i>
60 † R. McCormack
61 † J. Lomax
62 † T. E. Parkinson
63 † T. Hynes
64 † A. Casloff
65 † E. Morgan
66 † R. Whelan
67 † W. Smithson
68 † A. Hall
69 <i>Unknown</i> —Probably R. Templeton
70 † F. Grant

Nos. 51 to 70, inclusive, recovered from Fitzpatrick's Machine Wall, South Side Workings (on bottom seam).

71 *Unknown*—Probably J. Loughrie. No. 71 recovered from No. 12.

72 † J. Fitzpatrick
73 † P. Conopia
74 † G. James (senior)

Nos. 72 to 74, inclusive, recovered from depleted workings at the top of Fitzpatrick's Machine Wall.

One body still remains in the workings (on 20th September, 1921), probably in the No. 1 Gate road above the straight-in road on the bottom south level.

The accompanying list shows the cavil for places, to commence on 19th September, the morning of the explosion :—

## CAVIL FOR 19TH SEPTEMBER, 1921.

	<i>Contractors.</i>	<i>Shiftmen.</i>
<i>Main Dip</i> .. ..	Joachimzik and Adams	H. Bollen .. .. Miner
<i>Top Seam</i> .. ..	Martin and Henry	P. Minogue .. .. Miner
	Fogarty and O'Halloran	R. Leary .. .. Miner
	Spiers and Boyle	S. Liversidge .. .. Miner
	Mansfield and Lawson	J. Carson .. .. Miner
<i>Taylor's Wall</i> .. ..	F. Pattinson and T. Hutton	F. Butcher .. .. Miner
	Camm and Long	J. Fitzpatrick .. .. Machineman
	Riseley and Hawes	P. Conoplia .. .. Machineman
<i>Pick Wall</i> .. ..	Jackson and Nixon	T. Taylor .. .. Machineman
	Drier and Son	J. Beattie .. .. Machineman
	McIntyre and Cunningham	G. James (senior) .. .. Miner
	Kerr and Butler	G. James (junior) .. .. Wheeler
	Harrison and Johnstone	T. Adcock .. .. Miner
	Mounsey and McColm	R. McCormack .. .. Wheeler (youth)
	Carney and Turriff	P. Marks .. .. Wheeler (youth)
<i>Fitzpatrick's Wall</i>	Hall and Smithson	J. Reay .. .. Wheeler (youth)
	Ostle and Bell	F. Gielis .. .. Wheeler (youth)
	Lomax and Hynes	E. Hutton .. .. Wheeler (youth)
	Morgan and Casloff	F. Latimer .. .. Wheeler (youth)
	Templeton and Loughrie	R. Thompson .. .. Miner
<i>Top of Pick Wall</i> .. ..	R. Pattinson and W. Thompson	T. Hawes .. .. Wheeler
	Stevens and Swift	M. O'Grady .. .. Wheeler
	Fisher and Seymour	N. Ruming .. .. Wheeler
<i>No. 21 Bord</i> .. ..	Regan and Whelan	W. Cole .. .. Winchmen

T. J. Evans, Mine Manager  
Frank Grant, Deputy  
T. E. Parkinson, Deputy

The following notes are taken in the order given below :—

## CROSS-MEASURE DRIFT.

The cross-measure drift (650 ft. in length) has suffered very severely, being the main intake for air from the surface. The mine timbers were blown down in all directions, and numerous local falls from the roof occurred. The deputy's cabin was completely wrecked, the timber being splintered to matchwood for the most part. The anemometer was smashed to pieces, as were also a couple of safety lamps. We were fortunate in being able to recover from the wreckage here the mines inspection record book, practically undamaged. Scorching of paper was observed. All the earthy material over the timber at the portal collapsed, and heavy machinery outside the portal was wrenched from its base and hurled down the hillside. The grass and trees outside have been burnt and scorched for a considerable distance. The Mine Manager, T. J. Evans (No. 1), was rescued, badly injured, at the deputy's cabin, whilst the body of N. Ruming (No. 3) was found in the daylight near the portal, and that of M. O'Grady (No. 2) was located near Evans, in the middle of the haulage road.

## TOP SLIT (LEFT)—SOUTHERN WORKINGS.

The brick stopping close to the top of the main dip has been blown to the south with violence for a distance of 20 ft. Further in, the brick deflector has been blown uphill with violence. The brick wall and doors in the drift, on the right-hand side of the main haulage road, old top level, were blown northerly (*i.e.*, outwards from the dip) with great violence.

## MAIN DIP.

The roof has fallen in at the brow over an area of 6 ft. by 8 ft. to a height of 1 ft. since rescue operations ceased.

The first brick stopping on right-hand (northern) side of the dip, below the brow, was blown inwards (*i.e.*, northerly), as also were the Nos. 2, 3, and 4 brick toppings down the dip on the same side. A recent fall of the shale roof, some 6 in. thick, has occurred below the No. 4 stopping. Immediately adjoining the top (east)

side of the No. 1 left entrance into the top seam workings the roof has fallen for about 15 ft. by 20 ft. by 2 ft. in thickness. The No. 5 heading on the right-hand (northern) side of the dip has no brick stopping, and no inspection was made beyond the brattice, the same remarks applying to the No. 1 left-hand opening immediately opposite, as also the No. 6 right-hand side opening.

At the middle slit (where the body of R. Thompson, No. 4, was found) the roof has shelled off—particularly into the southern workings. No brick stoppings were used hereabouts. No damage was noticed along the dip below where Thompson's body was found for a distance of 30 yds. with the exception of two sets blown over, but at the No. 7 right-hand side opening the brick stopping is now lying on the rail side owing to having been held up by the pack wall beyond it.

Along the dip, at the first old workings on the southern side below the middle slit, much destruction of timber work is in evidence in addition to shelling off of the roof, but a portion of the latter fall has taken place subsequent to cessation of the rescue operations.

At the bricked-in transformer set along the north side of the dip the brickwork was shattered and the transformer slightly twisted from its bed in an uphill direction towards the main entrance. The fusion plug is still in position here.

At No. 8 brick stopping on the north side, adjoining the downhill side of the transformer room, the bricks have been blown inwards (northerly). A telephone has since been installed between the transformer room and the brick stopping on the right-hand side.

The next (No. 9) north side opening down the dip, about 60 ft. down, along the dip below the No. 8 stopping, was known during the rescue operations as No. 10 right, and leads to Beattie's machine wall; this level is described below some 20 ft. down the dip from No. 10, and on the opposite (south) side is another heading leading to Fitzpatrick's machine wall, which is also described in detail below. The body of Thos. Hawes (No. 5) was found on the left side of the dip immediately below the entrance to Fitzpatrick's wall.

Immediately below this entrance; and down the dip, the timber is intact for about 40 yds. down the dip, with the exception of six sets blown down. No falls occurred in the roof along this section.

At the next right-hand (north) opening, known as No. 12 Right, a road leads north to the bottom of Beattie's wall; the roof here has fallen in subsequent to the explosion.

A very slightly scorched old electoral roll (for Cunningham) was seen on the floor of the dip at the entrance to No. 12 Left (known as Taylor's flat), which latter leads to the pick wall face.

The bodies of two wheelers, viz., F. Gielis (No. 8) and S. Liversidge (No. 9), were found on the far (south) side of two full trucks of coal, some 20 ft. south from the dip along this lastmentioned No. 12 Left.

About 50 ft. below the entrance to No. 12 Left is located the bottom wheel of the endless-rope haulage, and the bodies of two men, viz., T. Adams (No. 6) and L. Joachimzik (No. 7) were recovered from on the top of timber here just below the wheel.

Bodies found in these northern workings were removed from the following locations:—

H. Bollen, P. Minogue, and J. Carney (Nos. 10, 11, and 12, respectively) from the bottom of the small jig plane on No. 10 North. T. Camm, J. Long, T. Hutton, F. Pattinson, and T. Taylor (Nos. 13, 14, 15, 16, and 17, respectively) from the main jig plane from the No. 10 level down to No. 12. An unidentified man (probably Geo. Hawes) and E. Riseley (Nos. 21 and 22, respectively) were found lying in a small dead-end on the southern side of the jig, immediately below the No. 10 level.

This main haulage road, which is at right angles to the strike of the coal seams, commences at a grade of 1 in 3, but nearer the bottom averages about 1 in 7.

#### NORTH SIDE (RIGHT-HAND) WORKINGS.

A marked feature of most of the workings and roads in this portion of the mine is the amount of scorching and burning observable, indicating great heat hereabouts during the course of the explosion, though the presence of unburnt papers, &c., in places suggests strongly that the flames leaped forward in long bounds.

At the bottom of the jig road on Beattie's machine wall, about 300 yards northerly from the dip, a body was found, and the crib wrapping-paper was unburnt. Twenty feet further in (to the north) a billycan was found quite undamaged. The body found here was almost certainly that of a wheeler; the wrecked truck lies alongside where the body was found.

The electrically operated coal-cutting machine (long-wall machine) is intact at the bottom of this wall. Apparently the operators were engaged at the time in the work of replacing the "picks" on this machine, one blunt "pick" being still in position. A couple of skips, half filled with coal, were found close to the machine. No paper was burnt hereabouts nor were the old clothes scorched.

At the No. 2 gate on Beattie's machine wall, a roll of paper was found unscorched, and the place is quite undisturbed. Opposite this opening, and on the southern side of the jig plane from Beattie's wall, two bodies were located in a dead-end about 30 ft. south of the jig plane. Three other bodies were recovered from the jig plane at the entrance to the lastmentioned dead-end. No bodies were found actually at Beattie's face.

At the top gateway on No. 10 a brattice on the main level has been blown out in the direction of the dip, but with little or no violence. About 30 ft. south of this another brattice stopping has been blown the same way. Remnants of the brattice cloth on a pig-stye nearer the dip show the threads directed in the same (southerly) direction.

The roof along the No. 10 road shows no sign of either violence or extreme heat. The timbers are heavily coated with a sooty dust which has resulted from the explosion.

The No. 10 heading, which commences at the north side of the dip and extends northerly to Beattie's wall, shows the following:—The first brick stopping from the dip has been blown violently inwards (*i.e.*, northerly). Apparently the abovementioned brattice cloths now on the south side have been driven back by the returning air (reversion) after the main explosion wave subsided.

At the entrance to the No. 5 gate on the jig road, a coil of fuse was found burnt out. The brattice stoppings on the Nos. 5 and 6 gates were scorched.

#### SOUTH (LEFT) WORKINGS.

Proceeding towards the top seam along the slit south from the main dip, it was observed that a truck of coal-bearing token No. 3—is standing just inside the level. A fall of roof some six inches thick occurred over a length of, roughly, 20 ft., commencing at a point 30 ft. in from the dip. A further fall of roof occurred over a length of 12 ft. by a height of 3 ft. along the middle of this slit road into the stone drive.

#### STONE DRIVE.

In the stone drive connecting the top and bottom seam workings the appended data were collected:—

Twenty-five feet along this stone drive, going westerly, there is an extensive fall from the roof as well as a fall from the floor of the drive into an old bord below on the bottom seam. This fall is roughly 20 ft. in length and up to 3 ft. in height, and the cavity, which commences at the eastern end of the fall, is from 6 to 8 ft. in length for the full width of the drive. Ten feet further along the drive a second smaller fall occurred.

From just beyond this lastmentioned fall to as far as the interception of the top seam the timbering is intact. The electric hoist used for working the top seam dip appears to be undamaged. The body of W. Cole (No. 38) was found on the northern side of the drive at a point 4 ft. west of the winch. A watch was found on the winch, and showed that it had stopped at 8.36. This electric winch could not have been in actual operation at the time of the explosion, seeing that the empty rope is at the bottom and no skips had been hooked on. At the end of the slit, where the stone drive turns away to the right to the top seam, there are two doors on the bottom seam. The first one has had part of its brickwork blown southerly, and the stopping at the bottom of the main upcast is blown easterly against the rib.

#### TOP SEAM.

A body was found in the right-hand heading on the road 40 ft. (north) from the stone drive. The timber hereabouts is intact.

The bodies of R. Spiers (No. 44) and J. O'Boyle (No. 43) were recovered in the No. 1 bord, which latter is the most northerly bord working on the top seam, at a point at the face about 50 ft. down the right-hand heading. None of the timbering has been disturbed in this area and, in addition, there is an absence of signs of violence.

Along the wheeling road from the lastmentioned working place to the straight-in dip off the stone drive much very charred newspaper fragments may be seen, but the timber is apparently only slightly scorched and quite intact. A much smaller volume of dust than usual has been deposited in this section. A skip was thrown off the line on the flat roadway here.

At the exit from the lastmentioned roadway into the straight heading at the first wheeling road to the right below the brow, the electric coal-cutting machine

junction box had been thrown down and appears to have been blown easterly. At this point the cable leading to the machine from the junction box is hanging over a cap of timber and shows decided heating from the roof to within six inches of the floor, all the charring here being on the uphill (*i.e.*, easterly) side of the cable. A plug of gelignite lying on the floor within two feet of this cable shows the paper wrapping on the upper side to be charred. The tape insulation at the connection with the switch (or junction box) was charred in all three cases to brittleness.

At the second bord on the right-hand side of the straight-in dip three bodies were recovered at a point two yards below the right-hand turn into the bord. It is practically certain the names of the men found at this point were F. Butcher (No. 42), H. Martin (No. 41 ?), and an unidentified man (No. 40)—probably Beattie.

At the face on this second right-hand bord the bord-and-pillar (electric) machine was situated; it is set in cutting at two yards from the downhill corner; the motor had clearly been left running when the men left their machine hurriedly, as the controller was found set at "full feed" and the machine is in the absolutely correct position for resumption of cutting. Two of the lastmentioned three men were the operators of this machine. These men's bodies were discovered 16 yards away from their machine. The top corner of the machine had been blown off and hurled 3 ft. uphill (*i.e.*, easterly). The cable connection to the plug exhibits considerable charring right in to the plug. The coal dust now coating the machine-trolley is coked in places, and that covering the rib side and the props on the road towards the dip road is also coked on the machine (southern) side. A partly emptied tin of friction grease (for the machine) has been charred around its outer edges. A waistcoat was found to have been rent into two halves, and a number of wax matches (in the usual small cylindrical cardboard container) in a pocket of the vest had been fired, though some of the matches had failed to ignite. The dust on the machine-trolley, and also that on the intake air side of the props and chocks, was found to have been converted into coke, especially near the roof.

The electric cable was somewhat charred along the length of the machine-trolley, about 12 ft. back from the machine. Both the trailing cable lastmentioned and also the travelling cable suffered charring.

At the bottom bord on the straight-in dip, tools (identified as belonging to H. Martin, No. 41 ?) were located. This man's body was recovered from a point 6 yds. uphill from his working face. The bord had been cleaned out preparatory to cutting, and the miner had apparently been engaged in squaring up his bord.

At the bottom bord on the left-hand side from the straight-in dip, which cuts off the left-hand heading, the following was observed:—

A full truck stands on the road in the face; the bord is machine-cut. No firing of explosives had been done, and the sole work appears to have been confined to filling slack from the cutting. Papers hereabouts are scorched. The body of J. Henry (No. 45) was located here.

Proceeding uphill towards the new shaft towards the old workings, we observed that in the main wheeling road to the top bords a small fall had taken place in the roof at 10 ft. in from the straight-in dip, near the junction of the stone drive.

At the bottom of the old rise wheeling road an empty skip was found with broken harness and limbers thrown with great violence against the side of the truck; the pony's collar, however, was found at least 30 yds. uphill (southerly) from himself, with the straw stuffing burst out on one side. The bridle still remained on the pony's head. The pony lies on the roadway

at a point opposite the staple shaft, with his head pointing northerly towards the empty skip. The body of the lad who was driving the pony (Geo. James, junior, No. 39) was recovered at the entrance to the left-hand heading six yards down the latter (southerly) from the pony. A very deep cut was noticed on the pony's withers, suggesting either that his backbone had been violently broken or else that he had been thrown violently up against the roof timbers or, possibly, sideways against the pack wall. From close to where the pony lies on the roadway up to the first bord on the right-hand side the timbering has not suffered, and there is a marked diminution observable in the quantity of sooty dust deposited in these workings, as compared to those just described.

From the right-hand turn-off from the main road, at a distance of 20 yds., two bodies, *viz.*, those of H. Mansfield (No. 47) and an unidentified man—probably Lawson (No. 48 ?) were found. These men worked on this bord at a distance of at least 120 yds. from the place whence their bodies were recovered; they had rushed back along the wheeling road from the face against the incoming fresher air, and one of them had brought his water-bag with him. At 34 yds. further in towards the face, paper was not even charred. Much brownish dust (coked dust ?) covers the timbers and roadways here. A watch, found inside a crib tin, was stopped at 1.45, and had probably been more or less protected from the explosion shock by the cushion of food. At this uphill bord, a truck, which had been filled by the miners, still stands at the face. The brattice stopping leading to this last bord is intact, and there are no noticeable signs of violence.

In the second right-hand bord further uphill, about 20 yds. from the main straight-in road, there is a newspaper on the roadway showing signs of severe burning. Just beyond this point, above a junction box, a quantity of newspaper stacked on top of a cap shows much burnt edges, but beyond this point to the face no paper can be seen which shows any sign of having been affected by fire. A (filled) truck of coal is standing at the face. The two men—J. O'Halloran (No. 49) and J. Fogarty (No. 50)—who were working at the lastmentioned bord followed the pack wall around until they emerged into the main wheeling road, which latter they then followed against the air (*i.e.*, downhill towards the dip), a total distance of 116 yards. For the first portion of their journey they had perforce to follow the outgoing air to as far as the main road, when, as above stated, they rushed in the direction of the intake air.

#### SOUTH (LEFT) WORKINGS ON BOTTOM SEAM.

*Taylor's Flat and the Pick Wall.*—The bottom heading on the left side (south) from the main dip is known as No. 12 Left or Taylor's flat. At about 300 yds. in from the entrance a large fall of brushing has occurred, extending along the lower side of the heading. A further 30 yds. in, there is a jig plane which runs uphill (*i.e.*, easterly). Continuing our inspection along the straight road we noted where two bodies had been recovered on the road, and the filled truck was found off the road at the face. This latter portion of the mine is known as the Pick Wall face, and but very little, if any, shooting is usually required along this wall. A fall of brushing right at the face had buried one man to a depth of 4 ft.; his body was unidentified (No. 71).

At 12 yds. uphill (easterly) along the jig plane from the lastmentioned main road, the body of Jas. Reay (No. 23) was found, whilst that of Percy Marks (No. 24) was located in the first gateway below the jig along the jig plane, this man being found only 20 ft. from his machine. No violence was observable here. Two bodies were recovered in the face at the topmost working place on the pick wall. Along the level to this face, paper was unburnt.

In the second gate on the left from the top of this jig plane a couple of bodies were recovered at the face, whilst two more were found in the third gate back from the face on the roadside. Two other bodies were taken from near the face at the fourth gate. At the fifth gate from the top (or the first from the bottom roadway) the body of a man was got in the face in front of a truck; a large fall from the roof here fell on the truck and behind it and extends down to the No. 1 straight road. Some 6 ft. of the roof has come down, and a severe stench is arising from under this fall of rock near the buried truck at the end of the roadway. Presumably the man (Butler?) was engaged filling the truck at the time of the disaster. Owing to an incorrect tally of the bodies at the portal of the main tunnel, this body was not recovered, and the rescue parties returned from Mount Mulligan to their homes. It will be dangerous to attempt the removal of this sole remaining body until the large fan has been again put into commission and the roof of the working place where he was killed is caught up safely by timbering.

Trucks either full or partly filled were found in every one of these Pick Wall working places.

*No. 11 or Pump Flat.*—Leading into Fitzpatrick's machine wall. The first (wooden) door, about 100 yds. in from the main dip, has been blown outwards (towards the dip) with violence, though the lighter splinters of pine and fragments of the old brattice stopping between the door frame and the wall have been blown inwards again by reversion. The second (wooden) door, located some 35 yds. further in, was completely demolished, and all the small timber composing it shattered into matchwood; a heavy iron hinge was found at a point 17 yds. towards the dip from this doorway, but a quantity of fine splinters was found driven behind a prop against the pack wall in the opposite (inwards) direction by reversion. A notably greater quantity of brown (coke?) dust remains on the southern side of the boards remaining in the doorway at the floor than is present on the northern (outwards) side.

Near the bottom the of monkey shaft, which leads from the top seam to the bottom seam workings, are two switch boxes used on the cables leading to both the bord-and-pillar machine and also the longwall machine on Fitzpatrick's wall. The switch on the cable leading to the bord-and-pillar machine has been blown downhill (in the direction of the dip). This piece of heavy machinery could hardly have been torn away from its support and thrown down into its present position except by some violent explosive force, as the returning air current would probably not be sufficiently powerful to wreck such a substantial object.

The brushing on the bottom side of the road is settling into the pack wall, but there are no signs of this having taken place on the top side; the same remark also applies to the roadway on Taylor's flat.

At the flat, or first turn-out, on this road the fragments of brattice cloth and paper have been blown against the timber from the south side. The first truck on this siding has had its northern end broken in, whilst the southern end has escaped damage; this particular truck could not conceivably have been bumped into anything solid, and the damage mentioned is clearly due to the force of the explosion itself. Some 20 ft. further in on this siding another truck has been similarly damaged at its northern end and is also now standing nearly vertically—jammed against the roof—with its northern end down on the rails. A third truck has been jammed against the second one just referred to, and its northern end is touching the roof whilst the southern end is down on the rails; the bottom of this third truck is badly damaged. A fourth truck alongside is lying up against the (western) rib. The fifth truck has been shifted bodily from the "empty" road over on to the "full" road, but has otherwise suffered but

little damage. Near these trucks may be seen a stack of mine props which have all been pushed over in the direction of the dip (*i.e.*, northerly).

Following this straight road to the top end of the pick wall, beyond the road leading to the left (*i.e.*, east to the Fitzpatrick wall) two bodies were found at a point 80 yds. in along the main roadway. The tram-line to near the place where these bodies were recovered has been lifted up bodily about 9 in. over a length of about 25 ft. by the explosion.

At 10 yds. in along the road from the side wheeling road there is a badly shattered track; the papers here are not burnt. Fuse, tokens, and a half-plug of gelignite were found by us. There are abundant signs of violence hereabouts, but burning does not appear to have taken place.

Immediately beyond this lastmentioned damaged truck, the pack wall has been blown out of the gob on the eastern side on to the roadway, with very great violence. There are no signs whatever of recent work having been carried on in this working-place at the end of the main road.

At the first gateway on the short rise wheeling road there has occurred a violent disturbance of the gob above (topside of the road), blowing the packing into the road for a length of 50 ft. This has very much the appearance of having been produced by a violent blast coming downhill at this point. No signs of recent work having been carried on can be seen in the face at the end of this road.

At the No. 2 gate there is a truck nearly filled with coal in the face, which latter is 40 to 50 ft. behind the No. 1 gate road abovementioned. The men engaged here must have been getting coal. A "monobel" cardboard wrapper is lying at the face much scorched. The stalling under the brushing near the working face is in perfect order.

Outside this gateway, on the rise wheeling road, a coil of new fuse has been completely burned out, though the paper alongside has been merely scorched (due to the ability of fuse to burn in an atmosphere devoid of oxygen.)

On the road, at the entrance of the third gateway, a watch was found in a vest; this watch had stopped at 1.57. An empty truck standing just inside the gateway has not been damaged, but is off the rails.

At the face, in the fourth gateway, a body was found. Explosives are lying spilt near the face, including loose caps and gelignite (Nobel's).

At the last bord on this road a truck of coal had been loaded. No signs of violence or burning are observable. One body was recovered from here.

Continuing our inspection at the first left-hand turn-off the main (pump flat) road, we noted that at 50 yds. up this left-hand road a body was found on the top side of an empty truck. This man must have been engaged pushing an empty truck uphill at the moment when the explosion occurred; the truck backed downhill over him. A further 30 yds. up the hill some of the ironwork forming portion of this truck was found, much battered about, on the floor of the level (going easterly). It is probable that at the moment of the explosion the truck was near to the point at which the ironwork now rests, and that the truck afterwards ran downhill over the man.

At the end of the No. 4 gateway from the last-mentioned road may be seen an empty truck, tools, burnt paper, and scattered explosives. The coal face has not been cut by the machine.

At the end of the next gateway uphill two bodies were found by the rescue parties. An empty truck here shows both ends smashed.

At the No. 6 gateway the machinemens' tools are stacked at the entrance, and have not been disturbed.

At the No. 7 gateway no truck had been brought up nor had the coal been cut. A chock on the uphill side under the brushing near the face shifted slightly downhill. No sign of burning hereabouts.

At the No. 8 gateway there are no signs of violence, and all the tools are lying about. The bodies of T. Hynes (No. 63) and J. Lomax (No. 61) were found near a full truck of coal close to the face. At the entrance to this No. 8 gateway from the main road, newspaper was scorched.

At the No. 11 gateway, which is the topmost place on Fitzpatrick's longwall machine run, the machine was not in work, the men being absent at the time of the explosion procuring rails, but was set ready for sumping in. The cover was off the gear-box and blown uphill 30 yds. The cable attached to this machine was not affected in the slightest degree. There are no signs of violence here, and none of the timbering has been disturbed. Bright coal is showing in the face; this coal has clearly fallen since the explosion. A cap and lamp were found blown back from the face into the pack wall (easterly). J. Fitzpatrick (No. 72) and P. Conopia (No. 73) operated the machine, but the bodies of these men were recovered many hundred feet away in depleted workings, whither they had gone for rails, as stated previously. *This is the first indication seen by us of severe force uphill*, all the other lines of extreme violence below this point having followed the face downhill. Two bodies were recovered from this No. 11 gate working place. Paper lying about was unburnt. The tools here are stacked in the position they were in when brought in by the party. A full packet of "monobel," detonators, and a coil of fuse were seen here undamaged. The only undercut coal on this machine was on the top (eastern) side of this gate road.

At the top end of the rise wheeling road the body of F. Grant (No. 70) was recovered from beneath a fall of rock on the roadway. No violence was noticeable here apart from the fall of roof.

In old workings at the top left-hand side of Fitzpatrick's wall, G. James (senior), P. Conopia, and J. Fitzpatrick (Nos. 74, 73, and 72 respectively) were lifting rails when they became alarmed by the explosion and hurried down the return-air course till they were finally overcome, the nearest body being 80 yds. distant from the point whence they fled, and roughly 20 yds. separating the bodies of each of the other two men. No damage was caused here.

#### VENTILATION FAN.

The large turbon fan at the mouth of the fan drift was wrenched from its supports with great violence and the solid 9-in. concrete wall of the fan drift was completely shattered, in spite of the fact that a light wooden roof had been provided for this drift to allow for any sudden disturbance in this air-course.

#### FIRE IN THE WORKINGS.

The general manager, Mr. Watson, considered that in view of the volume and kind of smoke which poured out at first from the fan drift, and also that a slight air current had been maintained during the period which elapsed before temporary fans could be installed, that there must assuredly be a fire burning near the fan drift. On the morning of Saturday, 24th September, before commencing our detailed examination of the workings, we made a search, in company with Messrs. J. Harris (chief engineer) and W. Matthews (coal miner) for such possible fire, and quickly located one at the top slit on the bottom seam, in close proximity to the position forecasted by the general manager, viz. : in the return airway. The coal was on fire for a length of 15 ft. on the southern rib.

Recognising the great danger to the mine of a fire in such a position, we immediately commenced work and succeeded in ultimately extinguishing it by means of completely digging out the burning and heated coal and carrying it away in buckets to a safe place in a stone drive near by on the fan drift; in this work we were assisted by yourself.

On Monday, 26th instant, the site of the fire (shown on the plan accompanying these notes) was again carefully inspected by us, in company with Mr. Watson. Tests then conducted by the latter gentleman with a hydrogen lamp, in both the fan drift and also at the top of the demolished air-crossing over the main dip, yielded entirely negative results as regards the presence of firedamp at either of these locations.

As careful an examination as possible was made by us of the whole of the underground workings of the colliery, but we could find no further trace of fires still burning anywhere throughout the mine.

We have, &c.,

E. J. LAUN,  
Inspector of Mines.

E. CECIL SAINT-SMITH,  
Government Geologist.

ATTACHED.

Plans of top seam workings, showing air circuits, falls of ground, location of such bodies as could be definitely placed, and blown-out air stoppings and doorways. (*Vide Exhibits 8 and 9.*)

#### Exhibit 3.

STATEMENT TENDERED BY C. V. LEWIS,  
ACCOUNTANT, CHILLAGOE LIMITED, MT.  
MULLIGAN, GIVING NAMES OF MEN IN  
MINE AT TIME OF EXPLOSION ON 19<sup>TH</sup>  
SEPTEMBER, 1921, AND CAVIL LIST OF  
SAME DATE:—

#### NAMES OF MEN.

1.	T. J. Evans	.. ..	Mine manager
2.	F. Grant	.. ..	Deputy
3.	T. E. Parkinson	.. ..	Assistant deputy
4.	L. Joachimzik	.. ..	Contract miner
5.	T. Adams	.. ..	Contract miner
6.	H. Martin	.. ..	Contract miner
7.	J. Henry	.. ..	Contract miner
8.	J. Fogarty	.. ..	Contract miner
9.	J. O'Halloran	.. ..	Contract miner
10.	R. Spiers	.. ..	Contract miner
11.	J. O'Boyle	.. ..	Contract miner
12.	H. Mansfield	.. ..	Contract miner
13.	J. Lawson	.. ..	Contract miner
14.	F. Pattinson	.. ..	Contract miner
15.	T. Hutton	.. ..	Contract miner
16.	T. Camm	.. ..	Contract miner
17.	J. Long	.. ..	Contract miner
18.	E. Riseley	.. ..	Contract miner
19.	G. Hawes	.. ..	Contract miner
20.	H. Jackson	.. ..	Contract miner
21.	J. Nixon	.. ..	Contract miner
22.	J. Drier (senior)	.. ..	Contract miner
23.	J. Drier (junior)	.. ..	Contract miner
24.	D. McIntyre	.. ..	Contract miner
25.	J. Cunningham	.. ..	Contract miner
26.	W. Keir	.. ..	Contract miner
27.	D. Butler	.. ..	Contract miner
28.	H. Harrison	.. ..	Contract miner
29.	W. Johnstone	.. ..	Contract miner
30.	G. Mounsey	.. ..	Contract miner
31.	S. McColm	.. ..	Contract miner

32. J. Carney .. .. .	Contract miner	54. J. Fitzpatrick .. ..	Machineman
33. G. Turriff .. .. .	Contract miner	55. P. Conoplia .. .. .	Machineman
34. A. Hall .. .. .	Contract miner	56. F. Butcher .. .. .	Machineman
35. W. Smithson .. .. .	Contract miner	57. R. Leary .. .. .	Shiftman miner
36. W. Ostle .. .. .	Contract miner	58. S. Liversidge .. .. .	Shiftman miner
37. I. Bell .. .. .	Contract miner	59. J. Carson .. .. .	Shiftman miner
38. J. Lomax .. .. .	Contract miner	60. G. James (senior) .. ..	Shiftman miner
39. T. Hynes .. .. .	Contract miner	61. T. Adcock .. .. .	Shiftman miner
40. E. Morgan .. .. .	Contract miner	62. H. Bollen .. .. .	Shiftman miner
41. A. Casloff .. .. .	Contract miner	63. R. Thompson .. .. .	Shiftman miner
42. R. Templeton .. .. .	Contract miner	64. P. Minogue .. .. .	Shiftman miner
43. J. Loughrie .. .. .	Contract miner	65. W. Cole .. .. .	Winchman
44. R. Pattinson .. .. .	Contract miner	66. G. James (junior) .. ..	Wheeler
45. W. Thompson .. .. .	Contract miner	67. P. Marks .. .. .	Wheeler
46. W. Stevens .. .. .	Contract miner	68. J. Reay .. .. .	Wheeler
47. T. Swift .. .. .	Contract miner	69. F. Gielis .. .. .	Wheeler
48. W. Fisher .. .. .	Contract miner	70. E. Hutton .. .. .	Wheeler
49. S. Seymour .. .. .	Contract miner	71. F. Latimer .. .. .	Wheeler
50. J. Regan .. .. .	Contract miner	72. T. Hawes .. .. .	Wheeler
51. R. Whelan .. .. .	Contract miner	73. M. O'Grady .. .. .	Wheeler
52. J. Beattie .. .. .	Machineman	74. N. Ruming .. .. .	Wheeler
53. T. Taylor .. .. .	Machineman	75. R. McCormack .. .. .	Wheeler (youth)

## CAVIL FOR 19TH SEPTEMBER, 1921.

	<i>Contractors.</i>	<i>Shiftmen.</i>
<i>Main Dip</i> .. .. .	Joachimzik and Adams	H. Bollen .. .. . Miner
<i>Top Seam</i> .. .. .	Martin and Henry	P. Minogue .. .. . Miner
	Fogarty and O'Halloran	R. Leary .. .. . Miner
	Spiers and O'Boyle	S. Liversidge .. .. . Miner
	Mansfield and Lawson	J. Carson .. .. . Miner
<i>Taylor's Wall</i> .. .. .	F. Pattinson and T. Hutton	F. Butcher .. .. . Miner
	Camm and Long	J. Fitzpatrick .. .. . Machineman
	Riseley and Hawes	P. Conoplia .. .. . Machineman
<i>Pick Wall</i> .. .. .	Jackson and Nixon	T. Taylor .. .. . Machineman
	Drier and Son	J. Beattie .. .. . Machineman
	McIntyre and Cunningham	G. James (senior) .. .. . Miner
	Keirs and Butler	G. James (junior) .. .. . Wheeler
	Harrison and Johnstone	T. Adcock .. .. . Miner
	Mounsey and McColm	R. McCormack .. .. . Wheeler (youth)
	Carney and Turriff	P. Marks .. .. . Wheeler (youth)
<i>Fitzpatrick's Wall</i>	Hall and Smithson	J. Reay .. .. . Wheeler (youth)
	Ostle and Bell	F. Gielis .. .. . Wheeler (youth)
	Lomax and Hynes	E. Hutton .. .. . Wheeler (youth)
	Morgan and Casloff	F. Latimer .. .. . Wheeler (youth)
	Templeton and Loughrie	R. Thompson .. .. . Miner
<i>Top of Pick Wall</i> .. .. .	R. Pattinson and W. Thompson	T. Hawes .. .. . Wheeler
	Stevens and Swift	M. O'Grady .. .. . Wheeler
	Fisher and Seymour	N. Ruming .. .. . Wheeler
<i>No. 21 Bord</i> .. .. .	Regan and Whelan	W. Cole .. .. . Winchman

T. J. Evans, Mine Manager

Frank Grant, Deputy

T. E. Parkinson, Deputy

## Exhibit 4.

STATEMENT TENDERED BY CONSTABLE R. McCLINTOCK, GIVING NAMES OF MINERS ENTOMBED AT MOUNT MULLIGAN COAL MINE ON 19TH SEPTEMBER, 1921, WITH LIST OF DEPENDANTS, WHERE KNOWN :—

Names of Men.	Married or Single.	Name and Address of Relatives or Friends.	No. of Children.	By Whom Identified.
Nevill Ruming .. ..	Single ..	Edward Ruming (father), Koorboora ..	..	M. O'Brien
Robert Thompson .. ..	Single ..	(Parent's address) East View, Clarevale, Newcastle-on-Tyne, England	..	J. Harris
Thomas Hawes .. ..	Single ..	Mrs. Purnell (sister), Mount Mulligan ..	..	N. Smith
Thomas Adams .. ..	Single ..	Miss Adams (sister), Seatthill, Great Broughton, Cocker-mouth, England	..	R. McClintock
Louis Joachimzick .. ..	Married..	Mrs. Joachimzick (wife), Mount Mulligan ..	..	By his wife
Francis Vicar Gielis .. ..	Single ..	Mrs. F. Grainer (sister), Mount Mulligan ..	..	R. McClintock
Sydney Liversidge .. ..	Single ..	Mrs. Liversidge, Balmain Coal Mine, Sydney	..	N. Smith
Herbert Bollen .. ..	Married..	Mrs. Bollen (wife), North Broken Hill ..	Unknown	R. McClintock
Paul Minogue .. ..	..	J. Minogue (brother), Paddington, New South Wales	..	W. McDonagh
J. Carney .. ..	..	Mrs. J. Carney, Iodide Lane, Broken Hill, New South Wales	..	W. McDonagh
Thomas Camm .. ..	Married..	Mrs. Annie Camm, Stanley House, Too-womba	..	R. McClintock
John Long .. ..	..	..	..	R. McClintock
Thomas Hutton .. ..	Married..	Mrs. T. Hutton (wife), Mount Mulligan ..	3	Wife
Frederick Pattinson .. ..	Married..	Mrs. F. Pattinson (wife), Mount Mulligan ..	..	Wife
Thomas Taylor .. ..	Married..	Mrs. T. Taylor (wife), Mount Mulligan ..	2	Wife
Francis Latimer .. ..	Single ..	R. H. Latimer (father), Arthur Terrace, Red Hill, Brisbane	..	N. Smith
Robert Leary .. ..	Single ..	Mrs. G. Leary (mother), Mount Mulligan ..	..	Mother
Edward Hutton .. ..	Married..	Mrs. E. Hutton (wife), Mount Mulligan ..	2	R. McClintock
George Hawes .. ..	Widower	Mrs. Purnell (daughter), Mount Mulligan ..	2	..
E. Riseley .. ..	..	Mrs. Riseley, Gormiston, Hobart, Tasmania	..	W. McDonagh
John Drier (junior) .. ..	Single ..	Mrs. J. Drier (mother), Mount Mulligan ..	..	Mrs. Taylor
John Drier .. ..	Married..	Mrs. J. Drier (wife), Mount Mulligan ..	2	Wife
J. Regan .. ..	..	Mrs. Martha Regan, Broken Hill, New South Wales	..	Ivy O'Leary
Henry Harrison .. ..	Married..	Mrs. H. Harrison, 138 Vine street, Wallsend, England	2	J. Harris
John Nixon .. ..	Married..	Mrs. J. Nixon, Callan Park Asylum, New South Wales	..	Mrs. Hunt
T. Swift .. ..	Single ..	Relatives unknown, arrived here from Wonthaggi	..	Mrs. Hunt
Hugh Jackson .. ..	Married..	Mrs. Jackson, Junction Hotel, Ipswich Road, Brisbane	..	B. McClintock
William Charles Cole .. ..	Single ..	No friends or relatives known .. ..	..	Mrs. Hunt
George James (junior) .. ..	Single ..	Mrs. G. James (mother), Mount Mulligan ..	..	Mother
Samuel McColm .. ..	Married..	Mrs. McColm (wife), Mount Mulligan ..	7	Wife
Frank Norman Butcher .. ..	Single ..	S. Butcher (brother), Mareeba .. ..	..	S. Butcher
James O'Boyle .. ..	Married..	Mrs. J. O'Boyle (wife), Mount Mulligan ..	1	D. Hutton
Robert Spiers .. ..	Married..	Mrs. R. Spiers (wife), Mount Mulligan ..	1	Wife
John Henry .. ..	Married..	Mrs. J. Henry (wife), Mount Mulligan ..	1	Wife
James Carson .. ..	Married..	Mrs. Carson (wife), Wolfram .. ..	..	Mr. Carson
Harry Mansfield .. ..	Divorced	Frank Mansfield, 83 Wilson Street, Redfern, Sydney	..	N. Smith
John O'Halloran .. ..	Married..	Mrs. J. O'Halloran (wife), Wonthaggi ..	..	N. Smith
John Fogarty .. ..	Single ..	James Fogarty, Waratah, Anzac Park, South Kensington	..	R. McClintock
Wilson Ostle .. ..	Single ..	Miss Ostle, Glaster's Cottage, Great Broughton, North Cocker-mouth, England	..	N. Smith
Wilfred Thompson .. ..	Single ..	(Parents' address) East View, Clarevale, Newcastle-on-Tyne, England	..	N. McCormack
William Fisher .. ..	Married..	Mrs. W. A. Fisher, Howard .. ..	..	N. Smith
Sydney Seymour .. ..	Single ..	G. Seymour, Bent Street, Wonthaggi, Victoria	..	Mrs. Hunt
Thomas Adcock .. ..	Married..	Mrs. T. Adcock (wife), Wolfram .. ..	..	A. Tudehope
Robert Templeton .. ..	Single ..	Minnie Barclay Templeton, New Monk-land Cemetery	..	T. Fitchett
Roland McCormack .. ..	Single ..	Mrs. McCormack (mother), Herberton ..	..	R. McClintock
Jack Lomax .. ..	Married..	Mrs. J. Lomax (wife), Mount Mulligan ..	..	Mrs. Lomax
Thomas Edward Parkinson .. ..	Married..	Mrs. T. E. Parkinson (wife), Mount Mulligan	2	Mrs. Parkinson
Thomas Sherlock Hynes.. ..	Married..	Mrs. T. S. Hynes (wife), Mount Mulligan ..	..	J. Hynes (father)
Alic Casloff .. ..	Married..	Mrs. A. Casloff (wife), Mount Mulligan ..	3	Mrs. Casloff
E. Morgan .. ..	Married..	Mrs. Morgan (wife), Chillagoe .. ..	5	M. Smith
Reginald Whelan (or Wheeler) .. ..	..	Mrs. Wheeler, Gormiston, Tasmania (mother)	..	..
William Robert Smithson .. ..	Married..	Mrs. R. Smithson (wife), Mount Mulligan ..	5	Mrs. Smithson
Albert Hall .. ..	..	..	..	Elizabeth Jackson
Frank Grant .. ..	Married..	Mrs. F. Grant (wife), Mount Mulligan ..	..	Mrs. Grant
James Laughrie .. ..	Single ..	Mrs. J. Doran (sister), Wallsend, New South Wales	..	Mrs. Hunt
John Fitzpatrick .. ..	Married..	Mrs. J. Fitzpatrick (wife), left here on a trip to England a few weeks ago	2	W. Conopia
Peter Conopia .. ..	Married..	Mrs. P. Conopia (wife), Mount Mulligan ..	3	Mrs. Conopia
George Doran James .. ..	Married..	Mrs. James (wife), Mount Mulligan ..	5	Mrs. G. D. James
Percy Marks .. ..	Single ..	Mr. J. Marks (father), Railway Workshops, Townsville	..	Joe Harris

## Exhibit 4.—STATEMENT TENDERED BY CONSTABLE R. McCLINTOCK—continued.

Names of Men.	Married or Single.	Name and Address of Relatives or Friends.	No. of Children.	By Whom Identified.
Robert Pattinson ..	Single ..	John Pattinson (father), "Waitara Parade," Hurstville Grove, Hurstville, Sydney	..	Mrs. J. Henry
Duncan McIntyre ..	Married ..	Mrs. D. McIntyre (wife), Mount Mulligan	..	Mrs. McIntyre
Harold Martin ..	Married ..	Mrs. H. Martin (wife), Mount Mulligan ..	4	Not identified
Irving Bell ..	Single ..	Scott Hill, Great Broughton, Cocker-mouth, England	..	Not Identified
John Lawson ..	Single ..	Richard Lewis, care of Mrs. W. Dobbin, Gilmore Estate, Wollongong, New South Wales	..	Not identified
(Correct name, Oliver Lewis)				
William Stevens ..	..	care of Mrs. Schromm, Murray Street, Wonthaggi, Victoria	..	Not identified
James Reay ..	Single ..	Correct address unknown, but arrived here from Wonthaggi, Victoria	..	Not identified
Donald Butler ..	Single ..	Mrs. J. F. Butler, Wynyard, Tasmania ..	..	Not identified
William Johnstone ..	Single ..	Parents, Ashonton, Northumberland, England	..	Not Identified
James Beattie ..	Married ..	Mrs. J. Beattie (wife), Mount Mulligan ..	3	Not identified
James Cunningham ..	Married ..	Mrs. J. Cunningham, 81 Lane Cove Road, North Sydney	..	Not identified
George Mounsey ..	Widower	Children in Melbourne ..	..	Not identified
George Turriff ..	Married ..	Mrs. G. Turriff, Wonthaggi, Victoria ..	..	Not identified
William Keirs ..	Single ..	care of Manager State Mine, Baralaba ..	..	Not identified
T. J. Evans (injured) ..	Married ..	Mrs. Evans, Mount Mulligan ..	1	..
Martin O'Grady (injured)	Single ..	John O'Grady (brother), Bibbohra ..	..	..
George Morrison (injured)	Married ..	Mrs. Morrison, Mount Mulligan ..	..	..

Number of deaths, 75.

Number of bodies recovered, 74.

Martin O'Grady was brought out alive, but died soon after reaching the surface.

T. J. Evans was brought out alive and was removed to Mareeba Hospital, where he died on Monday morning, 26th September, one week after the disaster.

George Morrison was working on the surface near the pit mouth when he was slightly injured by the blast coming from the tunnel mouth.

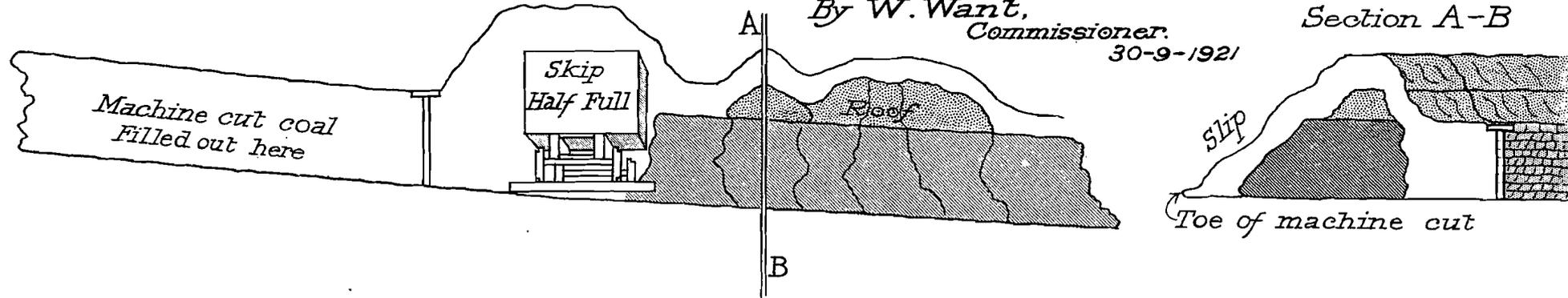
## Exhibit 5.

COPY OF "THE MINES REGULATION ACT OF 1910," CONTAINING SPECIAL REFERENCE TO THE SCHEDULE, PART III.—"GENERAL RULES APPLICABLE TO COLLIERIES ONLY," AND INCLUDING DIVISION I., "VENTILATION"; DIVISION II., "INSPECTION"; DIVISION III., "SAFETY LAMPS"; DIVISION IV., "PROTECTION OF UNDERGROUND WORKINGS"; DIVISION V., "USE OF EXPLOSIVES IN COLLIERIES" (PAGES 59 TO 65 INCLUSIVE).—Not Printed.

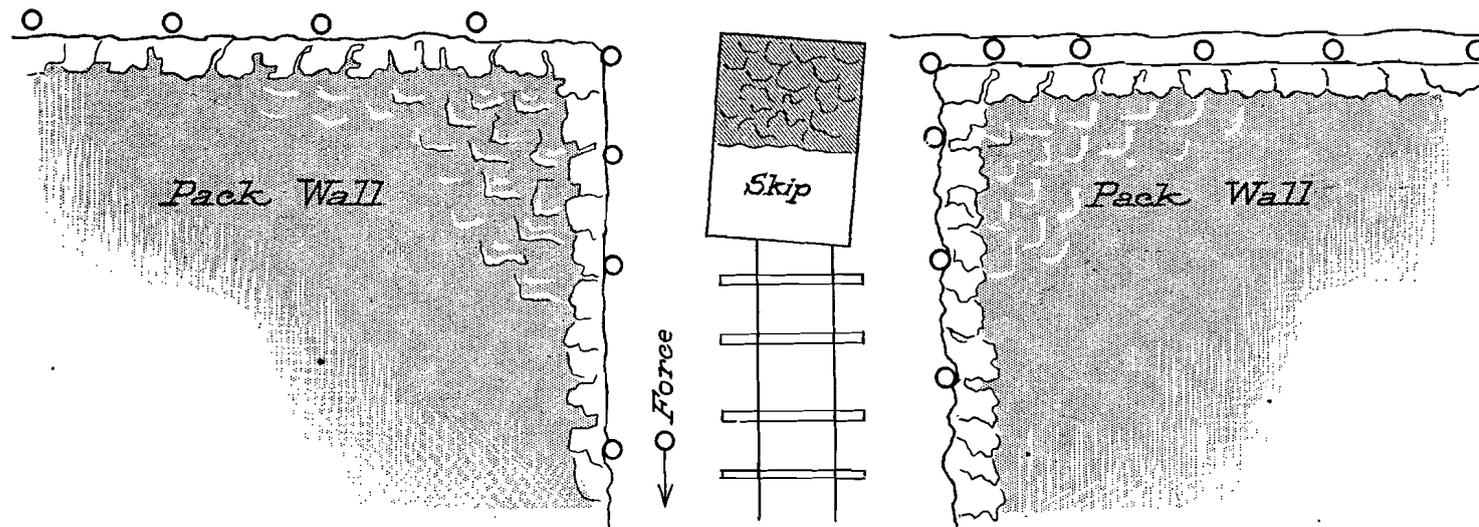
Sketch Showing  
Face of N<sup>o</sup> II Gate Fitzpatrick's Wall

EXHIBIT 6.

By W. Want,  
Commissioner.  
30-9-1921



Face



— Reference —

- Coal. Shown Thus .....
- Stone. " " " " .....
- Stone (Loose) " " .....
- Comminuted area. ....

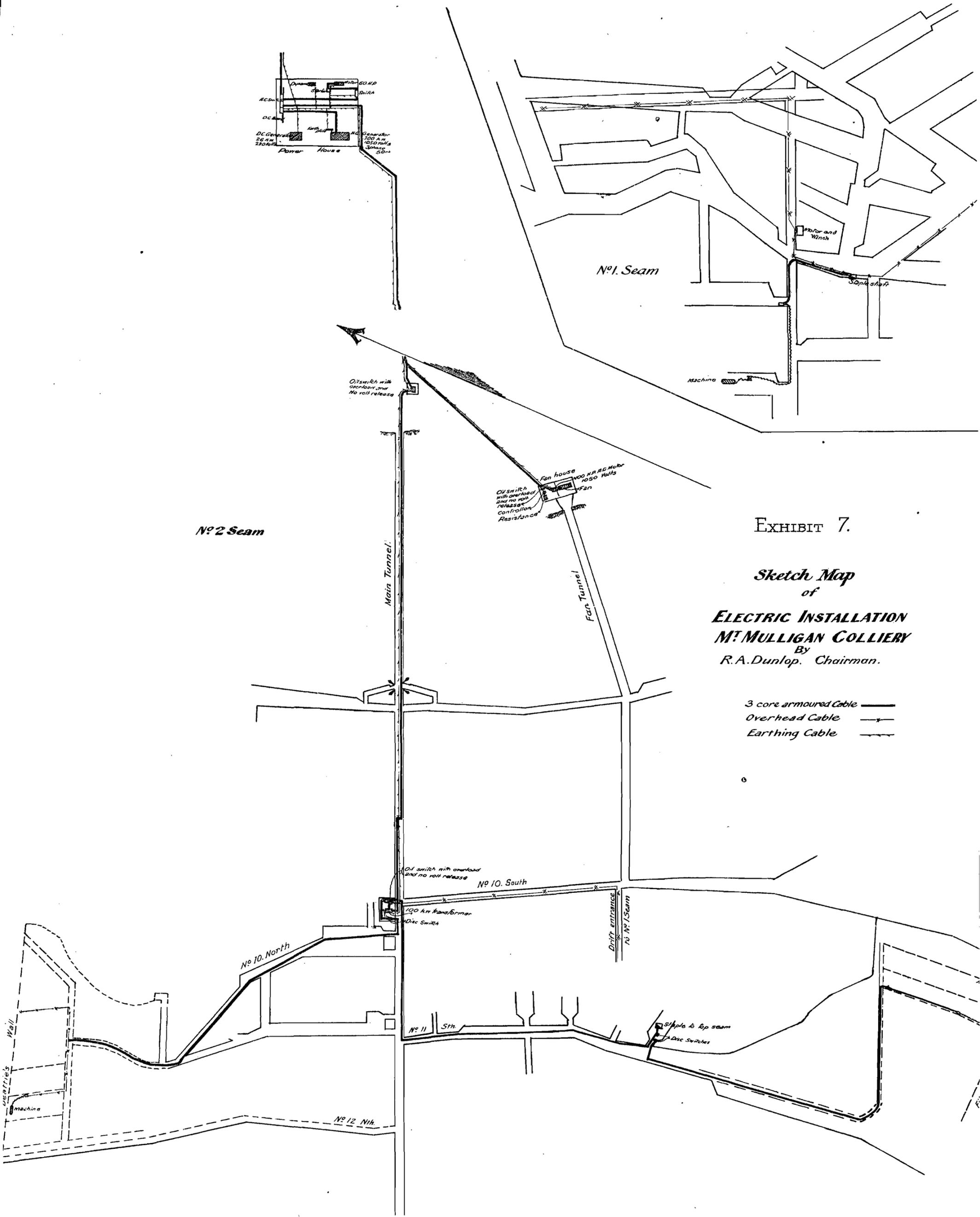


EXHIBIT 7.

*Sketch Map*  
of  
**ELECTRIC INSTALLATION**  
**MT MULLIGAN COLLIERY**  
By  
R.A. Dunlop, Chairman.

- 3 core armoured Cable ———
- Overhead Cable ———
- Earthing Cable ———

# EXHIBIT 8.

## PLAN

Drawn by Mr. E. J. Laun showing  
No. 2 Seam,  
MOUNT MULLIGAN COLLIERY.

Legend—

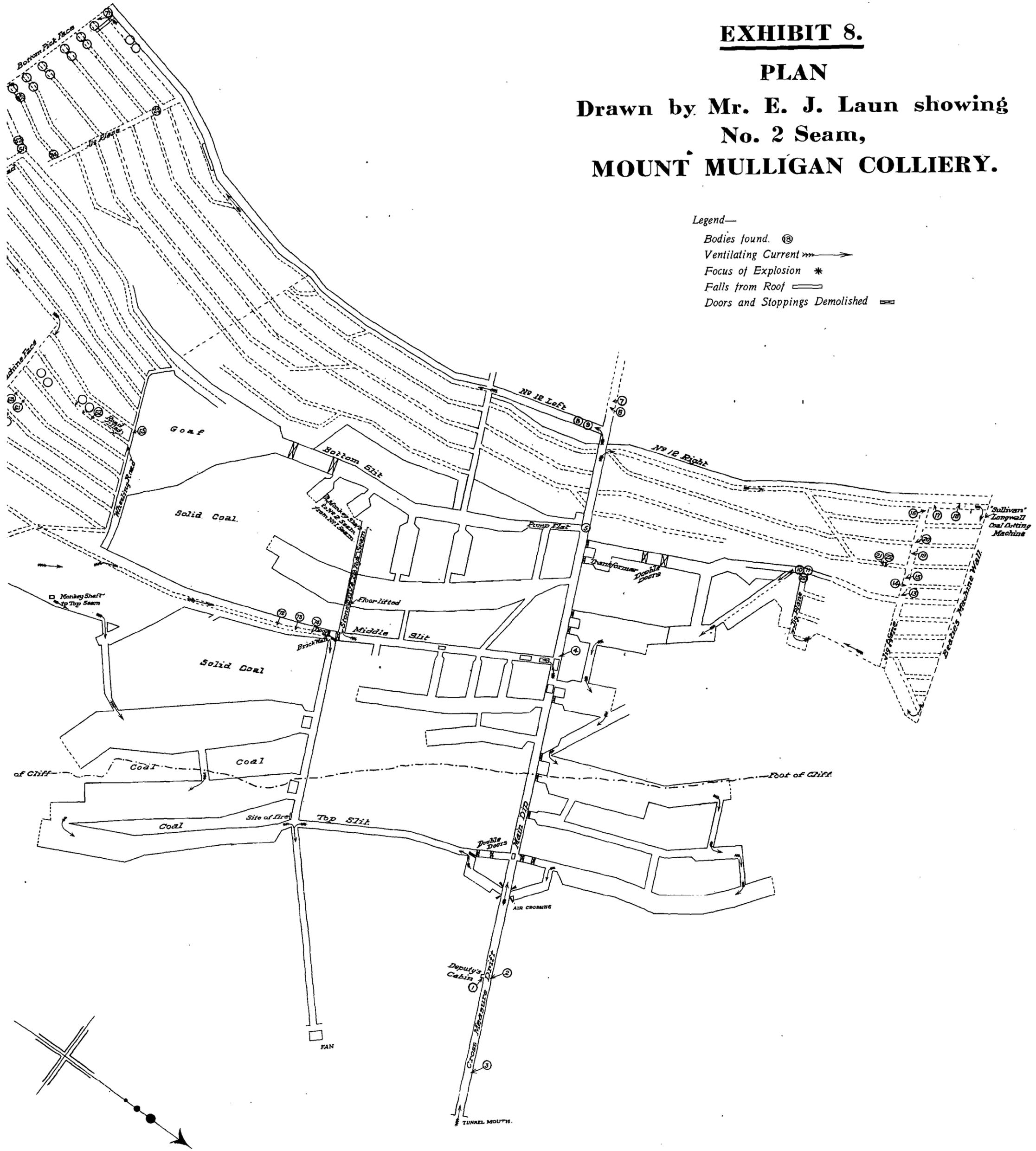
Bodies found. ⑧

Ventilating Current →

Focus of Explosion \*

Falls from Roof —

Doors and Stoppings Demolished =



# EXHIBIT 8.

## PLAN

Drawn by Mr. E. J. Laun s  
No. 2 Seam,  
MOUNT MULLIGAN COLL

Legend—

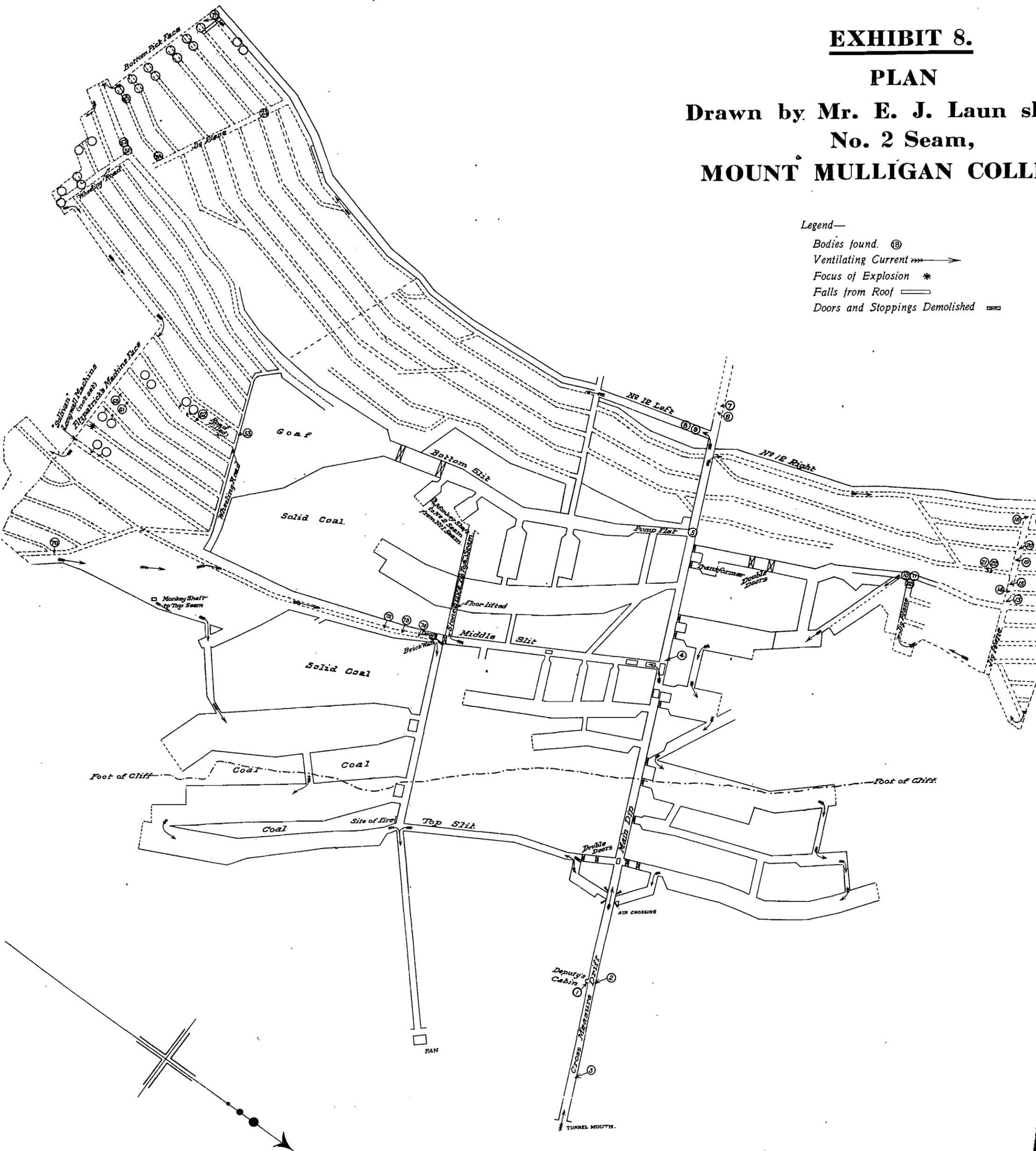
Bodies found. (B)

Ventilating Current >>>>

Focus of Explosion \*

Falls from Roof ———

Doors and Stoppings Demolished =



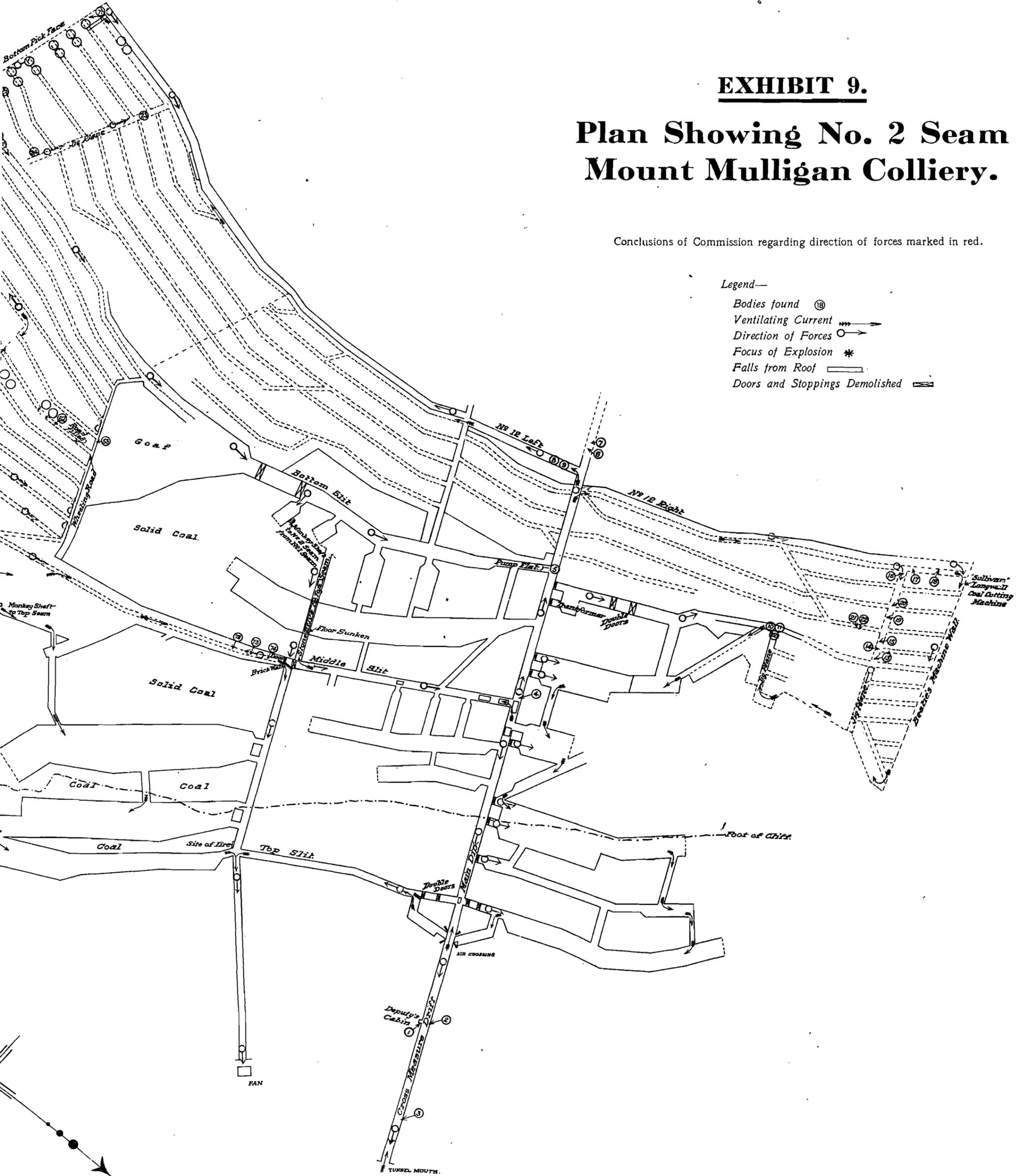
## EXHIBIT 9.

# Plan Showing No. 2 Seam Mount Mulligan Colliery.

Conclusions of Commission regarding direction of forces marked in red.

Legend—

- Bodies found (B)
- Ventilating Current (→)
- Direction of Forces (→)
- Focus of Explosion (\*)
- Falls from Roof (—)
- Doors and Stoppings Demolished (—)



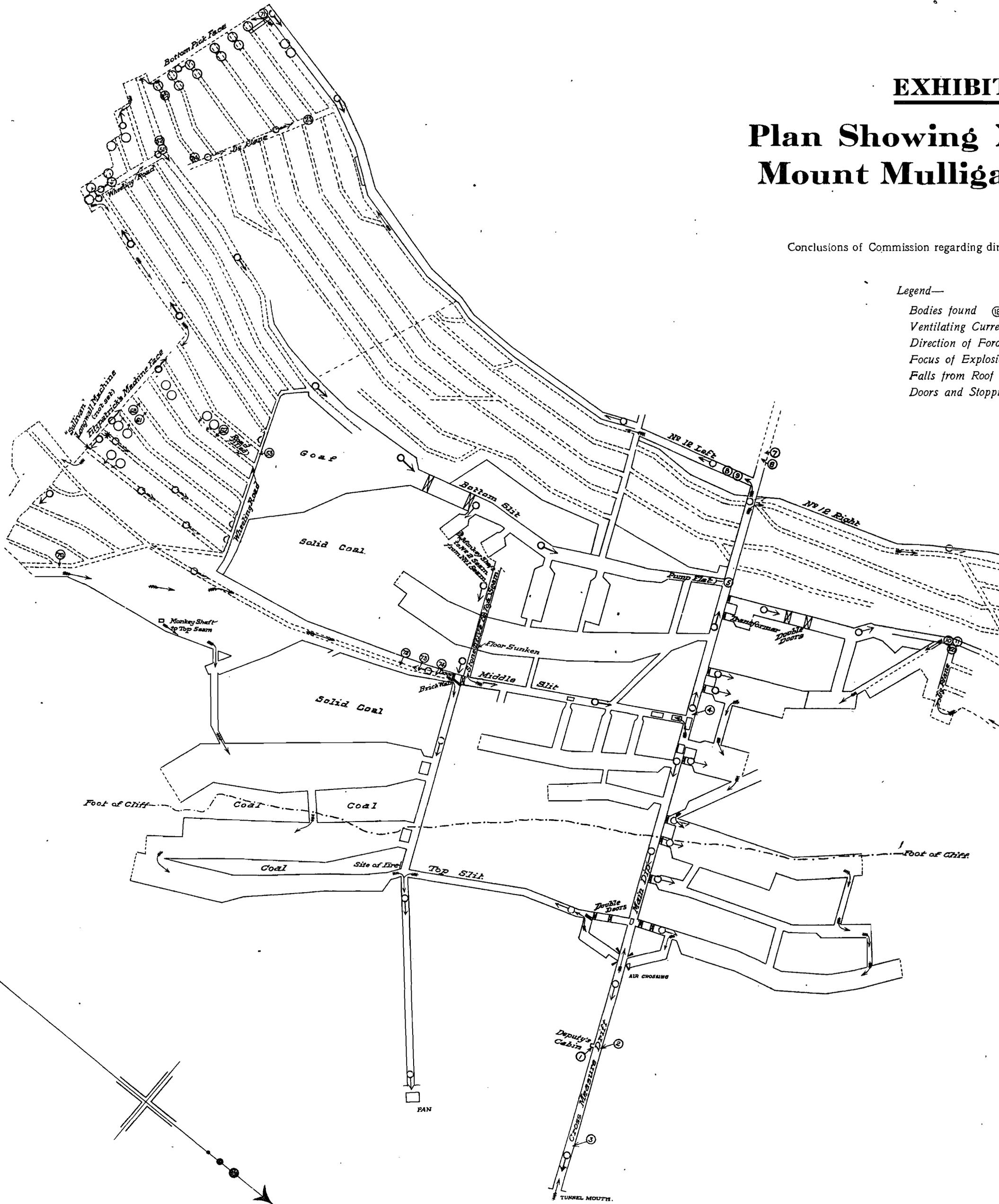
**EXHIBIT**

**Plan Showing  
Mount Mulligan**

Conclusions of Commission regarding dir

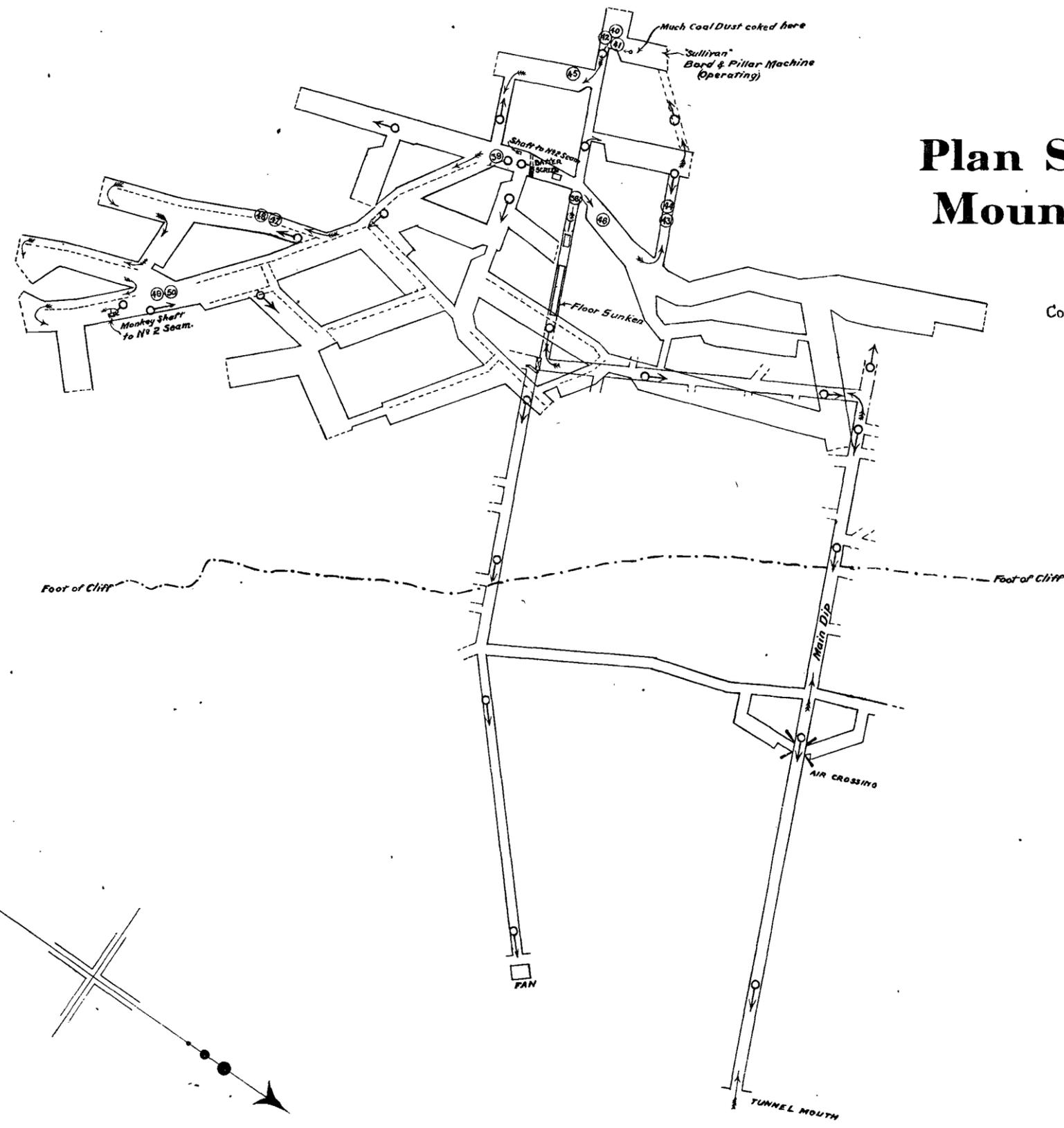
Legend—

- Bodies found (18)
- Ventilating Currents
- Direction of Force
- Focus of Explosion
- Falls from Roof
- Doors and Stoppings



**EXHIBIT 10.**

**Plan Showing No. 1 Seam  
Mount Mulligan Colliery.**



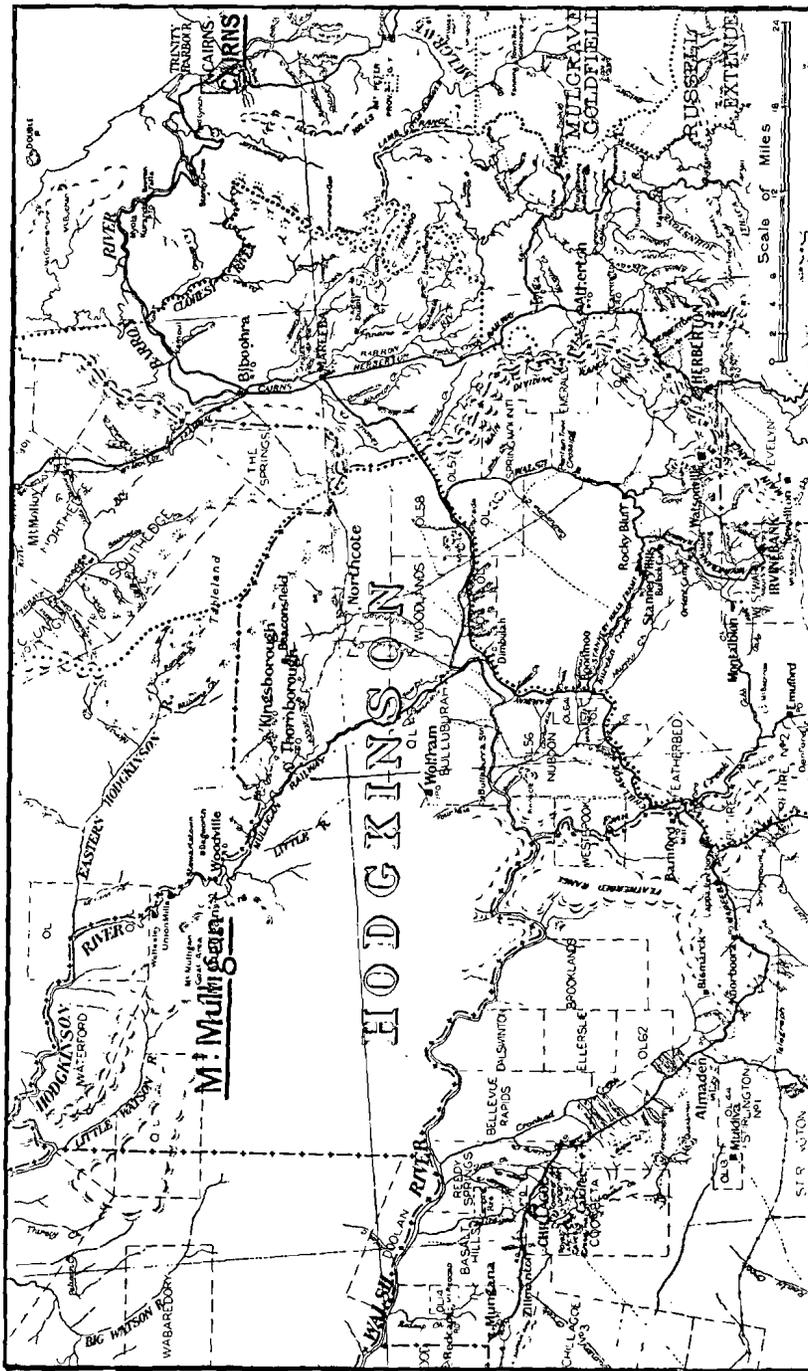
Conclusions of Commission regarding direction of forces marked in red.

- Legend—
- Bodies found (B)
  - Ventilating Current (wavy arrow)
  - Direction of Forces (red arrow)
  - Falls from Roof (rectangle with diagonal lines)
  - Doors and Stoppings Demolished (rectangle with horizontal lines)

Exhibit 11.

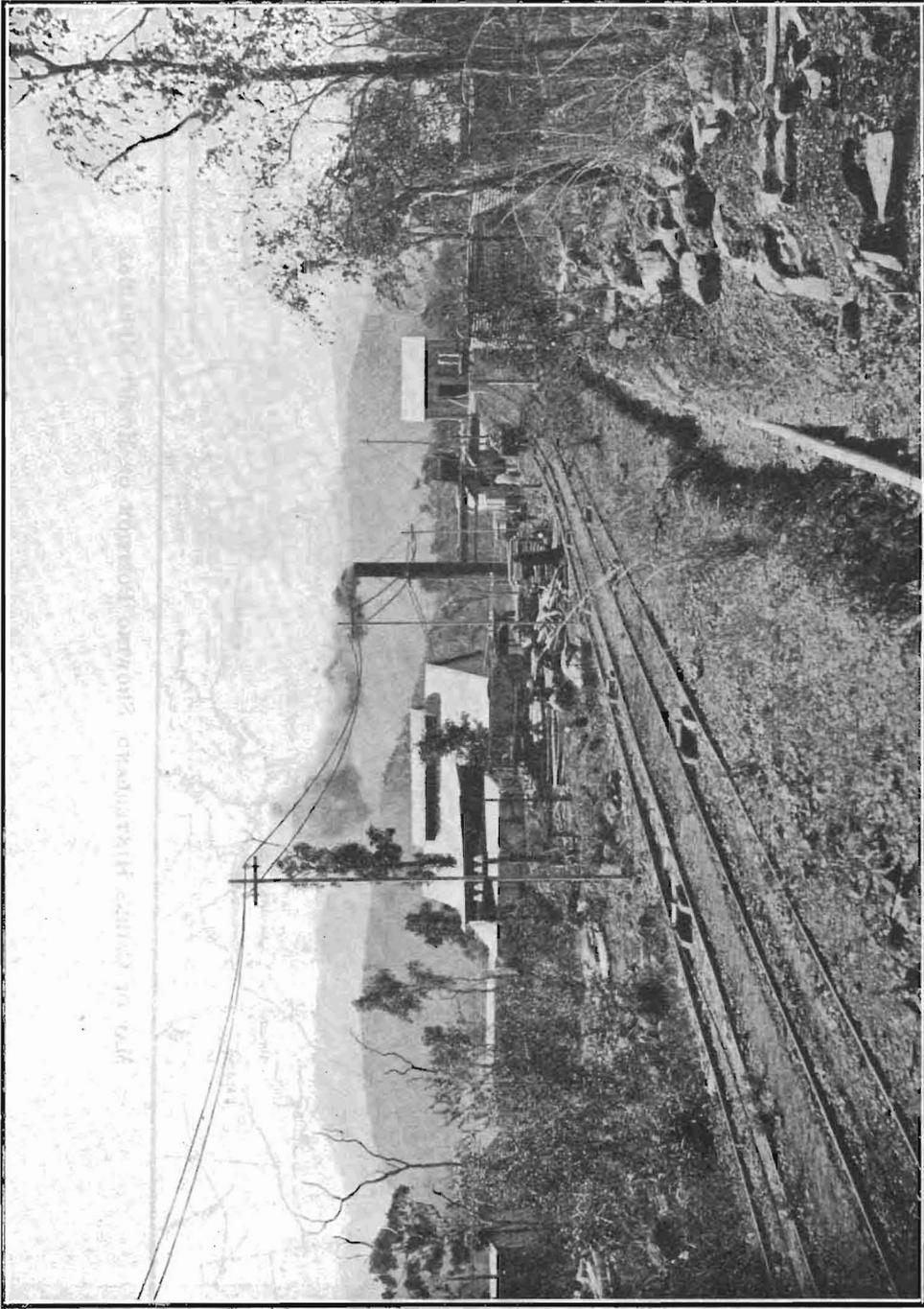
SPECIAL RULES ISSUED UNDER "THE MINES REGULATION ACT OF 1910" FOR THE CONDUCT AND GUIDANCE OF OFFICIALS AND ALL PERSONS EMPLOYED IN OR ABOUT MOUNT MULLIGAN COLLIERY—*Not printed*

Exhibit 12.



MAP OF CAIRNS HINTERLAND, SHOWING POSITION OF MOUNT MULLIGAN.

Exhibit 13.



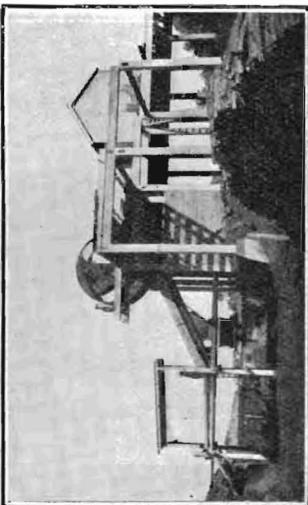
[Photo, A. Wise.]

**MOUNT MULLIGAN COLLIERY, NORTH QUEENSLAND.**

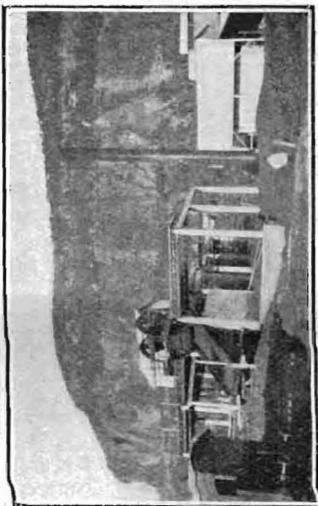
**SHOWING INCLINED TRAMWAY, POWER HOUSE, AND WEIGHHOUSE.**

Looking from the Main (No. 1) Adit, or entrance to the Mine, and down the Inclined Tramway over the Power House and Weighhouse, which are on the Mount Mulligan Branch Railway. This plant is three furlongs, or over a quarter of a mile, distant from the mouth of the Main Tunnel, and the Mount Mulligan Township, which lies behind and to the right of the buildings shown, is nearly half a mile from this entrance.

Exhibit 14.



[Photos, L.C.B.]  
COAL TIPPLER AND SCREEN.  
Showing Railway Truck on Mount Mulligan  
Branch Railway.



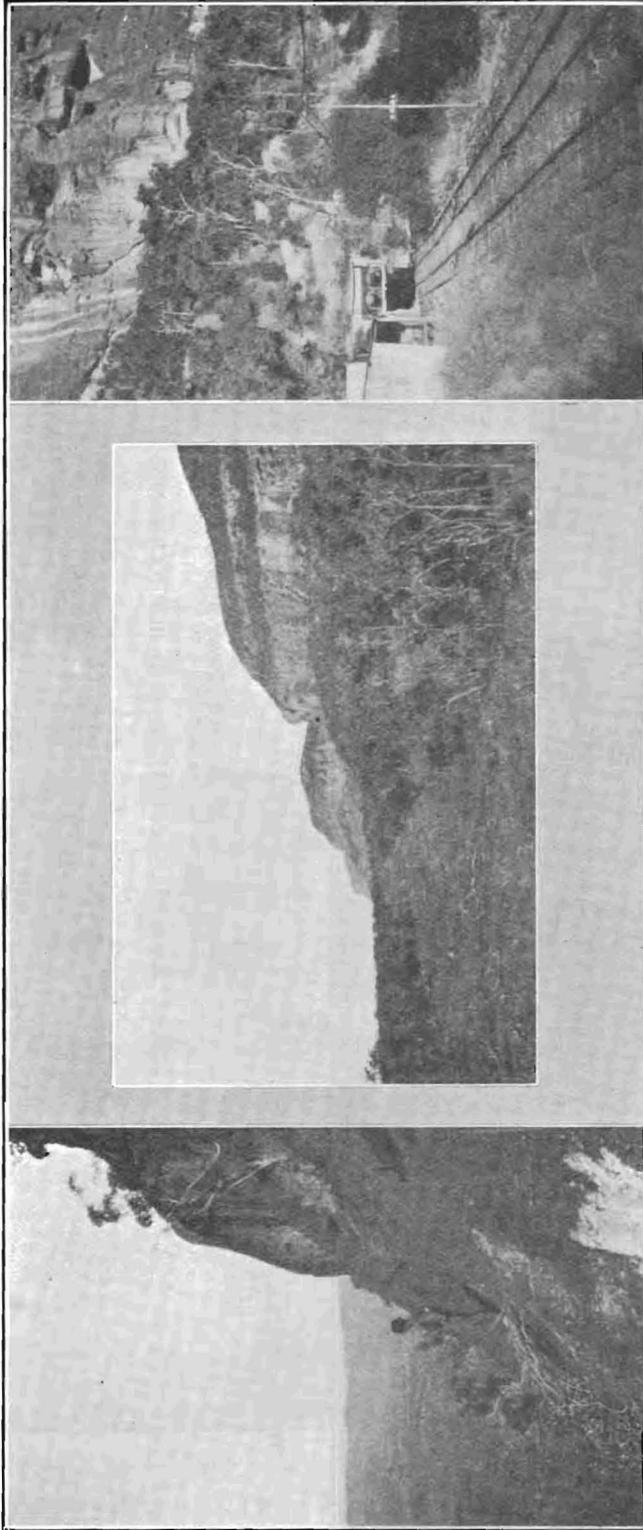
SURFACE PLANT.  
On left Revolving Tippler, and Screens above  
Railway Trucks; on right Power House,  
with Colliery in the distance.



TIPPLER, SCREEN, AND POWER HOUSE.  
As seen from the Township.

MOUNT MULLIGAN COLLIERY AND SURROUNDINGS

Exhibit 15.



STEPS ON CLIFFS, GERALDINE FALLS.

The least precipitous Section along the Sandstone Escarpment overhanging the Colliery.

MOUNT MULLIGAN.

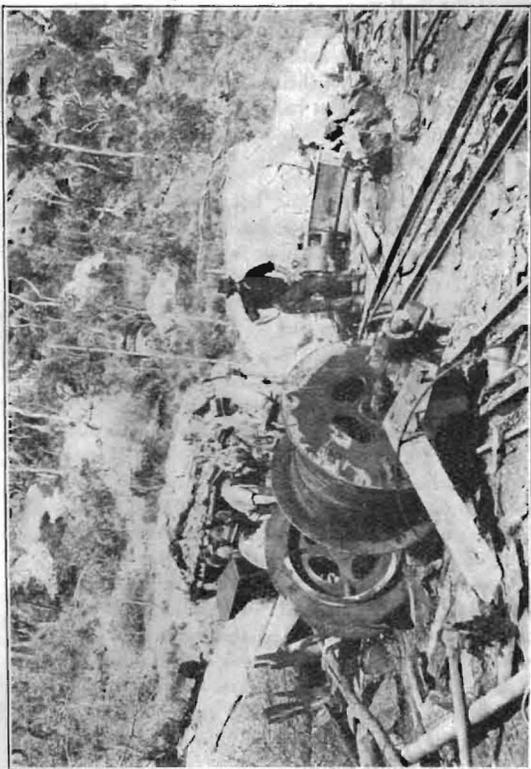
Taken from Targets at Rifle Range. The Mine is situated at the foot of the Cliff near the Centre of the Photograph.

THE COAL MINE.

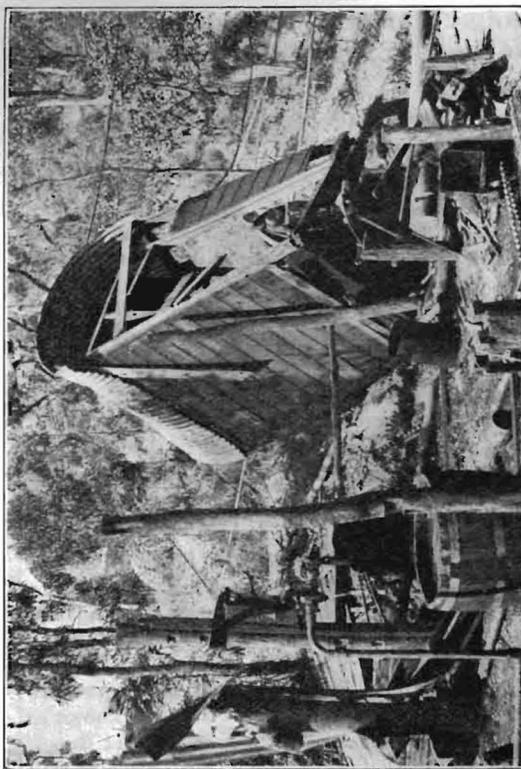
Mouth of Main No. 1 Tunnel, at the top of the Inclined Tramway leading into the Mine, where Mr. T. J. Evans, the Manager, was found, fatally injured, after the Explosion.

MOUNT MULLIGAN AND MOUTH OF MAIN TUNNEL, BEFORE EXPLOSION.

Exhibit 16.



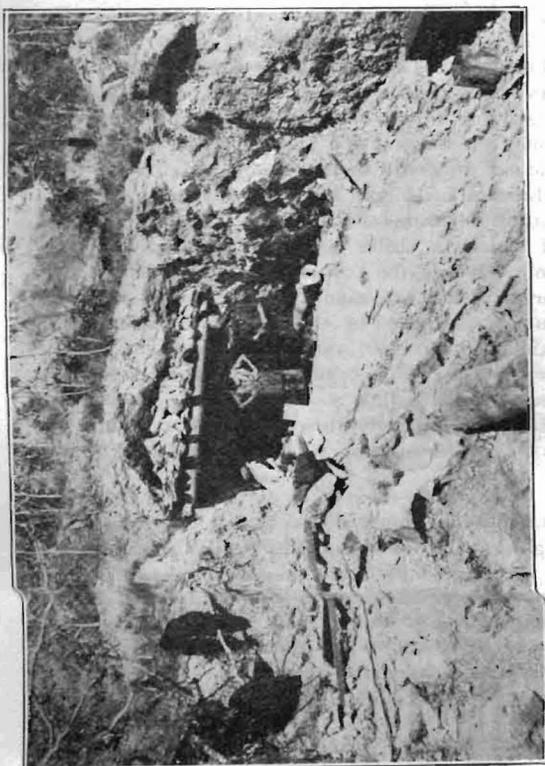
THE CABLE DRUMS, BLOWN 50 FT. FROM THEIR FOUNDATIONS.



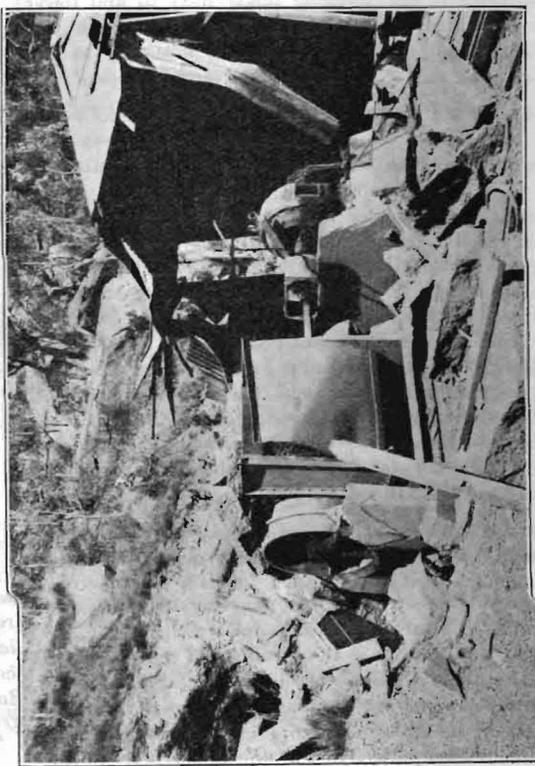
[Photos. A. I. Taylor.

SMITHY AND ELECTRIC SWITCHBOARD, 100 FT. FROM THE ENTRANCE.

MOUNT MULLIGAN COLLIERY AFTER THE EXPLOSION.



ENTRANCE TO THE MINE.



WRECK OF THE EXHAUST FAN, AT OUTLET OF THE FAN TUNNEL.

MOUNT MULLIGAN COLLIERY AFTER THE EXPLOSION.

## Exhibit 17.

THREE MINE RECORD BOOKS, INCLUDING CURRENT MINE RECORD BOOK, CONTAINING CERTAIN ENTRIES.—*Not printed.*

## Exhibit 18.

AFFIDAVIT OF JAMES HARRIS, ENGINEER, MOUNT MULLIGAN COLLIERY, DATED 3RD NOVEMBER, 1921, WITH PLAN ATTACHED.

I, JAMES HARRIS of Mount Mulligan, in the State of Queensland, Engineer, being duly sworn, make oath and say as follows:—

1. I am in the employ of Chillagoe Limited at the Mount Mulligan Colliery and the Engineer in charge of the electrical and mechanical plant at such Colliery and one of the witnesses examined before the Royal Commission of enquiry at Mount Mulligan aforesaid into the cause of the accident at the said Colliery on the nineteenth day of September one thousand nine hundred and twenty-one.

2. At the time of the Sittings of the said Royal Commission at Mount Mulligan aforesaid I was suffering from influenza and was unable to make a later inspection than that made immediately after the happening of the accident while engaged on rescue work.

3. On the twenty-seventh day of October one thousand nine hundred and twenty-one I this deponent accompanied by James Thomas Watson the Superintendent Engineer of the said Chillagoe Limited and William Matthews a machineman in the employ of the Company who had been engaged in rescue work made an inspection of that part of the Mine known as Fitzpatrick's Machine Wall comprising No. 11 Board. The said No. 11 Board situated on such machine wall as aforesaid is the working place next to and lower down the said wall than the Board in which the machine employed on that face is standing at the present time and stood at the time of the accident.

4. While I was engaged in rescue work following upon the explosion as aforesaid I previously had occasion to go into this particular Board situated on such wall and I there found the body of one of the contract miners of the name of E. Morgan situated about ten feet from the working face. The body was lying in a semi-sitting position with his right shoulder against the top side of the skip and his legs stretched out at right angles and his head thrown on one side away from the skip. I identified the said body by the fact that he was the only miner employed by the Company working in the mine who had full whiskers and I had no difficulty in recognising him. On that occasion beyond noting the position where the body was lying I did not take any particular notice of the condition of that Board.

5. On the said twenty-seventh day of October one thousand nine hundred and twenty-one I thoroughly examined the said Board and I found a large body of coal lying extended from the roadway to nearly the bottom of the Board. I also found a skip half full of lump coal standing up at the terminus of the skip road at a slight angle towards the bottom of the roadway and ten feet away from the working face with both sets of wheels off the rails in the direction of the said face. I also found that portion of the skin of the body of the said E. Morgan was still adhering to the front of the skip and the stain from the juice of the body is still visible. I found a tamping-rod lying alongside the place where the body of the said E. Morgan was found and his tools with his own brand on them were lying spread out within a few feet of the working face. I also found the end of a shot hole which appeared to

have been bored through the coal and into the fireclay overlying same at a point immediately overlying the lump of coal mentioned above. As a result of such examination it seemed quite clear to me that the shot hole had been bored through the coal which must have fallen subsequently. There was about six inches of the end of the hole still visible and I came to the conclusion that such hole had never been charged with explosives as some of the borings remained therein and the marks of the drill were still visible. There is no sign of "bulling" or shattering at the end of the hole as would be the case if the said hole had been charged and fired. After such inspection as aforesaid I compiled a plan setting out the various matters referred to in this my affidavit which plan is hereto annexed marked with the letter "A".

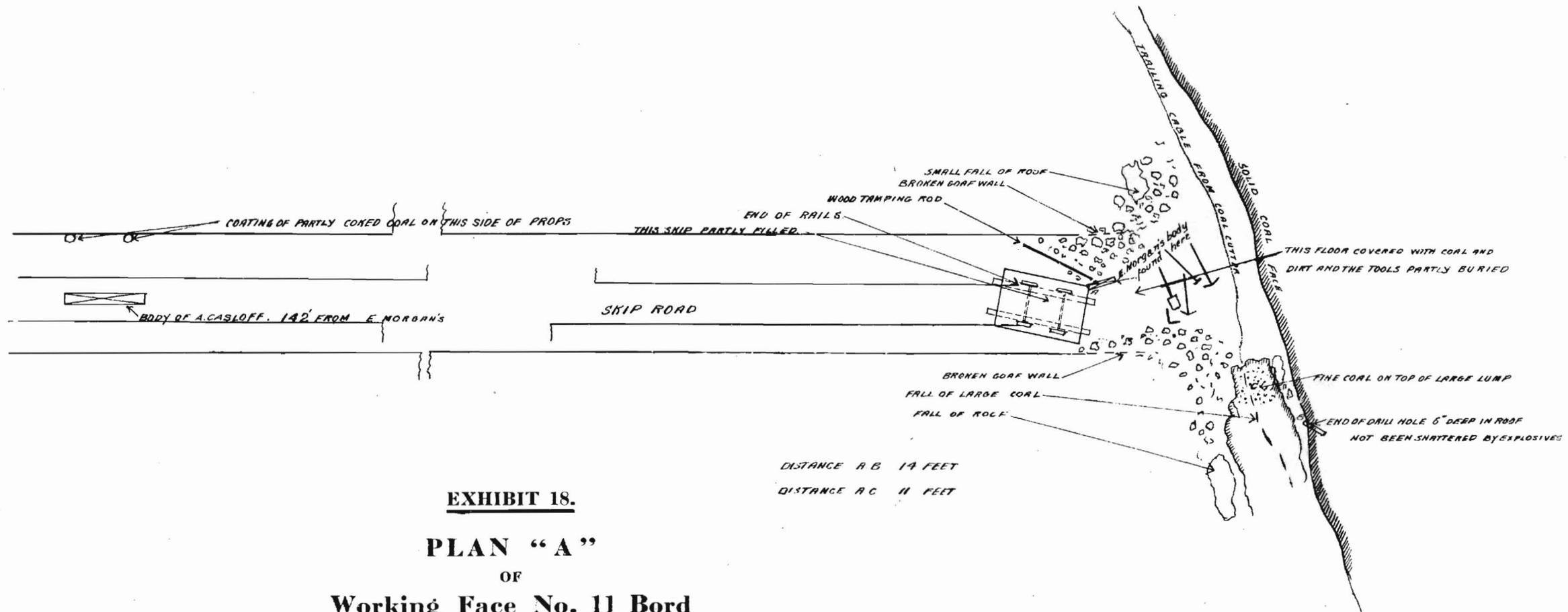
6. I refer to the plan of the bottom seam of the Mount Mulligan Colliery put in as an exhibit before the Royal Commission a copy of which is in my possession purporting to show by means of circles such places in the said seam where bodies were found and I say that such plan is incorrect in so far as it shows that no bodies were found in the said No. 11 Board of Fitzpatrick's Wall and I also say that such plan is incorrect in so far as it does not show that the body of A. Casloff was found lying in the skip road away from the working face a distance of one hundred and forty-two (142) feet from where E. Morgan's body was found by me. The body of the said A. Casloff was found by me in such place on the same day as I discovered the body of the said E. Morgan. I am also of the opinion that the position of a number of the bodies as shown in the said plan so put in as an exhibit as aforesaid is incorrect as to my knowledge the names of the persons whose bodies were found were not chalked up when found and in fifty per cent. of the cases it would be impossible to sufficiently identify such bodies as were found and the chalking up which was subsequently done could only be guess work.

7. As a result of my examination I have no hesitation in saying that in view of my discovering the drill hole in the roof and from the position of E. Morgan's body within eleven (11) feet of the end of the large lump of coal hereinbefore described and the position of the tamping-rod and tools that the explosion did not originate in this Board and that at the time the said E. Morgan met with his death he was engaged in preparing for the firing of the shot hole the end of which is visible in the roof. I also am of opinion in view of the position of the said skip that the force of the explosion travelled in by and my opinion is strengthened by the fact that a distance of approximately fifty (50) yards from the coal faces I discovered strong evidence of coking on the side of the props near the face thus showing that the force had come from the opposite direction. The position of such coking is shown in the said plan marked "A."

8. On or about the twenty-sixth day of October one thousand nine hundred and twenty-one I made a thorough examination of the Mine Record Book and I found that it had been the practice in the Mine to appoint registered shotfirers in accordance with the regulations relating to shotfirers in "The Mines Regulation Act of 1910" and to my knowledge some of the certificates issued to contract workers have since been found amongst their belongings.

SIGNED AND SWORN by the said  
JAMES HARRIS the above-  
named deponent at Cairns  
this third day of November  
1921 before me. } JAS HARRIS.

A. L. NEVITT, J.P.  
A Justice of the Peace.



DISTANCE A B 14 FEET  
 DISTANCE A C 11 FEET

**EXHIBIT 18.**  
**PLAN "A"**  
 OF  
**Working Face No. 11 Bord**  
**Mount Mulligan Coal Mine**

## Exhibit 19.

ORIGINAL CAVIL LIST IN HANDWRITING OF MR. GEORGE HAWES, SECRETARY OF MOUNT MULLIGAN BRANCH OF COALMINERS' UNION (ONE OF THE VICTIMS OF THE DISASTER), FOUND AMONGST MR. HAWES'S EFFECTS.

Long + Cann ✓	2 + 10	J.W.	22
O'Halloran + Fogarty ✓	7 + 8	J.S.	
Fisher + Seymour ✓	9		
Mansfield + Lanson ✓	5 + 6	J.S.	
Templeton + Loughrie ✓	6 + 9	J.W.	
Jarvis + Butler ✓	15		
Pattinson + Thompson ✓	11		
Drier + Don ✓	14		
Hutton + Leary ✓	3 + 11	J.M.	
McColm + Mounsey ✓	19		
Jackson + Nixon ✓	20		
Megan + Whelan ✓	16		
Power + Wisley ✓	4 + 12	J.W.	
Pattinson + Morrison ✓	1 + 9	J.W.	
Harrison + Johnson ✓	17		
Stevens + Swift ✓	13		
Surff + Barney ✓	21		
Bell + O'Neil ✓	12	J.W.	
O'Boyle + Speirs ✓	1 + 2	J.S.	
Hall + Smithson ✓	Blank	1	
Morgan + Casslett ✓	8 + 11	J.W.	
Henry + Martin ✓	7 + 10	J.W.	
Adams + Joachumyik ✓	Blank	2	
Birmingham + McDalyre ✓	18		
Lomat + Hayes ✓ ✓	3 + 4	Jopk	
Bollen + Mmogue ✓	Blank	3	





## Exhibit 22.

## LIST RECEIVED FROM CHILLAGOE LIMITED, MOUNT MULLIGAN, SHOWING NAMES OF VICTIMS OF THE DISASTER, WITH NAMES AND ADDRESSES OF THEIR RELATIVES.

VICTIMS OF DISASTER.	RELATIVES' NAMES AND ADDRESSES.
1 T. J. Evans .. .. .	Mrs. T. J. Evans (wife), care of A. C. Akhurst, "Thornley," Ellesmere Road, Windsor, Victoria.
2 F. Grant .. .. .	Mrs. F. Grant (wife), Mount Mulligan.
3 T. E. Parkinson .. .. .	Mrs. Parkinson (wife), Mount Mulligan.
4 J. O'Boyle .. .. .	Mrs. O'Boyle (wife), Mount Mulligan.
5 R. Spiers .. .. .	Mrs. Spiers (wife), Mount Mulligan.
6 W. Thompson .. .. .	(Parents), East View, Clarevale, Newcastle-on-Tyne, England.
7 R. Pattinson .. .. .	John Pattinson (father), care of W. Potts, Waitara Road, North Sydney.
8 J. Cunningham .. .. .	Mrs. B. Cunningham (wife), 81 Lane Cove Road, North Sydney.
9 D. McIntyre .. .. .	Mrs. McIntyre (wife), care of M. Berry, Gowdie Street, Mount Morgan.
10 J. Drier, senior .. .. .	Mrs. Drier (wife), Mount Mulligan.
11 J. Drier, junior .. .. .	Mrs. Drier (mother), Mount Mulligan.
12 T. Hutton .. .. .	Mrs. Hutton (wife), care of Mrs. J. Wasley, One Mile, Herberton.
13 R. Leary .. .. .	Mrs. Leary (mother), Mount Mulligan.
14 H. Harrison .. .. .	Mrs. H. Harrison (wife), 138 Vine Street, Wallsend, England.
15 J. O'Halloran .. .. .	Mrs. O'Halloran (wife), 12 Hunter Street, Wonthaggi, Victoria
16 J. Fogarty .. .. .	Mrs. Fogarty (mother), Hart Street, Colac.
17 W. Kerr (or Keirs) .. .. .	Mrs. Barbara Keirs (wife), Cessnock, New South Wales.
18 D. Butler .. .. .	Mrs. J. F. Butler (mother), Wynyard, Tasmania.
19 W. Smithson .. .. .	Mrs. Smithson (wife), care of Mrs. Peter Hill, Gordon Street, Bowen.
20 A. Hall .. .. .	Mrs. Hall (wife), Mount Mulligan; Mrs. Hall (mother), Abermain, New South Wales.
21 E. Morgan .. .. .	Mrs. Morgan (wife), Chillagoe.
22 A. Casloff .. .. .	Mrs. Casloff (wife), Mount Mulligan.
23 W. Fisher .. .. .	Mrs. E. Fisher (wife), Howard, Queensland.
24 S. Liversidge .. .. .	Mrs. Liversidge (mother), Balmain Coal Mine, Sydney.
25 T. Cann .. .. .	Mrs. Annie Cann (wife), Stanley House, Toowoomba.
26 J. Long (correct name, P. Doyle) .. .. .	Phillip Doyle (father), Dublin, Ireland.
27 H. Jackson .. .. .	Mrs. H. Jackson (wife), Junction Hotel, Ipswich Road, Brisbane.
28 J. Nixon .. .. .	Mrs. J. Nixon (wife), care of S. T. Harrison, The Avenue, Helensburgh, New South Wales; Mrs. Jane Nixon (mother), Helensburgh, New South Wales.
29 S. McColm .. .. .	Mrs. McColm (wife), Mount Mulligan.
30 L. Joachimzik .. .. .	Mrs. Joachimzik (wife), care of Mrs. R. Bailiff, Armidale Street, Abermain, New South Wales.
31 H. Mansfield .. .. .	Mrs. May Booth (sister), 883 Wilson Street, Redfern, New South Wales; Mrs. Maud Donoghue (sister), Avon Dam, Town Site, via Bargo, New South Wales.
32 J. Lawson (correct name, Oliver Lewis)	J. Lewis (father), Wollongong, New South Wales.
33 F. Pattinson .. .. .	Mrs. Pattinson (wife), Mount Mulligan.
34 W. Stevens .. .. .	Mrs. Schramm (?), Murray Street, Wonthaggi, Victoria.
35 E. Riseley .. .. .	Mrs. Riseley (mother), Gormanston, Tasmania.
36 G. Hawes .. .. .	Mr. C. Hawes (senior), Sutherland, New South Wales.
37 T. Swift .. .. .	Supposed to be from Wonthaggi, Victoria.
38 J. Lomax .. .. .	Mrs. Lomax (wife), Mount Mulligan.
39 T. Hynes .. .. .	Mrs. Hynes (wife), Mount Mulligan.
40 J. Carney .. .. .	Mrs. Carney (wife), Broken Hill.
41 J. Regan .. .. .	Mrs. Martha Regan (wife), 325 Lane Lane, of Chloride Street, Broken Hill.
42 G. Mounsey .. .. .	George Mounsey (son), 73 Swan Street, Richmond, Victoria; Mrs. Ethel Wallace (daughter), Through Road, Burwood, Victoria.
43 T. Adams .. .. .	Miss Adams (sister), Scott Hill, Great Broughton, Cockermouth, England.
44 H. Martin .. .. .	Mrs. Martin (wife), care of S. Martin, 53 Ashmore Street, Erskineville, Sydney.
45 J. Henry .. .. .	Mrs. Henry (wife), Mount Mulligan.
46 S. Seymour .. .. .	Miss S. Seymour (sister), 48 Flinders Street, Darlinghurst, Sydney; G. Seymour (brother), Bent Street, Wonthaggi, Victoria.
47 H. Bollen .. .. .	Mrs. E. Bollen (wife), 138 Brazil Street, Broken Hill.
48 G. Turriff .. .. .	Mrs. Turriff (wife), Wonthaggi, Victoria.
49 P. Minogue .. .. .	care of H. Lawson, M.L.A., Solicitor, Castlemaine, Victoria.
50 J. Loughrie .. .. .	Mrs. Annie Doran (sister), West Wallsend, New South Wales.
51 R. Templeton .. .. .	Mrs. Templeton (mother), Belmore Street, Wollongong, New South Wales.
52 Irving Bell .. .. .	Relatives in England (Cumberland).
53 Wilson Ostle .. .. .	Miss Ostle (sister), Glasters Cottage, Great Broughton, North Cockermouth, Cumberland, England.
54 J. Carson .. .. .	Mrs. Carson (wife), Wolfram, Queensland.
55 F. Butcher .. .. .	Mrs. Butcher (mother), Charters Towers, Queensland.
56 J. Fitzpatrick .. .. .	Mrs. Fitzpatrick (wife), Ashington, Northumberland, England.

Exhibit 22—*continued.*

LIST RECEIVED FROM CHILLAGOE LIMITED, MOUNT MULLIGAN, SHOWING NAMES OF VICTIMS OF THE DISASTER, WITH NAMES AND ADDRESSES OF THEIR RELATIVES—*continued.*

VICTIMS.				RELATIVES' NAMES AND ADDRESSES.
57	P. Conoplia	..	..	Mrs. Conoplia (wife), Mount Mulligan.
58	W. Johnstone	..	..	(Parents), Ashington, Northumberland, England.
59	T. Taylor	..	..	Mrs. Taylor (wife), Mount Mulligan.
60	J. Beattie	..	..	Mrs. Beattie (wife), care of R. Thustain, 310 Errard Street, Ballarat, Victoria.
61	G. James, senior	..	..	Mrs. James (wife), Mount Mulligan.
62	G. James, junior	..	..	Mrs. James (mother), Mount Mulligan.
63	T. Adcock	..	..	Mrs. Adcock (wife), care of Mrs. J. Wasley, One Mile, Herberton.
64	R. McCormack	..	..	Mrs. McCormack (aunt), Mount Mulligan.
65	P. Marks	..	..	Mr. J. Marks (father), Railway Workshops, Townsville.
66	J. Reay	..	..	Miss Reay (sister), Thirroul, South Coast, New South Wales.
67	R. Wheelan (proper name, Thos. Geo. Wheeler)	..	..	Came from Wonthaggi. Mrs. Winifred Wheeler (wife), Beenak, via Launching Place, Victoria; Mrs. Wheeler (mother), Gormanston, Tasmania.
68	F. Gielis	..	..	Mrs. F. Grainer (sister), Mount Mulligan.
69	E. Hutton	..	..	Mrs. Hutton (wife), Mount Mulligan.
70	F. Latimer	..	..	R. H. Latimer (father), Arthur Terrace, Red Hill, Brisbane.
71	R. Thompson	..	..	(Parents), East View, Clarevale, Newcastle-on-Tyne, England.
72	T. Hawes	..	..	C. Hawes (brother), Sutherland, New South Wales.
73	M. O'Grady	..	..	John O'Grady (brother), Bibbohra, Queensland.
74	N. Ruming	..	..	E. Ruming (father), Koorboora, Queensland.
75	W. Cole	..	..	Came from Wales—no friends or relatives known.

Price, 6s.

By Authority: ANTHONY JAMES CUMMING, Government Printer, Brisbane.