

1941.
NEW ZEALAND.

KAYE'S MINE ROYAL COMMISSION

(REPORT OF).

ROYAL COMMISSION

TO INQUIRE INTO AND REPORT UPON COLLIERY ACCIDENT AT TEN-
MILE CREEK, NEAR GREYMOUTH.

Presented to both Houses of the General Assembly by Command of His Excellency.



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KAYE'S MINE ROYAL COMMISSION

(REPORT OF).

Royal Commission to inquire into and report upon Colliery Accident at Ten-mile Creek, near Greymouth.

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

To our trusty and loving subjects : GEORGE GALLOWAY CHISHOLM, Esquire, of Greymouth, Stipendiary Magistrate ; JOHN WATSON, Esquire, of Huntly, Colliery Superintendent ; ANGUS MCLAGAN, Esquire, of Greymouth, Secretary ; THOMAS OTTO BISHOP, Esquire, of Wellington, Secretary ; JOHN DEVLIN, Esquire, of Wallsend, Miner : Greetings.

WHEREAS on the 6th day of November, 1940, at the coal-mine at Ten-mile Creek, near Greymouth, known as Kaye's Mine, there occurred a fire or explosion as a result of which five persons lost their lives :

And whereas it is expedient that a Commission should be issued for the purpose of inquiring into the cause of the said fire or explosion and into the working of the existing law in respect to the prevention of such fires or explosions and for the other purposes hereinafter mentioned :

Now, therefore, we, reposing trust and confidence in your knowledge, integrity, and ability, do hereby constitute and appoint you the said

GEORGE GALLOWAY CHISHOLM
JOHN WATSON
ANGUS MCLAGAN
THOMAS OTTO BISHOP
JOHN DEVLIN

to be a Commission to inquire into and report upon the matters hereinbefore referred to, and into the several other matters mentioned in these presents, that is to say :—

- (1) To inquire in what part of the mine the fire or explosion first started, the nature of the same, and how much of the mine was affected by it :
- (2) To inquire how the fire or explosion began and spread :
- (3) To inquire to what extent the provisions of the Coal-mines Act, 1925, and the regulations made thereunder were complied with in the mine, and more especially as regards—
 - (a) The examination of the mine ;
 - (b) Ventilation ;
 - (c) Lighting ;
 - (d) The preparation of shots and the method of firing shots ;
 - (e) The prevention and treatment of inflammable dust :
- (4) To inquire into the nature and character of the working and the efficiency of the management of the mine :

- (5) To inquire into the efficiency of the inspection of the mine by all or any persons who are responsible for such inspection :
- (6) To make suggestions for the prevention, as far as possible, of similar accidents and for the safe working of this and other mines in the future :
- (7) And generally to make inquiry into any matter or thing arising out of or connected with the several subjects of inquiry hereinbefore mentioned or which, in your opinion, may be of assistance in fully ascertaining, explaining, and arriving at a fair and just conclusion in respect to the prevention of similar accidents, and to report whether any additional legislation is necessary and the scope of same, and whether any amendment or addition to the regulations included in the existing law is required to provide reasonable and proper safeguards against such accidents.

And I do further appoint you the said

GEORGE GALLOWAY CHISHOLM

to be Chairman of the said Commission :

And you are hereby authorized to conduct any inquiry under these presents at such time and place as you deem expedient, with power to adjourn from time to time and place as you think fit and to call before you and to examine on oath or otherwise such persons as you think capable of affording you information as to the matters aforesaid, and to call for and examine all such books, papers, writing, documents, and records as you deem likely to afford you the fullest information on any such matters, and also to use the evidence taken in the course of any inquest or other previous inquiry having reference to the said accident and the deaths thereby caused :

And, using all diligence, you are required to report to us under your hands and seals not later than the thirty-first day of January, one thousand nine hundred and forty-one, your opinion on the aforesaid matters :

And you are hereby strictly charged and directed that you shall not at any time publish or otherwise disclose, save to us in pursuance of these presents or by our direction, the contents or purport of any report so made or to be made by you :

And it is hereby declared that this Commission shall continue in force and virtue although the inquiry be not regularly continued from time to time or from place to place by adjournment :

And, lastly, it is hereby declared that these presents are issued under Letters Patent dated the eleventh day of May, one thousand nine hundred and seventeen, and under the provisions of the Commissions of Inquiry Act, 1908.

In witness whereof we have caused this Commission to be issued and the seal of the Dominion of New Zealand to be hereunto affixed,
[L.S.] at Wellington, in the said Dominion, this nineteenth day of December, in the year of our Lord, one thousand nine hundred and forty, and in the fifth year of our Reign.

GALWAY, Governor-General.

By His Excellency's Command :

P. C. WEBB, Minister of Mines.

Approved in Council :

C. A. JEFFERY,
Clerk of the Executive Council.

Royal Commission to Inquire into and Report upon Colliery Accident at Ten-mile Creek, near Greymouth, Extending Period within which Commission shall Report.

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

To our trusty and loving subjects : GEORGE GALLOWAY CHISHOLM, Esquire, of Greymouth, Stipendiary Magistrate ; JOHN WATSON, Esquire, of Huntly, Colliery Superintendent ; ANGUS McLAGAN, Esquire, of Greymouth, Secretary ; THOMAS OTTO BISHOP, Esquire, of Wellington, Secretary ; JOHN DEVLIN, Esquire, of Wallsend, Miner : Greetings.

WHEREAS by Warrant dated the nineteenth day of December, one thousand nine hundred and forty, issued under Letters Patent dated the eleventh day of May, one thousand nine hundred and seventeen, and under the provisions of the Commissions of Inquiry Act, 1908, you the said

GEORGE GALLOWAY CHISHOLM,
JOHN WATSON,
ANGUS McLAGAN,
THOMAS OTTO BISHOP, and
JOHN DEVLIN

were appointed to be a Commission to inquire into and report as to the matters therein set forth with regard to a colliery accident at the coal-mine at Ten-mile Creek, near Greymouth, known as Kaye's Mine :

And whereas by the said Warrant you were required to report to us, under your hand and seal, not later than the thirty-first day of January, one thousand nine hundred and forty-one, your opinion on the aforesaid matters :

And whereas it is expedient that the period in which you are required to report to us should be extended as hereinafter provided :

Now, therefore, we do hereby extend the period within which you are required to report to us, as by the said Warrant provided, to the twenty-first day of February, one thousand nine hundred and forty-one :

And we do hereby confirm the said Commission except as altered by these presents :

In witness whereof we have caused this Warrant to be issued and the seal of the Dominion of New Zealand to be hereunto affixed, at Wellington, in the said Dominion, this twenty-ninth day of January, in the year of our Lord, one thousand nine hundred and forty-one, and in the fifth year of our Reign.

[L.S.] Witness Our Right Trusty and Well-beloved Counsellor, George Vere Arundell, Viscount Galway, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Companion of the Distinguished Service Order, Officer of the Most Excellent Order of the British Empire, Governor-General and Commander-in-Chief in and over Our Dominion of New Zealand and its Dependencies.

GALWAY, Governor-General.

By His Excellency's Command :

P. FRASER, for Minister of Mines.

Approved in Council :

C. A. JEFFERY,
Clerk of the Executive Council.

REPORT.

To His Excellency the Right Honourable Sir Michael Myers, Member of His Majesty's Most Honourable Privy Council, Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, the Chief Justice of the Dominion of New Zealand, and Administrator of the Government of the Dominion of New Zealand.

MAY IT PLEASE YOUR EXCELLENCY,—

We, the undersigned Commissioners appointed by Royal Commission dated 19th day of December, 1940, and issued under Letters Patent dated 11th May, 1917, and under the provisions of the Commissions of Inquiry Act, 1908, to inquire into and report upon the colliery explosion which occurred in Kaye's Mine on the 6th day of November, 1940, desire humbly to submit to Your Excellency our report.

The Commission formally commenced its sittings at the Court House, Greymouth, on Thursday, 23rd January, 1941, after which an inspection of the Kaye's Mine was made by the Commission, in company with counsel representing the parties, and officials of the Mines Department. The hearing of the evidence was commenced on 24th January, 1941, and concluded on 28th January, 1941. Eleven witnesses were examined and copies of their evidence are attached.

The proceedings were open to the public, and reports were published in newspapers.

The parties represented before the Commission were :—

- (1) The Mines Department (represented by Mr. F. A. Kitchingham, Greymouth) :
- (2) Mr. Adam Boote, jun., and the Kaye estate (represented by Mr. J. W. Hannan, Greymouth) :
- (3) The widow of Alexander McIntosh (represented by Mr. E. B. E. Taylor, Greymouth) :
- (4) The United Mine Workers' Union of New Zealand, and the relatives of Frederick Llewellyn Williams and Lindo Colpo (represented by Mr. W. D. Taylor, Greymouth) :
- (5) The Co-operative Employees' Union, Runanga (represented by Mr. D. Barnes, Runanga) :
- (6) Mr. G. Duggan appeared in his official capacity as Chief Inspector of Coal-mines.

Mr. F. A. Kitchingham conducted the examination-in-chief.

Kaye's Mine is one of a number of small collieries situated on the State Coal Reserve in the Grey District, approximately ten miles from the Town of Greymouth. These mines are always referred to as co-operative coal-mines, and this is a convenient, although not strictly accurate, designation. In nearly all cases they are operated under lease from the State coal-mines by working miners who form themselves into partnerships commonly referred to as "co-op. parties." When this system of mining operation on the State Coal Reserve was inaugurated, approximately twenty years ago, the parties were more truly co-operative than they are to-day. At present there appear to be about as many wage-workers employed by the parties as there are partners.

In March, 1935, Kaye and party acquired a lease of the mine which is the subject of this report. At that time the partners were John W. Kaye, Charles Kaye, and Adam Boote (jun.), and they traded under the style of "Kaye and Party." Subsequently, at a time and for a reason which were not disclosed to us, Charles Kaye retired from the party, and John W. Kaye and Adam Boote carried on the partnership until the date of the explosion, 6th November, 1940, when Kaye lost his life, leaving Boote the sole survivor of the party.

The area covered by the lease issued in 1935 consisted of 10 acres situated on the south bank of the Ten-mile Creek, approximately one mile from the main Greymouth-Westport highway. Connecting the mine with the main road is a tram-line, which is used to convey coal from this and several similar small pits. A plan of the mine and of the workings is attached hereto as Exhibit "A." The total output of the mine to the 31st December, 1939, as given in the Mines Statement for that year, was 16,099 tons. It will be seen from the plan that the coal-seam is bounded on the east and on the west by fault-lines approximately 5 chains apart. It is recorded in the report of the Inspector of Mines, dated 2nd October, 1940, that the main dip, which was the principal development heading, had reached the southern boundary of the lease, but arrangements had been made for the lease of another area adjoining this boundary. The east, south, and west boundaries of the area are not shown on the plan. The northern boundary is the escarpment in which the outcrop occurs and from which the development workings were commenced. The coal-seam has an average thickness of 10 ft. and is of good quality.

The total coal contained in the lease was approximately 120,000 tons, the greater part of which still remains to be extracted. There are no unusual difficulties attached to the working of this colliery. The physical conditions underground are quite favourable for cheap and safe mining. The roof conditions are good. The grade of the seam although steep, is not unduly so; little water is encountered, and until gas was discovered in August, 1938, the mine was worked with naked lights. A fan of a capacity of 5,000 to 6,000 cubic feet of air per minute was installed and should have been sufficient to have kept the mine safe even after gas had been first discovered if proper methods had been used to direct the air current.

The main dip shown on the plan was the intake airway. All the openings off this main dip on the east side were closed by stoppings so as to direct the air down to the lower workings. These stoppings were formed of light timber frames to which brattice cloth was nailed. They did not comply with the requirements of the regulations. From the point in the main dip where the east and west levels were driven off brattice should have been carried into the working-faces so as to force the air around these to keep them always in a fit state for persons to work therein.

The evidence submitted to us shows that bratticing to conduct the air current round the working-faces was not carried out. For some time prior to the 6th November, 1940, the ventilation of the west level must have been badly deficient, with no perceptible current of air from the point where it left the main dip. The east level would be in a somewhat better condition because it was not so far away from the main intake, also because from the dip to the first rise place shown on the plan this level was acting as the main return airway.

Owing to the flimsy nature of the stoppings there must have been a substantial leakage between the intake and the return airways, and so the total volume of air provided by the fan was largely wasted.

A report of the Coal-mines Inspector, Greymouth, dated 3rd August, 1938, in reference to the discovery of gas at this mine states that the gas was found in a rise place following the hade of the fault. This was on the east side of the workings, and the position is indicated by an arrow on that side of the plan. It is not unusual in coal-mining to find gas when approaching a fault in the coal-measures, and it is of some significance that the rise heading on the west side of the mine in which the ignition of gas occurred on the 6th November last was also approaching, and must have been within a few feet of, the fault which bounds the workings on that side.

On the morning of the 6th November, 1940, the following men were employed in and about the mine: John Kaye (sen.), John Leighton Kaye (jun.), Frederick Llewellyn Williams, Lindo Colpo, Alexander McIntosh (manager of the mine and the holder of a Fireman-Deputy's Certificate), Adam Boote, William Burnett, and Norman Pattinson. Pattinson and Kaye (jun.) were working on the surface and the others underground. Reference will be made later to the provision in the Coal-mines Act which permits workings of this class to be carried on under the supervision of a fireman-deputy.

The explosion which forms the subject of this inquiry caused the death of the following men within the mine: Kaye (sen.), Colpo, McIntosh, and Williams.

The positions in which their bodies were found are shown on the plan. John Kaye (jun.), who was also killed, was working outside the mine.

Although there is some conflict of evidence, the weight of evidence is to the effect that it was customary for all these workers to travel to the mine each morning on a motor-trolley from the terminus of the tramway at the Greymouth-Westport road. One of the workmen, Williams, who lived at the Ten-mile, was in the habit of joining the others at the tram terminus and riding up to the mine with them. We are satisfied that on the morning of the day upon which the fatal explosion occurred all of the eight men employed at the mine travelled together in this way. According to the statement made to the police by Boote, the whole party arrived together at the bathhouse at about 7.30 a.m. There they changed into their working-clothes. After changing they all went up to the mouth of the mine, except Pattinson, who worked on the tram-line taking coal from the incline to the party's bins. When the men arrived at the mouth of the mine the manager, McIntosh, went in to make an examination. He returned at about 8 o'clock, and the other men then entered the mine to commence their day's work. Although Boote in his evidence before the Commission antedated this statement it was confirmed by other witnesses, Burnett and Pattinson, and we therefore accept it as being correct in its original form rather than as amended. It follows that the mine fan was not started until just prior to McIntosh entering the mine, and was therefore running for a few minutes only prior to the entry of the rest of the men and the commencement of work. It follows further that if McIntosh entered the mine before the other workmen he was only a few minutes ahead of them and, in the light of later events, his examination of the mine workings must have been perfunctory and incomplete. The law requires every part of the mine in which workmen are to work or pass during the shift to be examined for gas with a locked safety-lamp before workmen are allowed to enter. Such examination cannot fail to disclose the presence of gas.

As to the actual happenings in the mine between 8 a.m. and the time of the explosion—which was given as 9.15 a.m.—the only direct evidence is that of Boote and Burnett. These men were working together in the end of the east level, and while at work they were caught by the explosion. Boote states that Kaye (sen.) and Colpo were working in the end of the west level. McIntosh was stated to have had a roving commission in the mine and went wherever his services were required. Williams worked alone in the rise heading off the west level. Burnett stated that prior to the explosion he and Boote filled four or five boxes of coal. According to the evidence of Pattinson, there were twelve boxes sent down that morning, so that seven or eight boxes were filled either by Kaye and Colpo in the west level, or partly from that place and partly from Williams' place in the rise heading. As the end of the west level, after the explosion, was found to be cleaned up and two shots were found in the face ready charged in preparation for firing, McIntosh had probably been in the west level for the greater part of the time between 8 a.m. and 9 a.m. It was his duty to charge the holes and to prepare to fire them.

There is some doubt whether Williams could have been working in his own rise place for an hour prior to the explosion without discovering the gas therein. He may have been there, but it seems to us more likely that he assisted Kaye (sen.) and Colpo in the level until the whole of the coal lying there had been filled and sent out. He would then go to his own place. The evidence of Boote and Burnett describes how they effected their escape, but nothing in their evidence throws any light upon the cause of the explosion. The evidence of Inspectors Parsonage and McArthur and of Frank Duffy, Superintendent of the Rescue Station—which was also confirmed by our own examination of the workings—leaves no doubt that the cause of the explosion was an ignition of gas in the rise heading off the west

level. While the explosion was not a particularly violent one in that it did not damage the mine timber or the workings to any great extent, it was of sufficient force to dislodge the brattice stoppings between the intake and the return airways, and on reaching the mouth of the mine—probably because of the increased supply of oxygen available—the force was so intensified as to demolish the fan, the haulage winch, and the sheds at the mine-mouth.

Workers at a mine situated on the other side of the valley described how they saw a flame issuing from the mine-mouth. The effects of this flame were seen by us in the scorching of the foliage of trees in line with the mine-entrance. Kaye (jun.), who was the driver of the haulage winch situated at the mine-mouth, was killed by the force of the explosion, and his body was found some distance away from where he was at work. There must, therefore, have been a considerable quantity of gas in the rise heading in which the ignition occurred. It is possible that the gas accumulated suddenly in the working-place between the time of McIntosh's examination and the time when the explosion occurred, but from the evidence of the Inspector of Mines as to the rate of the accumulation of gas on the subsequent days, and from our own examination of the working-place, we are of the opinion that the gas accumulated gradually from the time work ceased on the previous day. The Chief Inspector of Mines estimated the quantity of gas at from 200 to 400 cubic feet. In our opinion, it must have been not less than 400 cubic feet, and probably more, to have caused the effects which were noticed. It is probable that, the face being close to the fault, a shot fired towards knock-off time on the previous day liberated a gas-feeder which continued to discharge into the working-place for the eighteen hours until the actual time of the ignition.

After the explosion, Inspector McArthur and Superintendent Duffy conducted experiments and took measurements, and, according to their evidence, the rate of accumulation of gas on several days was approximately 400 cubic feet per day. As a gas-feeder is usually strongest when it is first liberated the issue of gas into the place during the first few hours was probably more rapid than this, and, in the absence of any ventilating current to remove it, the gas would accumulate against the roof of the place, filling a space roughly wedged-shaped, the thin end of the wedge being farthest from the face. There is only circumstantial evidence of the cause of the ignition of this gas, but that evidence is very strong. It is possible that Williams worked in the place filling coal up to the time of the occurrence, and this is consistent with the fact that after the explosion there was a full box of coal in the face ready to be sent down to the level, but we think it more probable that for the first part of the time, at any rate, Williams worked that morning with Kaye and Colpo in the west level, and that when the coal in that place was filled and sent out and the place made ready for the firing of two shots found there he went to his own place in the rise heading. As he ascended the rise towards the face he would come into contact with the inflammable gas mixture and either because he was smoking as he walked in or because when he was within a few feet of the face he struck a match to commence smoking, he ignited the gas. A tin of tobacco, with cigarette-papers, a box of matches, and the butt of a partially smoked cigarette, were found about 12 ft. back from the face. We are of opinion that no other reasonable conclusion can be drawn as to the manner of the gas ignition.

Throughout the mine there was much evidence of slackness in management and general disregard of safety precautions. Explosives and detonators were found in three places on the floor of the levels. Apart from matches found in the pockets of some of the deceased, matches were found in the mine at two places, one in the rise heading, and one in the main dip. Tobacco and other smoking-material were found on some of the bodies. Boote admitted that he had smoked in the mine prior to the appointment of McIntosh as manager, but denied that he had done so since then, and further stated that he had not seen other men smoking in the mine, nor was he aware that they had been carrying smoking-material and matches while working.

From the evidence before us we are of the opinion that it was common practice for the men to smoke in the mine and to do so just when and where they pleased.

The ignition of gas under circumstances closely approximating those which exist in mine workings has been observed in experimental stations in England, in the United States of America, and in other important coal-mining countries, and there is much literature available which describes how an explosion develops. The first ignition creates a rapid expansion of the gases which radiate outwards from the point of ignition in all directions which are open. In this case there was only one direction open—namely, down the rise place to the west bottom level, and then right and left along the level, up the main dip, and through the other open workings. This rapid expansion, following the ignition creates a partial vacuum at the point of ignition, and is therefore followed by a rush back to fill that partial vacuum. Where there is a considerable volume of gas this creates a further quantity of explosive mixture by bringing more air into contact with the purer gas, which is not by itself inflammable. This occurs a number of times in rapid succession, and so causes a series of ignitions, giving rise to reverberations and rumbling sounds, which are always described by those who have observed an occurrence of this kind. Under these circumstances it is quite possible for workers in the vicinity of the ignition to escape injury during the first few moments as the force of the explosion usually becomes greater as it proceeds until the gaseous mixture becomes exhausted. This explains why Kaye (sen.), Colpo, and Williams were able to proceed some distance from the point of the explosion. Kaye and Colpo who were working at the end of the level, would be alarmed at the first ignition and would immediately make for the main dip. They would therefore be in front of Williams, who was probably somewhat stunned by the first ignition and who had to make his way down the rise to reach the level.

In Dr. Densen's opinion Williams and Kaye were more injured by the actual explosion than were Colpo and McIntosh, who succumbed to carbon-monoxide poisoning. In this opinion there is nothing inconsistent with the facts. The injuries inflicted on both Kaye and Williams were probably caused by one of the secondary ignitions while they were on their way out, and if they were on their

feet they would be more subject to force than if they had been prone on the floor. McIntosh was found farther out of the mine than any of the others, and that is accounted for by the fact that he was farther out in the west level when the first ignition occurred and was in advance of the others when he attempted to reach safety. The escape of the other two men, Boote and Burnett, was due to the fact that they were working in the east level, a considerable distance from the place where the ignition occurred, and the force of the explosion was therefore largely spent before it reached them. By crawling along the floor—as described by both men in their evidence—they were partly immune from the poisonous effects of carbon monoxide, which is a gas lighter than air and therefore does not lie close to the floor of the workings.

We now proceed to deal seriatim with the specific questions arising under our order of reference :—

(1) To inquire in what part of the mine the fire or explosion first started, the nature of the same, and how much of the mine was affected by it.

The explosion first started in the rise heading off the west level, which is the lowest level on that side of the mine. It was a gas explosion, and there was no evidence that it was accentuated appreciably by coal-dust as usually occurs. The whole of the mine workings were affected by the explosion to the extent that they became filled with poisonous and unbreathable gases in which life could not be sustained. The actual physical damage inside the mine was very slight. The greatest force took effect at the mine mouth where Kaye (jun.) was killed and where machinery and sheds were destroyed.

(2) To inquire how the fire or explosion began and spread.

It is our opinion that the explosion was originated by some one—most probably Williams—bringing a naked light into contact with an inflammable gas-mixture, and that it spread as previously described.

(3) To inquire to what extent the provisions of the Coal-mines Act, 1925, and the regulations made thereunder were complied with in the mine, and more especially as regards—

- (a) The examination of the mine :
- (b) Ventilation :
- (c) Lighting :
- (d) The preparation of shots and the method of firing shots :
- (e) The prevention and treatment of inflammable dust.

We are of the opinion that the provisions of the Coal-mines Act, 1925, and the regulations thereunder were generally disregarded in the mine, and in regard to the specific questions above enumerated, we are of the opinion that—

- (a) The examination of the mine was perfunctory and inadequate :
- (b) The total volume of air produced by the fan was sufficient, but it was not properly distributed to the working-faces, and the stoppings between the intake and return airways were not properly constructed. Moreover, it appears very doubtful whether the fan was run during the whole of the time required by Regulation 179 :
- (c) The use of electric safety-lamps was in accordance with the Coal-mines Act and regulations :
- (d) Shots were not properly prepared in accordance with the requirements of the Act and regulations. This was clearly shown by the two shots previously referred to as being found in the face of the bottom west level. These had been bored straight into the solid coal without any preparatory cutting or holing, and, further, they were both fully charged and tamped together in contravention of Regulation 231 (d) (i). The method of firing shots appears to have been by electric detonators and batteries. The finding of two batteries and two coils of shot-firing cable, both of which were obviously being used, raised doubt as to whether all shots were fired by the one qualified person in the mine. The fact that loose explosives and detonators were found at certain points on the floor of the mine-workings indicates that the regulations requiring the proper storage of explosive materials underground were not complied with :
- (e) Stone-dust had been used in the mine. The Coal-mines Inspectors' reports regularly recorded that stone-dust regulations were complied with, and the fact that there was no evidence of a dust-explosion confirmed these reports.

Other matters to which we think attention should be called under this heading are—

- (a) The timbering of the roadways and working-places was not carried out in accordance with the provisions of section 117 of the Coal-mines Act, 1925 :
- (b) The access to the mouth of the mine from the lower tram-line was in our opinion dangerous, and unfit for use as a regular travelling way by the mine-workers :
- (c) The requirements of Regulation 180 that an automatic pressure-recorder should be attached to the fan had not been complied with during recent months. An indicator had at one time been procured and attached but had fallen into disuse.

(4) To inquire into the nature and character of the working and the efficiency of the management of the mine.

The working of the mine was in accordance with general practice, and followed the bord-and-pillar system of coal-extraction. As to the efficiency of the management of the mine, we are strongly of the opinion that it was not efficient. The Coal-mines Act permits a mine employing not more than eight workers to be controlled by the holder of a Fireman-Deputy's Certificate. While a fireman-deputy is capable of looking after a section of a mine under the supervision of an underviewer and/or a first-class certificated mine-manager, we are of the opinion that a fireman-deputy is scarcely qualified to take sole charge of a mine where no more highly qualified men are available to guide and supervise his work. In mines employing a larger number of men the Act requires certain duties to be discharged by the manager and by the underviewer. Presumably in a mine of this size a deputy given a permit to manage the mine is required to perform the duties which in larger mines are required of the manager and/or the underviewer, but nowhere is this specifically stated in the Act or the regulations, and, further, the syllabus for a deputy's examination is not designed with the idea that a deputy is to perform the duties of an underviewer or manager, and so there is no proof that any deputy given a permit to act as manager of a small mine is qualified to discharge the necessary duties. Moreover, the position of a fireman-deputy in charge of a mine in which his own employers are working under his control is such an exceedingly difficult one as to render it almost impossible for him to discharge his duties and obligations under the Coal-mines Act and regulations. For instance, section 98 of the Coal-mines Act, 1925, requires the manager of a mine to search workers systematically for matches and smoking-material. No such search was ever carried out at Kaye's Mine, and the Inspectors of Coal-mines, in their evidence, said that they had never required such a search to be made, nor had they ever discussed with the members of any co-operative party the question of searching. It is safe to assume, therefore, that the Inspectors realized the impracticability of enforcing these regulations under the circumstances, and to us it seems to be too much to expect that a man holding the nominal position as manager in a mine such as this would submit his own employers to frequent search for contraband material. In our recommendations we shall deal further with the question of management.

(5) To inquire into the efficiency of the inspection of the mine by all or any persons who are responsible for such inspection.

As to the efficiency of the inspection of the mine by all or any persons who are responsible for such inspection, we are of the opinion that the inspection of the mine by the manager was inefficient and perfunctory. The state of this mine as disclosed by the event is proof positive that the inspections by the Inspectors of Coal-mines were also ineffective, but in our opinion it is practically impossible, in the case of this and many other co-operative mines operated as this mine was, for the Inspectors to exercise sufficient supervision to obtain compliance with the provisions of the Coal-mines Act and regulations. In their evidence Inspectors Parsonage and McArthur both said that they were of the opinion that the co-operative parties generally complied with the requirements of the Act and regulations, but in view of the many breaches which were obvious in Kaye's Mine we cannot accept their opinion. In many of these mines the only official is one holding a fireman-deputy's certificate, and there is no constant and regular supervision by a qualified manager. Instead of their being two workmen's inspectors in this mine there are only two workmen's inspectors for nineteen mines in this district. The visits of the departmental Inspectors appear to have been made with considerable regularity, and, as Inspector Parsonage stated in answer to a question, it was always probable that members of parties operating these mines became aware when the Inspector was in the neighbourhood and likely to pay them a visit. Inspectors Parsonage and McArthur are fully qualified men, but we are definitely of the opinion that their inspections as carried out were ineffective for the simple reason that it was impracticable to make them effective.

(6) To make suggestions for the prevention, as far as possible, of similar accidents, and for the safe working of this and other mines in the future.

We make the following suggestions for the prevention, as far as possible, of similar accidents in the future :

(1) The only clause in Kaye and party's lease relating to the working of the mine is clause 8, which reads as follows :—

The lessees shall work and manage the mine in the most approved manner and to the satisfaction of the Superintendent of State Collieries and of the Inspector of Mines so as to do as little injury as possible to the surface and without creating any waste or unnecessary loss of coal

so that if the surface of the area is not injured and there is no unnecessary waste or loss of coal the Inspector of Mines and the Superintendent of State Coal-mines, under the provisions of the lease, have no powers to intervene. We think that any lease issued by the State Mines Department to a co-operative party should go much further than this and should require the complete observance of all the safety provisions of the Coal-mines Act and regulations to the satisfaction of the Superintendent of the State Coal-mines and the Inspector of Mines. Then the penalty of cancellation of the lease would be enforceable for any breach of these requirements. In our opinion, this would have a much stronger deterrent effect against neglect of safety precautions than the punishments which are at present available under the Act and regulations.

(2) As these small mines are situated on the State Coal Reserve and therefore must be regarded as part of the State's own mining operations, the State Mines Department should be required to accept greater responsibility for their proper management. There should be appointed a sufficient number of first-class certificated managers to control these mines in convenient groups, and to exercise over them efficient and regular supervision. In the Ten-mile Creek area there are five party mines working, and in the immediate neighbourhood there are several others. In our opinion, a first-class certificated manager should be appointed by the State to control this group of mines. Each small mine might still have its fireman-deputy in charge, but his duties would be similar to those which are required of a fireman-deputy in a larger mine who is in charge of a section only. He would be under the control and direction of the mine-manager. The question whether a sufficient royalty should be charged against the mine to meet the cost of management is one for the Department, but there should be nothing to suggest in any way that the manager is an employee of the working parties. He should be the direct employee of the Mines Department and be responsible only to the Department for his work. Other conveniently situated groups of mines could similarly be brought under the management of men holding first-class certificates.

(3) That section 60 of the Coal-mines Act be amended so as to eliminate the provision that the holder of a fireman-deputy's certificate may be a manager of a mine employing up to eight men, and to require that, independent of the number of men employed therein, no mine shall be under the sole charge of any one holding a certificate of lower grade than that of a Second-Class Mine-manager.

(7) And generally to make inquiry into any matter or thing arising out of or connected with the several subjects of inquiry hereinbefore mentioned or which, in your opinion, may be of assistance in fully ascertaining, explaining, and arriving at a fair and just conclusion in respect to the prevention of similar accidents, and to report whether any additional legislation is necessary and the scope of same, and whether any amendment or addition to the regulations included in the existing law is required to provide reasonable and proper safeguards against such accidents.

Under this heading we further recommend as follows:—

- (1) *Safety-lamps.*—It was suggested to us in the evidence that in enforcing the use of safety-lamps in this mine the Inspector had exceeded his powers. We have not gone very thoroughly into this matter in view of the fact that we are informed that the regulations are under review, but in our opinion if the Inspector could only secure the use of safety-lamps under conditions in Kaye's Mine by exceeding his statutory power, the amendments of the regulations should go far enough to ensure that the Inspector has all the necessary powers.
- (2) *Telephone Connections.*—We are of the opinion that all mines should be connected with the district telephone exchange.
- (3) *Inspectors' Reports and Diaries.*—The Inspectors' reports and diaries which we examined contained no statements as to the satisfactory compliance with the provisions of the Coal-mines Act and regulations, with the single exception of the stone-dust regulations. They therefore afforded no direct evidence that any other regulations were complied with. Attention was, however, called to breaches of regulations which were observed on the different visits made. We think it desirable that the Inspectors should note in their diaries compliance with the regulations under different headings, as for instance—report book; the keeping up to date of the mine plan every three months as provided by the Act; the self-recording indicator required to be attached to the fan; the condition of the bratticing, stoppings, doors, and other adjuncts to ventilation; the steps being taken to provide adequate support to roofs and sides; the storage of explosives and other regulations the observance of which is essential in the interests of safety.
- (4) “*Self-rescuers.*”—It was suggested in evidence that it would be advisable to make it compulsory for all miners to be provided with an approved “self-rescuer,” which they should carry with them every day as a part of their normal equipment. We are of opinion that this would be impracticable. Emergencies requiring the use of self-rescuers are fortunately of very infrequent occurrence. Many mines have worked for twenty or more years without the occasion for the use of a self-rescuer arising. It would be impossible to induce all workmen to carry self-rescuers and to continue to give them the proper care for such long periods on the chance that they might at some time be required. If an emergency did arise it would probably be found that the self-rescuers were not available or that they were not in good condition. We consider that it would be much better to make it compulsory for a supply of self-rescuers to be provided at each mine, to be kept in each section of the mine in the care of the official in charge of the section.

Conclusion.—In conclusion we would like to record our opinion that the escape of Boote and Burnett was entirely due to the presence of mind, resourcefulness, and courage displayed by the former immediately after the explosion.

We would like to emphasize that excellent work was done after the explosion by Inspector Parsonage, Inspector McArthur, Mr. Duffy (Superintendent of the Dobson Rescue Station), and all members of the rescue teams.

The Commission also desires to express its appreciation of the able manner in which Constable McQuarrie carried out preliminary investigations and obtained statements from all concerned, as this was of valuable assistance to the Commission.

The Commission also desires to express its appreciation of the efficient work performed by the secretarial staff.

We return herewith, Your Excellency's Commission, together with an extension thereof. All the foregoing matters and recommendations we humbly submit for Your Excellency's gracious consideration.

Dated at Christchurch, this 10th day of February, 1941.

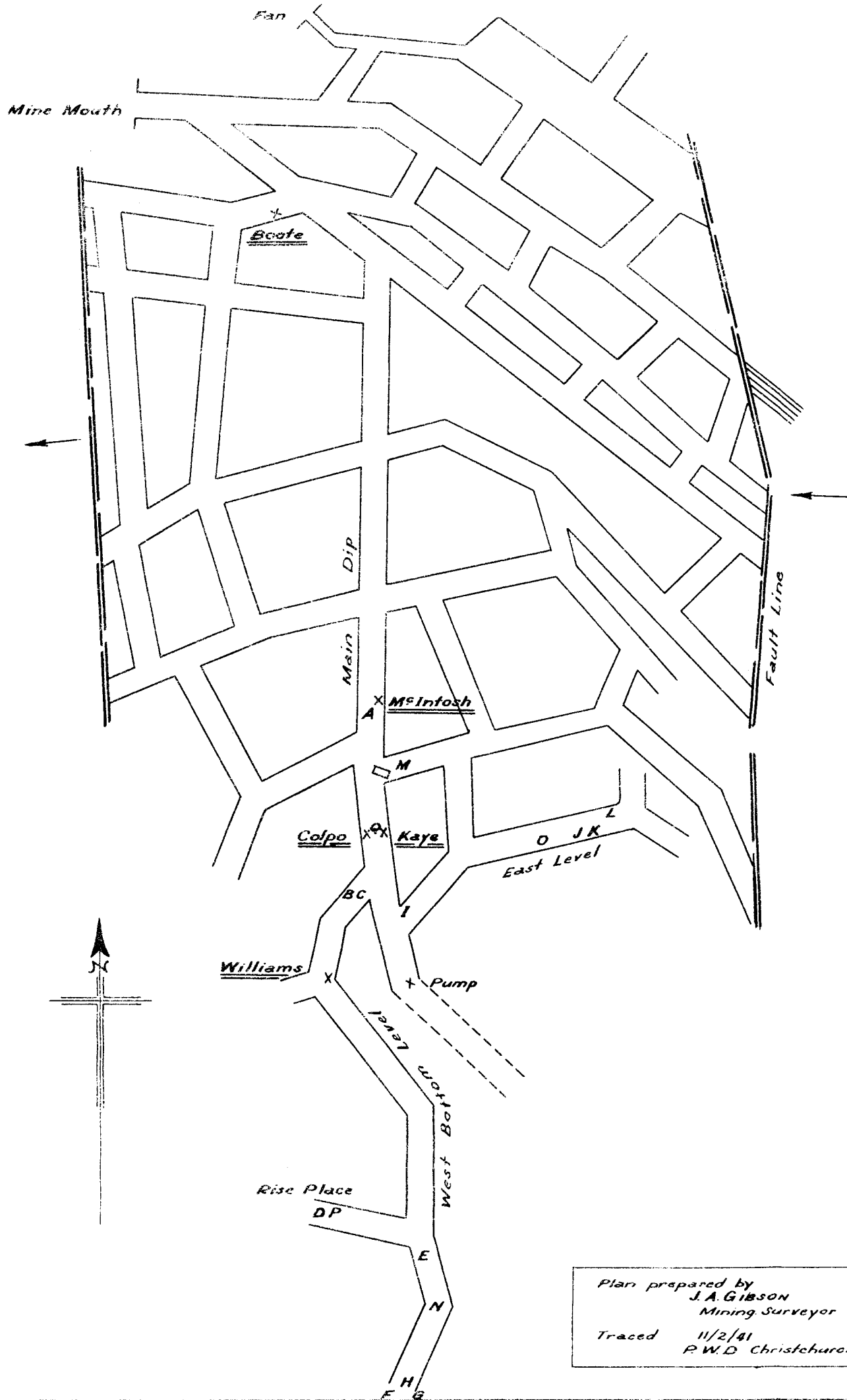
[L.S.]

G. G. CHISHOLM, S.M., Chairman.
JOHN WATSON.
A. McLAGAN.
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JOHN DEVLIN.

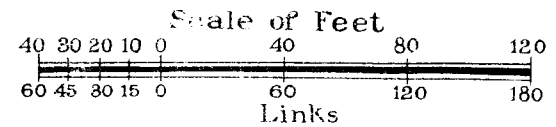
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MINE PLAN
KAYE & PARTY
TEN MILE



- A Box of matches
- B Struck match
- C Stem of pipe
- D Tin of tobacco and papers "cigaretts"
- E 12 lbs. Loose explosives "Monobel" & 5 loose detonators
- F Tamped Shot
- G Tamped Shot
- H Shot firing cable
- I Locked safety lamp
- J 12½ lbs. Loose explosives "Monobel"
- K Workman's coat with pipe half smoked and tin of tobacco
- L 5½ Loose plugs of explosives "Monobel"
- M Compressed air receiver
- N Shot firing battery
- O Shot firing battery and cable with cable partly run out
- P Cigarette butt and tin containing matches
- Q Tobacco and Papers

Plan prepared by
J.A. GIBSON
Mining Surveyor 5/12/40
Traced 11/2/41
P.W.D. Christchurch

