

NSW DEPT PRIMARY INDUSTRIES  
AB018297

EXPLOSION AT WEST WALLSEND NO. 2 COLLIERY  
ON 8TH JANUARY 1979

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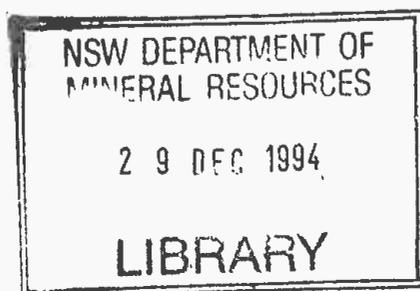
R E P O R T

of

His Honour Judge A.J. Goran Q.C. following an  
Inquiry by the Court of Coal Mines Regulation  
established under Section 31 of the Coal Mines  
Regulation Act, 1912, as amended.

RC 1979

COPY 1



His Honour Judge A.J. Goran, Q.C.  
Court of Coal Mines Regulation

Whereas it appears to me that a formal investigation of the explosion that occurred at West Wallsend No. 2 Colliery on 8th January, 1979 and of its causes and circumstances is expedient, I Ronald Joseph Mulock, Minister for Mineral Resources and Development in pursuance of the powers conferred on me by Section 31 of the Coal Mines Regulation Act, 1912, hereby direct such investigation to be held and require the Court of Coal Mines Regulation established under that Act to hold the investigation.

Dated at Sydney this 29th day of March 1979

R. J. Mulock  
Minister for Mineral Resources  
and Development

IN THE COURT OF COAL MINES REGULATION )  
 ) No. 1 of 1979  
HOLDEN AT SYDNEY AND BOOLAROO )

IN THE MATTER of an Inquiry in  
pursuance of the Coal Mines  
Regulation Act into an explosion  
which occurred at West Wallsend  
No. 2 Colliery on the 8th January  
1979 and its causes and circum-  
stances

R E P O R T

TO The Honourable Ronald Joseph Mulock,  
Minister for Mineral Resources and Development  
in the State of New South Wales

Sir,

Having been directed by your Notice dated at Sydney on the 29th day of March, 1979 made and issued in pursuance of the powers conferred upon you by the provisions of Section 31 of the Coal Mines Regulation Act, 1912, as amended, to hold a formal investigation as the Court of Coal Mines Regulation established under Section 33 of the said Act of the explosion that occurred at West Wallsend No. 2 Colliery on the 8th January, 1979 and of the causes and circumstances of such explosion, I have completed my investigation and have the honour to report as follows.

OPENING THE INQUIRY

I conducted a formal Sitting of the Inquiry in Sydney on 7th May, 1979. I accepted the following appearances:

Mr. B.F. Murray of Counsel on behalf of the Minister for Mineral Resources and Development and Chief Inspector of Mines. I also invited Mr. Murray subsequently to assist the Inquiry.

Mr. T.R. Bevan, Solicitor, for the Colliery Managers' Association.

Mr. R Stitt of Counsel for J. & A. Brown, & Abermain Seaham Collieries Ltd.

Mr. J. Tapp for the Australian Coal & Shale Employees' Federation.

Mr. R.P. Gaussen for the Australian Collieries Staff Association.

Mr. H.R. Hudson of Counsel for Newcastle District Deputies' & Shotfirers' Protective Association.

At a later stage of the Inquiry Mr. Hudson withdrew and Mr. N. Emery, Solicitor, appeared for the bodies whom he represented as well as for Messrs. C. Mathews and D. Pugh, Deputies. Later still Mr. R. Kable appeared for Messrs. Pugh and Mathews.

Mr. A.T. Brown Solicitor, appeared for Gilbert Bunn, Electrician, and the Electrical Trades Union of Australia.

Mr. J.D. Heydon of Counsel appeared for the Australian Collieries Staff Association.

I appointed Mr. Robert James Kininmonth and Mr. William Thomas Smale as Assessors to assist the Court in its Inquiry. There were in fact a number of nominations for these positions. Mr. Kininmonth is a Senior Inspector of Collieries in the Department of Mineral Resources and Development. He is located at Wollongong. Mr. Smale is Secretary of the Australian Coal & Shale Employees' Federation. I wish to acknowledge the great assistance given to me by these two gentlemen. Each of them showed complete impartiality in performing their duties towards the Court and the industry. Their depth of knowledge, both practical and theoretical, of the coal mining industry gave them a tremendous advantage as advisers. I learned much from them and was most impressed by their willingness to help at all times and

by the interest which they showed in the proceedings.

I feel that I should acknowledge the capable assistance afforded the Inquiry by Mr. Murray of Counsel. His task was arduous and indeed at one stage he became ill for a period largely as a result of his efforts. Nevertheless, he returned to the Inquiry as soon as humanly possible. He was always ready to carry out my wishes and to bring to me requests made by Counsel appearing.

I desire publicly to acknowledge the assistance given to the Inquiry by Mr. Alan Neaves, Registrar of the District Court and of the Court of Coal Mines Regulation. Mr. Neaves acted as Secretary and organiser of the Inquiry and took upon himself the task of finding a suitable Court for hearing the main body of evidence. The result was that the Inquiry was able to operate smoothly and with the minimum of delay occasioned by matters of convenience.

Finally, the Court expresses its gratitude to the Council and Shire Clerk of Lake Macquarie Shire for the assistance which they have given in accommodating the Inquiry and the persons involved over many days. During the earlier Sittings the Court was conducted in the former Council Chambers at Boolaroo. Later, when these became unavailable, the members of the Council generously invited the Court to sit in the very modern and splendid new Shire Council Chambers. Not only was the Courtroom thus made available but the facilities and hospitality of the Council were granted to both the members of the tribunal and Counsel involved.

On the 22nd May, 1979 together with my Assessors I visited the mine. In company with officials, Inspectors and Counsel, I inspected the surface installations and had demonstrated to me the equipment which was likely to become relevant at the Inquiry. The mine itself had been sealed at this time and underground inspection was, therefore, impossible.

On the 25th May, 1979 I commenced hearing evidence at the Inquiry and continued to do so, apart from adjournments necessitated by colliery holiday periods and necessary adjournments which were inevitable during that protracted hearing.

However, on the 24th July, 1979 the explosion occurred at Appin Colliery, claiming fourteen lives, and I was asked to convene the Court for the formal Inquiry into this disaster. It was obvious that this became an urgent matter in the public mind and, although it promised to be somewhat lengthy, it had to take precedence, once it was ready to proceed, above the present Inquiry. One result of the postponement of the concluding stages of this Inquiry in favour of the Appin Inquiry is that the present Inquiry in its later stages was conducted in the light of the lessons gained during the Appin investigation. In both cases inflammable gas was the fuel of the explosion and electrical arcing the ignition point. Further, the spread of improper practices and faulty methods of operation over both southern and northern coalfields has led me to consider the need for change in safety procedures in mines generally, and I have made certain observations and recommendations in this Report as a result. In the end, although the consequences of the explosion at West Wallsend No. 2 resulted in no loss of human life, general lessons should be learnt from it which are at least as important as those to be gathered from Appin and my recommendations lay emphasis on a need to examine the whole coal mining industry in this State.

#### THE MINE

The West Wallsend No. 2 Colliery is owned by J. & A. Brown & Abermain Seaham Collieries Ltd., a subsidiary company of Coal & Allied Industries Limited. The Mine is situated at Killingworth, adjacent to the old Killingworth mine, now closed after an explosion in 1910.

Sinking began in 1969 and the colliery first regularly produced coal for marketing in 1972. At the time of the explosion development had been considerable, and pillar extraction was taking place, although production had temporarily ceased for the Christmas holidays.

The mine had a downcast shaft, a drift and (at a distance of about one kilometre from these and the main surface buildings) an upcast shaft, where the main ventilating fan is situated. There are two coal seams. The main seam being worked at the time of the explosion was the lower Borehole seam. The upper seam is the Young Wallsend Seam, from which some coal has been extracted. However, this seam contains coal which is not as readily marketable because of its quality compared with that contained in the Borehole seam, and the latter seam had therefore been extensively developed first.

Coal is extracted by the bord and pillar method, which involves firstly the development of pillars of coal which are extracted last. This extraction leaves a waste into which the roof is allowed to fall, forming a goaf area. The goaf at this mine contained much inflammable gas in the form mainly of methane (CH<sub>4</sub>). Compared with this area, the solid strata, coal faces and ribs gave few gas problems. A bleeder system for the goaf was installed with the discovery of substantial quantities of goaf gas, by bleeder headings which were regulated to allow gas to flow into the main return system, to be extracted by the ventilating fan through the upcast shaft.

This fan delivered 300,000 to 400,000 cubic feet per minute of air to the mine workings - a somewhat larger quantity than normal, because of the mine's gassy nature. Even with this capacity, it would appear from some evidence, that with the extension of the mine's area, the fan was approaching full capacity and there was early discussion of the necessity for a fan of greater capacity.

The Coal Mines Regulation Act, 1912, provides (S.54, General Rule 1(d)) that where the percentage of inflammable gas in any return airway exceeds .5 per cent, an approved continuous monitoring system shall be installed so that the percentage of inflammable gas in the general body of air in that return airway shall be automatically recorded at the surface of the mine. Such a methane monitor with recorder was installed at the mine. It was electrically operated but one sensor head ceased to operate if the main ventilating fan stopped. Monitoring below the surface was normally by two sensing or detector heads, one located at the fan, the other in a return airway deeper in the mine inbye 1 West District. **At the time of the explosion the fan sensing head had ceased to operate through malfunction and had been sent away for repair.** The other head was operating. Its reading could be observed above ground in the report room, by means of a continuous pen tracing on a continuous roll of graph paper attached to the wall. When both sensing heads were operating two such tracers operated, leaving vertical dotted lines on the paper, which was continuously expressed from the recording device. This paper was torn off at appropriate intervals and stored as a record at the mine. The percentage of gas could be determined by applying a scale attached to the recorder, to the graph paper, and so reading off the percentage on the scale.

The paper (powered by surface power) also moved at a predetermined rate and a 24-hour calibration enabled the elapsed time for any point in such time to be determined in correlation with the gas percentage reading. Thus, when the sensor heads (or either of them) did not function a calculation of the period of such non-function could be determined by the failure of the tracer pen to record methane percentages on the graph of the methane monitor. In this way, the duration of fan stoppages could be calculated if the underground head was operative, since this sensor head ceased to function during such stoppages. The fact that a sensor was not functioning could be seen on the graph paper in that its tracer merely left a continuous series of dots on the left hand margin of the roll of graphpaper. In addition, a separate meter showed the methane percentage underground.

#### SURFACE STRUCTURES (AT THE TIME OF THE EXPLOSION)

In order to understand the events and nature of the explosion at West Wallsend No. 2 it is necessary to understand the disposition and purpose of some of the surface buildings, as well as the electrical supply and distribution of the colliery.

The mine property is situated near the main road to Killingworth. It has two gates - the main gate being used for ordinary access by personnel and vehicles, and the other for coal haulage trucks.

There is a carpark, office and bathroom, situated near each other, a workshop, store, loading shunts and a drift portal. Adjacent to the office and bathroom is the downcast shaft. About 100 metres from the bathroom is the power sub-station and the haulage room. The upcast shaft is, as already indicated, about one kilometre away (or perhaps a little less) and is situated on an adjoining property. The fan, of course, is located here, the whole area being fenced, with a locked gate. The fan room itself is kept locked, with access to limited personnel.

The bathroom (or change-room) is divided into three sections for the use of classes of personnel - staff, deputies and general employees, including miners, fitters and the like. Each one of these areas has a clean and a dirty side. The deputies' bathroom opens to a corridor which leads to the report or recording room. If a deputy goes outside, he passes through this room and is in a position, inter alia, to inspect certain significant instruments pertaining to the condition of the mine. This room leads to the lamp room, where the deputy must go to obtain his oil flame safety lamp and his cap lamp. It is on a wall of the recording room that the methane monitor recorder, already described, is affixed.

Above the door leading to the lamp-room is the fan control unit, which combines a fan indicator. At the top of this unit is a fan-speed indicator or tachometer, calibrated in revolutions per minute. Normally the fan runs at 480 r.p.m. (The scale includes a slight zero error) but is efficient and at a glance will show a malfunction in fan speed. A stoppage would be glaringly obvious. The bottom section contains indicator lights, ranging from a green "run" light which when on, shows the fan to be running.

On the other, when the fan is stopped, the green light goes out and a red "stop" light comes on. Next to the red light is an amber or gold "fault" light which will also come on with the red stop light, if the fan is stopped because of certain faults, for example the overheating of any one or more fan-bearings. ~~There~~ is a button for "alarm cancel" which must be pressed before the fan can be re-activated in these circumstances. If the fault persists the red light will show again, as will the amber light, if it has been caused to glow by the fault.

There is also a switch for "motor selector" which is not relevant at this stage.

The wall on the right hand side of the door is equipped with telephones and above there is a further unit which controls the underground power remotely from the report room. Its function is described as an "emergency underground power trip" and there are separate control buttons for the Borehole seam and the downcast shaft. In practice, according to the manager, when work ended on the Saturday before the explosion, the deputy Mathews turned the underground power off from this point. There is a certain vagueness in the evidence as to whether it was his general practice when on duty to use this method. However, power cannot be turned on from here - this must be done in the switchroom by the electrician. Warning lights on this unit indicate whether power is off or on. This fact has significance in the account of the practices at the mine described in evidence. If power was in fact on underground to either of the two areas, it should have been obvious to any person looking at this indicator in the report room.

THE MINE ELECTRICITY SUPPLY AND DISTRIBUTION  
AS AT THE TIME OF THE EXPLOSION

The Shortland County Council supplies power to the colliery at 33 K.V. This voltage passes through transformers to convert it to the voltage required for different functions in the mine whence it is distributed to the respective switchboards. Power is passed to these switchboards, located in the switchroom which is in the substation-haulage room complex previously described.

There are three main switchboards, one at 415 volts, one at 3.3 K.V. and the third at 11 K.V. The 415 volt board is in two sections, one supplying an 800 horsepower vehicle speed haulage, the other being for general distribution, including the downcast shaft lift, and general voltage distribution to the office, workshop, fire fighting pump and the switchroom building itself.

The 3.3 K.V. switchboard consists of a raised bank of three consoles. One, relating to the supply to the fan, receives power and feeds it to the fan. Next to it is the console which transfers power to the main drift conveyor belt. The third console takes power from the incoming transformer and distributes it to the other two consoles.

The 11 K.V. switchboard is also a bank of consoles. In this case there are four. The first receives power from an external transformer and feeds the remainder of the switchboard. The next console contains the equipment to control and feed power to the drift, whence it is reticulated by cables and transformers through the underground working. The third console performs a similar function for the downcast shaft. The feeder runs buried to the downcast shaft lift building whence it is suspended down the shaft until it reaches a transformer at the bottom which supplies power at 415 volts to two 100 H.P. pumps. The fourth console is vacant. The downcast shaft transformer is isolated from the feeder supply by circuit breaker which opens when surface power is disconnected. It remains isolated, that is, the breaker remains open, and has to be closed manually below ground.

The drift feeder cable reticulates through the Borehole seam workings, apart from being tapped off for the Young Wallsend seam. This power reaches by jointed cable a number of transformers distributed in the ordinary way through the mine. Thus reticulation of power stops at the various sections under development. The transformers themselves have isolators by which under a no-volt situation they can be disconnected from the main supply. When power has been disconnected at the surface these are usually left in the closed position, but since the transformer is "T-d off" from the main supply and has a circuit-breaker which is left open until the individual transformer is required to be used, the

*Fail fast  
alarms not  
provided*

transformer is not itself energized when power is switched on at the surface.

An apparent exception was early in the Inquiry believed to have occurred in respect of a transformer at one West. Before the recovery of this area of the mine after the explosion it was thought that this transformer may have been left in a situation where it would have been automatically energized by the switching on of power. It was found, however, in a switched-off condition.

It should be emphasized that all electrical equipment is located in intake airways and in the ordinary conditions and gas levels under which the mine had been operated faults would not have taken place in the presence of gas. This statement, of course, to those experienced in the mining of coal, while affording the colliery some comfort, is not to be taken as declaring a fail-safe condition or as indicating the justification of any degree of complacency among officials at the mine. The colliery had previously experienced electrical faults underground which led to no serious trouble. Reticulation cables extending over distances must be jointed. They must be connected to apparatus. They can become damaged. Mining history is filled with examples of such possibilities.

It is fair to say, however, that there was a considerable body of evidence from management that they were aware of the possibility of dangers and had implemented a method of operation which precluded human error in bringing together the obvious source of disaster - gas and frank electricity.

The switching apparatus for underground power is located, of course, at the 11 K.V. switchboard. Each of the two consoles concerned has a separate lever which operates a Reyrolle oil circuit breaker (O.C.B.), which, when closed energizes its respective feeder. The lever is raised by the operator to engage a spring, then pushed downwards, charging and closing the spring, to make the necessary contact which completes the circuit. Each console was clearly labelled to distinguish its function. However, it was claimed at first by the electrician on the explosion shift that he had mistaken the switch and closed the wrong circuit. This claim appears to have been dropped later, and in any case was

certainly not true. Despite the previous satisfactory situation, however, the colliery has seen fit for even more abundant precaution to alter the labelling and make other changes to the console inter alia. The management is to be commended for this attitude.

In conformity with Regulation 70 of the Seventh Schedule of the Coal Mines Regulation Act provision was made for the underground power supply to be automatically cut off in the event of a ventilating fan failure. This was effected by means of a shunt trip circuit breaker. This consists of a shunt trip plunger or rod. When the trip circuit is energized it fires a push rod which releases a mechanical trip and allows the breaker to go out, tripping out supply.

It appears to have been widely believed that since a fan stoppage automatically shuts off power underground, power could not be restored at any time while the fan remained stopped. Tests have shown that this is not the case with the West Wallsend No. 2 fan and underground power O.C.B. What happens in fact is that all three phases to the underground receive power for milliseconds with the closing of the circuit breaker and at the same time auxiliary contacts close on to the stop fan contacts which energize the shunt trip circuit so tripping out the O.C.B. Unfortunately, West Wallsend No. 2 was not the only colliery to suffer from this problem. ~~The difficulty can be avoided by energizing the shunt trip to place it in a trip-free position before the underground phases make contact. Other means, for example, no-volt trips, should be explored.~~

The Inquiry was supplied with the results of tests conducted by the Shortland County Council after the explosion at the Colliery to establish the trip free time of the Drift O.C.B. The three phases gave varying but sufficiently close results on all three phases in five different tests. The tests were conducted on no load. The explosion occurred in an on-load condition and it is suggested that a figure of 20 milliseconds be added for arcing time. This sum produces 55 milliseconds as the longest time that power could have been onto underground with the closing of the O.C.B. during a fan stoppage. The shortest time could have been 35 milliseconds.

Mr. R.J. Orr, Electrical Inspector of Collieries, whose investigation has been of great assistance in this Inquiry, has furnished me with an extract from Research Report No. 240 of the British Ministry of Power Safety in Mines Research Establishment, published in 1966. This deals with the ignition of methane by electrical discharges. The report indicates that a discharge of 300 microseconds in duration is sufficient to ignite an 8.5% mixture of methane/air. The time of 55 milliseconds is 180 times this and the figure of 35 milliseconds is more than 110 times the discharge postulated in the report.

One more feature in the switchroom should be described to complete the relevant matters in this Inquiry. It is situated on the bank of three main ventilation control consoles already discussed. Each of these consoles has its O.C.B. The right hand one is the main ventilation control already noted. On the front of the console is a square, white-faced ammeter, which displays whether the fan is running or stopped by showing what current is being drawn - an indicator, of course, to any trained electrician. The main consoles in the switchroom are mounted above ground level on a gallery, reached by a short flight of steps. This ammeter meets the eye as the first indicator when one climbs the steps to the gallery.

#### MINE PERSONNEL AND OPERATION

During the period when the explosion occurred the personnel of the mine was as follows: a manager, Mr. N. Snedden, an undermanager, Mr. T. Watson, an electrical engineer, Mr. J. Richards, a mechanical engineer, Mr. J. Bailey, a supervisor, three assistant undermanagers in charge of shifts, four maintenance engineers, deputies, fitters (electrical and mechanical), Federation men and general labourers. In all there were about 231 employees. In full production the mine worked four shifts but the explosion occurred during the Christmas holiday period and the mine was not producing. The last working day had been 22nd December, 1978. In full production, because there was a substantial break between shifts on Sundays, a pre-shift inspection was necessary prior to the midnight shift. This commenced about 10 p.m. and was thus termed the dogwatch pre-inspection.

During the holiday period there was only one shift in operation, a day shift commencing about 6.30 a.m. and lasting till 1 p.m. Maintenance work had been planned for this period - until 15th January, 1979, as follows: changing of belting in south-west headings, stone-dusting, belt cleaning, road laying, brickwork, repairing of a hole in the 600 ton coal bin near the base of the upcast shaft, etc. A list of holiday employees was drawn up and men were detailed to perform specific work. At times men were allowed to exchange days with each other.

The time of the explosion was between 4.30 a.m. and 4.55 a.m. on Monday, 8th January, 1979. The last work done prior to this was the morning shift of Saturday, 6th January, ceasing at 1 p.m. The deputies on that shift had been Mr. C. Mathews and Mr. D. Pugh. On leaving the colliery they had turned all underground power off. The same two deputies were rostered for the Monday morning shift. They were to be assisted by Mr. G. Bunn, electrician, and Mr. R. Miller, fitter. A pre-shift inspection of the mine within four hours of commencement of the shift was required by the Act according to the terms of S. 54, General Rule 4.

In order to perform this statutory duty the men, particularly the deputies and the electrician, had to arrive at the colliery gates at about 4.20 a.m. Mathews, who had a key, was to unlock the gates. The men should have then unlocked the bath and change house and changed into working clothes. It was the deputies' duty to proceed to the report room, check instruments, enter the undermanager's office to read any reports (although it was unlikely that there would be any on 8th January other than their own from 6th January) or instructions. The inspection of the mine would then take place, one deputy proceeding to the downcast shaft. The latter would climb some steps to operate an isolator that provided power for the lift which would take him down. The other deputy would descend to the main mine by dolly car. The electrician would connect the batteries to the dolly car, go to the lamp room to prepare oil flame safety lamps and obtain his own cap lamp, and then proceed to the switch-room, where he would be under deputies' orders. On the morning in question Pugh was to descend the shaft, and Mathews the drift. Usually the deputies met at pit bottom. At the appropriate time

the electrician should have put on power to the downcast shaft to enable the pumps to be started.

What actually occurred from the time of the men's arrival at the mine is a matter dealt with separately. It is beyond question, however, that Bunn was in the switchroom at the time of the explosion, closed the O.C.B. to the drift feeder first, and so energized the high tension cables throughout the main mine. A violent explosion followed, the blast of air causing the switchroom windows to cave in and the room filled with dust. Later he said that it appeared at first like a strong southerly change. Miller (in a statement) described it as like thunder and a hailstorm. Bunn said that the switch immediately tripped out and he saw the earth leakage light come on.

Soon afterwards, all power to the colliery went off, it being discovered later that flying debris had caused the failure.

Bunn took cover behind some consoles and then left the switchroom, falling down steps. He staggered and crawled down towards the main office area, but was met on the way by Miller and Mathews, who assisted him to the changehouse. He was somewhat shocked. The men helped him to shower, and when an ambulance arrived, summoned by the fire brigade which attended the scene, Bunn was taken to hospital for observation, but returned to the mine later.

Mathews telephoned the manager's residence, but there was no answer, the manager having gone away on holidays. The undermanager was not available. Mr. Bailey, the mechanical engineer, was telephoned and arrived at the colliery shortly after 5 a.m. He was followed by Mr. W.J. Seward, Superintendent of Collieries and Mr. J. McHarg, Chief Engineer for the Company.

A Mr. Hudson who lives on a property near the fan, was awakened by the explosion and informed the Cardiff Fire Brigade at 4.57 a.m. There is some doubt as to the time of the explosion. In evidence Mr. Hudson gives it as 4.35 a.m. and the deputies appear to believe that it was earlier than 4.55 a.m. On the other hand, a calculation from the methane monitor log appears to show that power went off to the mine about the later time and this would conform with the time of call to the Fire Brigade. Mr. Wilson, Senior Inspector of Coal Mines,

arrived soon after he was informed at 5.25 am. by a resident. He was assisted in his enquiries by Mr. E. Jones, District Inspector. Mr. Seward took prompt charge of emergency arrangements. Mr. Snedden, who was holidaying at Shoal Bay was informed by police of the explosion and hurried to the mine where he conducted recovery operations. Mine officials from other collieries also attended.

The violence of the explosion can be graphically shown by the fact that the elbow of the fan structure, a substantial and extremely heavy piece of metal was propelled 80 - 100 yards into Mr. Hudson's property. I deal separately with the extent of the damage underground.

It became obvious to officials that the fan had stopped. In fact this fan, the main ventilating fan to the mine had stopped at about 4.30 - 4.45 pm. on Saturday 6th January, and had been out of operation for some 36 hours. This fact is gleaned by inspecting the methane monitor chart, where the underground sensing head's tracer had stopped recording methane percentages for that period of time and had simply continued to record in the margin of the roll.

If the deputies had seen this they must have prevented Bunn from trying to switch power on to the mine, whatever they believed as to whether power could be put on during a fan stoppage. The first thing any deputy must have done was to see that the mine was ventilated before even proceeding underground or undertaking any below-surface inspection. They did not in fact look at the methane monitor recorder.

Nor did they look at the indicator nearby which showed methane percentage below ground by a meter. They did not even see the indicator in the report room which must have shown by lights that the fan was off, or the fan tachometer, which would have shown them that the fan was not running.

Bunn, for his part, claims to have checked the ventilation at the downcast shaft, on his way to the switchroom, and felt air flowing down. I deal with this proposition later. He did not go to the lamp room. He did not change the batteries on the dolly car. He went straight to the switchroom. Here, if he were at all interested in the state of ventilation, he could have checked the ammeter on the fan O.C.B. console.

He would have seen that the fan drew no current and must have realised that the fan was stopped. He did not look. It is somewhat strange that this meter must have been in his sight as he mounted the steps to the console, yet he did not notice.

#### THE FAN

At about 5.30 am. Mr. Bailey, mechanical engineer-in-charge, together with Mr. Seward visited the fan site. The compound containing the fan has a Cyclone wire fence, topped with barbed wire, the height of the two being approximately eight feet. There are three locked external gates. The locks were examined and found to be secure. The keys are issued only to certain people, being under control of Mr. Richards, electrical engineer.

As already described, the fan elbow, which leads from the shaft to the horizontal section of the fan had been blown off in one piece. Mr. Bailey opened the two doors to the fan room - they were still securely locked - and looked around from the platform. The external parts of the fan drive mechanism, including all belts, were completely intact. Neither official touched anything. The pair left, locking doors and the gate.

At approximately 6.30 am. Bailey returned to the fan site with Mr. McHarg, chief engineer for the Company. The purpose of the visit was to see whether the fan would be operational and to inspect the fan controls. The control console is in two parts. The left hand unit, labelled "415 volts" contains the controls relating to the auxiliary motor fan drive. The other console, labelled "3,300 volts" contains the controls for the main fan, including the main isolating switch. This switch was still in the closed or "on" position. On the 415 volt panel there is a black switch which has three settings - automatic - which would have allowed the fan, if there was no fault, to start automatically when power came on, manual, which requires an operator to re-start the fan, and off. This switch was found to be still on automatic.

McHarg was looking for signs of the fan having been tripped. The 415 volt panel has a protection device known as a P. and B. Golds Protection unit, which operates flag type trips that have to be manually reset. This unit was found not to have tripped out either on instantaneous or thermal overload.

On the 415 volt panel there is a red stop button. Mr. McHarg has no recollection of looking at it. He obviously did not know that it was of a self-latching type which, when pressed, remained depressed in the "stop" position, until manually unlatched. This button would effectively stop the fan. McHarg recalls switching the black button to "manual". Bailey and McHarg turned the fan over slowly by force to see if it was free, and confirmed that it was. McHarg decided to enter the fan through a small side door forward of the blades, at the bottom of the evasee. Inside, he conducted a further mechanical examination and noted that the blades were clear of the external fan-housing and that there was no physical damage to the interior of the fan.

McHarg came out again and waited for power, which was still off at the mine, to be restored. Some other mine managers came to the fan in the meantime to see if they could help. When power eventually came on, McHarg placed the isolating switch into the run position - he had switched it to "off" before entering the fan. He pressed the start button, to the left of the stop button, but the fan did not start. Then McHarg examined the stop button and found it was a latch button. He unlatched it, pressed the start button again, and the fan began to run. He repeated the process a number of times, allowing the fan to run further each time, until he had it running freely at full speed.

There is some mystery concerning the depression and latching of the stop button. Mr. McHarg does not remember at any time pressing it before he found it latched. In fact he went through the procedure of checking all circuits when the fan would not start at first, before discovering that the button had latched. This discovery was made, not by noticing at first that it was latched, but by bumping it in case it had faulty contacts, which action caused it to unlatch. So doubtful was Mr. McHarg that later at the mine he asked Mr Bailey whether he, Bailey, had pressed this button. Bailey denied doing so. Questions have obviously been asked around the mine about this button and no volunteer has come forward.

There were no signs of breaking into the fan room by somebody mischief-bent who may have stopped the fan. It is quite possible, of course, that an employee with

a key could have entered on the afternoon of Saturday 6th January, when the fan stopped. This, of course, is pure speculation. No motive of sabotage can be suggested, since it was believed that power could not be put on to the mine during a fan stoppage. In any case one would have expected a reasonable deputy or electrician to have discovered the stoppage immediately. One is forced to ask, "Who would stand to gain by delaying a Monday morning holiday maintenance shift?" If an alternative acceptable explanation can be put forward it is far preferable to the "stop button theory", which itself can be explained as co-incidental because Mr. McHarg (or perhaps somebody else) subconsciously pressed the button with other precautionary steps to prevent the fan from starting during inspection.

Two alternative theories have been advanced. One is remote and I dispose of it first. Some time in May, that is after the explosion, Mr. Barry Watson, under the instruction of Mr. Richards, removed the whole fascia or panel of the fan-room control system and relocated it elsewhere. After it was resited, Mr. Watson tried to start the fan in a test run and could not do so. On investigation he found that one of the main 3,300 volt contacts on the isolator was misaligned and prevented him from fully closing the mechanism so that an auxiliary switch in the main control circuit could not completely travel. The contacts were of the blade type and because of the misalignment could not enter their true path, but travelled down the side of it. The misalignment appears to have been a design fault in that attached cables of some weight pulled on the travelling section preventing it from making a fine, knife-edge entry into its holding position.

Mr. Watson advanced the theory to Mr. Richards, who revealed it to the Inquiry, that this may possibly have stopped the fan. I believe it to be a remote possibility only, having heard the expert evidence of Mr. Inspector Orr. One matter is significant - the fan was restarted while the panel was originally in the fan house by Mr. McHarg. It continued to run for some hours without stopping. There may then have been a degree of misalignment in the contacts but not enough, of course, to prevent the fan from starting or running. Possibly the misalignment increased with use or with

operating the switching mechanism subsequently. However, the most likely theory for the fan stoppage is that which is advanced by the Departmental inspectors and generally by the colliery officials, with some few exceptions, namely, the overheating of the fan's bearings.

These bearings, seven in all, are kept constantly lubricated, but there is still a danger of damage by seizing and the like, should they (and the lubrication) become too hot. A protective device is incorporated in the electrical circuitry, which responds to a temperature considered dangerous, by tripping the power supply to the fan, so stopping the fan. In earlier days this temperature had been set at a high of 120° F., but it was considered too low; although there is no record of the fan actually tripping at this bearing temperature, apparently the temperature at some stage had come near to this level. There is a degree of latitude in the tripping temperature selected, and as a precaution the temperature was raised to 140°F. This was the level at which the fan would have tripped out in the period before the explosion. Since that time the management has seen fit to raise this temperature for a bearing trip to 160°F.

The fan shaft runs through the motor room of the fan, an area subject to changes in outside temperatures, with a tendency to build up heat through the walls. The bearings themselves, of course, build up their own frictional heat. The bearing nearest the fan housing is most likely to be affected by the rise of temperature within the room. An exact outside temperature near the fan room at about 4.30 pm. on 6th January when the fan probably stopped cannot be obtained. However, an approximate temperature can be calculated by meteorological records. At that time on the day Newcastle recorded 36° Celsius, according to the Sydney Bureau of Meteorology. The inland temperature at West Wallsend probably rose above this by up to 4°C, giving an approximate temperature at the fan house of 40°C of 104°F. The temperature inside the motor room would of course be higher than this. There must be added some component of temperature increase in the lubricating fluid due to friction. Thus the trip temperature is by no means unlikely.

Against this two arguments have been raised. The first is the fact that this temperature had not previously been reached. It should be noted, however, that the argument does not go so far as to assert that the meteorological temperature had not previously been reached during the several years of fan operation. It must also be recognised, as Mr. Orr points out, that the mine had expanded since earlier days, water gauge increasing, and the load on the fan had therefore increased. Indeed, it was operating at little short of full load, probably over 80% of full load. **Testing at full load has shown a temperature increase by 100% over ambient temperature. A 20°C rise in bearing temperature over ambient temperature would probably be conservative.** The second argument is based on the fact that on the 9th January, with the fan still running, a fire broke out in the mine, with dense clouds of smoke and substantial heat rising through the shaft and the evasee of the fan. Some pineboard timber by way of a platform had been constructed across the shaft and a borrowed elbow, smaller than the original displaced elbow was tied into the vertical end of the tubular section of the fan on the shaft end by means of this type of timber. The heat set alight to this timber caused the fan blades and housing to expand, so that the blades were scraping the housing. The fan was stopped because of the fire. It did not stop in these conditions because of bearing overheating. However dramatic this episode may sound, objective analysis shows it to be of little relevance, since the fire was in sufficiently close to the bearings in the motor room. Photographs illustrated this. The fan at that time would be under light load, because of restricted air flow allowed by the temporary connection between fan and shaft.

I must admit that my mind has wavered between the speculative causes suggested by the evidence and what I may call the "official" view as to what really happened to stop the fan. Having reviewed the whole of the material, however, I am satisfied that the most likely cause is the one for which there is actual evidence. There is the evidence of temperature, fan load, a tripping of the fan which still enabled it to be re-started immediately once the fault disappeared - that is, when the bearing temperature dropped - no other

fault being present, and the speculative nature of any alternative theories.

**There remains the question of what indications of such a stoppage would have been present on the surface. I have dealt with the fan switchboard in the fan switchroom, which would have showed no current-flow on the ammeter, although the switch itself remained closed (which latter fact Bunn says he noticed). In the report room there was the methane monitor log, and the fan tachometer which should have revealed the position immediately, as well as the methane meter, which would have placed the deputies on notice and inquiry. As well as this, however, there was a fan stop alarm light in red which showed if the fan was stopped (as distinct from a green light when the fan was running). Alongside the red light was an amber light indicating fault. This did not show on all faults, for example, earth leakage fault, but would become incandescent on bearing overheating. If the fan was to be re-started an "alarm cancel" button had to be pressed before the fan could be switched on again. These lights were prominent and would have engaged the immediate attention of an observing deputy or electrician.**

In the fan room there was a repetition of this latter system. There was also a meter showing bearing temperatures on a series of seven individual gauges.

When power went off at the mine these gauges dropped back to zero, and since none had a "lazy needle" or memory to indicate the highest temperature reached, its evidence for subsequent inquiries was lost. In a similar way, the amber fault light requires power to hold it and it would go out with the other lights when power to the mine was lost. Once power was restored, the fan should have gone on again on "automatic", if there was no fault. However, according to Mr. Orr, Mathews told him that he had gone to the switchroom and opened the main fan switch. In the result, no evidence of the cause of the fan trip remained at the mine, and the Inquiry was left to consider the matters I have indicated in coming to a conclusion on the matter.

The management was conscious of the need to make regular inspections of the fan and these averaged in number about three times each week. One of these inspections seems to have been the duty of a mechanical

fitter, who would renew lubrication from time to time, check bearing temperatures, motor mountings, V-belt adjustments and the like. It was an inspection to see that the fan was functioning and likely to continue functioning. These inspections were supervised by the mechanical engineer, Mr. Bailey, who inspected the fan himself about twice each week. A record of these inspections was kept in a "fan book", which, as a matter of convenience only, happened to be a book in which inspections of head gear, ropes, chains, etc. and downcast shafts must be recorded under S. 54, General Rule 5 of the Act. The fan book did not purport to be General Rule 5 book. It was more a personal record than a report. The colliery did not include the fan as "machinery" under General Rule 5, which requires such machinery to be inspected daily and the fact of such inspection to be recorded in chalk at or near such machinery. I was told by learned Counsel for the Company that since the explosion Senior Counsel had confirmed the Company's point of view. The Company, or some official, however, had made his own legal judgment before obtaining learned Senior Counsel's opinion. I should say at once that this opinion is not universally shared by other collieries. In fact, in the southern coalfields at least, the view seems to be generally held that fan machinery is no exception to "the machinery" referred to in the Rule. I regret that I am unable to agree with learned Senior Counsel. It seems to me that the words in General Rule 5 are used in their ordinary and natural meaning. This meaning is not in any way modified by the other matters to be inspected in G.R. 5, although the suggestion was made before me that I should adopt such an interpretation of the words, by a kind of reverse ejusdem generis rule - a somewhat novel proposition. One would have to go behind the ordinary meaning of the words and look at the intent of the Rule to read the ordinary meaning down. While I can see some commonsense in altering the Rule to deal with the fan in some other way, the Rule as it stands now does not allow the fan to escape daily inspection. Of course, I have not had the advantage of reading or hearing learned Senior Counsel's reasons for his conclusion.

The colliery's viewpoint is important in demonstrating an instance of a situation among the coalfields with which I deal later in this Report. I refer to the confusion among many collieries - including the best-run mines - about what are the proper practices required either by the Act or by general safety principles. I am not being critical in the sense of casting blame. Some of these collieries are conducted by highly skilful and conscientious officials, who believe in the safe-working of mines. It will be seen that, although I may point to some shortcomings, I include the management of West Wallsend No. 2 in this category; indeed, I am certain that the men who run this colliery are only too eager to close any gaps and wish to have these matters fairly pointed out to them. I could not help but be impressed by the respect afforded to this colliery by the Mines Inspectorate and the representative of the Federation, himself a Check Inspector. The District Inspector, Mr. Jones, for all his charm and gentleness is no easy man to deceive. He has been careful and painstaking in his investigations and has not spared criticism where this can be fairly levelled. Yet in the end it is obvious that he regards this mine as one of the safest and best-managed in his District. His own figures bear him out. Nevertheless, there were faults here. If they existed here, what of the other collieries?

One result, of course, of the lack of a daily fan inspection was the failure, in a 36-hour period to detect that the fan had stopped. It can be argued properly that if the fan had stopped for some period less than 24 hours, an inspection conducted during 24 hours before the fan stopped would still have left a dangerous fan stoppage undetected. I do not think it is a fair criticism in the end result to say that the disaster came about as a result of the management's viewpoint as to a daily inspection of the fan. The purpose of General Rule 5 is not to allow fan stoppages to be detected. It is to inspect the state of machinery in general; it is largely a safety rule. In this sense it may well have among its purposes the prevention of fan stoppages, rather than their discovery. It must be remembered that in ordinary practice fan stoppages on the odds of chance would occur during working days and

would be immediately detectable. Perhaps in earlier days before mines went into round-the clock production, particularly in the old single-shift days, a stoppage might go undetected for several hours. That ought not to be the case in modern mining.

What is of some concern, however, is that a mine - albeit made secure from outside interference - should be left unattended for long periods, with not even a casual safety officer or caretaker to visit the site and make sure that all is well. It is not too much to ask the industry to employ such a person, either specially engaged for the purpose, or if already on the payroll, paid overtime for the short period of necessary inspections.

The usual way in which a fan stoppage is made manifest in the absence of personnel to note it, is to incorporate an alarm system which is activated by the fan's stopping. In fact, the colliery made provision for an alarm in its original fan circuit, but for some reason did not instal it. One possible defect of an alarm system is that in the absence of colliery personnel to hear it, its effectiveness depends upon the presence, appreciation and goodwill of neighbours or passers-by who will notify a responsible person of the alarm. On the other hand, it is a swift way of telling people at work in the colliery itself that the fan has stopped. The Company has introduced another system since the explosion which in itself is very commendable. The fan is now linked to a 24-hour security system in Newcastle which, in the event of fan failure, alerts the operator who has a series of telephone numbers of colliery officials which he is to ring. This should prevent the recurrence of an unnoticed fan stoppage in an unattended colliery.

I should here draw attention to the requirements of General Rule 3 which demands that the fan should be in such position and placed under such conditions as will tend to its being uninjured by an explosion. It would appear that the blowing off of the fan elbow probably saved this fan from injury, by providing relief from full blast to the main fan. The management and Inspectorate should investigate this matter at the subject mine, as well as at other mines.

#### POST-EXPLOSION RECOVERY AND DISCOVERY

Mr. Seward, District Superintendent of Collieries for the Company received a telephone call from Mr. Hudson, the neighbour whose property now contained the huge fan elbow, at about 5 am. on 8th January. He immediately rang the Boolaroo Mines Rescue Organisation asking their immediate attendance at the mine. He then rang other Company officials, some without success. He rang the District Fire Office who told him the brigade was on its way and that the ambulance had been alerted. Then he proceeded to the colliery, which was in darkness. He saw Mathews, Pugh and Bunn in the undermanager's cabin and ascertained that nobody had been underground at the time of the explosion. Mr McHarg then began to inspect the property.

He saw the devastation in front of the tunnel mouth. Mr. Lyne, Manager of Stockrington No. 2, whom he had telephoned, was already there with Mines Rescue Personnel. He asked that the area be roped off and all people be kept away. Mr. Lyne with the Rescue Men had already started analysis of the atmosphere from the drift, which, normally on intake, had reversed and was exhausting. The downcast shaft was normally taking in air. He then proceeded to the main ventilating shaft at the fan, as I have already described.

Work parties were then organised to prepare necessary equipment for the sealing off of the three mine outlets, if necessary. At the same time air samples were taken. Arrangements were made for ACIRL to attend and continuous samples were then taken by that organisation to ascertain the conditions underground. This analysis subsequently indicated that conditions below were improving. Initially there was residual carbon monoxide in the atmosphere, the product of combustion, together with a small quantity of methane. At about 8.30 am. Mr. McHarg told Mr. Seward that the fan was operable. It could not ventilate the mine, because the elbow had gone. The original elbow was too damaged to use, and eventually B.H.P. Company Ltd. made available a smaller elbow, which was modified and fitted to the fan by about 7 pm. It was then decided to ventilate the mine. The drift began to intake normally once ventilation commenced. The downcast shaft continued to intake, indicating that there was a circuit of air through the mine.

Mr. Inspector Jones during the day made arrangements for the Department's mobile gas analysis van to arrive. It was located at the upcast shaft and enabled continuous read-outs of mine atmosphere from charts in the van to be made.

However, the van was not equipped for hydrogen analysis and two tubes were placed down the upcast shaft so that samples could be drawn off via a pump and taken to ACIRL mobile laboratory set up in the office. By about 4 am. virtually pure air was being drawn through the mine. Before then, after 10 pm. the previous evening, two inspections had been made by teams underground.

That morning at 8.30 Mr. Snedden, who had arrived back at the mine during 8th January, reported to Mr. Seward that, while the system had remained static as to ventilation, there had been a rise in the carbon monoxide content. Mr. Seward told the manager to make arrangements for sealing the mine. On his way back Mr. Seward saw dense black smoke issuing from the upcast shaft. It was obvious that there was fire underground. I have already referred to the fact that the timber placed into position for the adaptation of the fan elbow began to burn. The elbow had to be removed by crane and the smoke then could not go through the fan. The fan had been operating with much clattering as the expanded blades fouled the housing. Orders were given perfectly properly, in this situation of unknown danger, to seal the three entrances to the mine.

Sealing was accomplished with expedition, using a plastic and friable earth. **It has been suggested that there is some danger to participants in this method of operation, in view of the time lag before a proper seal can be made. An alternative method, requiring a mine to have either at hand or ready access to a guillotine for sealing surface mine openings, has been suggested.** One answer is that not every situation lends itself to this method of sealing, however speedy it is. I have not sufficient evidence, expert or otherwise, to enable me to make a finding upon this question. I would refer it for investigation to the Department's Inspectorate. **I am, of course, conscious of the reality that the necessity to seal off a mine arises infrequently.** However, the evidence does enable me to say that not only was the sealing operation at this mine satisfactory,

but due care was exercised to protect people engaged in the operation from danger.

The first rescue expedition went underground as a team of five about 11 pm. on 8th January. Mr. Sneddon, the manager, was a member of this team and the later group.

Some of the wreckage around the mouth of the drift had been cleared and the team descended the drift on foot, calling on the dolly car behind them on the rope haulage. They took an intrinsically safe telephone, paying out the cable as they went. They cleared debris from the track on their way. Bricks from manhole structures were on the track. After about 100 metres they say that much of the belt structure as was suspended in the drift was badly bent. The fastenings had come away from the roof. Near the Young Wallsend seam inset the belting had been rolled over onto the track, blocking the path for the dolly car. Much of the structure had been thrown about. Further on, beyond the inset the party could see much damaged belt structure. A winch located in the inset had been dislodged down the drift. Most of the air was flowing into the Young Wallsend seam inset and only a low velocity airstream flowed down the drift towards the Borehole seam. The only electrical equipment damaged was suspended cable which had come away from supporting brackets and at the Young Wallsend seam an isolator had been moved. The party was unable to determine whether the explosion had originated in the Borehole seam of the upper Young Wallsend seam.

At about 2 am. a second team, consisting of volunteers from the Rescue Station with the mine manager went underground. They carried liquid oxygen self-contained breathing apparatus.

On the first expedition, although they carried this equipment they did not couple up to it. This team proceeded beyond the Young Wallsend inset to the top of the bin in the Young Wallsend area. This took them to the vicinity of the upcast shaft. They then went on to the regulator in the return airway from the Young Wallsend seam, only to find that it had been destroyed by the explosion. It had been a block wall. The captain of the team and Mr. Sneddon under breathing apparatus went to the edge of the drift which carried air from the Borehole seam. This again was of low velocity and carried blue smoke.

In the months that followed, the mine was unsealed and recovery work continued. It was discovered that the Young Wallsend seam tended to catch fire - most probably the source of the fire on the morning of 9th January - and it was sealed off as a seam because of this. Recovery has been very difficult and therefore slow. **It has become apparent that the source of the explosion was not in the Young Wallsend seam, but inbye in the Borehole seam.** The area north to the intersection of 2 West with the main north headings has been opened up - pit bottom is to the south. 1 West was opened, but has been sealed again. The distance along the main north headings opened, measures several hundreds of metres. The mine is on limited production. So far the ignition point has not been discovered and lies further inbye, although there had been some further penetration north by teams under breathing apparatus at the time evidence before the Inquiry concluded.

#### THE NATURE OF THE EXPLOSION

Unless one discards as the trigger for the explosion Bunn's attempt to put power underground and regards the fact that it was contemporaneous with the blast as a mere coincidence, **then the ignition point must have been an electrical incendive spark.** There has been no other possible theory put before me which could stand up to examination. I am constrained, therefore, although the ignition point at this stage has not been reached and displayed in evidence, to find that the material for the fire was flammable material set alight by such a spark. This could have come from a loose connection, a flawed cable, or a faulty switch. There may be some other less obvious source.

It seems beyond question also that what exploded was a mixture of methane gas ( $\text{CH}_4$ ) and air in the explosive range - approximately 5 - 15%  $\text{CH}_4$ . The mine had such gas in the goaf area, and as I have already indicated, it was bled off into the returns. This meant, of course, that the bleeder and return headings generally were sealed off from the intake airways, according to well recognized mining practice. There was a regulator to assist in this bleeding off - a gap in a stopping by which intake air could enter the bleeder system to assist in the bleeding-off process. One must recognise that

all electrical circuitry ran in intake headings and that under normal conditions there was very little if any gas make in these headings. Thus the problem of explaining a methane/air build-up in the intake airways to be exploded by an electrical spark is a real one.

At this stage I am deeply indebted to Mr. C.G. Ellis, the Senior Scientific Officer in the Department's Chemical Laboratory, in charge of the Safety in Mines Section of that laboratory. Mr. Ellis attended the colliery, bringing the Department's gas analysis laboratory on the day of the explosion. He has been back several times since and has been below on inspections, recording details with a photographer and taking dust samples. His work was interrupted by the need of his presence in investigating the Appin explosion. I have already publicly recognized the value of his work in that Inquiry. Mr. Ellis believes he is better equipped to deal with the problems of West Wallsend No. 2 as a result of his experience with Appin.

Certain matters remain speculative for him, however. One is the question of how the fire in the Young Wallsend seam originated, particularly when evidence led people at the colliery to believe it was the Borehole seam which was on fire on the morning of 9th January, leading to the sealing off of the mine. However, Mr. Ellis is satisfied that what exploded was methane gas mixed with air. He has dealt with the question of coal-dust involvement and considered it unlikely. However, in a later report he considers that coal dust must have been involved, but that it is almost impossible to establish its significance. I am content to accept his reasoning, which this time treats with caution the wellknown mathematical formula known as Trickett's Ratio evolved by Trickett and Jones. It should be noted that this formula was relied upon by Mr. Ellis at the Appin Inquiry, but there the mathematical result was so definitive, the explosion area so limited as to be free from distorting factors from outside, and in any case there was marked corroboration along the explosion path and by other mathematical calculations as to gas quantities available.

The explosion was extensive and violent. Dramatic examples of its violence are obvious. One I have already adverted to - the hurling of the fan elbow over a

considerable distance. Objects were thrown vertically from the upcast shaft, having travelled underground, negotiated a right-hand bend and then having been thrown several hundred feet vertically upwards. There were discovered, having reached the surface in this way, a wheelbarrow, a stretcher, an oil drum and a telephone. Near the drift, buildings on the surface in line with the drift suffered damage and even steel structures on the surface near the drift were damaged by the blast out of the drift. Underground, much heavy equipment, for example, transformers, was moved over substantial distances and some broken. Timber roof supports were scattered, steel "W" straps were buckled, conveyor belting was disrupted. Naturally mixed coal and stone dust were blown away from surfaces and deposited elsewhere in the mine or carried above ground.

The damage in the pit was not uniform but was similar over large areas. From the main north heading over several hundreds of metres the damage did not increase or decrease greatly in severity, indicating not a local but an extensive explosion. The direction of the blast appears to be from north to south, although there are the usual exceptions to the pattern, breaking up the uniformity, such as are found in all major explosions. The trend is generally consistent. It should be noted that in adjoining headings sometimes the movement will be in opposite directions; the theory is that a common enough return rush of air will bring this about. At pit bottom there is a deal of confusion.

Mr. Ellis has inspected the main north headings, where there are seven parallel roadways, the seventh being used as a return, with a high methane content; it was thus not entered. In the other six, the explosion appeared always to travel from the three central roadways to the outside, that is, from the intakes to the returns. This phenomenon is most significant, since one of the three intake roadways carried the main power cables.

An analysis of dust samples gives varying results as to the remaining presence of volatile matter. A similar result as regards dust as was found after the Appin explosion was apparent here - the lighter dusts had been carried away over certain areas, making it impossible to determine the efficacy of stone-dusting by the colliery by examining the dust that remained.

There is nothing to suggest that stone-dusting did not comply with the requirements of the Act. Mr. Jones says that the colliery bore a high reputation for stone-dusting. However, Mr. Ellis is able to say, from his analysis of remaining coal dust volatility, that the flame has travelled weakly, if at all in 1 West and the South headings, but strongly in the main North headings.

Mr. Ellis has attempted to estimate the likely build-up of methane in the whole mine during the 36 hours fan-stoppage. In the first place he makes an elementary unrefined calculation based on the normal throughput of atmosphere in the mine - some 300,000 cu. ft of which 0.5% is methane. This calculation extended to a 36-hour period leads to something over 3 million cu. ft of methane - or about 90,000 m<sup>3</sup> or in terms of weight, about 60 tonnes methane, which would be a startling amount if it were a solid fuel. However, some of this methane must escape from the mine in a period of 36 hours, since there must have remained some natural ventilation in the mine after the fan stopped. Further, pure methane will not explode and a mixture of methane and air within the explosive range must be postulated. For example, if no methane escaped, and formed a 10% CH<sub>4</sub>/air mixture, a rough calculation will show that this would fill some 80 kilometres of mine roadway - probable well in excess of the total length of roadways at West Wallsend No. 2. The concept, however, is a handy one to enable one to understand the kind of situation we are dealing with - with some methane having been ventilated out, an explosive fuel substantially throughout the mine at the time it was ignited.

A puzzling feature now must be dealt with. If such quantities of methane had issued from the coal strata, the make would have been slow, would have tended to layer near the roof, and would have been subjected to slow diffusion only with the minimum ventilation available. An explosive mixture thus would only be in a very small region - or perhaps an extensive amount of layering, but very little mixed with air in a 5 - 15% explosive range. However, the make of methane from the solid coal is very small at this mine. The only other source of gas is the goaf, particularly the goaf area between 2 West and the area of development further north. This area is not completely sealed off - an

incomplete seal exists in the roadway furthest to the east. Here the top of the stopping does not meet the roof - it forms a planned regulator for ventilation to pass through. If a make of methane comes out of that roadway and a stream of low velocity air travels along the return headings - the two streams could mix into an explosive mixture which would ultimately extend through the mine.

Mr. Ellis found some corroboration of this theory. In the intake airways at that area of the mine where the explosion seemed to have its greatest force, concrete block stoppings had been pulled outwards from the intake roadways into the returns - pointing to an explosion in the intakes and not in the returns.

During a previous fan stoppage the colliery officials found that while the downcast shaft continued to take in air and the upcast shaft to exhaust, the drift reversed. Instead of taking in air, air came out. The situation may have changed as from 6th January, since the mine had extended and different winds might have affected the airflow. Again, the methane made or emitted may have so altered the relative density of the gases as to assist a flow in one direction rather than another. Mr. Ellis suggests that on this occasion the downcast shaft continued to take in air and that most of that air returned to the surface via the drift. I would draw attention to the fact that Mr. Seward, for example speaks of the downcast shaft taking in air and the drift reversing, that is, discharging air. At no stage before the fan was in operation again did anyone appear to have checked the direction of air flow at the upcast shaft.

Mr. Ellis says that in this situation the south headings - that is, the area affected by this ventilation via the drift - would be kept practically free of methane. This may explain the fact that there has been little damage in this area; it is not necessarily conclusive. Mr. Ellis puts forward the hypothesis that the upcast shaft was reversing also, taking in air instead of exhausting. **In this case all return roadways would become intakes and the intakes which were part of this system would become returns. In particular fresh air would travel along the return roadway along the north headings up to the area called 3 west and along the return roadway there, picking up methane from the goaf,**

forming an explosive mixture with the high rate of methane issue from the area. **Thence this mixture would pass into the intake airways and out of the drift.** The pattern would be repeated, of course, through the returns on the other side of the headings. **Thus in both the southwest headings and at the end of 3 west there would be a methane/air mixture in the intake roadways, where the electrical equipment was situated.**

The theory is plausible, but not conclusive. Mr. Ellis puts it no higher than that. My assessor, Mr. Kininmonth, had his doubts about it when it was given in evidence, on the basis that he thought that if there was a reversal of ventilation, there would also be a reversal of the goaf-bleeder. It was pointed out, however, that the pit is divided into separate splits and that each split exhausts straight into a return. Mr. Ellis appears to feel unshaken. He points out - and I am constrained to accept this - that a methane/air mixture was ignited, and it must therefore have reached the intake airway somehow. He has attempted to explain how. **It is in my view beyond question that methane in an explosive mixture with air was ignited in an intake airway as a result of a fault in the electricity system. It is also beyond question in my view that the methane in mixture came from the goaf areas of the mine while the mine lacked proper ventilation. It is beyond question also that the immediate cause of the ignition was the attempt by Bunn to switch on the underground power which supplied the Borehole Seam.**

It is impossible for me to obtain any estimate of the financial loss occasioned to the Company and the industry as a result of this explosion. I have asked Counsel for the Company whether any figure has been suggested. However, he has pointed to difficulties at this stage which face the Company in coming to a proper figure. I am satisfied that the Company's attitude is a correct one. It would be fairly simple to arrive at a value which represents the loss of equipment either on a cost or on a replacement basis, as well as an estimate of the costs of other repairs. However, there are areas which are far more speculative, for example, the months and possibly years of lost production; an apparently lost seam of coal. In addition, West Wallsend miners and officials have had to be employed in other

mines which already had sufficient employees. There is, of course, an indirect loss to suppliers of the Company in respect of this colliery. A reasonable estimate would contemplate many millions of dollars. Such a loss, of course, is primarily suffered by the Company. It is ultimately reflected as a loss to the industry and in the long run, to the economy.

#### THE RESPONSIBILITY

The pre-shift group - Mathews, Pugh and Bunn, within a short time of the explosion gave an account of what had happened. Each man's version was consistent with that of the others. Miller, the fitter, who was not part of the pre-shift procedure, corroborated the account from the time he became aware of what had happened.

Mathews was interviewed by Mr. Jones about 9 am. on the day of the explosion. He then made written statements, one of which he places as having been written on the 9th January, and a subsequent account on 18th January, amplifying his first statement by describing what he did after Mr. Bailey arrived and asked him to restore power.

His account of the explosion was brief enough. He had arrived at the main gate at about 4.20 to 4.25 am. He unlocked the gate and then went to the change house to get ready for work. (Later it became clear that Pugh arrived with him by car). Before he changed he went to the toilet. He then changed and was putting on his boots when he heard a loud rumbling accompanied by vibration. He ran to the lamproom to see everything covered with dust and fumes. He called out to the others. Pugh and Miller replied that they were all right. He asked after Bunn. Pugh told him that Bunn was up near the winch room. He ran out with Miller and encountered dust and fumes. At that moment surface power went off and Pugh had the only light. They obtained cap lamps and went to seek Bunn, whom they found in front of the winch house. There was a person on a motor cycle near the ambulance room to whom Pugh called out.

Miller and Mathews helped Bunn to the bathroom. Bunn was very shaken. Mathews then says he notified officials by phone.

It will be observed that by this account Mathews sheds all responsibility for what happened. He has not seen Bunn and has given him no orders. He has not even entered the report room or the lamproom and therefore has had no opportunity to ascertain the position at the fan or underground. He is dressing when somebody else may have done something to cause the explosion, always without his knowledge. However, in this brief account Mathews lets fall one significant statement which appears casual and innocent at this stage. Pugh, he says, was the only man with a lamp after the explosion. It will be seen that this tends to bear out the account which Pugh and Bunn give. However, the statement by implication places Pugh in a difficult situation. To obtain a light - cap lamp or locked-oil flame safety lamp, Pugh must have gone to the lamp room. This must take him through the report room, where he ought to have seen the warning devices.

Pugh was interviewed by Mr. Jones at the colliery and on the night of 9th January he wrote a statement which he handed to Mr. Jones on 10th January. On the 9th January in the afternoon he was also interviewed by Mr. Seward in the presence of the manager, Mr. Snedden. Again on 10th January he was interviewed in the presence of representatives of the colliery and the Mines Department.

Pugh's account is that he arrived at the colliery at about 4.20 to 4.24 pm. when Mathews unlocked the gate and they proceeded to the car park, followed by Miller. Mathews and he went to the deputies' bathroom and Miller to the general bathroom. He was dressed in clean working clothes. He hung up the clothes he was to change into later and put his knee boots and hat on. Then he went to the lamp cabin. Passing through the reports room he noticed that the recording methanometer was not working and "made a mental note to inquire why". He checked and re-set the barometer, noticing it had fallen slightly. He serviced his safety lamp and put it along side the door to the deputies' report room.

He was about to get his cap lamp and self rescuer but found he had left his belt in the bathroom. He retrieved this, put on his cap lamp and rescuer, picked up his flame safety lamp and walked towards the shaft.

As he reached the steps to the elevator house he waved his light to the winding house where he had seen Bunn walking fifteen or twenty minutes earlier. His motive, he says, was to attract Bunn's attention to let him know that he was going down the shaft.

He then noticed he had not put his sock ties on, so he walked back towards his bag in the lamp room. He entered the door, when he heard two explosions, the first one slight. Everything outside was just a black mass.

When Mathews and Miller came running from the bathroom, calling out, he remembered Bunn in the winch house. They went back to get camp lamps for Mathews and Miller. On their way to find Bunn he saw a stranger on a motor cycle and he ordered this person from the area. By this time Mathews and Miller had brought Bunn down to the lamp room. Bunn was in a shocked state.

This account, of course, takes Pugh of necessity through the report room. He admits to seeing the non-recording methanometer, but it obviously means nothing to him. There is a complete omission to look at the other devices and this is unexplained. This unfortunate situation arises from the necessity for Pugh to recount how he waved his lamp towards Bunn. He must have obtained a lamp, of course, and so he must pass through the report room.

There are, of course, other curious features of this account. He is outside and therefore unable to see what Mathews is doing immediately prior to the explosion. He is saved from the effects of the explosion by remembering his sock ties and going back inside. The vital matter, however, is the waving of the lamp at Bunn to indicate that he is going down the shaft. He is entering the mine without power being switched on, in order to do his part of the pre-shift inspection. Mathews, of course, is safely out of the way and cannot be blamed for anything. All Pugh has done is to greet the electrician with a lamp signal to indicate that he was about to do his duty. He cannot be blamed really, either, unless some sceptic examines the coincidences and asks questions about the report room - he may not even have thought of this aspect. However, if blame is to attach, it must be to Bunn, whose hand pulled the switch.

Bunn prepared a hand-written statement by dictating it to Mr. Richards at about 9.35 am. on 8th January. Some two or three weeks later at the request of Mr. Jones he prepared a statement in his own handwriting, almost in terms similar to the first statement. Again, this time at the request of Mr. Orr, he made a third statement on 6th February, which adds to the former account. Finally on 25th May he answered certain questions asked by Mr. Jones which questions, with his answers, were recorded, and were signed by Bunn.

The accounts thus given by Bunn were consistent with each other and with the accounts of the two deputies. Bunn said that he arrived at the pit top at 4.35 am. Mathews, Pugh and Miller were then changing in the bathroom. (He does not say that he saw them, and he does not indicate that he changed into working clothes). He walked to the downcast shaft to check the ventilation and noticed that air was being drawn down. He then walked to the switch room. There he checked the fan switch board and noted that the fan supply was closed. He checked the haulage and the 415 volt switchboard and discovered nothing wrong. Then, said Bunn, he walked to the window facing the shaft and waited for Pugh to phone. This, of course, refers to Pugh's inspection of the downcast shaft, followed by his telephone call from underground that it was safe to put power on to the shaft. Bunn said he saw Pugh at the shaft, waving his caplamp up and down. He apparently took this for a signal that all was well in the shaft and he proceeded to put the power on. Unfortunately (he said in his second statement "inadvertently") he closed the switch which supplies the Borehole Seam - that labelled "drift". At first the handle did not latch, but by a second attempt he managed to charge the spring and close the switch. Immediately it tripped out and the earth leakage indicator lamp came on and the explosion occurred. Later he said that during his routine inspection the red fault indicator light on the earth leakage unit was not on and he considered everything normal. He went on to describe the windows collapsing and the room filling with dust. He took cover for five or ten minutes behind the fan cubicle. On leaving he fell down the stairs and kept falling on his way until he was met by the others and taken to the undermanager's cabin.

In answer to Mr. Jones on 25th May, Bunn said that he had, prior to 8th January, worked on two pre-shifts during the holiday period. He had, in addition, worked on one Sunday night pre-shift alone and on another was a back-up electrician. He said that during the holiday pre-shift inspections the time of the telephone call to him instructing him to put power on varied, but the call came as to the downcast shaft about 4.50 to 5.05 am, and as to the main drift, about 5.50 to 6.10 am. He had never previously put power on in response to any signal other than a telephone call.

This was the account and the position espoused by the deputies and the electrician up to Friday, 25th May. On Monday, 28th May, the Inquiry opened for the taking of evidence and proceeded on that basis. Indeed, after the Inquiry had sat for a number of days, Bunn's statements were tendered without objection, and cross-examination by his counsel had been conducted on the basis that, while it was not accepted that Bunn's closing of the switch had caused the explosion, a mistake in closing the wrong switch was reasonably possible because of unclear labelling of the switches.

Certain features of Bunn's account struck me as curious. For example, although he explained his observations and checks in the switch room which confirmed that the fan was in operation (the fact that the fan switch was closed and the absence of earth leakage fault indicators) he had not looked at the fan ammeter, which must have indicated that the fan had stopped in the face of power switched on. He did not at any time claim either lack of knowledge of the electrical system in the switchroom and indeed, was a competent electrician when he came to the colliery. Despite this, he had, according to his story, deliberately checked the downcast shaft on his way to the switchroom, in order to make sure that there was ventilation to the mine. Here I became suspicious. It was not part of the electrician's duty to do this - indeed, it is a very rough way of checking ventilation - as can be seen from the fact that after the explosion, with the fan still out of action, the downcast shaft was still intaking air. In any case, there were two deputies who would, in the ordinary course of things, check ventilation on the instruments in the report room

before venturing below. After that, a deputy proceeding underground on pre-shift inspection would immediately realise the lack of fan ventilation and would never dream of telling the electrician by telephone or otherwise to put the power on. What, then, presuming Bunn's story of checking the downcast shaft was false - he could never explain why he did it, incidentally - was the purpose of the invention? I came to the conclusion that it would lead to two possible inferences, if accepted. Firstly, whatever sins the electrician committed in turning on the power, at least he believed that the fan was still operating. Secondly, despite the fact that the deputies, particularly Pugh, had not checked the instruments, Bunn could say that the fan appeared to be operating in any case, and it might still turn out to be true, since nobody at that stage was certain that the fan had stopped. It was an attempt, therefore, to cover both deputies and himself. It covered Pugh, of course, since he was himself close to the downcast shaft and should have noticed if no air was being drawn in. Although he, as a deputy, could not fall into the trap of saying that this was his method of checking ventilation, Bunn could claim as a fact on his behalf that ventilation had not ceased.

A further curious matter in Bunn's statement was that he had not spoken to the deputies; this was explained to some extent by his claim that he arrived at the colliery at about 4.35 am. - some ten minutes after they and Miller, who followed their car, arrived. It provided, because of his lateness, a motive for his going straight to the switchroom without changing.

However, the fundamental method of operating espoused by the tree men comes through as a safe system. On this one occasion a tragic error occurs, because Bunn has mistaken Pugh's cheery caplamp wave for a signal to turn on the power to the downcast shaft, and for some inexplicable reason Bunn, the trained and competent electrician, has closed the wrong circuit, turning power on to the main mine. If the fan has stopped, it has stopped without their knowledge, Bunn having taken reasonable precautions, and that will be another strange, unhappy coincidence. Nevertheless, under normal circumstances the procedure is in fact for one deputy to inspect the downcast shaft and when satisfied that it

is safe to do so, to telephone the electrician, asking for power to that area. The other deputy descends the drift and inspects, making a similar telephone call to the electrician at the appropriate time. If there is more than one deputy inspecting the main mine, power will not be ordered on until the last inspection.

In substance this method is in accordance with a document prepared by Mr. Richards, bearing date "August, 1978" and the heading, "Electricians' Duties on Preshift Mine Preparation". This document was said by Mr. Richards to have been prepared for the benefit of new starters among the electricians, since he was concerned that they might not bear in mind what they were supposed to do. The document became the subject of deep controversy during the Inquiry, where it was marked and became known as "Exhibit K". Some electricians claimed that they had neither received it nor seen it. The most important instruction as far as the Inquiry was concerned was No. 3 in this document, which reads, "Wait on surface for telephone instruction from the deputies on preshift underground inspection to switch on the underground power supply". This, of course, was the precise method of operation implied in the account given by the electrician and the deputies on the morning of the explosion.

Bunn was interviewed by a panel consisting of inspectors and management officials. He was shown the document and agreed that he had read it. He said that he had obtained it from a backshift engineer. Mr. Richards is adamant that he handed it out in August to four recently appointed electricians, naming them, at the same time, one of whom was Bunn.

The whole account given by the three men came to grief when Mr. Edward Johnson, electrical fitter, was called before the Inquiry on 6th June. Prior to the explosion Mr. Johnson had been employed at West Wallsend No. 2 for approximately three years, as an electrical fitter. During the holiday period from 22nd December, 1978 until 15th January, 1979 he was scheduled for duty, together with Bunn, a leading hand electrician, Les Davis, and an apprentice. Only one would normally be scheduled for pre-shift work. Davis, did not work the early pre-shift, so that these periods were shared between Bunn and himself. In fact, he did most of the

pre-shifts himself. He related to the Court what happened when he did the first of his pre-shift periods. Mathews unlocked the gate and let them in. They proceeded to the bathroom and got changed. Mathews said to him when he came out, "Have you got the power on?" Johnson replied, "No, no way". Mathews said, "I just thought it would have saved you a walk to go up in your car", to which Johnson replied, "It's a dangerous practice". The deputy replied, "Well, this is the way we do (?) it, when I was pre-shifting as an electrician, and Jack Richards is aware of this procedure, and I see no reason to change now". Johnson said Pugh and Miller were in the vicinity. Mathews again told him to put the power on and Johnson said "Right-o, you're the boss". He walked to the switchroom, while the deputies proceeded underground. He put the drift breaker on first. He said that there was no reason for this, other than that he had been told to put the power on and he did this. On later occasions he always put the power on before the deputies went underground, but he always waited to be told by Mathews.

On the Saturday before the explosion after he put the power on, he and the apprentice both accompanied Mathews underground in the dollycar, leaving no electrician on the surface. Apart from being expressly forbidden by the terms of Exhibit K, this practice is in direct contravention of Regulation 16 of the Seventh Schedule to the Act, which provides that:

"During the time that any conductor inside a mine is live .... an authorised person shall be in attendance at the surface readily available to operate, in case of emergency, the switchgear controlling the power entering the mine".

At pit bottom the party transferred to a personnel car in which Mathews drove towards 3 West. On the way inbye Mathews stopped and put a couple of transformers on. At 3 West they repaired another transformer which had been reported faulty. Johnson is unable to say whether Mathews did any inspection. He cannot even remember whether the deputy had his testing lamp with him. He saw Mathews only get out of the car at the transformers.

Johnson started on the Monday morning at the usual starting time - that is, of course, after the explosion.

He spoke to Mathews, Pugh and Bunn casually but worked most of the day with others at the fan. On the Tuesday or Wednesday - he cannot remember, but said it was the same day as the Mines Department inspectors had a conference with management officials - "the trumps" - he had a conversation in the morning with the two deputies and Bunn before that conference. He had been working in the drift conveyor room and the three men arrived and called him down below the room. There Pugh said to him, "We're going to have to tell them that Gilbert (Bunn) made a mistake in the signal to put the power on, and he put the power on the wrong breaker, and unfortunately Gilbert has got to take the brunt of things, otherwise we'll all go along". Johnson said to Mathews, "Cliffie, you know what I said about this". Mathews merely nodded. They separated.

Subsequently, on Thursday 24th May Johnson said he received a telephone call at his home from Mathews. The deputy said "We're having a meeting down at West Wallsend Bowling Club to discuss the incident out at West Wallsend No. 2. Have you been subpoenaed yet?" Johnson said he had not. Mathews asked him if he had legal representation. Johnson said he didn't think he needed it. Mathews said "We've all got legal representation ourselves". Johnson says that he replied "Anyway, I'm not interested in your meeting and in any event I'll be working". He added "If I get subpoenaed I'm going to tell them the way it was in my case". Mathews replied, "Well, you'll get pinged if you do", Johnson understanding that this meant he would be in trouble. His answer was, "Well, I couldn't care less. That's the way it's going to be".

Within a day of that telephone call Mathews rang again to say, "We've been advised not to have the meeting at West Wallsend Bowling Club. We're now going to have it in Speers Point Park". Johnson replied that he wasn't interested. In the event Mr. Johnson received a subpoena and consulted a solicitor. He then made a statement to members of the Mines Department.

This revelation by Mr. Johnson caused some confusion in the ranks of the deputies and Bunn. In the first instance, the solicitor for Mathews and Pugh, who was also appearing for the Newcastle and District Deputies and Shot-firers Protective Association, found

that he was faced with a conflict of interests and I granted an adjournment for him to resolve the position. On the next occasion Mathews and Pugh were represented by a different solicitor to whom I gave leave to appear. Bunn's solicitor, who also appeared for the Electrical Trades Union of Australia was faced with no such conflict.

However, the three men made fresh, lengthy statements in consultation with their respective solicitors, which reached the hands of Mr. Murray, Counsel for the Minister. In these statements all three men revealed that the accounts which they had given were false and sought to explain them and provide matters of extenuation. All three gave evidence and were cross-examined at length. I should say that I approached their evidence with great caution, since each of these men was already a self-confessed liar, and, as I shall make apparent in time, worse. Their evidence therefore bore a taint of mendacity which the taking of an oath alone would not serve to remove.

Mathews' new statement speaks of his making to the Court "a full and frank disclosure" that portions of his statements were not true. He then goes on to say that his statement as to the occurrences at the time of the explosion was true, but that Pugh was in fact in the bathroom with him at the time of the explosion. This, of course, puts paid to the whole story of Pugh waving his caplamp at Bunn from the downcast shaft and Bunn mistaking the signal for an instruction to put the underground power on. It also, by implication, means that Bunn put the power on without any signal, telephonic or otherwise, and indeed, before the inspection commenced. It therefore corroborates the practice of the deputies as related by Johnson. Now Mathews claims an altruistic motive for his lie. His previous statements were "manufactured", he says "as a result of discussions between myself and Dave Pugh and Gilbert Bunn in order to protect as many people as possible".

In evidence he explains this statement. He was seeking to protect "other deputies and electricians and members of the company". He also agrees that one of the main motives in inventing the story was not to protect themselves, but others. He says there was not much they could do to protect themselves, because they

were already "involved". However, he is far from satisfactory in explaining why it was that the blame was being put on Bunn and the deputies were exonerated by the story itself. It is then put to him that after the explosion the three men must have known that they had adopted a wrong procedure - otherwise if everybody had been following the correct procedure there would be nobody to protect. He then makes the bold statement that they came to realise it was wrong because "everybody gave it some thought and there was a lot of suggestions or anomalies or thoughts of what had happened and all this sort of thing and - which changed everybody's thinking". That was why he had said in his statement "I might say at this stage that the story was not manufactured on the spur of the moment and that it was manufactured over a period of some days following the explosion ...". However, he agrees that he had in fact made up the main part of the story on 8th January, following the explosion. He then begins to rely on the fact that he made his written statement the next day. It is put to him that at 9 am. on the 8th January he had told Mr. Jones the procedure on pre-shift inspections in the same terms as that implied in the manufactured story and not in switching on power before the inspection. He can point to no part of the story which was manufactured after that day. Subsequently it transpires through him and the others that the story was concocted almost immediately after the explosion and fed to Bunn while he was showering prior to going in an ambulance to hospital.

Thus not only has Mathews been shown to be lying again, this time in his new statement, the truth of which he has sworn to, and in his protestations in evidence, but his hypocrisy begins to be revealed.

Mathews claims in his confessional statement and in his evidence that he always followed the procedure of putting power on before the pre-shift inspection. Like Johnson he had been an electrician before he received his third class certificate of competency and was appointed a deputy. He was very experienced as an electrician and two of his years in that capacity had been served at West Wallsend No. 2. He was appointed deputy on 22nd August, 1978, a relatively short time. However, he had spent much time on pre-shift for the Sunday dogwatch as an

electrician and should have known the procedure applicable. In contrast, Johnson, also a competent and experienced electrician, says that ingrained in his experience on pre-shifts at other collieries, **was the principle that power did not precede inspection.** Although there was no written instruction as to this that he could recall - as an experienced electrician he did not receive a copy of Exhibit K - at one colliery, Buchanan, where there was a methane problem the manager had warned both electricians and Federation men of the dangers of malpractices. As he spent his time in collieries it became an accepted principle of safety handed down that inspection preceded power. Johnson's position is that electricians should not need to be told the proper procedure, they should know it.

Mathews adopts the position that he learnt the procedure of putting on power first when he first became an electrician on pre-shifts at West Wallsend No. 2 and really never knew that there was anything wrong with this procedure. It is apposite at this stage to mention the evidence of Mr. Davis, a deputy at the colliery when Mathews was an electrician, in this regard. Although Davis - now working as an undermanager elsewhere, agrees that he lapsed into accepting the system by not resisting it, when he first found that Mathews, then the electrician, had put power on first, he remonstrated with him and told him not to do it again. I believe Davis, who impressed me as generally a truthful witness, with no motive to lie in these proceedings. As against this Mathews says that at no stage while he was an electrical fitter was he ever given instructions against this procedure and that as far as he is aware this procedure was followed by all electrical fitters and deputies at the colliery. He says that while studying for his deputy's ticket he was not told of any "specific procedure" requiring a pre-shift inspection to be carried out before power was turned on. He had developed a habit of checking the fan speed indicator and the methane monitor. If there was some irregularity in these he would not turn the power on until the cause had been discovered. He has no recollection of any instruction that he should check these.

I am to infer that but for this habit of unknown origin, Mathews can see no necessity to check the

instruments in the report room. He reinforces this principle by saying that he was always of the belief that no power could be introduced into the mine while the fan was stopped. This proposition was introduced on behalf of both the deputies and Bunn and stressed throughout the hearing. Its real basis is in Regulation 70 of the Seventh Schedule to the Act, which deals with fan stoppages. **Inter alia the Regulation provides that if the fan stops, all power underground must automatically be cut off. It is silent as to whether it should be impossible to restore power while the fan remains off. One would think as a matter of commonsense that the supply of power underground during a fan stoppage should also be made either mechanically or electrically impossible. However, the Act, by omission or otherwise, does not provide this.**

Johnson, the electrician, appears to have believed that power would be for the briefest period introduced underground by closing the power supply O.C.B. even though the stopped fan would cause it to trip out immediately.

Nevertheless, however general the belief was as to the impossibility of switching on power, this in fact provided no excuse for the deputies or electrician. In fact they did not even contemplate a fan stoppage. The belief is irrelevant in the circumstances of this occurrence and indeed is a red herring in the Inquiry. For it to be significant as an excuse the men on pre-shift must have said or thought: "It is possible that the fan may have stopped. Nevertheless we shall switch on the power, because it is still safe to do so". In fact no man suggests that such a thought ever crossed his mind. Indeed it would be completely unreal to believe that any deputy or electrician, knowing that the fan had stopped, would dream of turning on underground power for the purpose of commencing a pre-shift inspection.

What is equally important is the implied suggestion in Mathews' "frank and truthful" statement that there is no real need to look at the instruments in the report room. He had acquired "the habit" as an electrician of looking at the fan speed indicator or the methane monitor. He makes no mention of the fan warning lights and presumably did not check these in his customary pre-

shift inspections. Of course, on the morning of the explosion his account never gets him as far as the report room. He appears to have been spending his time in the toilet or the bathroom.

Although he insists, as does Pugh, as well as some others engaged in pre-shift inspections, that this practice was the only one they ever knew and was apparently countenanced by the management, strangely enough the concocted story which they devised immediately after the explosion accorded exactly with the proper procedure as known by Johnson and as described in Exhibit K by Mr. Richards, issued, incidentally, with the blessings of the management who became aware of it. Bunn, indeed, gave some precision to the times when telephone calls would reach him from underground, instructing him to put on power. It is true that Miller is said to have warned them after the explosion that they stood in danger of losing their tickets. This might account for some cover-up story to be told. What it does not account for is the story that they followed precisely the procedure which the management espoused, and which they should have followed. **Yet the three men insist that they have never heard of such procedure.** I shall deal with Bunn and his knowledge of Exhibit K separately. Mathews agrees that he invented "a system of communication" - that is, the telephone calls from underground - "which did not exist". **It is impossible for me to accept this nonsense.**

One obtains a fairly clear picture of what Mathews conceives to be the duty of a deputy from his evidence in answer to me:

**Q: Is it part of your duty to see whether the ventilation is working?**

**A: Not from the surface, Your Honour, no.**

**Q: Not at all?**

**A: If you - once you get into the - assuming you get into the dolly car area to go underground or in a cage, you would immediately realise then that the fan is not going.**

**Q: You don't have to look at anything above ground, is that right?**

**A: No, not to my knowledge, no.**

Q: All this equipment that we've got photographs of, this somewhat expensive equipment that's put around the walls of the room there that we've been told about is of no concern to you as a deputy?

A: Not specifically, no."

This is a departure from his confessional statement, in which he says, "...when the fan speed indicator and the methanometer are checked prior to the turning on of the power and any irregularity is shown on checking those matters, then the power would not be turned on until the source of that irregularity was found". It was necessary for him to make this departure when it became clear to the Court that he either ordered or allowed the power to be turned on without first checking these instruments. Later, he tries to distinguish his practice as a deputy in this regard, from "the habit" he had picked up as an electrician of looking at these instruments. He finally states that he looked at the instruments every day as a deputy because "that was just another safeguard for the whole situation".

The argument that everybody believed that it was safe to put power on underground while the fan was stopped appeared to the three men and some, at least, of their Counsel to provide an escape from censure. An atmosphere of something like euphoria prevailed for a very short time. The proposition, not surprisingly, found its way into each of the three confessional statements tendered, and was obviously meant as a defence to a charge of reckless and improper conduct. Unfortunately for them, apart from its irrelevance to their particular case, the prop was quickly demolished for another reason. Mathews was forced to agree that even if the fan had not stopped, ventilation could have been short-circuited by roof falls which either destroyed stoppings or caused blasts of air that knocked them down. It was quite possible for methane then to accumulate and reach electrical equipment or cables. Because of this alone, a pre-shift inspection had to precede the turning on of power. Apparently this had not even crossed the mind of the deputies before the Inquiry. If it had, they had discarded the risk in favour of their own method of operating.

It is, of course, pertinent to ask what could be gained by the so-called "system", a term which their

Counsel was prone to inject into the Inquiry, so giving the practice an air of respectability as an acceptable method of working alternative to that laid down by the management. Firstly, it left the electrician free to come down with the deputies in the dolly car, ready to attend to such electrical work as needed his services. This was obvious from the evidence of Johnson. It was not denied by Mathews that this occurred, although it was in clear breach of the Act, and a dangerous practice in itself, if no electrician remained on the surface. Secondly, it enabled power to be used to effect a start of the diesel man cars, which otherwise might have to be pumped if their batteries were not sufficient. It also enabled the pumps to be started early and the conveyor belts to be set in motion as the deputy passed each section. He could, further, energise the transformers to the sections while on pre-shift. Thus everything would be ready and working for the oncoming shift. It was referred to by Mr. T. Davis as a "push-button start". The drive for production by the deputy appeared to me to be the motive for the dangerous practice. Counsel for the Minister put this position to Mathews:

"Q: The way you go about your duties indicates, does it not, that you are more concerned with production than with safety?"

A: No. I've had specific instructions off the undermanager, as well as others in what he regards that we should look on these factors at.

Q: I know what the undermanager has no doubt instructed you to do, but I'm asking you what in fact you do, and the way you regard your job?

A: No, I regard it as I've been instructed.

Q: I suggest to you that the way you regard your job is that your whole mode of operation is concerned with production rather than safety?

A: They're tied together, yes.

Q: Yes, because what you do is aimed at getting people into their workplace as quickly as possible in order for their tasks to be undertaken as quickly as possible, is that right?

A: That's the normal thing, yes.

Q: Well, that is your thing, isn't it?

A: Yes."

and from myself:

Q: And do you regard that as the proper function of the deputy?

A: If it is carried out reasonably, yes, Your Honour. Nobody has been subjected to any danger."

One would hardly expect Mathews to admit that he had subjected anybody to danger. However, his methods were obviously dangerous and their objects were to shortcut steps designed specifically to ensure safe operation. His operation could benefit nothing but the earlier production of coal. This was confirmed later by Mr. T. Davis, the undermanager previously referred to. His evidence was that the West Wallsend undermanager in his time at the colliery, Mr. Thompson, required an explanation for every delay. His opinion was that there was a greater emphasis on production than on safety at the mine.

One should turn to the inspection reports made by Mathews to see whether there is any avoiding of his safety obligations by taking short cuts. The object of a pre-shift inspection, of course, is to examine all areas of the mine where men are to work or to travel during the shift, and certain other places as described in the Rule. These are all to be examined before the shift commences. The only provision for examining what may be called "pre-shift areas" during the course of a shift is when two shifts succeed each other. A during-shift inspection can then take the place of a pre-shift inspection. This is obviously to ensure continuity of shifts and to utilize shift time for the 4-hour period within which a pre-shift inspection may be made. This deputy's reports for 6th January 1979 and his answers concerning them reveal his attitude to his duties. On that day his pre-shift inspection was of two areas, south-west and 3 west. He says he had men working on a transformer in 3 west. Nobody was to work in south west. His only explanation for inspecting it was "probably

sheer habit". He cannot explain why he inspected it. One immediately queries whether he inspected it at all, but stated in his report that he did so, out of "sheer habit". The matter, however, is more complicated. His during-shift report for the same day shows that he inspected the east heading. No men were working there. Men were in fact working in 1-west. He had not pre-shifted this district at all. Of course, he had not pre-shifted the east heading at all. Asked about inspecting 1-west before men worked there, he says that during the shift he took the men from 3-west through 1-west to the General Rule 4 station to wait, while he did a during-shift inspection of the area - the men being the electrician and apprentice. This meant, of course, that the men accompanied him into an uninspected area. His answer is that he wouldn't have gone into a dangerous situation himself and so the men were perfectly safe. I am obliged once again to quote his evidence:

"Q: And is it your practice to adopt short cuts wherever possible?

A: There are short cuts taken right throughout the industry at times.

Q: Well, you do, but never mind about the rest of the industry, I'm asking about you?

A: On odd occasions there may have been".

The inspection times in both reports are interesting in themselves. The pre-shift report says that the inspection started at 7.00 am and finished at 8.30 am. The report was made out at 9.15 am. (Mathews cannot explain this time, the book being on the surface). The during-shift report shows an inspection of 1 West and the east heading, neither a pre-shift area, commencing at 7.15 am (15 minutes after commencement of pre-shift) and completion at 11.30 am. Thus during-shift inspection was being performed at the same time as pre-shift inspection. This report was made at 12.10 pm. Mathews explains "You do a during-shift report or part of a during-shift report during a pre-shift report - a pre-shift examination, you can do it that way, yes". He says he has been carrying on this practice for as long as he has been a deputy. It was not a practice handed down to him by other deputies, but his own. He

says it is quite safe, quite reasonable. He is not, of course, concerned with the Act.

Some suspicion attaches to the pre-shift inspections carried out by Mathews during the holiday period from an examination of the reports. Rarely does an inspection take him longer than 1 and a half hours and then only 5 minutes more. Some are minutes less. He agrees that he is fast. When questioned about one time, an hour and fifteen minutes, he says that he did not waste any time; in fact, occasionally he came up in a lather of sweat, since he had been walking "pretty rapidly". One wonders why he had to hurry so much over such an important safety task. Provision had been made for up to two hours to conduct a pre-shift inspection. **No provision existed at this colliery for any official to find out how thoroughly the deputies were carrying out these inspections.** Mr. Watson, the undermanager, says that he read the reports with a view to discovering the gist of them, in order, apparently, to see whether any condition had been discovered which should cause him concern. Apart from this he relied on his deputies to perform their job faithfully and trusted them. I have already said in my report on the explosion at Appin that **I believe that there should be some check on the way deputies perform their safety duties, both statutory and discretionary.** This is not at all meant as a slight upon the general body of deputies in the coal-mining industry, who as a class are concerned and conscientious men who can be relied upon. Nor is it a slight upon other deputies who worked at West Wallsend No. 2. However, men such as those few who receive criticism before this Inquiry bring undeserved shame upon an honourable profession. The only way to prevent their selfish operations is to provide some check by management or Check Inspectors upon their performances. No such check came from the undermanager. When he was on holidays, his duties, **including that of checking and countersigning their reports fell upon the manager, Mr. Snedden. The deputies' reports for the holiday period were not countersigned by anybody.**

Mathews denied that Johnson had warned him that his method of switching power on early was unsafe. He could not admit this and maintain that he had not heard that there was anything wrong with what he was doing. He

also denied that he had told Johnson that Mr. Richards approved of the method. Johnson lied, he said. I accept Johnson and reject the evidence of Mathews in this regard. I also accept Johnson as against Mathews in regard to the deputy's warning him that he would be in trouble if he told the truth as to what had happened on pre-shift inspection. Of course, much of what Johnson said was corroborated by the admissions made by Mathews. He even agreed that Johnson and the apprentice accompanied him underground during the pre-shift inspection.

Mathews was at his worst as a witness when any area touched upon in questioning involved a reference to other people. So he was reluctant to commit himself on any instructions which may have come to him from Mr. Richards. It was almost impossible to get him to nominate those deputies or electricians present at the mine on his first pre-shift periods from whom he claimed to have inherited his practice. He did not wish to name the persons who attended the meeting in Speers Point Park. **This reluctance on his part may have stemmed from the principle of which I heard much from witnesses at this Inquiry, of not "dobbing other people in" - the schoolboy code of honour among men in mines, passing itself off as mateship, which overrides the safety of others and provides the recipe for disaster.**

However, I think the more forceful motive in the case of Mathews was the fear that he might be proved a liar if others were called. He simply could not commit himself because he did not know what new evidence would be brought forward. In a corner he would hedge and claim loss of memory for matters which he must have remembered, employing the usual devices of the untruthful witness. So, having, towards the end of his evidence, told the Court that he communicated with the electrician in the report room, as deputies had spoken to him when he had been an electrician, he is faced with the fact that Bunn on the morning of the explosion had gone straight to the switchroom without any such communication. His reply is that he did not see Bunn - perpetuating, of course, the story that Bunn arrived late. He is then asked whether he is suggesting that that was the first occasion this had happened. He replies, "I don't know. It may have been, it may not have been". He is pressed as to whether it was the first time. With Bunn yet to give evidence

and with the evidence of Johnson as to his experience, Mathews can not afford to commit himself. "I couldn't answer that to be quite honest. He may have gone straight up, he may not have". There is much more in the same vein throughout his evidence.

Deputy David Pugh, in his new statement, claims that when he gave his first account he was not aware that the incident would become the subject of an inquiry or that he would be required to give evidence under oath. He had not "directly attempted to mislead, rather to protect others involved in pre-shift work at the colliery and also the colliery". So loyalty to the colliery is again protested, but in evidence it becomes meaningless. The whole motive of selflessness in the invented account of pre-explosion events become absurd when it is revealed firstly, that Miller had warned the deputies that they would probably lose their tickets, and that the account was concocted in such haste that it was drummed into Bunn while he was showering prior to going away in the ambulance. Pugh even displays this fear in his statement when he says that his immediate reaction was that, something having gone wrong, his livelihood would be in jeopardy and "this sentiment appeared to be shared by others". He described the story as having been prepared when Bunn returned from hospital. This later is shown to be untrue; however, it is in conflict with the statement of Mathews that the story was prepared over a number of days.

Pugh says that after he realised that the incident would be the subject of an Inquiry in Court, he became worried about his first statement, but he was hopeful that he would not be required to give evidence and that his statement would be accepted. He does not explain why it was that this false account was maintained until Johnson exposed it. Indeed, he describes the meeting of deputies and electricians involved in pre-shifting as a meeting to discuss the matter and "to decide whether Cliff Mathews, Gilbert Bunn and I should pursue the course we adopted after the explosion". He says that when he left the meeting he was under the impression that they would try and ride the enquiry through without involving other people - his motive always being to protect all those involved. Pugh does not appear to have been over-concerned that Bunn, the young electrician of

comparatively little pre-shift experience, would be carrying what blame was attributable to them and that the story was actually designed to exonerate the two deputies. He admits his awareness of this, agreeing that he said to Johnson, "Unfortunately Gilbert's going to cop the brunt of this".

In evidence Pugh said that he arrived with Mathews at the colliery. Miller was parked opposite the gate, having arrived before them and followed them to the car park and bathroom. He had no recollection of Bunn being there and he did not see him prior to the explosion, either in the switchroom or otherwise, presumably. This lie is nailed by Miller in evidence, and by Bunn, after much pressure and hesitation. Bunn, in fact, was standing talking to Miller, having arrived by cycle, opposite the gates when the deputies drove up. One deputy got out of the car, according to Miller, and he with Bunn exchanged greetings with the deputies. Bunn had not arrived late after all. Of course, he went straight to the switchroom and must have done so with the knowledge and assent of the deputies. Pugh then said that he had not gone to the downcast shaft. **The story of the caplamp signal, of course, was pure fabrication.** He had not even gone into the report room, let alone checked the methanometer. He did not get his lamp and selfrescuer - indeed, he had not left the changeroom when he heard the explosion. The three men then ran from their bathrooms. They realised Bunn was still in the switchroom and set forth to bring him down. Pugh spoke to the unknown motor cyclist.

He then says that they came to the conclusion that the fan most probably had stopped. Then they decided that if the fan was stopped and the high tension power was energised this was a breach of the Act. They tried to give Bunn "an out" for putting the power on. Pugh considered that if Bunn had put the power on intentionally, without first knowing that the fan was running or not, he left himself open, but if he had put it on "unintentionally on mistake of this signal that therefore he would not be so vulnerable to criticism". The conversation, or most of it, took place prior to Bunn going to hospital.

Miller's version is that Pugh came into the bathroom when Bunn was having a shower and fed him the

story of the caplamp signal then. He knew that the deputies were engaged in a wrong practice, because he had learnt the correct procedure when he studied for his deputy's ticket. It was this that had caused him to warn them about the danger of their losing their tickets. It was obvious from their response to him that they also knew. They had said that they would have to make up a story.

It should be evident from these accounts that there could be no question of the deputies concocting a story to protect anyone but themselves. At the outset in Pugh's first discussions on the morning of the explosion it was Bunn and not themselves who needed protecting, because he was vulnerable. It was the electrician's duty to check whether the fan was running before he put the power on. Obviously it was going to be said that Bunn had put the power on without being directed by the deputies. This is the real reason why in their invented version they had not seen Bunn. Bunn had to be seen to have arrived late and to have gone straight to the switchroom before the deputies could ascertain whether it was safe to close the O.C.B. However, he could not be seen to have switched on the power without some kind of indication to him for this would have exposed the real facts, so a mistaken caplamp signal was made a feature of the account.

There is something shameful about these deputies. They secured the loyalty of Bunn by suggesting that he was "vulnerable". Then they secured the silence of other deputies and electricians, suggesting that all persons involved on pre-shift were vulnerable. It needed a Johnson to expose them. Unfortunately, there are deputies and electricians who will still suffer from the folly of supporting them against authority, brushing aside the real motives that caused them to act in this way, and believing that they were really only being loyal to others.

Pugh was not without experience in the industry. He had worked for six years as a Federation member, transferring to West Wallsend No. 2 early in 1975. In November, 1976 he obtained a deputy's certificate having spent two years at technical college. He was appointed a deputy at the same mine in June 1977. He had become quite conversant with safety procedures and had a

knowledge of the Coal Mines Regulation Act. He claims that prior to the explosion he did not consider it a dangerous practice to energize the underground power system without a pre-shift inspection. With hindsight he realised it was in fact dangerous. He says that he has no answer to the proposition that there are dangers other than fan stoppages with power on, for example, damaged stoppages, but he had followed the procedure blindly. Normally, he says, there would be contact between the deputies and the electrician in the report room or the lamp cabin. It was never necessary to instruct the electrician to put the power on. If everything was all right, nothing was said to him. On the explosion morning Bunn arrived unknown to the deputies, went straight to the switchroom and put the power on without any communication from the deputies. This is a lie, as Miller testifies, for they knew Bunn was there. It is a lie for a purpose, to absolve the deputies from blame. Pugh then says that Bunn should have waited for communication from the deputies. Again Pugh has covered up the real procedure. Johnson gave evidence, and Mathews conceded its truth, that after his first pre-shift experience with these deputies, when he was told by Mathews that he thought he would already have put the power on to save himself a walk, Johnson afterwards put the power on without any direction or consultation.

Inadvertently Pugh lets slip an important truth which shows that the deputies knew they were adopting the wrong procedure. He is questioned about Bunn's story that he closed the wrong switch, it being suggested that this feature was added by the deputies. He says: "I don't know that we knew until much later that Mr. Bunn had closed the wrong switch". He is asked which is the right and which the wrong switch to put on first if power is going to be put on. Pugh sees the trap and becomes confused. If the only system he knew was that all power went on before inspection, it does not matter whether the downcast shaft or the Borehole Seam power goes on first. To say that Bunn in putting on the Borehole Seam power first mistakenly pulled the wrong switch - as Bunn says in his statement - is to say that the downcast shaft power must go on first. This can only be so if the mine's laid down practice is followed

- namely that the deputy goes down the shaft and inspects, before instructing the electrician to put on power to the shaft - this being done before drift power is energized. The deputies must then have known the correct procedure for them to invent the cover-up story. Pugh tries to escape the trap by saying: "... I always thought that normally the downcast shaft power went on first". He sees the uselessness of this answer and amends it to apply a pre-shift examination after the fan has stopped. This, however, omits the fact that Pugh had himself inspected the downcast shaft first, before any other inspection, which is the correct pre-shift procedure without a fan stoppage. I remain unconvinced. At the time this story was invented they did not know that the fan had stopped. Indeed, they had Bunn describing actions which indicated the contrary. He had gone to the downcast shaft and checked the ventilation. He noticed that the fan power switch was closed. This was a statement made in answer to Mr. Richards by 9.35 am. on that day. I have come to the conclusion that the story the deputies invented for Bunn shows that they knew the correct procedure and that it was not limited to periods when the fan had stopped. They knew they were acting in defiance of colliery rules.

Pugh gives some indication of where he learned to do his inspections in this way. He says he does not know where the practice originated. In 1977 when he commenced pre-shift work Mathews was the electrician. Irvine was his co-deputy, having been on the shifts before him. The deputies and the electrician would meet in the report room or lamp cabin and then the electrician would go up and put the power on to the high tension side of the transformers. The deputies would go underground. He says the deputies always read the methane monitor and checked the fan light indicator. He agrees that the methane monitor would not show the result of goaf falls; it would only show the movement of gas in the returns. He says the electrician would have been told if the power was not to be put on. That was the procedure adopted by him ever since. It must therefore be presumed that any deputy or electrician after that time followed the same procedure. He was therefore protecting by the false story all of those people involved on pre-shift inspection. His statement had

referred to protection of "the colliery", also. After striking some trouble with his concept in his answers, he withdraws this statement. The people involved are only the deputies and electricians. However, he agrees that there is a difference of opinion among the deputies as to what was the correct procedure - that is, the accepted procedure - on pre-shift inspections at the colliery. Certain deputies, including the senior deputies, believe the instruction to the electrician by telephone call from underground was a necessary precondition to power being supplied. There would be more adherents to this school of thought than to Pugh's school.

Mr. Pugh's school apparently attended the meeting in Speers Point park. Apart from Pugh and Mathews there were deputies Heaton - he called the meeting, according to Pugh, although evidence shows Mathews to have been a prime convenor - Irvine, Wallace and Henwood. Mathews had some doubts as to whether Henwood accepted the invitation. Henwood in evidence said that he did not - he was taking his son to football. I am left in doubt and do not resolve the matter. There were also three or four electricians, apart from Bunn. Johnson, as we have heard, would not go. The purpose of this meeting is significant. The three men and the witnesses who attended the meeting seek to give it an air of innocence. It was merely a discussion of what had occurred on the explosion shift and of the account given to the Inspectors and officials by the pre-shift team. Two preliminary matters are striking. Firstly, it was somewhat clandestine - the venue had been moved from the Bowling Club to the park, because the meeting would there attract less public attention. Secondly, the meeting took place on the Saturday before the Monday on which the Inquiry opened to hear evidence. One cannot escape the feeling that the deputies were trimming their sails and attempting to make their ship seaworthy before commencing a difficult voyage. One cannot lose sight of the stark reality that all men who were invited knew the truth about the operations of Mathews and Pugh; they had been a party to this method themselves. They knew before-hand or were told at the meeting of a complete cover-up by way of a pack of lies which had been already put forward and was to be placed in evidence before the

Inquiry. In plain terms they knew that the three men were going to commit perjury in the Court. Yet this proposed crime having been flaunted before them they voiced no protest let alone took any steps to prevent it. The convenors of the meeting - Mathews, Pugh and Heaton too, let it be now said - knew that the lie to be told was safe - there was little risk of it being exposed by any member of the gathering. Mining men do not "dob each other in". **The sacred rule of silence of which these men are so proud may lead to massive loss of employment and coal and at times to tragedy in families when the ultimate victims of contempt for safety are killed. Yet these men - deputies in charge of safety - are satisfied with themselves and their conscience.**

So it is that I regard the evidence of such men with the greatest suspicion. Johnson, who was invited to the meeting, refused to be a party to it. Pugh admits that the story was revealed to Johnson in order to enlist his support by silence. It is a reasonable inference that this was expected of the men who attended the meeting also, as I have indicated. However, not one of these men as witnesses would admit this. They shuffle vaguely around questions as to what actually happened at the meeting. They cover the events by the blanket word "discussion", without being able to say what was discussed. They suffer the usual curious loss of memory which marks the lying witness. One man at least remembers nothing about the concocted story. This is in complete contrast to their recollection of the pre-shift procedures which they adopted and which were substantially the same as those espoused by Mathews and Pugh. Thus they defended the actions of the explosion pre-shift man by showing that a common practice which everybody believed correct was followed.

Pugh's own account, which preceded their entry into the witness-box, is that the meeting was called to decide whether they should continue with the concocted story or change it. The meeting decided that they would cling to the lie to protect the three men and the others involved in the wrong practice. All present knew, by the time of the meeting, if not before then, that they had been doing their work wrongly. The meeting lasted about an hour, the men all standing in a group in the park. The three men directly involved recounted in

detail the story they had made up, each taking part. Everybody appeared to believe that the story would be accepted. All men were totally agreed that the story should be told to the Inquiry - Pugh says that was "most definite". The meeting was tested as to whether the persons present were willing to be implicated by the three men telling the truth. They did not wish to be implicated - Pugh says this is "understandable" - and so it was understood that the lie would continue in evidence at the Inquiry. It was possible, of course, that some of those present might be called to give evidence. If they were, they indicated, that they "would follow the same lines" - that is, they would say that they had always adopted the correct pre-shift procedure. They, too, would lie on oath.

This evidence is in complete contrast to the evidence of the men who were present when they were in fact called to give evidence. Perhaps the effect of Johnson's evidence upset their plans. Perhaps they could not afford to reveal their shameful part in this meeting. **The whole affair is, of course, greatly disturbing. Even if these men were not - the deputies, at any rate - trusted officials with a duty to pursue safety, which is paramount and which requires the truth at all times - but ordinary men without such distinction, they had revealed to them a conspiracy to commit perjury. They themselves not only knew of it, but agreed to it - encouraged it, indeed, to avoid being implicated by the truth coming out. One wonders what trust can be placed in such men.**

Gilbert Bunn is a comparatively young man, some 25 years of age at the time of the explosion. He had a good education for his trade, having completed a four-year trainee course in electrical engineering through B.H.P. after obtaining his Higher School Certificate. He had, as extra electives, also completed courses on Colliery Electrical Engineering and Mining Legislation and Technology. For some time prior to his appointment at West Wallsend No. 2 he had pestered Mr. Richards for a job. Mr. Richards was impressed by his background qualifications and personality. He was instructed in safety matters and Mr. Richards personally showed him the surface installations and switchgear, leaving him in the hands of Mr. Barry Watson, leading hand electrician.

After seven weeks on day and evening shifts he was transferred to dogwatch for some weeks, when he attended two pre-shifts. The first of these was with four deputies, but it was Mathews who showed him what to do. On the second shift he was second electrician and arrived later, to find power already on.

He went back on evening shift and did no more pre-shift work until the holiday period. On his first attendance he was told to put the power on before any inspection. On the second occasion he met the deputies at the gate and went straight to the haulage room, switching on the power. This was apparently the method in vogue.

Because of his comparative youth and inexperience, I considered that Bunn, assigned to the supervision of older deputies, was likely to be dominated by them. It seemed unlikely that a young man such as he, with the promise of a successful career in the industry, would of his own independent will defy and disobey his employers. I was therefore inclined to be tolerant in his case.

Unfortunately, Bunn was grossly disappointing. He apparently still thought he had to support the deputies in their actual method of working and to maintain the truth of parts of his concocted story. I took the trouble on more than one occasion to remind him that the Inquiry would expect the truth from him and that it was now in his own best interests to tell the truth. He found great difficulty in keeping to the truth and lapsed into obvious and silly lies from time to time. An early instance concerned the question as to whether he had met the deputies before going to the switchroom or whether they must have known he was at the mine.

It will be remembered that in the cover-up story it was essential for its acceptance that Bunn had arrived late and gone to the switchroom without the knowledge of the deputies. Pugh supposedly saw him there from the downcast shaft and acknowledged his presence with a wave of his caplamp, and so on. Bunn says that on his previous pre-shift he arrived before the deputies and met them at the gate, but nevertheless went straight to the switchroom to put on power. As to the night of the explosion he admits at first talking to Miller outside the gate before the deputies arrived. Miller

in fact, of course, says that one deputy was out of the car and greeted them both - they must have seen Bunn. However, Bunn refuses to be definite. He had been definite about the previous night, when it did not really matter. It now - with the truth revealed - does not matter that it is seen to have happened again on the morning of the explosion. But Bunn is uncertain as to whether he should cling to the lie. He has heard the deputies hedging about it, so he is not quite sure as to whether he met them at the gate on the very night of the explosion.

This lack of frankness is by no means the only instance. He has said in his confessional statement: "The question of putting power on did not overly worry me as my distinct recollection in my tech.course was that power could not be put on in a mine when the fan was off." Thus he is still clinging to the "party line" of Mathews and Pugh. In their case, as I have said, they did not even consider the fan not running and the excuse is a failure. In Bunn's case it is even worse, for his account is that he checked the ventilation and the fan power switch - he actually believed the fan to be on. He still maintains that he performed these checks, although he cannot explain why he went to the downcast shaft. Indeed, I doubt his account of making these checks and believe that he blindly obeyed the order of Mathews. However, that is not to the point. Having committed himself to the story of making these checks, he still attempts to suggest that at the time of concocting the story he believed the fan had stopped. The concocted story, he says, involves the procedure which must be adopted after a fan stoppage. That, of course, was the position which Mathews and Pugh tried to maintain - not that it was the usual correct pre-shift procedure as laid down by the management, which they refused to follow. Bunn's "confession" does not deal with the matter; indeed it sidesteps completely an account of how the story came to be concocted and the reasons for it. The proposition that the invented pre-shift procedure was based on fan stoppage procedure was introduced into the Inquiry by Pugh. Bunn has taken it up.

It is time to lay this fan stoppage myth to rest for good. The procedure is obviously not to await a phone call from underground before power is put on, during a fan stoppage, that is, while it is stopped. If the stoppage exceeds half an hour, then the supply shall not be restored to any part of the mine until on inspection it is found that the percentage of inflammable gas in the general body of air on the intake side of such part of the mine is less than one and a quarter percent. Thus it is obvious that firstly ventilation shall be restored and a subsequent inspection permits the deputy, by telephone or otherwise to instruct the electrician to restore power (Regulation 70 of Schedule VII). The dog-watch pre-shift inspection in a sense is analogous to that situation, because on both occasions the mine must be inspected. There is no statutory requirement as to when power is to be put on after a pre-shift inspection, as there is after a fan stoppage. It is a matter of safe practice and commonsense, as well as a matter of the procedures laid down by the colliery in question. Nor does Regulation 70 speak about telephonic communication - that again is a local system. The deputies had recently undertaken inspections after two fan stoppages on 23rd December, 1978 and 4th January, 1979. They could not but have been impressed by the thoroughness of at least one of these, with telephone fuses being removed to prevent ignition by ringing out until each section in turn was found to be gas-free. This could never be confused with any supposed situation on the 8th January, a fan stoppage with a telephone call to turn the downcast shaft power on first.

In fact Bunn is in real trouble when he attempts to explain why he went to a window while he awaited the supposed phone call. He professes to be unsure as to the location of the telephone, seizing on the fact that the telephone was relocated after the explosion and suggests it was not on the wall near the window, but on the table. He is pulled into line and finally agrees that it was on the wall near the window through which he was supposed to be looking when he saw Pugh's cap lamp and did not wait longer for the phone call. At last he agrees that he was instructed as to this part of his statement. Immediately after he attempts to lose his memory again.

Bunn is perhaps at his most mendacious when he attempts to explain away Exhibit K. He agrees that when he was interviewed by the panel of inspectors and officials he was shown the document and said he had seen it before and thought it had been given to him by the maintenance engineer on back shift. In fact it was put to him by a member of the panel that apparently the only step he had not taken was instruction No. 3, which concerned waiting for the telephone instruction. In his confessional statement he resiles from this position, saying that it is not true that he had ever seen the document before it was shown to him at the panel interview. He had told this untruth, because Mr. Richards was at the interview and he felt "that no point would be served by bringing him into the enquiry". What he is really saying, of course, is that he had never seen the document at any time. He is asked why he had not told the truth - Mr. Richards' name as the author of the document had not been raised, so he would not have involved Mr. Richards. He then says that he admitted receiving the document because it "went along with our fabricated story". So he adds a second reason for lying to the panel. Mr. Richards says in evidence that he issued the document in August, 1978, with the approval, as I have said, of the management. He recalls handing it out to four electricians on the one occasion, Bunn, Williams, Sams and Wilkinson. The attack on Mr. Richards first took the form of suggesting that no such document existed - it was a recent fabrication by him, apparently designed to give some status to the colliery's system of pre-shift inspection, also apparently declared after the explosion. Indeed, at one stage the attack appeared to be directed to the management generally, and I had cause to express my unease, since no ground had been laid for it, other than to divert blame from Bunn and his fellows. However, after clear evidence came from the undermanager, Mr. Watson, at a late stage of the enquiry, that he had seen and approved Mr. Richards' document about the time it was said to have been issued, the attack changed to a proposition that Mr. Richards had prepared the document but had never issued it, at least to Bunn and company. Thus I would be asked to say that either Mr. Richards was mistaken as to who his new-starter electricians were, since Exhibit K was

prepared for them, or he was lying. This would of course involve, as an ancillary proposition, that he had produced the document to the panel of interviewers, unknowing whether or not it would be rejected by Bunn. Not unnaturally, Bunn was supported in his contention by the electricians, some of whom had attended the meeting in the park, saying that they either had not received Exhibit K or did not recall receiving it. After all, this evidence was not unexpected. Of course, this really meant that Richards was lying - no new starter had received the pre-shift instructions specially prepared for them.

Of course, if Bunn had seen the document, his defences were down, for he had deliberately disobeyed them. Any other of the electricians, for example, Wilkinson and Sams, could not be heard to say that they knew of no other pre-shift inspection practice than that which turned on power prior to inspection.

I have come to the conclusion that it is impossible for me to accept Bunn on this issue. He himself has agreed that he will lie when it is convenient for him to do so. I certainly believe that the question of his having seen Exhibit K is a most convenient occasion. He says that the principle of convenient lies would not extend to his lying on oath. I am not taken in by this statement. He has obviously lied before me on a number of occasions. I instance further his futile account of why he claims to have mistaken the switch when he put on power, his explanation of why he would put power on before the deputies had even checked the instruments, his conflicting answers, and his admission that he would persist in a lie that suited him. It grieves me to say such things about a promising young man like Bunn. Unfortunately, I believe he has been corrupted by others.

I turn to a consideration of how widespread was the pre-shift practice adopted by the explosion-shift team. A guide as to its origin at this colliery can be found in the evidence of Mr. T. Davis, to whom I have already referred. On the whole I believe him to be a reliable witness, perhaps his only failing being some lapse of memory for details, not unexpected in the circumstances. He has no motive for deceiving the Court and appeared ready to assist my Inquiry. Mr. Davis is

now an under-manager at John Darling Colliery. With a wide experience in mining at various collieries since 1966, he started work as a deputy at West Wallsend No. 2 in March of 1976 and worked there for almost three years. He obtained his second class certificate in 1974.

Mr. Davis has had experience in pre-shift inspections at Belmont and Delta collieries. At Belmont the electrician remained on the surface while the deputy inspected underground and phoned the electrician for power after all was found satisfactory. At Delta No. 1 he says the system should have been the same but he in fact found power on to underground when he arrived. He had never encountered this elsewhere, although he had heard talk of it. It was a regular procedure at the colliery. He complained to management about it and was told the colliery had permission from the Department for this to happen. Later it was confirmed by Mr. Murray that this permission existed, apparently to keep pumps operating continuously because of the special conditions at that colliery.

About three weeks after he started at West Wallsend No. 2 he commenced work on dog-watch and found himself on the Sunday night pre-shift inspection. He inspected the available instruments, with which he had sufficient familiarity, went to the undermanager's cabin to read reports and orders and then proceeded underground by means of dolly car. On the first shift, including himself there were five deputies. The normal complement was four. Each had a specified area to inspect, and would ring the electrician for power after he had inspected. There was at that time a surplus of deputies because Aberdare North had been closed down after a fire and some of the deputies were at this mine. Power would go on after the fourth deputy rang. Davis says the inspection took him all of two hours. The electrician at first was Alwyn Hemmond. About June or July the number of deputies was reduced to two, the Aberdare deputies having left and one production unit having been cut out. He remembers then that deputy Happ, Mathews - then an electrician-and possibly Pickles, an electrician (he is not certain) went to pit bottom in the dolly car. When he saw Mathews there he asked: "Who's going to turn the power on?" Happ replied: "The power's already on". They then carried on with the

inspection. Davis says he was surprised and spoke to the others about it, but cannot remember what was said. Although he has no memory now for specific days, Davis says that over a period after the first time this procedure continued.

Later the dog-watch shift was reduced to one production unit and one deputy. His opinion was that the whole mine should be inspected on pre-shift, unlike the practice of Mathews and Pugh, who only inspected areas to be worked. He had no chance of doing this as sole deputy. That situation continued for about six months - from about September, 1976 until about March, 1977. On an early occasion in this period Mathews was his electrician when he arrived to find the gate opened, all lights on and power already underground. He saw Mathews in the lamp cabin and told him he should not put the power on until he was instructed. The following week he encountered Mathews again and told him to wait on the surface and not touch the power switch until he, Davis, had gone below and rung out. Mathews obeyed him. There was then a dispute about the number of deputies on the dog-watch shift - he places it about August. Mr. Thompson, the Manager, approached him and asked what was going on in the dog-watch pre-shift. Davis says he told the Manager that they were putting the power on before they went underground. He says he explained that he was checking all instruments on the surface, but had no chance of inspecting all the area on his own. He claims that Mr. Thompson replied: "Power to a certain point, that should be all right", apparently referring to power going to the transformers. Before that time, despite his instruction to Mathews, he reverted to the system of putting on power first, after checking surface installations. This, according to Davis, was because he would have been alone down the mine if anything had happened by the turning on of power after he had left an inspected section. He explains that as an example, a fall might disturb a stopping and permit gas to accumulate around a live transformer. He would not necessarily be aware of such a fall, because of the distances involved.

The remark attributed to Mr. Thompson is hotly contested by the Company. However, there is room for misunderstanding and cross-purposes here and I do not

intend to resolve the dispute. I am satisfied in any case that the undermanager, Mr. Watson, made the point abundantly clear at the colliery by his maxim that "gas and electricity do not mix". He would not have countenanced the practice. I am certain the Manager at the time of the explosion would not have permitted it, and that the management in general were kept unaware that the practice was going on. It will be seen that an assistant undermanager, Mr. Gilbody, was aware of it in more recent times and condoned it, but took pains to deny to the management that he knew. He did not once suggest that it was known to his superiors also.

It is apparent that the practice of power before underground inspection was in operation before the time that Mathews and Pugh became deputies. Indeed, Mathews as an electrician introduced Davis to it, and apparently constrained other electricians like Johnson and Bunn to use it, in Johnson's case against the latter's better judgment. However, there is a vital difference between the method as practised by Davis and that practised by Mathews. Davis ensured such safety as he could before power went on, by checking surface instruments to ascertain ventilation and gas conditions underground before he would allow the supply of power. Mathews had no such safeguards. The electrician switched on all power underground on arrival - even before he changed. That this was so is evident from the account by Davis of discovering power already on when he was sole deputy and Mathews his electrician, from the account of Johnson as to Mathews importuning him to put power on by pretending to a desire to save Johnson a walk, and from Bunn's account of Mathews sending him to put power on first and his actual obedience to this instruction. For all Pugh's assertions that he checked the instruments in the report room and would, on discovery of an irregularity, have prevented the electrician from putting on power, it is clear that neither deputy did this. It is possible, of course, that they looked at some or all of these instruments after power was put on, as a matter of mere routine. I doubt even this. Certainly there is no real evidence that they or other deputies knew the usefulness of the methane monitor, or really understood the significance of the chart readings. This apart, whatever one may say about the degree of risk in

switching on power before inspection below, there can be no condonation of any sort for allowing or ordering it to be supplied without first ascertaining the condition of the mine through such instruments as were provided for this purpose. Herein lies the real evil of these deputies. Counsel for the Colliery, the immediate sufferer with its employees of the results of their actions, urged upon me an analogy from a hypothetical situation. True it is that no person was in fact underground, but if somebody on the surface had been killed by the explosion, as well he might have been when one sees the surface damage done, both at the mine site and at the fan site, would not these men be properly charged with manslaughter because of their wanton recklessness? This is the question asked by Counsel. I have no hesitation in answering his question in the affirmative.

I briefly deal with the evidence of these deputies and electricians who followed the incorrect pre-shift inspection practice, in order that I may give reasons for my findings as to the extent of the practice at this mine. It should be recalled that some of these men attended the infamous Speers Point park meeting and, apart from the fact that certain of them were prepared to lie about it, that alone causes me to treat their evidence with caution. It is possible that a man may gain in stature among his fellows because he is prepared to place himself on the side of Mathews and Pugh. Suffice to say that nearly all these men now admit the procedure is incorrect, that the explosion has taught them the safe way. There is evidence to show that it has not even done this.

Mr. R. E. Irvine had come up through the Federation and had been a check inspector. About December, 1974 he, while working at this colliery, sat for examination as a deputy and was appointed to this position on 14th February, 1977. His training consisted, like most deputies at the mine, of being sent for some time with other deputies around the mine. It should be noted that electricians were given similar induction training at the mine, although sometimes the electrical engineer first took them in hand. Criticism has been offered at the Inquiry by Counsel for the deputies and electricians, on the basis that this was not enough and

mitigated the fault in the present case. I reject this criticism. In the case of the electricians documents containing instructions were also issued, but on the whole I do not believe that there is any real substitute for on-the-job training if a man is already qualified.

Irvine had some personal instruction from the Under manager, Mr. Watson. He did his first Sunday dogwatch shift and pre-shift inspection about April, 1977. He relieved Mr. Davis, who stayed as second deputy for two weeks and instructed him. Mathews was the electrician. Irvine remained as sole deputy. He claims to have examined all available instruments in the report room. Davis instructed the electrician as to the turning on of underground power. They met him in the lampcabin or the undermanager's office. Irvine says that after the surface inspection power was turned on prior to going underground. He did not at any time see anything on the indicators which dissuaded him from doing this. He recognised it was vital to see that the fan was working before allowing power on. However, he has in fact ordered power when the methane monitor showed a reading of 5%. On reflection he would hesitate if the fan sensor head showed that, but not the underground sensor. His evidence must be untrue, because the graph reading goes off scale after 4%, and cannot be read. Even if true, in my view, only a deputy who knew little about the significance of the monitor could risk such a practice without inspecting for gas underground first. It must be remembered that this man had been a check inspector. If my view is incorrect, then Irvine is making such a claim out of some mistaken sense of loyalty to the other deputies, who obviously, like Mathews and Pugh, did not bother to inspect the graph. Irvine claims to have come to the conclusion since the explosion that his practice on pre-shift was wrong. In fact, he says that he thought it was wrong then but did nothing about it.

Irvine describes the discussion which took place in the park-meeting as about what had been done on pre-shift inspections, the latest on how the mine was and "generally if any of us had any idea on what did cause it to go bang". He is vague on details. He only knew the concocted story in general terms, but believes that the cap-lamp signal was mentioned. It all has to be drawn out of him by questioning. Finally he is asked whether

he disapproved of "the fake story that was coming into Court". He says that the only thing that concerned those present was whether or not the story would get through. He says he did not protest because the full impact of the Inquiry had not registered with them at all. He had no answer when Mr. Tapp pointed out to him that the meeting had taken place over four months after the explosion. Of course, it was obviously a pre-Inquiry meeting, held on the Friday before the Monday Court opening.

However, whatever doubts are cast on Irvine's truthfulness, it is clear that he inherited a system from Davis without question, Mathews being a common factor. It should be noted that Irvine took his electrician below with him, leaving no electrician on the surface.

Mr. P. J. Henwood is also a Federation man who became a deputy. He was appointed as such to this mine on 22nd May, 1978. He was inclined to minimise the nature of his instruction - a month on day work in various sections of the mine under the supervision of another deputy. His first Sunday night pre-shift inspection was about the second week in July. He cannot remember his first shift. The first he can remember included Irvine, Heaton and Wallace. Mathews was the electrician. He says that they checked instruments in the report room and read reports. The only instrument he describes is the methane monitor graph. He appears to know little about it - in fact he thought there was only one sensing head. The electrician, after his preliminary duties, met the deputies in the undermanager's cabin. Then he went away, probably to put the power on. Henwood never heard anyone tell him to do this. The electrician accompanied them to pit bottom in the dolly car. Nobody stayed on the surface. On one or two occasions they met Mr. Gilbody, the assistant undermanager, in the undermanager's cabin. Mr. Henwood was invited to the meeting in the park. He says he did not go, because he took his son to football. There is evidence that he was present. The matter is of little moment - he obviously does not wish to reveal that he knew the reason for the meeting, in any case. One claim that he made, however, led to the Inquiry asking about another colliery. Henwood had made the now fashionable statement that

although he had not realised the pre-shift procedure was wrong he had come, as a result of the explosion and the Inquiry itself, to realise the dangers of such a method of operation. Mr. Tapp, for the Federation, then led him to reveal that he was now employed as a deputy at Stockrington No. 2 colliery. On July 12th, 1979 he was on duty at the colliery when the fan stopped twice, the first time for over 30 minutes - between 20.02 hours and 20.41 hours. Mr. Gilbody, formerly of West Wallsend No. 2 was in charge as shift undermanager. Of the other deputies present, Messrs. Wallace and Heaton, formerly of West Wallsend No.2 colliery were in attendance. Mr. Gilbody, once the fan was finally re-started, ordered the deputies to go underground with some Federation men to bring out some transport which had stopped because the power had been cut off. Power was restored before this without any pre-shift inspection, contrary to Regulation 70 of the Seventh Schedule to the Act. The deputies obeyed, apparently without demur. Finally men came out on strike. So much for the protestations of deputies that they had now learned their lesson.

Mr. L. G. Wallace commenced employment at West Wallsend No. 2 in October, 1977 as an electrician. He commenced duties as a deputy in March, 1978. He was involved in pre-shift duties first as an electrician late in 1977, being instructed by Mathews. The power was put on before the deputies went down. He has travelled down the drift with the deputies, where he attended to switching on power at the transformers at pit bottom, starting the personnel cars and starting and checking belts as they went. He can only remember two of such shifts as an electrician. Both electricians went below, he thinks. As a deputy, he says, he cannot recollect the power not being on when he arrived at the mine, although he cannot recollect being the first deputy to arrive. Mathews was still an electrician then. He says he checked all instruments including the methane monitor, although he is uncertain as to what he would do if the graph showed a level as high as 2 and a half percent in the return, as to supplying power or allowing men below. He would ring the undermanager. The question, of course, is academic, since on his own evidence power was already on. The check is too late.

Wallace claims that it was up to the deputies to decide whether they turned up on pre-shift or not. There appears to have been no constraint by the management. He agrees that he attended the park meeting, but says that he left early. He understood that the issue was whether the explosion pre-shift men would change their story to involve all other deputies. He says he did not think he was involved and said so - he told them to please themselves what they did. I remain sceptical about this version of the facts.

Wallace was one of the deputies involved after the fan-stoppage at Stockrington No. 2. He heard that the fan had stopped for 50 minutes and run for 15 minutes. He interpreted this to mean that it had run for 15 minutes of the 50. He is the only person who gives these figures and the interpretation is nonsense. He tries to save himself by saying he trusted Gilbody - "my under-manager". He explains that he went down the mine the first time to bring out the locos and skips of coal that were blocking the tunnel so that the P.C. cars could be brought out for the men to go down the pit. The belts were then put on and power was in fact reticulated through the mine. The men objected to the power being put on without pre-inspection.

Mr. L. A. Heaton, a man with 32 years' experience in the mining industry was appointed as a deputy to West Wallsend No. 2 on 21st November, 1977. About a week later he started work on night shift and performed Sunday night pre-shift duties. On his first shift Irvine, Pugh and Mathews were present. He found that power was put on before they went below. In fact most of the time the power was already on before he arrived. He checked instruments and read reports - it must have been after power had been put on. The electrician travelled below with the deputies, leaving nobody on the surface.

Heaton says that at the time he saw nothing amiss with the practice. He has had long experience in the industry and has worked in a number of collieries. He had done a pre-shift at Wallarah and power was on all the time. His inspection was of a section in which a production shift had to work, which had not been inspected within the last four hours. This is obviously a different situation, of course. He instances the time when he was maintenance engineer on the night shift.

Pumping went on and continuous power was on all the time, manned by deputies underground. He believes that was the normal procedure at Stockrington. Heaton apparently can see no difference between his first two examples and what occurred on Sunday nights at West Wallsend No.2. As to Stockrington, there is no real evidence - he says himself that he was not very interested in the mining site. He agrees, however, that on July 11th at Stockrington No. 2, where he is now employed, he received, in common with other deputies and officials, documents for which he signed, setting out emphatically the procedure to be followed on pre-shift inspections, in line with the principles set out in Exhibit K. With this in mind, he was present at the fan stoppage on 12th July and on the instructions of Gilbody to go down with loco drivers and other deputies to bring out the electric locos and diesel transports to the surface. He did not then accompany the men below because he was involved in belt inspections. He knew the power was on and no pre-shift inspection had been done. His excuse is that he was not aware of the duration of the first fan stoppage, even though he spent time with the undermanager and others in the undermanager's office for about 10 minutes or so. Heaton claims that he realised after the explosion that the practice he had been following was dangerous. He attended the Speers Point meeting and knew that Mathews and Pugh were going to tell an untrue story. He said that since the others were not involved, they had made up the stories and it was up to them. Apparently, even if this is what happened at the meeting - it will be remembered that differing accounts are given and Pugh probably reveals what really did happen - Heaton sees nothing wrong with this attitude, a calm acceptance of the fact that two trusted deputies are to lie in Court.

Mr. R. S. Gilbody holds a first class certificate of competency, granted in England and endorsed here. He became assistant undermanager at West Wallsend No. 2 about the beginning of April, 1978. He was in charge of the night shift until the explosion, when he was transferred to Stockrington No. 2. His shift began at midnight, but his practice was to arrive between 10.45 pm and 11.15 pm. On Sunday nights the pre-shift inspection would be in progress. After changing he would read

reports and the like. He says that he was aware that power was already on underground while the inspections were taking place. He saw nothing wrong with this and accepted it. He concedes that there would be many circumstances when the practice could be dangerous. He claims to know little of electricity.

When he was questioned about his knowledge of the practice on 7th June, 1979 he was hesitant about admitting he knew what was happening. This, he says, was because of some uncertainty that he knew. At the same time he was under the impression that power only went to pit bottom. In fact at that time he knew that this Court was conducting an Inquiry into the explosion. He was asked by Mr. Snedden whether he was aware of the deputies' practice on pre-shift and he denied that he knew. Again, the next day, 8th June, Mr. Watson asked him again and he denied it once more. He was told that Mathews and Pugh had made a statement to the Department saying that he knew of and condoned the practice. He denied this again. On 9th June he went to Mr. Snedden's home and said that he must have known of the practice. Then he rang Mr. Snedden and said he was now of the opinion that he might not have known. The manager told him that Mathews would make a statement saying that Gilbody had actually accompanied him underground on pre-shift inspection. He denied this to Snedden. Then he recalled that Mathews had in fact asked him to come below on an inspection of the shaft to show him how the pumps were set. The simple answer to Mr. Gilbody's faltering approach to the truth is that when he was on the surface he must have seen the two indicator lights in the report room which indicated that power is on underground.

That he realised the practice was contrary to colliery instruction is really beyond question. At the time when Mr. Richards prepared his instructions for electricians, he gave a copy to Gilbody saying that since he was involved with the Sunday night shifts he should have the document. Gilbody protests that he did not know the practice was wrong. He uses the familiar excuse that he did not read the document, other than perhaps skimming through it, but put it in a drawer. He saw a document, obviously a copy, once more in the report room. In the presence of Sams and the bath attendant he picked it up and said, "What's this?" It was Mr.

Richards' instructions to electricians. Again he did not read it. I am totally unimpressed by Gilbody's display of blissful ignorance.

Gilbody was also questioned about his part after the fan stoppage at Stockrington No. 2 on 12th July. He agrees that he was given sheets of instructions two days before and that the subject was there covered. He agrees that the fan stoppage exceeded 30 minutes and that the Act requires an underground inspection after ventilation is restored. He ordered no such inspection. His excuse is that the written instructions were handed out at a staff meeting when the Manager in discussion said that half an hour is unreasonable for a mine like Stockrington No. 2 and that the stoppage should be for an hour before an inspection is necessary. When the stoppage occurred he was unsure of what to do and he went to the fan and from there rang the undermanager in charge, seeking the manager's opinion. He then acted according to his impression of what the Manager had wanted at the staff meeting, because he apparently received no satisfactory reply.

Even if this account is true, the situation, looked at objectively, was merely whether to hold up the shift work while safety precautions were taken as laid down by the Act. One would have thought that any official-in-charge, if in doubt, would follow the safest procedure, particularly if the Act told him he had to. Not Gilbody, however, if we believe his story, which to me sounds like one more of his feeble excuses. The implications are quite serious, however. What he is asserting is that the mine manager makes up local rules for his colliery in defiance of the Statute. Further, the officials as the mine are coming to a private, illegal agreement which jeopardizes the safety of the men, who have no say in the matter. I believe Gilbody is lying; indeed, I hope, for the sake of the industry that what he has described did not and does not occur. As for his own standards, I draw a curtain over them.

Two other electricians involved in Sunday night pre-shift work were called, both of whom had followed the Mathews-Pugh method of operation, and attended the Speers Point park meeting and who tended to deny the existence of Exhibit K. The first, Mr. P.J. Wilkinson, joined the shift when Mathews became a deputy. The

latter instructed him to perform checks in the switch-room and then put power on straight away, before the underground inspection. He accompanied the deputies below. He categorically denied having seen Exhibit K or having heard it suggested that the electrician should wait on the surface and not turn on power until the deputy had instructed him to do so after pit inspection.

The other was Mr. R.J. Sams. He was on pre-shift work for the last nine Sunday nights before Christmas 1978 and joined Wilkinson, Mathews and Pugh. He agreed with the account given by Wilkinson. As to Exhibit K, he apparently had suffered a loss of memory. It will be recalled that Gilbody had asked him about a document similar to this in the report room and Sams had answered him. Sams does not remember this. Neither electrician impressed me. My doubts were increased by their account of the Speers Point meeting, as to which they happened to be in conflict, both versions remaining in conflict with Pugh's account.

As opposed to these men, electricians, Mr. K. Pickles and Mr. P. Maher, and electrical engineer Mr. B. Watson were called. Mr. Pickles yielded his place on the dogwatch shift to Mathews and another electrician, Owen Hammond. He had commenced work at the colliery early in 1976 and received instruction in the usual way, through the electrical engineer, the leading-hand and other electricians. The deputy, Mr. G. Short, and Hammond showed him what to do on pre-shift inspections. He described a programme in accord with Exhibit K, awaiting a phone call from underground before turning on power. It is not suggested that a copy of Exhibit K was issued to him, but he says he may nevertheless have seen one in the report room, but he is not sure. Mr. Maher joined the colliery early in 1975 and was instructed in a similar way to Mr. Pickles. He was on pre-shift from about March until November, 1975, starting with deputies Mr. Laidlaw and Mr. Botham. He was always told to put power on after underground inspection, 90% of the time by phone and the remaining occasions by the deputy coming to the surface. It should be noted that the undermanager says that either method of communication is approved, the underground telephone being more convenient usually. I can see no reason to differ from his view. The essence

of the exercise is proper communication at the proper time. Mr. Maher says that in the latter part of 1978 he was reading reports in the report room. On the same desk next to the reports he noticed sheets of paper which attracted his attention because they had electricians' names on them and "pre-shift procedure" on the top of the page. He is not sure if what he saw was identical with Exhibit K because he did not take much notice of the rest of the document. The two electricians' names that he read were Gary Williams and Rodney Sams. There were other sheets below these.

Mr. B. Watson, electrical engineer at Stockrington No. 2, started work as an electrician at West Wallsend No. 2 colliery in 1974. He was instructed by Mr. Richards. He has never been involved in pre-shift inspections. He was shown a copy of Exhibit K in about August, 1978. Mr. Richards handed him the document in his office and told him he was going to issue it. Watson said that he thought it was a good idea.

There can be no doubt that Mr. Richards prepared his pre-shift instructions to electrician about August of 1978. The only area where there could be a remaining doubt is as to whether he issued them by handing them to these electricians personally, or whether there is room for confusion as to this, since other documents were issued to them from time to time. The doubt arises, not because these electricians say in the witness box that he did not hand such a document to them, but because of the evidence that documents - probably copies of Exhibit K - were left for the electricians with their names on them, and because Bunn on early interview said he had received his copy from a backshift engineer - at a time when he was admitting he had received it and there was no need to lie about the way he had received the document. I do not think for one moment the Mr. Richards is lying. I merely cannot resolve the question as to whether his memory is faulty. There is no need for me to resolve this question, for I am satisfied that the instructions reached the hands of the electricians for whom they were intended, namely the inexperienced men, and that they are completely unreliable witnesses, inspired by a motive, among others, to protect Bunn. It must be remembered that the system is for the less senior men to be placed on the night shift, and these electricians are of that class.

Possibly this system - of using new men on this shift, of which I heard evidence - is one of the reasons why the incorrect pre-shift procedure was allowed to operate. It is probable that a more senior man would not have tolerated it. The method itself seems to have been initiated late in 1976. It would be unfair on the evidence to say that Mathews brought it into being. It is quite fair, however, to say that he helped to perpetuate it. His name appears continually in the early accounts of its adoption as electrician, when on one occasion he took matters into his own hands with Davis, and later as deputy. Here, of course, he overrode the protests of Johnson. It was a procedure which contained the elements of disaster, but those men who practised it were prepared to take the risk. They probably thought there was little risk. The whole story of mining, however, is the story of disaster from the unexpected. Usually, the risk should be seen and the possibility of disaster, however slight, expected. There is no room in safe mining operations for taking risks.

My concern goes beyond West Wallsend No. 2 mine. I am not satisfied on the evidence that this risky method of operation is confined to that colliery. The evidence of deputies who have worked at other mines is that at times they encountered similar procedures elsewhere. The account of Davis about continual power for pumps at Delta is an example which is intriguing. It is said that that colliery had obtained some special permission for this procedure, as if the colliery received a Departmental exemption. However, the so-called "correct procedure" is nowhere laid down in Statute or Regulation. I was left wondering from what legal rule, therefore, the colliery was exempted. However, Departmental files show that the Chief Inspector, subject to stringent conditions, exercised his powers to exempt the colliery from inspection of earth leakage protection equipment on each shift as required by Regulation 67A, and 4-hourly inspections of live conductors, required for operating certain pumps, which should have been necessary under Regulation 16 - both Regulations being under Schedule VII of the Act. However, the fan stoppage at Stockrington No. 2 shows that men are prepared to pay mere lip service to safety procedures, whether or not they are laid down in the Act or its Regulations. I am left with the

feeling, amounting almost to certainty, that considerable confusion exists among certain collieries, not only as to what are the actual laws of safety already laid down and what are safe commonsense mining practices for which there exists no printed word and which must be instituted to meet the differing needs of individual collieries. There is often also a lack of understanding of the reason behind some statutory safety procedures. This leads to a belief that those procedures are archaic and needlessly irksome. So the strict obedience of the regulation is often avoided. As single obvious examples of a much wider practice, I refer to the claim at Appin that returns were not inspected when men did not work there, and the claim at Stockrington No. 2 that a pre-shift inspection was only necessary after the fan had stopped for an hour.

There is little consistency in the type of safety warning devices among our collieries. The methane monitor with a moving roll of graph paper as displayed in the report room at West Wallsend No. 2 is by no means a universal coal mine feature. The Act does not prescribe the type of monitor to be installed. Consequently, the Bacharach system is still used, while some mines are changing to the tube bundle type. West Wallsend No. 2 has installed this system now. I am told in evidence and otherwise that a few safety-conscious collieries have more sophisticated developments of the latter system. There can be nothing but praise for the installation of a modern, efficient monitoring system. However, there must exist also a certainty that the responsible officials understand the significance of whatever system is installed, and in fact use it. At West Wallsend No. 2 there were convincing signs that the deputies did not understand the significance of the tracings on the chart paper. A few simple questions revealed that most did not even bother to read it, though all claimed to inspect it. If they do not understand its significance, of course, there is not much use in reading such a log. The management of any colliery must feel a certain disappointment then, that its expensive equipment is of no help to its deputies. It should undertake an instruction course for every deputy, at least, in the importance and the manner of using this monitor. I note with approval the new introduction of

further safety devices and measures, and in particular, a requirement that deputies report their inspection of such equipment as is provided. Greater attention to fan stoppages is obviously necessary. This colliery's fan stopped three times within a relatively short period. There is no suggestion that the colliery should be blamed for any of these stoppages, but I feel that a stoppage such as the last, of which the colliery is unaware for a long period, cannot be tolerated. Fortunately, the management has now taken very proper steps to ensure that a stoppage will be known very quickly.

Fan stoppages combined with unsafe practices at other mines are not infrequent. Mr. W. Wilson, Senior Inspector for the Northern Districts, has furnished me with the following accounts for the period December, 1978 to early February, 1979. Over this very brief period, the incidents as described present an alarming picture of only one aspect of the state of safety precautions in the coal mining industry.

In the Southern Coalfields District in one colliery the main fan was closed down for the Christmas holiday period on 21st December, 1978. I pause to say that this dubious practice itself requires investigation. The fan was restarted on 12th January, 1979. About two and a half hours later an inspection was commenced, 3.5% of inflammable gas being found in the general body 200 metres from the working face. A normal pre-shift inspection was carried out two days later. Over the next seven days three ignitions of inflammable gas occurred inside flameproof enclosures.

After the weekend, 1st - 2nd September, 1979 power was switched onto an area of another mine and machinery worked before any pre-shift inspection.

At the same mine on 1st October, 1979, a number of persons including a deputy travelled to pit bottom as part of pre-shift inspection. The deputy had been told to inspect the mine from pit bottom to the inbye General Rule 4(a) stations. The intention was that the parts of the mine beyond the General Rule 4 station in each panel would be inspected when the main body of men came on duty. A workman in fact went beyond one of the inbye stations, knowing that the area beyond had not been inspected, this action being in breach of Regulation 161 of the 6th Schedule of the Act. The main fan at

another colliery shut down at 4.33 pm. on Saturday, 2nd February, 1980. At about the same time the return airway monitoring system ceased operating because of a surface power supply earth fault. There was no provision for alarm on either fan or monitor failure. If, however, the monitor had not failed, the build-up of gas underground would have been sensed and an alarm siren would have sounded. However, the fan was not inspected on the Sunday. In fact the faults in the equipment were not found until about 4th February, 1980. Usually, in the absence of fan ventilation, natural ventilation reverses for periods unspecified, giving fluctuating airflow. The underground telephone system, interconnected to colliery cottages, was not automatically disconnected and was live for 30 hours of fan shutdown.

In the Northern Coalfields, on 6th December, 1979 at 12.15 am. the failure of power supply to a colliery caused the No. 2 shaft ventilation fan to stop for slightly over an hour. Underground power was restored as far as the inbye transformers in the working panels before any underground inspection had been made - an apparent breach of Regulation 70 of the 7th Schedule of the Act.

Two matters are worthy of comment at this stage. Firstly, these occurrences, over a relatively short period of time were in fact reported to the Department's inspectors. One is forced to ask how many circumstances of potential danger occur and are never made public. Secondly, all of these occurrences took place after the explosion at West Wallsend No. 2, and three of them after the Appin disaster. Events such as these, although the source of great public alarm, apparently do little in themselves to create a greater awareness of danger in other collieries. I should add here, if indeed I need to, the occurrence at Stockrington No. 2 colliery, where the very men who were supposed to have learned their lesson at West Wallsend No. 2, were among the main actors. I should here refer to the fact that, in terms of accidents, West Wallsend No. 2 has a very proud safety record. Mr. Jones has produced figures by way of a chart, which shows this mine to be superior to the average northern colliery as far as safety records are concerned. The incidence of accidents, dangerous occurrences and known breaches of each of the northern collieries needs examination.

Despite the record of this colliery, however, I am constrained to draw attention to a number of features of its operation which I consider, in the light of the whole of the evidence, to be less than satisfactory.

There appears to have been a lack of written instructions, signed for by persons to whom they would be issued as an acknowledgement of receipt, to employees like deputies and electricians. It was this fact, of course, which enabled the electricians associated with wrong practices to claim that they had never been shown otherwise. In the long run I have found this claim to be unfounded and I believe the personnel involved to have been deliberately changing these colliery practices to suit themselves. I have already said that I agree with the view of the management that pit training in company with experienced men produces the best results. In fact, Mr. Watson appears to have been both respected and obeyed by employees at the mine. As I have said, he adopts a somewhat liberal view as to communication by telephone from underground to the electrician on the surface. He sees nothing wrong with a deputy coming to the surface and giving instructions face to face. I have said that I cannot but agree with him. The essence of the exercise is communication of an efficient kind at at the proper time and this is obviously not restricted to the use of a telephone. Nevertheless, in the special situation of colliery management, where strict insistence on safe practices is indispensable, it is essential for there to be documentation of the practices to be followed and an issue of instruction documents to mine personnel. The Colliery should retain signatures with the date of receipt from all persons who are issued with such documents. This is the system which was implemented at Stockrington No. 2 and involved assistant under-managers as well as lower ranks. A manual of documentation, progressively kept up-to-date, should be considered. This method inhibits all arguments with staff. It is also proof subsequently of the systems which are in operation at the mine.

Another example of the lack of documentation at this colliery is the fact shown in evidence that Bunn and other electricians were never authorised in writing by the manager to carry out the duties incidental to the regulations under the 7th Schedule of the Act.

Thus electricians who entered the haulage room at this mine, as Bunn did on 8th January, 1979, apparently have entered in breach of Regulation 15(b) of the 7th Schedule. The onus would probably be upon Bunn to prove the exception mentioned in the Regulation, namely that he had permission from the manager or undermanager, and it would be a nice question for a Court to determine, in the obvious absence of express permission, that such permission could be implied. It would be somewhat unfair to blame the electricians in such a case. However, the same cannot be said about persons responsible for authorizing the electricians in writing. Regulation 2 of 7th Schedule is in point. The regulations are to be observed as far as is reasonably practicable by all persons acting in the management, etc. A special provision is made in the same regulation casting a duty on the mine electrical engineer to ensure that electrical machinery, plant and apparatus is installed, worked and maintained in compliance with these regulations. Since the regulations require these items to be worked and maintained by authorised or competent persons, the electrical engineer is prima facie in breach of Regulation 2 of the 7th Schedule. The manager is prima facie in breach of this regulation and also Regulation 8 for failing to appoint in writing the necessary competent persons therein described. Similarly the manager and the electrical engineer are in breach of Regulation 2 for failure to appoint an authorised person in accordance with Regulation 16 to be in attendance at the surface of the mine to operate switchgear.

In the course of my Report for the Minister on the circumstances of the Appin explosion I found it necessary to criticize deputies' reports both as to form and the perfunctory attitude towards what was reported. A similar comment can be made about some of the reports I have had occasion to examine during this Inquiry. There are also apparent conflicts that arise from a close examination of the reports of pre-shift inspections. The difference between the starting times of Mathews and Pugh during the holiday period is noticeable and unexplained yet Mathews always claims to complete his inspection within five minutes of Pugh. The inspection on 6th January, of course, falls into a different category. On 23rd December both men sign the same report

- in fact the handwriting shows it to be Pugh's report, to which Mathews adds his signature. On 6th January, 1979, work takes place in 1 West section, yet it has not been pre-shifted. The reports were not examined in this way by Mr. Watson, the Undermanager. He read them, he says, to obtain the gist of them. He was obviously looking at them to see whether there were any matters of concern to be attended to. He was not checking on his deputies. I believe that this attitude is not good enough, even if he did not realise that when Gilbody was present he was in fact complacent. If there is trouble as a result of a deputy failing in his duty, whatever the trust an undermanager places in his deputies, it is too late afterwards to say that he did not notice anomalies because he did not check for them. I do not say that Mr. Watson was negligent in this regard. The proposition that I put forward is that in underground coal mining ordinary care is not sufficient as a standard of conduct, supervisory or otherwise. Continual vigilance is entirely necessary. I deal with this concept at greater length towards the end of my Report.

However, Mr. Snedden, the Manager, has no defences whatsoever of the nature raised by Mr. Watson. Mr. Watson was absent on his vacation during the relevant holiday period. His duties, according to Regulation 9 of the Sixth Schedule to the Act, fall upon the Manager. The examining and countersigning of reports made in pursuance of the Act and Regulation as to conditions below the surface on the same day as the report is made or the day following, is primarily the task of the assistant undermanager (Regulation 34S of the Sixth Schedule). Where he is absent, the task falls upon the undermanager. In the latter's absence, there being no deputy manager, the manager must accept the burden. Mr. Snedden countersigned no report from 22nd December up till the explosion shift. One could be pardoned for assuming that the deputies, after the first two or three reports, realised that they had an "open go", since nobody was checking their reports - a fact which became obvious on looking at their previous reports in the book.

Similarly, Mr. Snedden failed to make the daily report as to inspection of parts of the mine in accordance with Regulation 34M of the Sixth Schedule, a duty normally carried out by Mr. Watson.

Regulation 67A(2) of the Seventh Schedule provides that a competent person shall at least once in each working shift make a test of all automatic earth leakage protection equipment and shall record the result of the test in a special book provided. There is no evidence of any earth leakage test reports on the days previous to the explosion, and presumably no such tests were made. Responsibility for carrying out this regulation falls upon the Mine Electrical Engineer (Regulations 72 and 73 of the Sixth Schedule) and upon the Manager (Regulation 1 of the Sixth Schedule).

Looked at in retrospect, the part played by top management in the supervision of the operations of the mine leaves something to be desired. I do not wish to be misunderstood in saying this - I find no direct connection between the standard of supervision revealed and the explosion which subsequently occurred. In a colliery with as good a reputation as that possessed by West Wallsend No. 2 the facts are surprising and this publishing of them is painful to me. However, of far deeper concern is the inference that a serious and widespread problem of this kind would become evident if one looked below the surface of management in other collieries. So far this exercise on any scale has been impossible because of the lack of inspectorial time. It is, however, a necessary project. In the meantime, I am happy to say that the colliery and the Company behind it have produced evidence that there is a sincere and positive response to the need to remedy shortcomings. I am satisfied that faults in systems have been remedied and that the management has gone much further, by taking several additional steps, not only to instal new safety devices, but to tighten its supervision and control of staff.

Mr. Murray, on behalf of the Department of Mineral Resources has submitted a Departmental view as to my making certain recommendations for the improvement of safety in mines. I propose to deal with those which I adopt.

Before doing so, however, it is opportune for me to take up and deal with the question of the role of Counsel assisting this Court in a formal inquiry, since this has been subject to a certain public scrutiny after the Appin Inquiry. In the present Inquiry and during the Appin investigation Mr. Murray appeared to represent the Minister, who appears as of right under Section 32(7) of the Act, the general section which gives the Court jurisdiction and provides for certain powers in the Court and the framework within which the Court operates. He also appeared for the Minister's Department, but there is nothing materially added to his brief by this fact, for the Minister as a Minister of the Crown and his Department are the one entity. The Department is not synonymous with the individuals, for example, the inspectors, who are employed by the Department. Indeed, the Act makes reference to this fact in the same subsection as I have cited, giving to the chief or any inspector the right to appear separately - and therefore, of course, to be separately represented. Thus it may happen from time to time that Counsel for the Minister may have to play a critical role in respect of certain inspectors of the Department. It should be noted that Counsel for the Minister is instructed by the Crown Solicitor. It is not envisaged at any stage that he will adopt a partisan attitude.

In 1965, during my Inquiry into the fire at Bulli Mine, I found it convenient to treat learned Senior Counsel and his Junior as occupying de facto the role usually ascribed in tribunals with a non-Court status, for example, Royal Commission of Inquiry, to Counsel specially briefed to assist the Inquiry. My researches so far have failed to find any single historical basis for such a role as Counsel assisting an inquiry. There is, of course, the English position of clerk assisting an inferior Court, who may advise as to procedure and law. Similar positions may obtain in military and naval tribunals. In this State, however, the only time Counsel is specifically briefed in this way appears to be when the Tribunal of Inquiry is not a Court. There may be good logic for this. Generally speaking, Courts have to deal with adversary situations and the tribunal finds its facts from evidence adduced in this way. There is no need for Counsel specifically assigned to assist in

such a proceeding. However, a tribunal without designated adversaries stands on a different footing, in that there is no party who has the carriage of the proceedings, and indeed the situation could possibly arise where no Counsel adopted a critical or testing role.

Counsel then who are non-partisan and yet have the carriage of the proceedings, and who can carry out in addition the tribunal's wishes, can be a distinct advantage to the inquiry process.

The manner in which Counsel carries out these duties may vary from Counsel to Counsel and tribunal to tribunal. In some inquiries Counsel assisting is the real inquirer and the tribunal appears content to follow. In others he may merely present evidence, help other parties, carry out the tribunal's wishes and finally address the tribunal as to possible findings on the evidence.

It should be noted, however, that Counsel is not an investigator in the sense of going out into the community and gathering evidence. He has officers at his disposal and he may indicate avenues of search to them and use the material if it is eventually worthy. There is however, one type of Court where Counsel has a duty to the public as well as to the party briefing him. This is the criminal Court, where, theoretically at least, Counsel for the Crown - the Crown Prosecutor - not only presents a Crown case, but must assist the Court by placing credible evidence before it, even though it does not assist the Crown case, which has not been adduced by the defence. It has other functions of a like nature. Courts in this State are quite familiar with this situation.

The Court of Coal Mines Regulation is a Court with powers like that of certain other Courts. In its ordinary jurisdiction it supervises adversary situations and has no need of Counsel to assist it, although if the Minister is represented, it expects the same attitude as a criminal Court does from a Crown Prosecutor. However, when by reference the Minister himself refers a formal inquiry to the Court under Section 31 of the Act, there is strictly no adversary situation. The Court, however, mindful of the fact that it is an inquiry ordered by the Minister, expects his Counsel to assume

the carriage of the proceedings. As a matter of practicality, further, evidence has been gathered by the Departmental inspectors, who are prima facie independent, and who are doubtless persons of great experience in coal mining. The Minister's Department, moreover, has testing facilities and laboratories which cannot be matched by any party, it has access to the results of research and, generally, has the facilities and means of obtaining evidence to place before the Court. It can also assist in answering the tribunal's questions and resolving its doubts.

This, of course, must be achieved through the Minister's Counsel. It is but the briefest step, therefore to regard this counsel as generally assisting the Inquiry. Other Counsel or parties may look to him for assistance, he may carry the tribunal's wishes to them and their wishes to the tribunal.

Because of my past experience with the practical application of this concept, I invited Mr. Murray at both of these Inquiries to adopt the role of Counsel assisting the Inquiry. I should say that at no time was there any demur from learned Counsel at the Bar table. At no time did Mr. Murray experience any conflict of interest. At all times I was especially alert to see that no injustice was being done and to see that the Inquiry was fully and properly served. I should have intervened immediately had I thought there was any need.

Unfortunately, in the news media after my Report on the Appin explosion, there was a statement to the effect that Mr. Murray by acting as Counsel for the Minister, did not perform his functions properly as Counsel assisting the Inquiry. This piece of groundless opinion purported to be based upon the fact that I adverted to my uneasiness that certain evidence which I would have expected from Federation men was not forthcoming. What I said was in no way in criticism of Mr. Murray. Indeed, I specifically went to the trouble of expressly stating that "it was not the fault of Counsel assisting the Inquiry that it was not called. It was because its existence was not revealed". In fact I referred to it as an example of what I have called here the code of not "dobbing in" other men.

Indeed, I devoted some of my Report to praising Mr. Murray for his assistance to the Tribunal. What I omitted to say was that both of my Assessors consistently praised his ability and fearless attention to duty during our consultations in Chambers. I have raised the matter at some length in my Report because I consider it necessary to do so for two specific reasons. Firstly, I should not want it to be thought that there was anything amiss in this present Inquiry because Mr. Murray has adopted the same role as he did at Appin. Secondly, I wish to advise the Minister that in my view there is no need whatsoever to amend the Act, or to take any other steps to provide for special Counsel to assist the Court at formal inquiries when the Minister is already represented. The Minister orders the inquiry in his capacity as representing the Crown. His impartiality is presumed from the fact that he has seen fit to demand that a happening should be the subject of public investigation by the Court. His only interest can be that the matter be properly investigated, and that he receive a Report from one of Her Majesty's Courts showing the result of such an investigation. A Judge of the Court presides and must be presumed to be sufficiently vigilant to ensure that a just and unbiassed, objective account will be rendered. On the other hand, Counsel assisting the inquiry with no other brief, would be quite redundant. The Court would still have Counsel, briefed by the Crown, representing the Minister and providing the evidence which forms the bulk of the inquiry, as well as other Counsel for the parties providing such evidence as they wish to call. Counsel assisting would have a role mainly of watching - usually in an unfamiliar field - and making subsequent submissions to the tribunal. I feel the Court at present functions very well without such Counsel. I recommend that the situation continue. Should it appear at any time that the Court is disadvantaged in a particular inquiry, the situation would be quickly remedied by the Judge asking of the Crown Solicitor that such special Counsel be briefed. I feel, however, that this chance is most remote.

Mr. Murray has suggested to me certain amendments to the Coal Mines Regulation Act to cover deficiencies revealed by this Inquiry. Some of these may already be

incorporated in the amending legislation. I mention them in any case.

Firstly, as I have already indicated, the main ventilating fan (or fans, when there are more than one) should be provided with signals within both the relevant part of the mine premises, as well as outside.

Thus, the West Wallsend No. 2 system (or its equivalent) of fan speed indicator, fan ammeter, fault light and stop light system should be visible on the colliery premises. In addition, any meter which shows crucial matters such as bearing temperatures should be equipped with a needle (and reset button) which will remain in position should the fan stop for any reason and the colliery surface power be cut off. I note with approval that this colliery has already installed such a device among its new equipment.

In addition, the fan should be equipped with an approved audible alarm system which will indicate any stoppage at the colliery site and its environs. This should not, however, be the substitute for a monitoring system which will have the end result of notifying senior officials of the mine, when they are not in attendance at the mine, of fan failure. As an example, the system now in operation at West Wallsend No. 2, providing a 24-hour security service leading to telephone calls to senior officials, appears to be an excellent method of bringing about the appropriate result.

The fan itself should be connected to a timing device which will indicate when the fan stopped, enabling a calculation to be made of the duration of the fan stoppage. I believe that this is easily available and should either be made the subject of a specific regulation, or a condition of fan approval by the Chief Inspector. Some doubt appears to be present at the moment as to the practice - or possibly practicability - of the Chief Inspector to monitor fan equipment by using his discretion as to approvals. It is essential that the Chief Inspector's discretion in this regard should be placed beyond any doubt and that he exercise his discretion to withdraw approval from existing fans if they do not comply with conditions imposed.

A difficulty presents itself with Regulation 70 of the Seventh Schedule. As presently framed the regulation provides two satisfactory safety provisions.

The first is the automatic cutting off of power to the mine in the event of fan failure. The second forbids the restoration of power, if the stoppage or the main ventilating system exceeds 30 minutes, until after an inspection has been made, etc. While the latter provision forbids the early supply of power, it does not ensure it - for example, one notes the situation at Stockrington No. 2 and, of course, the inadvertent application of power against a fan stoppage at West Wallsend No. 2.

The West Wallsend situation would be discouraged if the fan alarm necessarily continued until the fan was restored. The solution to the first of these difficulties appears to be technological, although it is not a complete solution. A provision whereby power could not be restored once the fan has stopped for 30 minutes, or a substantial period after the fan is operating again may well provide a reasonable attempt at a solution. Such a device should not be a major difficulty for modern technology. It should be noted that something of a similar nature, but for an entirely different purpose, operated at West Wallsend No. 2. After a fan stoppage, the methane monitor having stopped, it lagged behind the fan by half an hour after the fan was restored. What is needed to prevent power being restored is some type of lockout device which will ensure time for an appropriate inspection to be made, so preventing people like Gilbody from defying the regulation. I suggest, for consideration only, a period of one to one and a half hours.

It is clear after the experience at this Inquiry that a trip system for underground power while the fan is stopped must never allow any power, of whatever duration, to go underground before the trip. Regulation 70 should at least be amended to ensure that a device is incorporated which prevents power from being restored until the fan is operating. Such a system is now already in operation at West Wallsend No. 2. The Chief Inspector has sent a letter to all other collieries threatening the withdrawal of approval for fans that do not ensure this. Whether this provision be enshrined in legislation or left to the Chief Inspector is a matter which I recommend for his consideration. I feel that much of the above could be introduced by the regulations

providing for approved systems in line with the above principles.

Although the practice espoused by the deputies at West Wallsend No. 2 of putting power on before pre-shift inspection has been severely criticized in this Report, there is no provision in the Act against this practice. If the provision of power before inspection is unsafe, then a pre-power inspection should extend to every part of the mine to which power is reticulated. There exists a provision in Regulation 16 of the 7th Schedule for regular 4-hourly inspections "of that part of the mine outbye the inbye point at which the conductor is live to the nearest outbye station appointed under General Rule 4". This, of course, covers a during-shift inspection and envisages a working-back by the deputy from the inbye terminating point of the live conductor, outbye to the General Rule 4 station. It assumes that power is already on and that a shift is in progress. What it does not contemplate is a break in the succession of shifts and an introduction of power, either to the whole mine, or in certain cases, to part of a mine only. The Act requires amendment to forbid the new supply of power in these circumstances to the mine or part of the mine, as the case may be, before the necessary inspection of the type I have described. There should be exemption to allow the use of battery powered transport for entry to pit bottom.

It is time that all telephones in mines should be intrinsically safe. In West Wallsend No. 2 and in many other collieries they are not. It was noted in evidence that at this colliery, during an inspection after a fan stoppage, fuses had to be removed from telephones until the part of the mine being inspected was declared safe. This, of course, means that in case of emergency there is no immediate communication between underground and surface. An intrinsically safe telephone would obviate this difficult and cumbersome procedure.

The Department suggests that circuit breakers, rather than isolators, should be used so as to prevent sections from being energised when the main feeder is switched on. It is understood that the new Act will provide for this. The danger is that usually isolators to transformers are left closed, because of the difficulty experienced with some isolators in closing

them with voltage on. As a result, the high tension side of every transformer is energised by the switching on of power, even though the transformer itself is not energised until the circuit breaker is separately closed. Yet it is obvious that the probability is that at West Wallsend No. 2 this was sufficient to reach a fault inbye which caused the explosion. Thus with circuit breakers which drop out automatically once the main feed is opened, a manual operation must take place to energize each section serially. Sections of the mine not being worked would then be unenergised.

The system whereby deputies were to communicate by telephone to the electrician on the surface, to activate power, is not good enough. The Act, of course, is silent as to telephonic communications, but it can be used to advantage if improved. In the first place, the West Wallsend No. 2 system did not provide for the inspection report book to be made accessible to the workmen, as contemplated in General Rule 4. Further, it was never made clear at this mine that the deputy met the men before they entered the working places and reported to them as to the state of their working places - a requirement of Regulation 38 of the 6th Schedule. It is considered by the Department that the report should be to a senior official, such as an assistant under-manager, who shall be satisfied as to the pre-shift inspection and general underground safety before authorizing power to be turned on or allowing men to enter the mine. This would require an amendment to the Act.

The above consideration leads to an examination of the question as to what rank of official should be left in charge of a mine. It appeared to me during the hearing that it was not good enough, even on holiday maintenance shift, to allow a mine to be in charge of two deputies. One would have thought the presence of an assistant undermanager to be a minimum requirement. As it was, these men had the mine to themselves and worked without supervision. In a similar fashion, I am curious as to what the mining community feels about leaving a mine, with fan in operation, completely unattended for days. On the other side of the coin, I raise a query as to the propriety from a safety viewpoint, of deliberately turning off the fan for a

week or more over a holiday period. My view is that those who operate a mine, particularly a gassy mine, have a duty to the community to keep all safe at all times. Nobody can estimate beforehand what external damage can be done by an explosion in a mine substantially filled with an explosive mixture of gas and a strong possibility of coal dust involvement. For those sceptics who believe this is an alarmist view, I would recommend a visit to the Department's Londonderry Testing Centre to witness the frightful potential of even a limited gas explosion in a comparatively short testing gallery. I further draw attention to the fact that those who are allowed to mine coal have a duty to preserve the mineral for the economy.

It is obvious that General Rule 5, requiring inspections of machinery and the like, misses the point if it is designed to provide a state of maintenance for safety, at which this Act should aim. The Rule seems to relate to the past, before sophisticated machinery became the rule in mines. Regular maintenance of the efficiency of machinery is best left to mechanical engineers and fitters, who will soon rectify an inefficient piece of equipment. ~~What should be required~~ is the regular inspection and maintenance of machinery for reasons of safety. Thus a planned maintenance scheme would require close attention to flameproof enclosures, diesel exhaust gases, brakes and the like. The manager of a mine should have the duty of preparing such a maintenance scheme and subjecting it to the approval of the inspectorate.

In this regard, once again I am duty-bound to emphasize the necessity of increasing the inspectorate. I realize that the Department is doing its best to attract competent men in this field, and raise the matter once again, not in criticism, but for the record. Indeed, I am told authoritatively that there probably is no need for an additional electrical inspector on the southern coalfields - I was led to believe during the Appin Inquiry that there was such a need. However, that certainly is not the case in the northern district, where Mr. Orr covers 52 collieries from Lake Munmorah in the south to Ashford, above Inverell in the north. He points out that there are 43 registered workshops looking after mining equipment and he has to approve those doing

electrical work, examining persons said to be capable of doing this work. Instead of carrying out routine regular inspections as he would wish to in mines, he finds himself rather acting as an electrical investigator of accidents after they have occurred. Of course, this is most unsatisfactory.

Submissions have been made to me both by the Department and by Mr. Tapp on behalf of the Federation that every mine should have equipment ready for the fast sealing off of a mine after fire or explosion. A guillotine is suggested as an example. I have already found that the operation at West Wallsend No. 2 was efficient and safe. I realize that other mines may not act as expeditiously as this mine did. At the same time I am loath to saddle all pits in the State by a recommendation that they instal expensive mine-sealing equipment in case of such fires and explosions as may, in comparatively rare instances, require that the mine be sealed. At this stage I make no recommendation other than that the Inspectorate discuss this matter and, if necessary, present its own view to the Minister.

One serious difficulty at West Wallsend No. 2 which led to much debate at the Inquiry was the dispute as to what were the rules as to pre-shift inspection. Even on the assumption that a phone call to the electrician re power was necessary, there were those, including the undermanager, who believed face to face communication was acceptable. I have touched on this and said, incidentally, that I agree with the logic of the undermanager. However, this points to the necessity for a set of inspection rules, or procedural rules, which should be standard for each particular colliery, and, as I have said, these should be documented, distributed and receipt acknowledged by each recipient. However, I agree with a suggestion that the manager of each colliery should make his own rules and should have these approved for the colliery by the district inspector.

Mr. Tapp, on behalf of the Federation, has renewed the submission made on behalf of the same body at the Appin Inquiry that there be a judicial inquiry into mining safety generally. This time, however, the request is more specific. The Federation wishes this Court to carry out the investigation, and does not seek, nor did it ever seek, a Royal Commission of Inquiry. Again,

whereas the previous submission was made largely on the basis of costs to the industry arising out of accidents, the present request is based on the number of accidents each year as compared with the number of persons employed in the industry. It is claimed that this number is rising once again. I pass on the Federation's request without adding any recommendation to it.

However, an attempt to obtain an accident rate which has significance in reflecting the standard of safety in pit-type collieries is becoming necessary - I shall explain why in the course of this discussion - and yet it is difficult to obtain. The criticism of insurance figures, or compensation claims, is usually that they do not truly reflect the real accident rate. In the first place, of course, periodic journeys are included, and these are not mining accidents. Further, the figures contain a component of non-serious accidents, false claims and the like.

Mr. Bevan, Solicitor for the Colliery Managers Association, disputes the accuracy of Mr. Tapp's figures and the claim that accidents are becoming more frequent. He submitted graphs based on certain tables of figures supplied by the Joint Coal Board and the Department of Mineral Resources Annual Reports. He deals firstly with fatal accidents and shows a definite fall from the period December 1948 - December 1954 to the period June 1973 - June 1978. This figure will show a substantial rise when it includes Appin figures in 1979. He produces frequency rate figures for total and serious accidents for the period 1969-70 to 1977-78 and shows a slight decline. Again the next period should show a rise, probably on these statistics, a dramatic one. The third useful set of figures are those showing frequency rate of lost-time accident claims in New South Wales underground mines. These, of course, should include the doubtful claims. Most areas of the State show some rise after 1970-71. However, the South Coast district shows a most dramatic rise, which can only be accounted for by an increase in accidents. There are substantial rises in some other areas - South Maitland is now actually declining slightly. However, there is nothing comparable with the South Coast. The latter district between 1964-65 and 1977-78 has now more than doubled its frequency rate. Lest it be suggested - as it has been,

that the rises followed the 1972-73 introduction of accident pay, the Southern Districts' rise started two years before that date and has gone on increasing since that date apart from a slight levelling off between 1974-75 and 1975-76. It is noticeable also that despite the general increase in these figures in underground mines, the introduction of accident pay had no effect whatsoever upon the frequency rate of lost-time accident claims in open-cut mines. I would discount any criticism of figures available based on this factor.

I should state, in fairness to the Colliery Managers Association, that Mr. Bevan has indicated that although the Association may not accept the Federation's figures, it agrees that there are too many accidents in coal mines.

Some figures furnished by Mr. Inspector Jones to the Inquiry, for the purpose of contrasting the performance of West Wallsend No. 2 with the average for other collieries, show incidentally the safety record of other northern underground mines. 34 collieries, which worked a full 9-year period from January, 1970 to December, 1978 were considered. These produced the following totals: fatalities - 36; serious accidents (reportable under Section 36 of the Act) - 207; dangerous occurrences - 209. These figures do not include injuries less serious than a fracture or dislocation, and no minor injury other than one caused by explosion or blast. There is no room here for complacency.

Some specific figures are apposite here. They are derived from tables published by the Joint Coal Board in its 1978-79 issue of "Black Coal in Australia". The first significant figures relate to the frequency rate of lost-time accidents, that is the number of such accidents per million-man hours worked. The totals for all underground mines show an increase in this rate from 138 in 1970-71 to 432 in 1978-79, with a consistent increase in the years between. The Board explains that "lost-time accidents are, in the main, accidents which involve an absence from work of at least one day, other than the day on which the accident took place". Also included are fatalities and claims involving permanent injury. I select various injuries which obviously are of the more serious type, for the purpose of this comparison. From the period 1971-72 to 1978-79, the

number of claims in respect of fractures rose from 350 to 419, an increase of 20%. Dislocation claims rose from 7 to 20, 186% increase, but with the small number involved not of great significance. Concussion and internal injury claims rose from 37 to 91, an increase of 146%. Amputations and enucleations, again in the low numbers, fell by 35%. Burns rose by 59% from 53 to 84. Contusions and crushings rose from 1189 to 2304, an increase of 94%. I have deliberately omitted less serious injuries, for a number of reasons, including the fact that it is in this area that an exaggerated claim may be made.

The activities which yield the greatest numbers of claims are also of significance. In the same period as above, roof support/handling materials, boring and shotfiring gave rise to an increase of claims from 1,510 to 3,487, an increase of 131%. Transport of all types and walking led to a final figure of 1,718, an increase of 120%.

In respect of classes of worker, the statistics yield the following figures: erecting timber or metal roof supports, a rise in claims from 454 to 696, an increase of 242 in number; preparing for, or installing roof bolts, 235 to 739, a rise of 504, again numerically; shuttle car activities, 156 to 319, a rise of 163. Generally speaking the number of claims rose from 4,062 to 7,784, an increase of 3,722. As against these figures must be placed the background of an increase in the number of employees by 1,332 over the intervening period - there are now over 15,000 people employed at underground mines - and an increase of manshifts worked by 241,000. These latter figures do not sufficiently, in my view, explain the increased accident rate.

I concede that one cannot argue from raw figures alone as to unsatisfactory conditions of safety control in New South Wales underground mines. I accept that a number of factors extraneous to any lack of safety measures may well distort these figures. Two statements about the figures, however, I believe to be valid. Firstly, increase or no increase in accidents and injuries, the figures are too high in themselves to be acceptable. Coal mining is an industry which has been subjected to developing safety legislation over some seventy years. To my knowledge it is the only industry

which has its own safety code enshrined in an Act of Parliament with its own Departmental inspectorate to police it, and its own Court to make decisions concerning it and to recommend changes after formal inquiries. Nevertheless, from a safety viewpoint, it remains a high-risk industry. Secondly, there is obviously a rise in the accident rate, even though there is room for argument as to the extent of this rise. The situation in the southern coalfields district appears particularly serious, the frequency rate of lost-time accidents for this area having risen from 182 per million-man hours worked in 1970-71 to 432 in 1978-79, a rise of approximately 130%. The reasons for this are best known to mining men themselves, and are probably locked away in the collieries. It is no sudden rise, however. It represents a consistent increase over the intervening years.

In addition to accident figures, one should look at the Department's lists of reportable dangerous occurrences which are in fact avoidable. I have already referred to a few instances over a short period, of a particular type, provided by Mr. Wilson. During the Appin Inquiry I was furnished with similar lists, the results of check inspectors' current findings and reported by them. I pause to wonder how many of such occurrences remain unreported and undetected. No person or body interested in mine safety can afford to turn a blind eye to these happenings, many of them containing the elements of potential disaster.

One should recognise, of course, that the mining industry is full of rumours. Men whisper stories of happenings and practices in mines for which there is no actual evidence whatsoever. There is a current belief that many mine officials are prepared to thumb their noses at the measures prescribed in the Act for the protection of miners and of mines. However, identifiable instances do not seem to find the light of day. I discount much of what I am told, in fairness to those decent men, conscious of safety, who have to win coal under difficulty. At the same time, when disaster strikes, almost inevitably there is revealed a series of shortcomings as to control for the purpose of safety, a method of operating which shows a lack of commitment to safety regulations, contemporaneous with a

claim that safety is always regarded as paramount. The reason lies probably in the fact that achievement in mines is measured by tonnage of coal produced, rather than by steps taken to avoid accidents.

I feel that it is the duty of this Court to point out that any defects in control for safety in our underground mines are likely to grow far worse in the immediately approaching years, rather than to improve themselves. This State's coal mines are in the process of commencing a substantial drive for increased production, created by a much greater demand in Australia and abroad, for coal. I wish to avoid references to what is popularly known as "the energy crisis". I prefer to base my reasons on the official sources, and in particular, upon the Joint Coal Board's own published assessment of future coal production in New South Wales in accordance with increased demand. In 1977-78 the Board in its Annual Report forecast that the 1978-79 market would be 42,900,000 tonnes, an increase of almost three and a quarter million tonnes over the previous year. In fact markets expanded less rapidly than expected and the actual increase was about two and a half million tonnes for the year. The 1978-79 Annual Report predicted further substantial growth. This was due, it said, in Australia because of the higher demand for steel products and electricity (with uncertainties and higher prices for petroleum products). It was expected that coal would compete acceptably as a fuel against fuel and diesel oils. On overseas markets New South Wales coal would be in demand because of the record levels of world steel production, which particularly needed coking coals. Further the 1979 Tokyo Economic Summit of Western Powers and the policies of the member countries of the International Energy Agency have concentrated attention on the expanding use of coal as a fuel. To meet this need, Australia is seen as the major source of steaming coal. Coal exports from New South Wales for 1978-79 reached almost 19.5 million tonnes. For the next year the Board predicted an export level of 21.5 million tonnes. The overall market for New South Wales coal for 1979-80 was predicted at 45.5 million tonnes, an increase over the previous year of 8%. In fact the figure has fallen to 45.04 million tonnes as a result of industrial unrest. The export level,

according to more recently published figures, was in fact 21.87 million tonnes. The Board offers no predictions for the sale on export markets of New South Wales coal beyond that year. However, it publishes a table of projected increases for the sale of New South Wales coal within Australia over a period of five years following 1978-79. This shows an increase above that year of almost 7,500,000 tonnes or 33%. Underground mines at present account for almost three quarters of total production.

The point of this analysis is to direct attention to what promises to be a great demand on our coal mines for the supply of increased quantities of coal. Many collieries, including underground mines, will be at full production, with inevitable pressure from management for levels of coal to be maintained. Under such conditions there is no room for lack of attention to safety standards. Indeed there is, as from the present day, a great need for vigilance and attention to detail. There should be instituted an investigation into present safety procedures and devices with a view to ascertaining whether they should be revised. The two recent Inquiries with which the Court has been associated have revealed shortcomings which have probably existed for years and which already are matters for concern. I have no doubt that the making and keeping of records in both collieries, for example, have been regarded as a duty imposed by the Act, which adds to the burden of mine management, and which ultimately is of little value, because in the end the records come to nothing. If this were not true, better and more faithful records would have been kept at both mines, and a more vigilant inspection of them would have been made by those whose duty it was to supervise them. I do not intend to revive the Appin Inquiry, but I had cause there to criticise what I saw, in strong terms. In this Report, I have already described my attitude. I am not, however, insisting on the tying of the collieries in red tape. The records themselves should be the strongest indication, if they are true records, that the colliery in question is faithfully inspecting and reporting; the overseeing of the records by superiors is, and should be, if done properly, evidence that the management is meticulously monitoring both the work of its employees, and conditions in its mine.

Nor is it good enough any longer - if it ever was good enough in the past - for management to say that officials were trusted to do their job; if the officials failed, management was not to blame. It is most important that officials should be seen to do their job; that trust should be checked by supervision and that nothing affecting safety should be taken for granted. It is essential at this time for participants in the coal mining industry to realise that although they may have believed their operation to be safe enough in the past, the standards used may very well not be good enough to maintain safety in the future. It should, of course, be remembered that if real trouble should strike a mine, the drive for production is an ideal which has disappeared. The cold, hard fact is that a disaster such as has been encountered by these two collieries, whether men lose lives or suffer injuries, or whether years of work are set back, is a grievous loss in financial terms to the colliery. The psychological effect also on management and men remains a serious handicap for years to come.

In an endeavour to discover some principle which may guide those who prepare safety standards for this industry, I have carried out a minor study of other industries with safety standards. I hoped to discover a principle which guided a safe industry and which might, perhaps with modifications, be adopted for coal mining. I have come to certain conclusions.

There will be few who will disagree with the assertion that among what are prima facie the high safety-risk industries where safety measures have been largely successful, the air-travel industry is outstanding. I refer particularly to the carriage of passengers by air transport. There were times when many people were too afraid to step into an aeroplane and await take-off. In fact, today it is a platitude to say that all over the world planes every twenty four hours travel thousands of miles without mishap. In busy airports they wait in queues, as it were, for take-off and landing, so many are the daily journeys made. While occasionally there is an air disaster, as a matter of pure statistics, against the background of miles travelled, the industry remains superlatively safe. Of course, this is an industry which is responsible to the public, particularly its passengers.

I look for the principle which helps the air travel industry to maintain its safety records. Obviously, the general statement which must be made is that its operators - management, air crew and support staff try to foresee the danger and forestall it. Behind this general statement, however, is a code of procedure which depends for its success, not only on sophisticated equipment and technology, not only on the skills of its operators, but on essential steps to ensure safe operations, as programmed by those responsible for the procedure, and finally by the meticulous carrying out of each step as a matter of routine. There are obvious extensions of this simple statement of principle, obvious complications. The code itself is constantly under revision, as the industry changes with advancing technology and increased demand by its consumers - the passengers. Over it all, there is a system of ongoing checks of operators, skills, aeroplanes and equipment. There is also a continual search for equipment which will make the whole operation safer.

My belief is that the same principle should be applied to the coal-mining industry of this State. If the industry and the inspectorate is really serious about ensuring safety in this industry which from time to time kills and injures men as well as destroying property - I am sure that most men in the industry and all inspectors are serious about this ideal - then there must be a coming-together of all sections affected, to accept a code of this nature. Meticulous attention to detail by people in mines will always be necessary, however unnecessary the detail may appear, once it is sanctified by being included in the code. At the same time, there will be out of date provisions at present in legislation which may be removed as irksome and unfruitful. However, routine procedures are essential.

The difficulty is not, as I see it, in the application of the principle to the industry, or the devising of methods to ensure obedience to it. There are two major difficulties as I see the problem. The first is to convince the industry that the principle should be accepted. As against this, I feel that many would prefer a systematic, if detailed, approach towards safety, to the patchwork approach which has historically been the industry's lot.

Let me say that I recognize that a colliery must produce coal as freely and economically as possible. I propose nothing to hamstring the management in this endeavour. A proper safety code should actually help the management. I would hope that management and men would both be fully consulted to bring this aim to fruition.

The second difficulty is to devise the code itself - to work out the programmes which are necessary to serve the principle, as well as the programmes whereby the details can be continually reviewed with changes in the industry. It would appear to me that an initial move would be to investigate those areas of operation which produce the major serious accidents and dangerous occurrences.

However, I would be failing in what I conceive to be the duty of this Court in the light of two major Inquiries if I did not stress that the need for revision of what is at present occurring in the industry is a matter of urgency now. The stresses that are occurring in sections of the industry at present - revealed to some extent by the figures I have cited - will become painfully obvious in the years, possibly the months, which will shortly follow.

#### RECOMMENDATIONS AS TO PROSECUTION

I have previously pointed to the fact that it is somewhat of an anomaly for a Judge to recommend a prosecution other than for perjury. However, as I was once reminded, the Judge of this Court in a formal Inquiry is given all the powers of an inspector under the Act (S.31(3)) and consequently bears the corresponding duties. I have decided in this Report to recommend certain prosecutions. However, I do not thereby come to any conclusion as to guilt, for that is the sole prerogative of any Court hearing the charges. It must be remembered also, that there are inhibiting factors to the successful prosecution of any person for an offence under the Act. Firstly, there is a limitation of six months from the date of the offence to the time when the complaint or information must be laid (S.70). Secondly, the answers given to an inspector by any person who is making any answer to

an examination or inquiry by the inspector under S.27 of the Act, cannot be admissible in evidence against him in any proceedings, except a proceeding for making a statement which he knows to be false in a material particular or which is recklessly made and is false as above. I have always conceived it to be the law that since the Court has the powers of an inspector under the Act in a formal Inquiry and any such person is bound to answer questions asked of him, his answers should be treated in the same way and not be admissible against him in any other proceedings, except proceedings for false swearing, perjury and the like.

Indeed, after the 1965 Bulli Inquiry, when certain persons were prosecuted, it was held by the magistrate (with respect to him, I believe correctly) that such evidence, consisting of answers at the Inquiry by the defendants, was inadmissible against them in the hearing of the charges.

It should be noted, however, that there is a difference in the statutory limitation imposed on prosecutions of offences under the Act in the ordinary course of events, and those prosecutions arising as a result of the report of the Court appointed to hold a formal investigation "with respect to or in consequence of any accident in the mine" when it appears from the report that any of the provisions of this Act were not being complied with at the time of the accident. In that case a prosecution in respect of such non-compliance may be commenced at any time within six months after the making of the report (S.70(d)).

I interpret the word "accident", which is not limited to accidents to persons, to include an explosion, even though S.31 speaks of a "formal investigation of any explosion or accident". In speaking of non-compliance with the Act, I believe that the phrase "at the time of the accident" is not intended to exclude offences committed at the time of an explosion. The contrary view would defeat the purpose of the Statute. I think also that the phrase "at the time of" has a wider meaning than "at the instant of" and refers to any part of the period during which the accident occurs which is not too remote from the accident. In any case, at this mine the accident was a continuing transaction, extending from the fan stoppage to the period of fire

underground, and after, which caused the mine to be sealed off.

I recommend that the Manager, Neville William Snedden, be prosecuted for the following offences against the Act, which appear in my Report to have been committed by him:

- (1) That he did fail to appoint in writing an authorised person to enter a machine or motor room, and to interfere with an electric line and apparatus used in connection with the supply of electricity on 8th January, 1979 (Regulation 15(b) of the Seventh Schedule and Regulation (1) of the Sixth Schedule).
- (2) That from 22nd December, 1978 until 15th January, 1979 he did fail to make daily a true report, in a book to be kept at the mine for the purpose, of the parts of the mine he had inspected and as to their general safety (Regulation 34M of the Sixth Schedule).
- (3) That from 19th December, 1978 until 5th January, 1979 he did fail to countersign any pre-shift reports on the day they were made or the day following (Regulation 34S of the Sixth Schedule).
- (4) That he did fail to enforce observance of the Act and Regulations by all persons employed at the mine in accordance with Regulation 1 of the Sixth Schedule in that he did fail to ensure that a competent person at least once in each working shift did make a test of the automatic earth leakage protection equipment and did record the result of such test in a book kept at the mine for that purpose in accordance with Regulation 67A(2) of the Seventh Schedule, from 14th December, 1978 until 5th January, 1979.

I recommend that the following persons, namely:

Clifford West Mathews, Mine Deputy,

David Wayne Pugh, Mine Deputy,

Gilbert John Bunn, Mine Electrical Fitter,

be each prosecuted separately, for that each:

In giving an answer required of him by an inspector on 8th and 9th and 10th January, 1979, to wit, Elwyn Jones, did make a statement which he knew to be false in a material particular: S. 27(2)(b).

I draw attention to the fact that the falsity of the statement in each case became evident during the Inquiry and is found to be false in this Report. The period of limitation therefore should run from the making of this Report to the Minister. I have already observed that in my view the word "accident" in S.70(d) embraces the word "explosion". Further, it is my view that S.27 (1)(c) was not being complied with at the time of the accident in the dual sense that the time refers, as I have said, not to any instance of time, but to a period which is not too remote from the accident and further, the accident in this case continued from the early morning of 8th January, 1979 for the next few days, certainly for the period when the false statements were made to the Inspector. The statements will need to be particularized in each case.

I have come to the conclusion that Mathews, Pugh and Bunn are not to be believed on their oath in various aspects of the evidence they have given at the Inquiry. On the other hand, the crimes of perjury or false swearing have their complications of proof, not only as to the necessity for corroboration, but as to actual assignments of perjury. Between each of these cases there would be differences and three separate trials would therefore be necessary. One grave matter, however, should not be allowed to escape unchallenged, namely the agreement to continue a false picture before the Inquiry. This agreement, of course, was in force, according to the evidence, on the Saturday before the Inquiry heard evidence on 28th May, 1979. It continued until Johnson had given evidence. There can, however, be no agreement in relation to the Inquiry before the Inquiry was announced, even though there was an agreement to deceive the Inspectorate already in existence on 8th January. The Inquiry held its first formal sitting, taking appearances, on 5th May. The charge should be laid at least between 5th May and 6th June, when Edward Johnson gave his evidence. I recommend that the documentary material he referred to the Honourable the Attorney-General with a view to his considering the prosecution of Mathews, Pugh and Bunn on a charge of conspiring and agreeing together and with each other between 5th May, 1979 and 6th June, 1979 (1) to swear falsely in respect of a material particular before the Court of Coal Mines

Regulation; and/or (2) to interfere with and pervert the course of justice. These offences, of course, are indictable and know no limitation as to time within which they must be laid.

I have the honour to be, Sir,  
Yours faithfully,

Judge  
Court of Coal Mines Regulation