

466. Have you looked for any cavity from which it is exuding?—No, we could not get there. We could tell the general position, but there is a huge fall.

467. But the air is getting better and better?—They have put brattice up and are carrying in an air-current.

468. The ventilation is removing the gas, and the gas is not being replaced by a further supply?—I do not think, to any extent, but we have no means yet of telling.

469. Later on they will be able to say with greater accuracy if there is a cavity or places from which the gas exuded?—When it is possible to clear away the gas the source of it will no doubt be found in the course of an examination.

470. Do you remember the New Oaks explosion?—No, I have only heard of it.

471. The work I have here says that in connection with this explosion 10,000 ft. of fresh air per minute was passing through at the time of the explosion?—If the explosion was caused by a blown-out shot it would not matter how much air was passing; indeed, the air would probably make matters worse.

472. Can I put it this way: that it is practically immaterial what ventilation is present?—In a dusty mine the air does not matter a bit where an explosion is started by a blown-out shot. As I said before, it only aggravates matters.

473. The explosion in the New Oaks Pit commenced in the rise longwall workings, according to Pamey, and these workings were ventilated by a current of 10,000 cubic feet per minute; but it does not say whether the air was passing along near where these outbursts took place?—There were probably gas reservoirs present, and these no doubt caused sudden outbursts.

474. Pamey goes on to say that the returns became so loaded that Mueseler lamps at the bottom of the upcast were extinguished in a current of 140,000 cubic feet per minute?—That would assist the explosion. If there had been no air there would have been no explosion, for such enormous outbursts to become explosive much oxygen is necessary.

475. May I put it this way: that it is entirely immaterial how much fresh air is pumped into the mine, if a sudden outburst of gas occurs, there is bound to be an explosion?—No; if it is an outburst of gas, and there is a certain amount of oxygen present, sufficient to bring the mixture to an explosive state, an explosion would occur after ignition; but if there is an enormous amount of air, sufficient to dilute the gas below explosive proportions, there will be no explosion. There will be no explosion if there is an adequate amount of ventilation.

476. Is it material how much fresh air is pumped into the mine?—If there is a sudden emission of gas, and it is ignited, will not an explosion take place?—I say that if there is a sudden emission of gas it is the quantity of air entering the mine which will very materially affect the result. If there is a sufficient quantity of air to dilute the inflammable noxious gas no explosion will occur.

477. Tell me what quantity of air is sufficient to prevent an explosion by sudden outburst of gas?—It all depends upon the quantity of gas also, the quantity of air present, the coaldust present, and what lights are used.

478. Does it matter what ignites the gas so long as it is ignited—say there is a naked light at the point of ignition?—No, it does not matter.

479. We know you have proved conclusively that a very small quantity of gas will begin an explosion. That is conceded by all?—Yes.

480. I am now seeking to get your full meaning of your evidence in relation to this gas matter. I am citing cases of other mining disasters, and I suggest that it was immaterial what quantity of pure air was going into the mine, because the explosion was overpowering?—Two things were absolutely material for a firedamp explosion—a large volume of gas and an insufficient quantity of ventilation to adequately dilute that gas.

481. You cannot answer the question as to the quantity of gas and the quantity of air necessary to dilute it?—Not without further particulars from you.

482. I think the author means that the fresh air will not sufficiently rapidly mix with the gas under those circumstances?—I really do not know what you mean.

483. Would you agree with that?—I am afraid you are trying to assume an involved case.

484. If there is a sudden outburst of gas, or from a large blower, would it matter very much how much fresh air was introduced?—Certainly, because you must get within certain proportions in order to create an explosion at all—between 5·6 per cent. and 16 per cent.

485. We may assume there was enough oxygen to cause an explosion?—If there is enough oxygen to make it inflammable, there must be an explosion if a flame is applied.

486. Irrespective of the ventilation?—The mixture will start an explosion. If the inrush of gas and the air present maintains about the same proportions, you are going to have a great explosion. You cannot answer these questions as to whether explosions will take place and what will happen unless you know whether the proportions of gas and air are maintained and if fine coaldust is present.

487. A mine may be well ventilated, and yet disastrous explosions may occur from blowers or outbursts?—If the blowers are of sufficient magnitude to vitiate the airways under such conditions, why have naked lights?

488. Pamey says, as you did, that you could not class this as a blower; but it might have come from remote strata?—From coal-seams and the adjacent strata, yes.

489. Pamey continues as follows: "Under certain conditions of roof, and where the roof yields firedamp freely, it may be that spaces exist out of sight yet communicating with the air of the mine through cracks. These spaces being filled with an explosive mixture might form a train of fire, and thus ignite an accumulation of gas at a considerable distance. The condition most favourable for this would be where the roof for a few feet immediately above the coal subsided gradually upon the coal as the face advanced; yet the next stratum above, consisting of hard rock several feet in thickness, only