nitro-glycerine explosives are very poisonous. The burning may be originated by weak detonator or inferior quality of explosive.

10. *Preparing Charges.*—Generally due to frozen nitro-glycerine explosive, unduly sensitive explosive, recklessness, or lack of skill.

11. *Ignition of Explosive by Spark.*—Principally confined to gunpowder, where open lights are used below ground.

12. *Socketting or Springing.*—Due to re-charging before sufficient time has elapsed.

13. *Ignition of Fire-damp or Coal Dust.*—Apart from the quality of the explosive, generally due to the firing of two shots, one after the other, without examining for gas after firing the first shot. The firing of overcharged shots is perhaps the more usual cause.

It may be of interest to state that during 1909 over 30 million pounds of blasting explosives were used in mines, quarries, and construction works in Great Britain, and that (exclusive of fatalities from explosions of fire-damp or coal dust) 53 lives were lost thereby.

Staff of the Explosives Department.—The technical staff of the new department should, I think, consist of a Chief Inspector, two Inspectors, and a Chemist. I cannot state too emphatically that the Chief Inspector should have sufficient technical knowledge not only to enable him to administer what must of necessity be a very technical act, but also to deserve the confidence of the explosives manufacturers. As men possessing such qualifications are rare, I would venture to suggest that it would be very unwise to attempt to economize by offering an inadequate salary. As regards the two inspectors, it will hardly be possible to obtain the services of technically qualified gentlemen, and I think it would be sufficient if these gentlemen possessed practical experience of the use of explosives, one of them at least having gained his experience in coal mining. In assigning their salaries, the fact that their work must of necessity be somewhat hazardous should not be lost sight of.

The responsibility of the chemical adviser to the department will be considerable, as in his hands will rest the recommendation for the acceptance or rejection of explosives. When it is remembered that the authorization of an explosive or otherwise, or the condemnation of a batch of explosive which has been issued from a factory may involve large financial interests, it is hardly necessary for me to point out that this gentleman should be possessed of the highest technical qualifications and integrity. The salary of the chemical advisers of the Home Office is entirely dependent on fees, but it would be far preferable if the chemist of the new department were paid an adequate salary so that his whole time should be at the disposal of the government.

It will be necessary to employ a mechanic at the Testing Station, who will be competent to carry out minor repairs to the apparatus, and who would assist in carrying out official tests and experiments. He should also be responsible for the care of explosives stored in the magazine and for apparatus and stores used in connexion with the Testing Station.

I have the authority of Major Cooper Key, His Majesty's Inspector of Explosives, for stating that he will be glad to afford facilities for any person who may be appointed as an Inspector to be attached to the Explosives Department of the Home Office, to enable him to get an insight into the administration of the Explosives Act and the methods adopted for the testing of explosives for use in coal mines. Major Cooper Key also states that he would be glad to make arrangements for the chemical adviser of the new department to work in the laboratory of Messrs. Dupré, who are the chemical advisers of the explosives department. I would strongly urge that these facilities be taken advantage of.