results of a special test for explosives which have been made by the British Government in the direction of ascertaining the safest explosive compounds for use under dangerous conditions. The special test differed from the ordinary test in the following particulars: "(1) In the amount of the charges, which is increased by half for the first ten shots, and doubled, with a slight increase of stemming, for the remainder; (2) in the more sensitive character of the gaseous mixture in which the shots are fired; (3) in the fact that, while an explosive might pass the ordinary test with two failures in forty shots, under the special test a single failure disqualifies."

Six explosives passed the special test—viz., ammonite, amvis, carbonite, electronite (2nd definition), Nobel ardeer powder, roburite No. 3.

The following explosives have passed the ordinary test, and are included in the "permitted list":—

Ammonite.	Electronite (1st definition.	Nobel carbonite.
Amvis.	Elephant brand gunpowder.	Nobel gelignite.
Bellite No. 1.	Elephant brand gunpowder No. 2.	Oxalate blasting-powder.
" No. 3.	Faversham powder.	Pembrite.
Benedite.	Kynite.	Pitite.
British gelignite.	Kynoch gelignite.	Rhenish gelignite.
Bull-dog brand gunpowder.	Nahnsen's gelignite.	Roburite No. 3.
Carbo-gelatine.	National gelignite.	Stowmarket gelignite.
Carbonite.	Nobel Ardeer powder.	Sun gelignite.
Danmenite A.		Westfalite No. 1.
Earthquake powder.		" No. 2.

The method of firing these explosives has in many instances been by what is commonly known as "safety" fuse, ignited either by a fine wire heated in the flame of a safety-lamp or by means of a "safety-igniter." The latter consists of a light tube of tinned sheet-iron, about ¼ in. diameter and 2½ in. long, into one end of which the fuse is inserted. The other end is closed, and near its extremity is a tiny glass bulb containing a drop or two of sulphuric acid, and also a pellet of composition, which bursts into flame inside the tube when it comes into contact with the sulphuric acid. This is accomplished by nipping the tube with a suitable tool at a place marked for the purpose, and so liberating the acid by breaking the bulb.

In consequence of an explosion of firedamp which occurred at the Cwm Pit, Merthyr Tydvil (South Wales), in May last, a Commission was appointed to fully inquire into the cause. It appears that bull-dog powder—one of the permitted explosives—was used, a safety-fuse and safety-igniter being adopted as the method of firing the charge. After very careful inquiry the Commissioners reported as follows:—

"(1.) That it is impossible to say with certainty whether or no the explosion was due to the use of bull-dog powder. We think that the probability is that it was due to an imperfect fuse, improperly used.

"(2.) That most of the fuses at present employed in mining are distinctly dangerous, and that steps ought to be taken to test all fuses and other apparatus for firing explosives in mines."

Of late years the system of firing shots by electricity has been adopted to a considerable extent, and it is more than probable that the report of the Commission above referred to may tend to promote its more extended use, especially as it presents a minimum of risk as compared with other systems, and the prime cost of a 4 ft. length of electric fuse is now only a trifle over ¾d. This will compare favourably with the cost of ordinary fuse of good quality, apart from the cost of the safety-igniters previously mentioned. The battery and cable are very portable, and their cost moderate.

For the following general description of electric blasting I am indebted to my friend Mr. F. W. Brain, managing director of the Trafalgar Collieries Company (Limited), Drybrook, and of the Electrc Blasting Apparatus Company, Cinderford, Gloucestershire, England:—

"The system of electric blasting as distinguished from the alternate plan afforded by the safety-fuse consists in supplying the initial source of heat, required to bring about the explosion of the main charge, by means of an electric current, instead of by means of a match, a heated wire, or any other special device by which the ends of the time-fuse is lighted. While in the case of the time-fuse the igniting-device is applied to a short protruding end of fuse, and the workers retire to a safe distance to await the explosion, in the case of the electrical fuse there are wires communicating from the working-face to a position of safety, from which, when all is clear, the current is turned on. The danger of accidents to the workmen by premature explosion—by 'hang fire' or by ignition of the explosive gas—are not possible with electric shot-firing, and it is for these reasons that the adoption of electric blasting generally throughout coal-mines is strongly recommended.

"The two main divisions of electric blasting are known respectively as high tension and low tension, each of which has many adherents. The high-tension system of blasting is the more generally used in Great Britain; but in some other parts of the world the low tension is used to the almost complete exclusion of the alternative method. The broad division between these two plans lies in the fact that in one case the electrical circuit is entirely broken at the place where ignition is effected, and in the other case it is, as it were, partially broken; or, in other words, the size of the electric wires is diminished at this point to such an extent that, while the current can pass over the other portions of the circuit without any apparent heating effect, at this point the conductor is so reduced in sectional area that it is raised to a white heat almost instantaneously the current commences to flow. In the case of the high-tension system the flame essential to the ignition of the charge is produced by a spark which is