

THE REPORT OF THE GUN COTTON COMMITTEE.

The preliminary report of Colonel Young-husband's Committee, recently addressed to the Secretary of State for War, will be somewhat reassuring to those whose faith in gun cotton was somewhat rudely shaken by the Stowmarket explosion. We are able to present our readers with an epitome of this first instalment of the result of the committee's labors, and we cannot but feel that in every respect the point at which they have arrived will be deemed satisfactory and reassuring.

The constitution of the committee is as follows.—

President. Colonel C. W. Young-husband R. A., F. R. S. Members: Colonel R. Gallwey, R. E.; Colonel F. W. Midward, C. B., R. A.; Lieut. Colonel C. H. Nugent, R. E.; Captain E. Field, R. N.; G. P. Bidder, Esq.; Past President Institution of C. E. Dr. Wilham Odling, F. R. S.; H. Beauerman, Esq. Secretary. Capt. W. H. Noble, R. A.

The Committee was appointed by the Secretary of State for War to report up on the following points respecting the employment and manufacture of gun-cotton.—

1. "Whether the employment of gun-cotton is attended with such uncertainty or peril as should induce the party to relinquish its manufacture and its use for these military purposes for which it has hitherto been considered peculiarly valuable.

2. "Whether its manufacture, in all its different stages, is a dangerous process, and one that should not be carried on near an inhabited neighborhood, and whether additional precautions to those now in use seem necessary.

3. "Whether the storage of gun cotton, either wet or dry, is necessarily attended with danger, in magazines on shore or on board ship, under any or all conditions of temperature.

5. "Whether, either in a pure or impure state it is liable to spontaneous combustion, and if so, whether such combustion would result in explosion, or in mere ignition.

5. "The nature of buildings best suited for the storage of gun cotton.

The committee were besides, required to report upon any points, in addition to those above enumerated which might arise in the course of their investigation and to which they might consider it desirable to draw attention. Mr. Cardwell also desired that they should undertake, "as a separate subject, an investigation which the Secretary of State for the Home Department has requested, as to the question of the safety for transport, and storage, of the substance called litho-fracture.

It seemed desirable, at the commencement of the labours, and their attention should be diverted to the first of these points as, should the evidence obtained, show that the employments of gun-cotton for military purposes is attended with uncertainty or peril, it would follow that its manufacture must be abandoned, and it would be unnecessary to enter into the other points as to storage, liability to spontaneous combustion and the most suitable nature of buildings for magazines.

The committee naturally made themselves acquainted with all the official reports yet furnished on the practical application of gun-cotton; notably, the report of the Royal Engineer Committee, dated 3rd August, 1870, from which some very valuable information was obtained. They also received evidence from the officers of the Royal Engineers under whose directions their experiments

with gun cotton in military mining demolitions, and in submarine mining have been carried out; and also from other persons of varied experience in mining and quarrying operations. From all these sources, opinions very favorable to compressed gun cotton were generally obtained as regards its safety in use, facility of application, storage, and transport. The following officers appeared before the committee, namely—Sir J. Lambert Simmonds, K. C. B., formerly commandant of the School of Military Engineering at Chatham; Col. Lennox V. C., R. E. Instructor in Field operations at Chatham, Captain Home, R. E. Secretary to the Royal Engineer Committee; and Lieut. Anderson, R. E. Secretary to the Torpedo Committee.

A careful review of the reports and other documents before them, and the evidence of these officers and others, respecting the use and application of compressed gun cotton, principally as regards its employment for military purposes, decided the committee to report that they consider that its use is not only unattended by either uncertainty or peril, but that the material as an explosive agent, is effective, certain, safe, portable, and easy in employment; they consequently express a strong opinion on its great value for military engineering purposes generally, and for submarine mining purposes.

As regards storage, no extended experience has been gained by the officers who have used it at Chatham and elsewhere; but within the limits of twelve months no change has been observed. The evidence respecting the stability of a material which has been in practical use during a comparatively short period is necessarily meagre; time forming an essential element in determining upon this important quality. But as bearing upon this point, the committee found that considerable quantities have been sent during the past two or three years to hot and damp climates, and have undergone voyages to Australia and India, without, so far as they could learn, any accident whatever. Some gun-cotton which was supplied by the Stowmarket Company in the summer of 1870, and kept in a magazine on the Thames, was subsequently sent to Calcutta, where it had been stored for some months. A report recently received from Colonel Kenaid states that the gun-cotton shows no indication of any change.

The reports published in Austria furnish very satisfactory evidence respecting the stability of gun cotton. These, and the elaborate investigations made and published by Mr. Abel, are too voluminous to discuss at length; but a consideration of them together with the other evidence adduced, satisfied the committee that no hesitation need be felt in continuing the employment of compressed gun cotton through any fear of undiscovered unstable qualities.

A considerable number of specimens of gun cotton that had been stored at Woolwich for several years past (several specimens for periods as long as nine years), under varying conditions of exposure to light, heat, and change of temperature, were examined. Their unaltered state furnishes confirmatory testimony that under all ordinary circumstances, gun-cotton may be regarded as a stable material.

The experiments on the stability of gun-cotton extending over a long period, refer to the material in the form of rope or skeins, that is gun cotton in the loose state, as distinguished from the substance compressed in blocks or discs from pulp, on Mr. Abel's system; but as it has been satisfactorily proved to the committee that gun cotton

produced from the long staple cotton cannot be so perfectly purified as pulped gun-cotton, it follows that all the evidence is in favor of stability of gun cotton, in the purification of which the pulping process has been applied.

As regards manufacture, the committee made themselves acquainted with the nature of the several processes constituting Mr. Abel's system, up to the stage in which gun cotton is compressed into discs and ready for use. In these processes the material, from the moment of its conversion into gun cotton, and up to the drying stage is in a wet state, and at the final stage of leaving the press contains from 16 to 20 per cent. of water. It is throughout in every stage perfectly unflammable, and no danger can possibly result from its manufacture (with the exception of drying) in any locality, whether in or near a town, or otherwise.

The operation of drying, as followed at Stowmarket, seems to be open to some objections, but the committee have not discussed these objections, apprehending no difficulty in the devising a safe and simple method easily applicable to any locality. Under these circumstances the committee felt no hesitation in recording their opinion that there is no reason why the War Department should relinquish the manufacture of compressed gun-cotton; and we are happy to be able to record our satisfaction that such should have been the result of the first portion of their labors. Those somewhat behind the scenes have known from the first that the arguments based on the explosion, nay, and the very explosion itself, arose not from the necessary course of manufacture of gun cotton under Mr. Abel's patent, but from evil motives to which the name conspirator would be a term of extraordinary mildness.—*Broad Arrow.*

NORWAY A THOUSAND YEARS AGO.

In July next the Kingdom of Norway will celebrate a national festival, on account of its being 1,000 years since its various provinces were united into one kingdom. A. D. 872 King Harald Haurfagor defeated the independent Norwegian Princes in the battle of Havnstord, and made them subject to him, united the whole land into one Kingdom, with Harald as its King. In memory of the above feat a national monument will be raised, in the month of July, on the mound near Hougessund, where King Harald lies buried. Under these circumstances a sketch of his life will undoubtedly be read with interest.

A. D. 863, Harald succeeded his father Halfdan, King of the Southern part of Norway. The western and northern parts were ruled by many petty kings, each of whom was independent in his own dominions. According to the "Tales of Snorro Sturleson," King Harald would, in all probability, have remained satisfied with his own share of the country, if he had not fallen in love with a princess named Gyda. He sent a messenger to demand her in marriage of her father; but she answered that she would not throw her self away by taking for her husband a King who had no other Kingdom to rule over than a few districts. "It is wonderful," she said, "that no King in Norway will make the whole country subject to him, in the same way King Gorm did in Denmark, and Erik at Upsal. Tell King Harald these my words: I will only agree to be his wife on the condition that he shall first subject to himself the whole of Norway, for then only can he be called the King of a people."

When the messenger came back to King