

WASC 2023

ERDE

Historical Note

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The Establishment occupies a site originally used for the manufacture of gunpowder but the early days of the factory are largely a matter of conjecture and legend. The first positive link between Waltham Abbey and gunpowder is contained in the State Papers of 1561 in the form of a letter to John Tamworth of Waltham Abbey concerning a contract for the supply of saltpetre and sulphur. The importance of the local manufacture was emphasized a century later by the local Minister, Dr Thomas Fuller, who wrote that there was more gunpowder made by the mills in his Parish 'than in all England besides'. Unfortunately powder-making was a hazardous occupation and the Parish Registers for 1665 record the burials of two workmen killed by a mill explosion. The mills at this time were horse-driven but they were converted to waterpower by the Walton family in whose hands they remained for more than a hundred years until they were bought by the Government in 1787 from John Walton. The man who played the greatest part in this was General Sir William Congreve, who disputed the widely-held belief that the private manufacturers made better and cheaper gunpowder than the Government. Later Congreve demonstrated convincingly the superiority of the powder from the Royal Gunpowder Factory and was still able to show savings of some fifty thousand pounds. Walton's Powder Mills were capable of producing 6000 barrels of gunpowder a year but by the time of the Napoleonic Wars the output was of the order of 25,000 barrels. The quality of Waltham Abbey powder was recognized overseas and both sides in the American Civil War drew on the experience and expertise of the Factory. The United States Ordnance Manual for 1862 records that no one makes better powder than the British.

For several hundred years the sole product of the Factory was gunpowder but in the second half of the 19th century the manufacture of other explosives commenced. In 1872 a plant was erected for the production of guncotton but this plant was soon found to be inadequate and the first land on the South Site was acquired in 1885 for a new guncotton factory. A decision of the newly-appointed Explosives Committee, with Sir Frederick Abel as President, resulted in the setting up of further plant in 1891 for the manufacture of nitroglycerine and the first production of cordite. Other explosives produced since the turn of the century include tetryl, TNT and RDX. RDX, or Research Department Explosive, has been described as the high explosive of World War II: it is significant that for the first years of the war the Royal Gunpowder Factory was this country's only source of production, just as it had been earlier for cordite during the two years at the beginning of the First World War.

The days of the Royal Gunpowder Factory came to an end in 1945 when the present Establishment came into being, bringing with it a change in character from the role of a major production unit to that of a research and development organization with pilot plant facilities.

At first the activities of the new Establishment were devoted entirely to work on liquid and solid propellants and explosives, including the development of flashless propellants for guns and plastic propellant for rockets. With the passing of time and of Ministries there has been a change of emphasis in the work of the Establishment. At present about 20 per cent of the total effort is absorbed by work on high explosives and initiating compositions and about 50 per cent is devoted to research and development of propellants, now confined solely to solid propellants with exception of a study of heat transfer and thermal conductivity of liquids. Materials and Process Research groups have been formed and these absorb the remaining 30 per cent of the effort with the physics, chemistry and applications of polymers and with the design of high strength composite materials.

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