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# On Her Majesty's Service

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S/Sister M. Durrant (now Mrs. Williams) with Establishment M.O.,  
Dr. J. W. Green, with patient in consulting room

## Occupational Health Service in a Research Establishment

THE LITTLE TOWN of Waltham Abbey in Essex, 14 miles from the centre of London, to the passing motorist is a picturesque place on the edge of Epping Forest, with a market once a week and an incredibly narrow main street in which there seems to be a great number of hostelrys. There are lovely meadows on which gypsies keep their horses and fishermen spend tranquil hours by waters well known to Izaak Walton, who wrote his "Compleat Angler" nearby. The whole place is steeped in history. Boadicea's glorious death ride in 54 B.C. ended at Warlies; King Canute's Standard Bearer, Tofig, built a church to house the Holy Cross and to serve the 36 inhabitants of the hamlet, about A.D. 1030. On the same site King Harold built a church and founded a college which later became the present Abbey, under the High Altar of which he is reputed to have been buried after the Battle of Hastings, on Saturday, October 14, 1066. The Abbey became a place of pilgrimage throughout the Middle Ages and gave trade to many more inns than now exist. King Harold built well in more senses than one and encouraged learning and thinking. There have always been men of learning in Waltham; the Reformation was actually started here, during a conversation between Thomas Cranmer, Stephen Gardiner and Edward Fox. Today there are, perhaps, more men of learning than ever before, because of the Government Research Establishment, and many scientists live in the district and enjoy the very lovely countryside.

### Early Manufacture of Explosives

Explosives do not necessarily mean war materials and there are many peaceful uses, particularly today, but gunpowder was first used by English soldiers in war at the Battle of Crecy. At that time the ingredients—saltpetre, charcoal and sulphur—were mixed together in the field, but later in the 14th Century small manufactories were set up in several places, mostly near London, which supplied the ready-mixed powder in kegs, most of it being supplied to King Edward II for his continental military adventures.

One such powder mill was at Waltham Abbey, although the earliest known record bears the date March 2, 1560, in the reign of Elizabeth I, being a tender from one Marco Erizzo for the supply of saltpetre, sulphur and bow staves for barrels, to John Tamworth, who was the owner or manager of the mills at that time. Unfortunately, through error, many ancient documents were cleared out for salvage during the last war but it is possible that the gunpowder used by Guy Fawkes in 1605 was made at the Waltham Mills. Naturally no record exists, but it seems likely that all the powder would have been purchased in this country,

since smuggling of such a commodity would have been extremely risky. Moreover the chief conspirators used to meet at a house named White Webbs, only a mile or two away, and from the mills to the Thames ran a navigable and secluded waterway, an important consideration in view of the hazardous business of moving explosives over the rough 17th Century roads.

By 1735 the ownership of the mills had passed to the Walton family and consisted of about 20 buildings (see engraving). Power to drive the millstones was originally supplied by horses and continued to be used to some extent considerably later than 1770. A record exists of double horse mills still in use in 1791, finally terminating in 1814, but water power was introduced in the mills about 1735 utilising the resources of the tributaries of the river Lea, which flows through the factory. The Board of Ordnance acquired the mills from a descendant of the original Walton in 1787, though he continued to operate them. In 1795 the Board assumed direct management, incorporating the powder mills at Faversham and Ballincollig, under the supervision of General Sir William Congreve, Comptroller of the Royal Laboratory. Waltham thus is the home of the first nationalised industry. Eventually hazardous screw presses were replaced by hydraulic presses and by 1870 steam power had largely supplanted water power.

### Modern Developments including a Medical Service

Nothing else but gunpowder was manufactured in the mills until 1872 when the production of guncotton was started. The demand grew until in 1885 an additional 100 acres of land was acquired at Quinton Hill (the present south site) and on it was erected a new guncotton factory which in 1890 started production of what is now known as cordite. Throughout two World Wars the factory expanded and continued to produce explosives and propellants in large quantities. In 1945 it was closed down as an ordnance factory and taken over by the newly formed Chemical Research and Development Department, an offshoot of the Armaments Research Department. In 1948 the title was changed to the Explosives Research and Development Establishment—E.R.D.E. The considerable task of transforming a factory into a modern research station with facilities for development was tackled with energy, foresight and imagination, and necessitated, among other things, the provision of up-to-date surgery accommodation, supplementing the existing service.

It would appear that the provision of medical services for workpeople has always received some attention at Waltham from the time the Government took over. An



Row of Powder Mills at  
Waltham (from an 18th cen-  
tury engraving). Some of  
these are still standing,  
though now in ruins (see  
following page)





Ruins of old powder mills

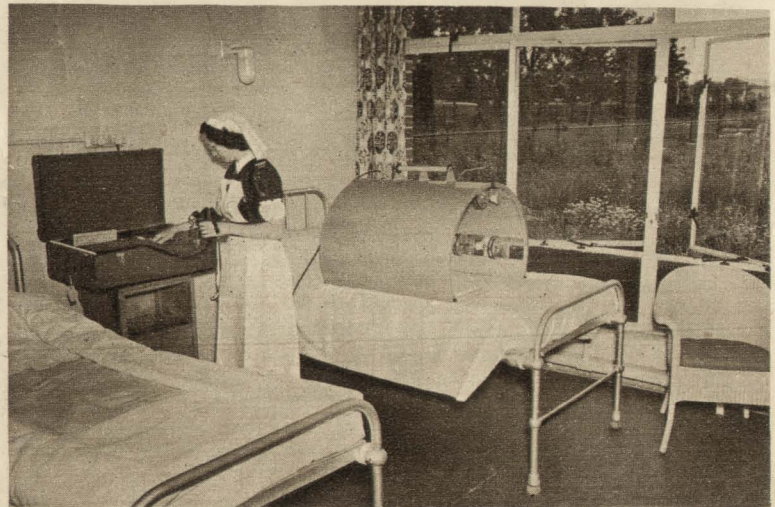


Water colour sketch by Mr. E. A. Monro, showing mill in picture before right half was demolished

## Where Guy Fawkes Got His Gunpowder?



IN TREATMENT ROOM: Sister M. H. Atkinson, with patient



RECOVERY ROOM with pleasant outlook on garden

"apparatus for the recovery of the apparently drowned" is still in good order though not in use, and was recommended and made for the Royal Humane Society. A copy of the report kept in it dated 1797, with instructions referring to the use of the apparatus, indicates that there was at least an active first aid organisation at that date and there are instrument sets of at least 100 years of age which could only have been used by a surgeon. In 1893 there was an accidental explosion of some magnitude which resulted in much correspondence during 1893 and 1894 between the Secretary of State for War and their Lordships of the Treasury, concerning the necessity for erecting a hospital of six beds within the factory. It was finally decided upon and Sandhurst Hospital was built at a cost of £1,180. The correspondence reveals that no fewer than 21 people had been nursed in a temporary building in 1893-4: that there was no charge for treatment of patients "they being at the present time entitled to treatment under the Ordnance Factories Rules and Regulations": a contribution of 1s per diem was required from workmen towards the cost of their diet, as at Woolwich Arsenal, where there had then been a hospital for over 30 years: the families of workpeople (except in a few cases of army-navy pensioner employees) and the general public were not entitled to be treated in the hospital except possibly in the contingency of their being injured by an explosion in the Government works. The medical officer was to continue his services without any change but it was necessary to engage a nurse and a servant at an approximate cost of about £100 per annum.

The earliest existing record of cases appears to be one from 1917 to 1940 and it is interesting to note that a work-

man had a severe acid burn of foot skin grafted in June, 1917, a month after injury, and was in hospital only 42 days. There were several deaths (and recoveries) during the 1918 influenza epidemic and many major surgical operations for general as well as traumatic conditions were performed. A wooden extension of the hospital was erected and both were in use up to 1948, the sisters giving full nursing coverage and living in quarters in the hospital.

### Ministry of Supply Nursing Service

The Ministry of Supply Nursing Service is an integrated service controlled from headquarters by the Chief Nursing Officer, Mrs. A. Louise Reeve, and the sisters are posted all over the country, in factories which cover almost every known industrial process. Group Sister Miss E. M. Miller was in charge at Waltham, under a part-time establishment medical officer, Dr. Green, for some 15 years until December, 1955, and it was after 1945 that the nursing staff was increased and the present south site surgery erected and put into use in July, 1955. There are now three nursing sisters, Miss E. M. Mortlock, Miss M. H. Atkinson and Miss M. C. Brooks, working with the senior sister. There is a surgery on both north and south sites of the establishment, and a sister is on duty whenever any hazardous work is being done, which occasionally entails covering 24 hours a day for several weeks.

### Work at Waltham

Because this is a research establishment the work of the nursing staff, which is naturally that of any occupational health nurse, is also in the nature of research, since com-





*HOSPITAL WITHIN A FACTORY: Sandhurst Hospital (left) built in 1893 and its extension (right); where patients were nursed and nurses lived until 1948*



*ITS MODERN SUCCESSOR IN 1956: new surgery just within the gates. Sister M. C. Brooks beside ambulance*

PICTURES SPECIALLY TAKEN BY NURSING MIRROR STAFF PHOTOGRAPHER

## OCCUPATIONAL HEALTH IN AN HISTORIC SPOT

Ministry of Health Explosives Research and Development  
Establishment, Waltham Abbey

(See article beginning on page vii)



*HISTORIC EXHIBIT: Sister M. C. Brooks and S/Sister M. Durrant, (seated) with resuscitation apparatus and 1917 records*



*SISTERS' ROOM: L. to R. S/Sister M. Durrant (now Mrs. Williams), Sister M. H. Atkinson and Sister M. C. Brooks*

binations of chemical and other substances are handled which may never have been used together before, and careful observation of personnel and reporting is essential. Dr. Donald Hunter, Professor of Industrial Medicine, University of London, says that "of all workers the scientist is the most difficult to protect" and how right he is. Of course, some risks are unavoidable, but at Waltham, as elsewhere in the Ministry of Supply, every possible precaution is taken to protect both scientists and the industrial workers who assist them. Pre-employment examinations and regular routine checks, blood counts, etc., are done and the closest collaboration is maintained with the establishment safety officer. With the approval of the Director, Mr. L. T. D. Williams, the sisters visit the laboratories and all work places regularly, where they discuss any new work being done and make written environmental reports. Discussion of nursing problems within and without the department is constant and every advantage is taken of excellent library facilities in the establishment and within the medical department.

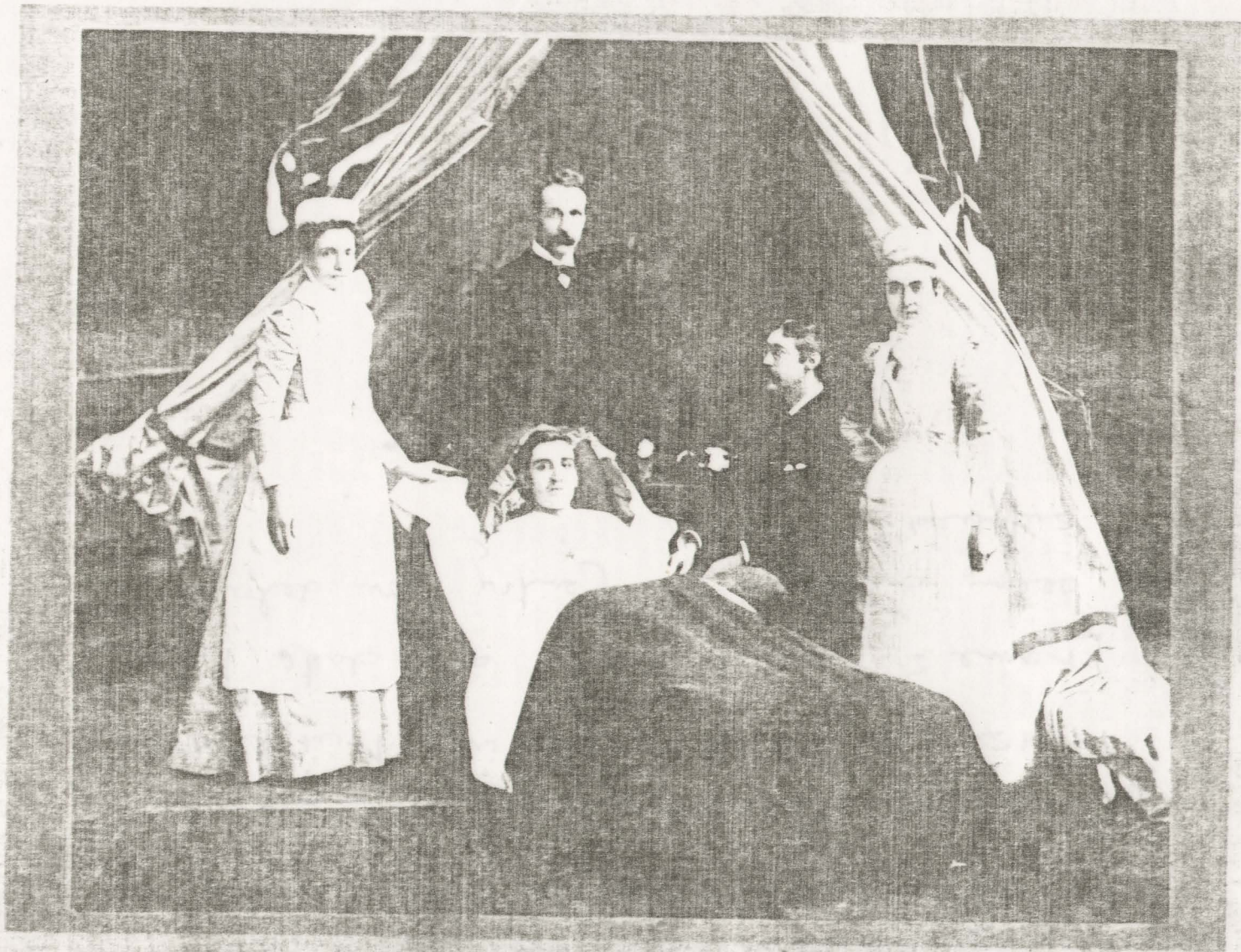
The new south site surgery, as can be seen from the illustrations, is light and well appointed. Floral decorations are either gifts from employees or wild flowers gathered by the cleaner, Mrs. Rumble, who emulates Constance Spry even in the depths of winter. Decorated in contemporary colours the surgery offers pleasant working conditions for the staff, who are encouraged to arrange equipment after study of function and motion, and to sit whilst giving treatment, a more efficient position which also prevents aching back muscles. A no-touch technique is invariably used and

wounds are irrigated rather than swabbed to cleanse them; full advantage is taken of new materials like polythene, particularly for covering trolleys and storing dressing stock, transparent dustproof bags saving much time searching for various items.

As the establishment is quite large and even a fast car takes some time to reach the boundaries, an efficient first aid organisation amongst workers of all grades is an essential facet of the organisation. The ambulances are manned by the fire brigade and are used for transportation of patients for treatment as well as accidents. Naturally the biggest (though fortunately very rare) risk is burning, and the recovery rooms in both surgeries are arranged with this in mind. Patients are never put between blankets, only sheets, even in the ambulances, and the stretchers are so arranged that they can rest directly on the beds and the patient is treated there to save any shock from unnecessary movement.

The life of the nursing staff as part of a forward-thinking unit is varied and interesting but the pleasant woodlands in which most of the modern sections lie nevertheless remind one constantly of bygone days; the remains of the water-driven powder mill of the time before electricity, the canals and bridges of the days when all movement of explosives was by barge, and the surgery mascot, "Daisy" the alligator, is a reminder of the time when her forebears hung in apothecaries' shops. From that time dates the tradition of good medical and nursing care in the Royal Gunpowder Factory, a tradition which the present staff is endeavouring to uphold.





1247.

Can House Explosion Victim, Mr Carr, Doctors  
Priest and Beaumont. Date Dec 1893  
Nurse on Right of picture Nurse Wren?

[name of second doctor and date have  
been altered] (entry from details  
supplied in 1970)