

Majesty's Service

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MINISTRY OF SUPPLY

EXPLOSIVES RESEARCH AND DEVELOPMENT ESTABLISHMENT
WALTHAM ABBEY

Visit of the Minister of Supply, The Rt.Hon.G.R. Strauss M.P.

February 1951

INTRODUCTION

Until 1945 'Waltham Abbey' was a Royal Ordnance Factory. As such it had operated since the latter part of the eighteenth century, though its history as a gunpowder factory under private ownership goes back many centuries and is lost in the mists of medieval times. It participated in a rearmament drive during Elizabeth's reign. The monks of the Abbey of Waltham Holy Cross are believed to have made gunpowder for King Edward II. The official title of the Establishment is still 'The Royal Gunpowder Factory'.

Immediately after the last war the Chemical Research and Development Department was created under the leadership of Dr. F.J. Wilkins, with the object of taking over and extending the functions of the chemical branch of the old Armanent Research Department, Woolwich. A year or two later, during Dr. H.J. Poole's time as Chief Superintendent, the name was again altered to Explosives Research and Development Establishment, E.R.D.E.

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The technical staff therefore consists largely of chemists, together with some chemical engineers, physicists and engineers. The Establishment occupies two separate areas, each of about 250 acres, connected by water-ways and the main road, known as the North and South Sites, or, alternatively, as Hoppit and Quinton (see map).

The old Factory got along without roads; the remarkable system of waterways served this purpose and provided in the River Lea a direct link with the Thames and Woolwich. For reasons dictated by official policy very little has been done since 1945 to implement the considerable programme of re-building and road-making required to give the new Establishment essential facilities and amenities. As a result, fully 35% of E.R.D.E. staff continue to work at Woolwich, and quite a number of others journey to Waltham every day from the same Area. The rehabilitation of some existing old buildings and conversion to laboratories have been carried out gradually during the past five years by the Establishment's own labour force. During this period several members of staff have been lost to 'Atomic Energy' and to other enterprises accorded over-riding priority.

However, it is a sign of the times that a Building Contractor's board appeared on site about three weeks ago, and M.O.W. is negotiating a contract for staff houses.

- 2 -

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The numbers of E.R.D.E. employees in the various categories are summarily as follows:-

| | |
|-------------------------------------|------------|
| Scientific Officers (all grades) | 52 |
| Administrative Officers | 3 |
| Attached Military Officer | 1 |
| Experimental Officers (all grades) | 92 |
| Engineers | 3 |
| Assistants (Scientific) | 52 |
| Non-Industrial grades | 95 |
| Industrials (skilled and unskilled) | 509 |
| W.D. Constabulary | <u>22</u> |
| Total | <u>829</u> |

- 3 -

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ORGANISATION AND FUNCTIONS

Executive Staff. Chief Superintendent,
Dr. C.H. Johnson, C.S./E.R.D.E.

Superintendent of Explosives & Intermediates,
Dr. A. Forster (S.E.I.)

Superintendent of Chemical Engineering,
Mr. R.G. Ross (S.C.E.)

Superintendent of Propellant Research, I.
Mr. A. Brewin (S.P.R.I.)

Superintendent of Propellant Research, II,
Mr. L.A. Wiseman (S.P.R.II.)

Senior Administrative Officer,
Miss V.A. Davidge. (S.A.O.)

Branches. The fields of work of the individual
Superintendents are as follows:-

(1) Explosives & Intermediates. Dr. Forster's group which is located partly at Waltham Abbey and partly at Woolwich is responsible for carrying out research on possibly useful substances wanted either as starting materials for, or ingredients of, explosives and

- 4 -

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propellants, and for devising satisfactory processes by which to prepare them. Another important task is that of developing manufacturing and handling procedures for the capricious class of substances known as 'initiators' which, as the name implies, are used in caps and detonators to set off the high-explosive fillings in the warheads of bombs, shell, and other missiles. This group also examines the economics of proposed manufacturing processes. Traditionally they also form the link between E.R.D.E. and the Royal Ordnance Factories.

Senior Staff: Dr. E. Roberts, Dr. T.M. Walters,
Dr. A.W.H. Pryde.

(2) Chemical Engineering. This is a comparatively new Branch, under Mr. Ross, wholly located at Waltham Abbey. The main effort is directed towards the design, erection, and operation of pilot plants in which the processes worked out by S.E.I. Branch on the laboratory scale are engineered and transformed into something approaching manufacturing units. A small section concentrates upon the design of new and various types of liquid oxygen producing plants required by three Services. As the Branch grows, the intention is to tackle fundamental problems in chemical engineering related to explosives production.

S.C.E. is also responsible for engineering services and maintenance work throughout the Establishment.

Senior Staff: Mr. S. Chard, Dr. G.A. Knight, Mr. W. Bancroft.

- 5 -

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(3) Propellants Research, I. The S.P.R.I. Branch (Superintendent, Mr. Brewin) covers research and development over a wide range of solid propellants for all types of cannon, and for rockets. The items of highest priority on E.R.D.E's. building programme are those concerned with the development of solid rocket propellants for Guided Weapons. Small scale manufacturing facilities exist at Waltham Abbey and at Woolwich (different processes) for the production of experimental batches of cordite. Assistance to the Services is given, and knowledge of their requirements obtained through the Ordnance Board, the Approving Authorities and the Chief Superintendent, Armament Research. The Branch includes specialised sections dealing with problems of materials, weather-proofing and storage in connection with Service explosives and propellants.

Senior Staff: Dr. C.G. Lawson, Mr. G. L. Hutchison,
Dr. J. Gooding, Dr. W.G. Williams.

(4) Propellants Research II. The existence of a second Branch concerned with Propellants is indicative of the scope and size of the effort required. Broadly speaking, S.P.R.I. and S.P.R.II. (Mr. Wiseman) divide as between Development and Research. During the past year S.P.R.II's exclusive interest in liquid propellants has been extended into the field of solid propellants because of the growing belief that these offer more acceptable solutions

- 6 -

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to the problems of providing boosts and sustainer motors for guided and unguided rocket missiles. Most of the really fundamental research is done by this Branch.

One section carries out ad hoc and basic investigations of the 'sensitiveness' of explosives and propellants to thermal or mechanical shock, electric sparks and other stimuli, and attempts to relate the behaviour to hazards arising in manufacture and in operational use by the Services.

Senior Staff: Dr. G.H. Young, Dr. K.A. Cooper.

(5) Lodger Groups. E.R.D.E. is responsible for the administration of the Home Office Explosives Section at Woolwich and of the Inter-Services Research Group at Waltham Abbey, and for providing their personnel. Together they absorb some 13% of the total scientific complement. Neither contributes to the Establishment's programme of research and development.

The Officers in charge are Mr. J.S. Skelton (Home Office) and Mr. C.A. Meek (I.S.R.G.).

- 7 -

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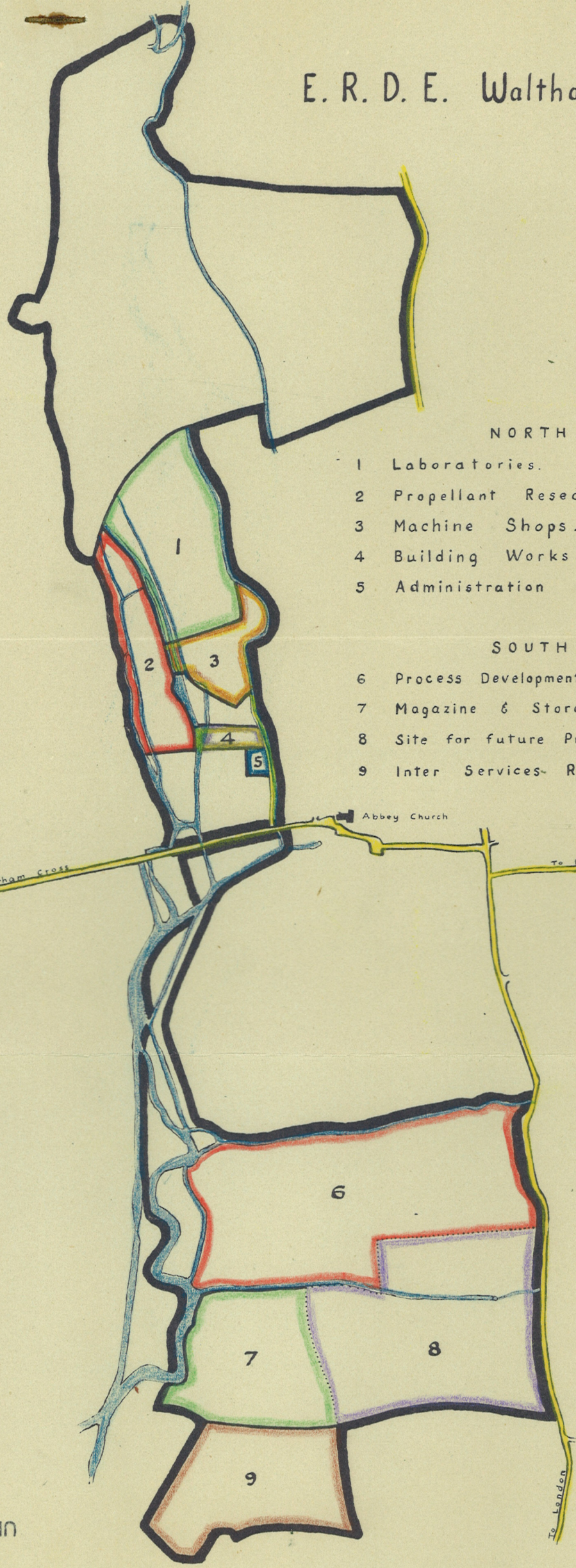
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E. R. D. E. Waltham Abbey

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NORTH SITE.

- 1 Laboratories.
- 2 Propellant Research.
- 3 Machine Shops.
- 4 Building Works Dept.
- 5 Administration Offices.

SOUTH SITE.

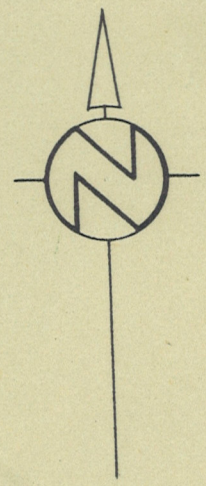
- 6 Process Development & Chemical Engineering.
- 7 Magazine & Storage Area.
- 8 Site for future Propellant Development.
- 9 Inter Services- Research Group.

To Waltham Cross

To Epping

Abbey Church

To London



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