

CSAC 73/3/80

CONTEMPORARY SCIENTIFIC ARCHIVES CENTRE

under the guidance of the Royal Society's
British National Committee for the History of Science, Medicine and Technology

Catalogue of the papers of

IVOR EVANS

(b. 1918)

relating to the development of Operational Research

1940 - 1952

Compiled by: Jeannine Alton
Julia Latham-Jackson

Deposited in the Imperial War Museum, London, 1980

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GENERAL INTRODUCTION

The collection was received from Dr. Evans, who had assembled the material from his own papers to document the development of Operational Research during the Second World War. It consists mainly of reports and memoranda on Operational Research by Dr. Evans and others (Section B) with some historical accounts of its development and a little biographical material (Section A). Some of the papers were annotated by Dr. Evans and additional comments by him will be found in A.9.

The origins of Operational Research are described in A.5 and A.6. In August 1940 P.M.S. (later Lord) Blackett was appointed as Scientific Adviser to Anti-Aircraft Command as a result of discussions between General Pile and A.V. Hill, and his first task was to assist the Command to make the best use of the gun-laying radar sets which were then being delivered to the A.A. batteries around London. The introduction of a completely new technique, using equipment much of which had hardly passed the laboratory stage, was liable to present many new problems and Blackett therefore decided to bring together a number of men with good scientific training, but without specialist radio knowledge, to study the operational use of the radar sets, guns and predictors. The initial team consisted of D.K. Hill, A.V. Huxley, A. Porter, F.R.N. Nabarro, H.E. Butler, G.W. Raybould, L.C. Bayliss (Blackett's Deputy) and I. Evans. The organisation of the group was decided at a meeting on 8 October 1940, although its earliest members were by then at work.

In March 1941 Blackett left A.A. Command for Coastal Command and the future of his group came under discussion. This led to the formation of the Army Operational Research Group in the summer of 1941. Item B.1 in the collection is a report by Dr. Evans circulated in June 1941 which was later designated as A.O.R.G. Report No.1. The appointment of Lt.Col. (later Sir Basil) Schonland as Superintendent of A.O.R.G. in August 1941 marked the firm establishment of Operational Research in the army, and its sphere of operations continued to expand throughout the war. See B.8-B.9, B.11 for reports on aspects of the invasion of Europe in 1944.

Copies of items A.1, A.2 and B.1 also appear in the collection of the papers of Lord Blackett deposited in the Library of the Royal Society of London (CSAC no. 61/1/79, items D.122, D.123).

CURRICULUM VITAE

EVANS, Ivor

b. 21/5/1918 at Beaufort, Mon.

Educated Ebbw Vale County School and University College, Cardiff
graduated 1939 with 1st Class Hons Physics.

Oct 1940, selected by Prof P M S Blackett at an interview to join his
"Anti-Aircraft Command Research Group". This later developed into the
Army Operational Research Group. Served from 1940 to 1952 on a variety
of topics:

A.A. Gunnery, Field Gunnery, Lethality of weapons, Battle Analysis,
Tank Mobility.

1952 - 1954 Fighting Vehicles R & D Establishment

1954 - 1969 Mining Research Establishment, National Coal Board, Isleworth
Assistant Director, 1958

1969 - to date Mining R & D Establishment, Burton-on-Trent
Deputy Director, Head of Mining Sciences Division

Publications: Many papers, mainly in the mechanics of materials, eg

A Simple and Convenient Instrument for Measuring the
Shearing Resistance of Clay Soils

A Theory of the Basic Mechanics of Coal Ploughing

A Theory of the Size Distribution of Broken Coal

A monograph: "The Strength, Fracture and Workability of
Coal (with C D Pomeroy), Pergamon Press 1966

Some light verse under the nom-de-plume Kenvyn Evans
(Penguin Books : Yet More Comic and Curious Verse)

Honours:

D.Sc., University of Wales 1963

Queen's Jubilee Medal 1977

Visiting Professor of Mining at the Universities of
Nottingham and Newcastle-upon-Tyne

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12/9/78

SECTION A HISTORICAL ACCOUNTS OF THE DEVELOPMENT OF
OPERATIONAL RESEARCH, A.1 - A.9

- A.1 'The Beginnings of Operational Research', by I. Evans.

Typescript text of talk given at the Safety in Mines
Research Establishment, 24 February 1970.
- A.2 Letter from Evans to P.M.S. Blackett, 22 January 1974,
written to accompany a copy of the above typescript, and
containing a brief résumé of Evans's contribution to
Operational Research.
- A.3 Curriculum vitae prepared by Evans for inclusion in
this collection, 1978. (Reproduced on p.3.)
- A.4 Testimonial by Brigadier B.F.J. Schonland, Superintendent
of the Army Operational Research Group, with accompany-
ing letter to Evans, 15 October 1945.
- A.5 'The Origins of Operational Research in the Army.'

9 pp. typescript by L.E. Bayliss, 11 October 1945.
(A.O.R.G. Memorandum No.615).
- A.6 'History of the Origins of Operational Research in
A.A. Command.'

13 pp. typescript by L.E. Bayliss, n.d., c.1945.
- A.7 'The History of AORS 10 from July 1944 to October 1945.'

13 pp. typescript, no author or date, c.1945.

(A.O.R.S. 10 was a section of A.O.R.G. It was
originally formed to investigate the effects of bombard-
ment, but this was widened to include the general
quantitative study of warfare and the search for numerical
estimates of factors of military importance and the
relations between them.)
- A.8 Correspondence with C.P. Snow arising from his book
'Science and Government', July 1961.
- A.9 Letter from Evans to the Contemporary Scientific Archives Centre,
28 February 1978, containing comments on several of the docu-
ments in the collection, most of which are in Section B. Some
of these comments are reproduced in the entries for individual
items in Section B.

SECTION B MEMORANDA AND REPORTS ON OPERATIONAL RESEARCH,
1941-52, B.1 - B.16

All items are in typescript.

- B.1 'Report on Analysis of Balloon Calibrations with Mark I/EF on Matted Sites', by N.F. Mott and I. Evans, 1 June 1941 with 4 figures dated 6 June 1941.

Evans writes of this report (see A.9), 'It has historical interest in that when AORG was formed as the linear descendant of Blackett's Group, it was designated AORG Report No.1'.

- B.2 'Notes on Treatment of Recording Van Results', by I. Evans, September 1942.

- B.3 'Examination of Tracks', by I. Evans, September 1942.

This was originally attached to B.2.

- B.4 'SCR 268 and M.7 Director Trials', by I. Evans and J.H. Weems, 10 February 1943.

Includes 8 figures and 2 photographs.

- B.5 'Theoretical Estimate of the Efficiency of 5.5" and 7.2" Air-burst Shell for detonating Anti-Tank Mines', by I. Evans, 9 November 1943.

- B.6 'The Delay Times of Tellermines 35 and 42,' by I. Evans, 3 December 1943.

(A.O.R.G. Memorandum No.237.)

- B.7 'A.O.R.G. Xmas Memorandum 1943.'

Includes contributions by Evans.

- B.8 'Casualties and Effects of Fire Support on the British Beaches in Normandy', by J.C. Dorward, F.C. Liston and I. Evans, 21 April 1945.

(A.O.R.G. Report No.261.)

Memoranda and reports on Operational Research, 1941-52

- B.9 'Opposition Encountered on the British Beaches in Normandy on D-day.'

(A.O.R.G. Report No.264.) Evans comments (see A.9), 'A massive report by AORG standards (157 pp.) compiled by a team of 5 people, of whom I was one, under the leadership of F.R.N. Nabarro. I would estimate it to have considerable historical value'. The other members of the team were J.C. Dorward, F.C. Liston and M.J. Dobson.
- B.10 'Material and Moral Effects of Bombardment', by I. Evans and F.R.N. Nabarro, 4 June 1945.

(A.O.R.G. Memorandum No.535.)
- B.11 'Comparison of British and American Areas in Normandy in terms of Fire Support and its Effects,' by I. Evans, 14 August 1945.
- B.12 Army Operational Research Group Conversazione held at Ibstock Place and Richmond Park, 26 and 27 July 1945.

Guide to exhibits with a review of A.O.R.G. sections and their work.
- B.13 'A test of the condition of loam soils in relationship to trafficability', by I. Evans, October 1949.

(A.O.R.G. Report No.14/49.)
- B.14 'The mechanics of traction in plastic clay', by I. Evans, 1951.

(A.O.R.G. Report No.16/51.)
- B.15 'A method for the rapid evaluation of soil strength at forward airfields', by I. Evans, November 1951.

(A.O.R.G. Report No.21/51.)
- B.16 'A simple procedure for estimating the sinkage of a tank as a function of the bearing capacity of the soil', by I. Evans, January 1952.

(A.O.R.G. Memorandum No.C.2.)

INDEX OF CORRESPONDENTS

SCHONLAND, Sir Basil (Ferdinand Jamieson) A.4

SNOW, Charles Percy, Baron Snow A.8