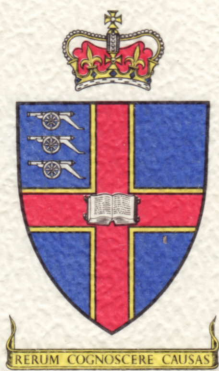


The
Royal Military College of Science

1864



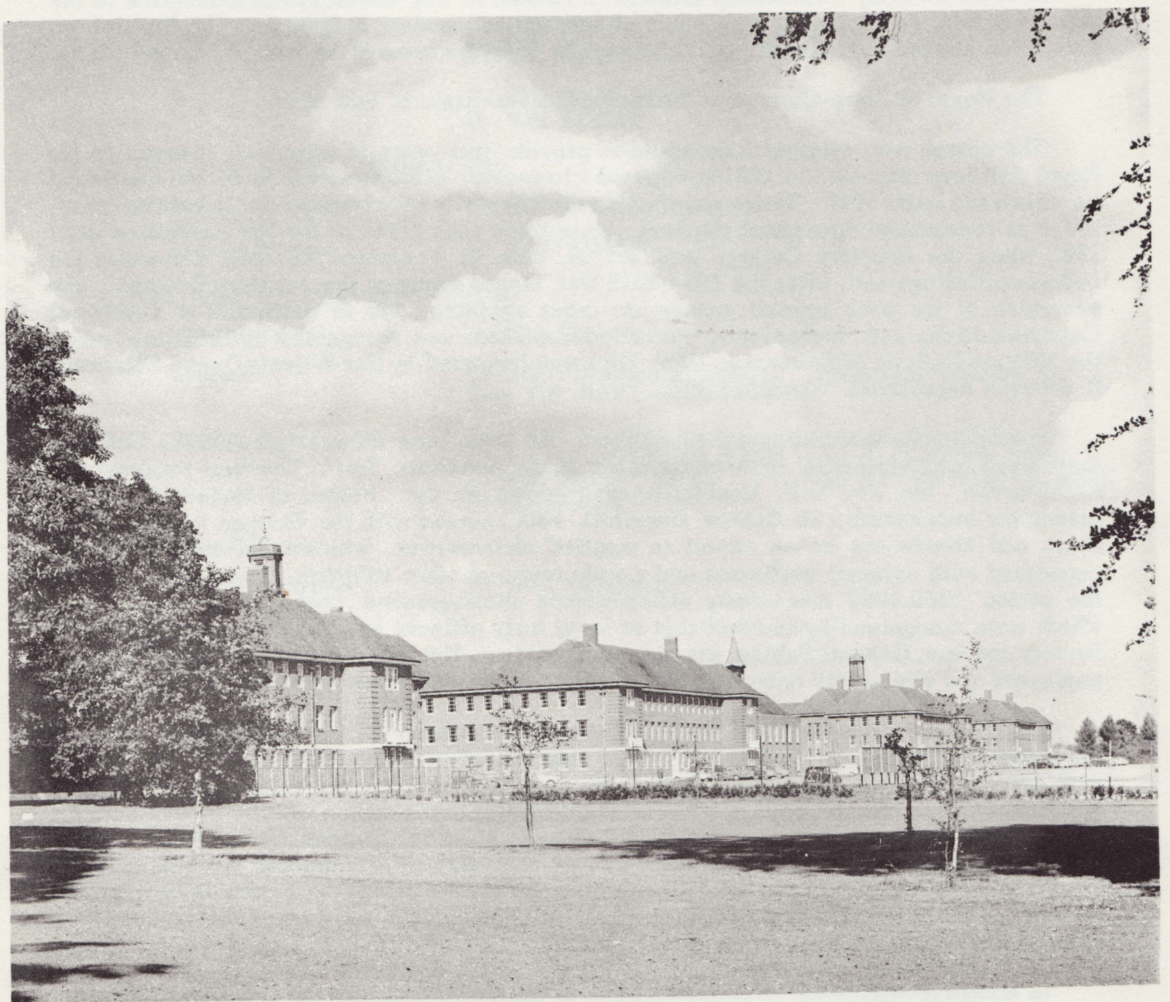
1964

Centenary Year

The Visit of
Her Majesty Queen Elizabeth
The Queen Mother
to
The Royal Military College of Science
Shrivenham
on the occasion of
Centenary Year Commemoration Day
on
29th. June, 1964



The
Royal Military College of Science



*Southern aspect of Wellington Hall,
Greenhill House and Marlborough Hall.*

ROYAL MILITARY COLLEGE OF SCIENCE

Historical Notes

In 1716 Albert Borgard was appointed Colonel of the Royal Artillery and, for the first time, organised systematically the construction and proving of guns and their equipment. In 1772, twenty-five years after his death, the Military Society of Woolwich was founded for the scientific study of gunnery. Although its life was short, it left a tradition under which, by the time of Waterloo, British military equipment had reached a very high standard.

In 1840, the Army's increased interest in education was shown by the foundation of the Royal Artillery Institution for the study of Science and modern languages. The Institution, which was housed at Woolwich, was to become in 1864 the home of the new Advanced Class.

The Royal Military College of Science owes its origin to this class.

The course was originally designed to provide two years of organised instruction for Royal Artillery officers. In 1921 it expanded to include officers of all Arms and continued its existence until 1940. Those passing out successfully received the qualification 'pac', which is recognised throughout the Army. Instruction took place in the RA Institution until 1885 when the Artillery College was set up, also at Woolwich. In 1889 it became the Ordnance College and, after the 1914-1918 War, it was renamed the Artillery College. The extension of its work beyond gunnery to other subjects, and in particular to Electrical Communications and Mechanically Propelled Vehicles, was recognised by its being named the Military College of Science in 1927. This was honoured by Her Majesty Queen Elizabeth II with the appellation 'Royal' in 1953.

In addition to the distinguished soldiers who have been associated with the College, there have been numerous eminent members of the Academic Staff. The first Professor of Mathematics, the Rev W.F. Bashforth, was known as the 'Father of Modern Gunnery'. Among his successors, Sir George Greenhill, FRS, served with the College for over thirty years and stands out as an expert in Applied Mathematics, who solved many problems connected with external ballistics and a wide range of other subjects. Furthermore, during the period 1780-1890 many Army officers made distinguished contributions to Science which were recognised by the fact that at least forty officers became Fellows of the Royal Society and one, General Sabine, became its President. Notable astronomers, metallurgists, engineers and physicists have also lent distinction to teaching and research at the College.

The College dispersed to Stoke and Bury at the start of the 1939-1945 War, where it ran a variety of war-time courses. It was re-established at Shrivenham in 1946. As a result of experience gained during the War the Advanced Class, which had catered predominantly for gunnery, was developed into the Technical Staff Course during which officers from all arms of the British and Commonwealth Forces specialise in Weapons, Vehicles or Electrical Instrumentation. Those who pass the course successfully are awarded the qualification 'ptsc'. A short course is run for officers from the Staff College who come to Shrivenham for one term, before going to Camberley. In addition, there are specialist courses at a higher level which are also attended by officers of the Royal Navy and the Royal Air Force.

In accordance with the recommendations of the Guy Committee the College commenced in 1946 to run Degree Courses leading to University of London External Degrees in Science and Engineering. The majority are young officers most of whom have attended the Royal Military Academy Sandhurst although some are from Commonwealth and other countries and there are as well some civilian scholars and a few student apprentices. In addition a small number of officers return to the College to read for Higher Degrees.

The Estate on which the College was established was formerly Beckett Manor which existed before the Norman Conquest and is mentioned in Domesday Book. The present house, Beckett Hall, which is about 120 years old, became one of the four Halls or Messes for officer students. All the remaining buildings are new and are named after distinguished soldiers or scientists.

HIGHER

Ph.D.

M.Sc.

FIRST D

B.Sc. 1st

B.Sc. 2nd

B.Sc. 2nd

B.Sc. 3rd

B.Sc. Pa

Command

UNIVERSITY OF LONDON RESULTS 1963/64

HIGHER DEGREES

<u>Ph.D.</u>	Mr. Z.S. ARIYAN	Mr. H.J. WINTLE	Mr. M.G. ORMEROD
<u>M.Sc.</u>	Capt J.L. DUMBRELL, RASC		

FIRST DEGREES

B.Sc. 1st Class Honours

<u>Special Physics</u>	Mr. M.W. VERNON
<u>General</u>	Lt H.N. TARVER, QUEENS OWN BUFFS Lt R.C. ARMSTRONG, RHF
<u>Engineering</u>	Capt D. SHAW, REME Mr. R.M. LOGAN

B.Sc. 2nd Class Honours (Upper Division)

<u>Special Chemistry</u>	Mr. M.D. MAGEE
<u>Special Physics</u>	Mr. E. STAINSBY

B.Sc. 2nd Class Honours (Lower Division)

<u>Special Physics</u>	Mr. P.A. WALLEY	
<u>General</u>	Lt C.C. PEACOCKE, QDG Capt T.P. HART DYKE, ROYALS	Capt R.J. HARRIS, RA
<u>Engineering</u>	Lt D.R.G. MORRIS, RE Capt J.E.C. STEVENS, R SIGS Lt W.H. GREEP, REME Mr D.J. BILLINGTON	Lt C.C. PARSONS, RE Lt B. FLEMING, REME Lt A.P. METCALFE, REME

B.Sc. 3rd Class Honours

<u>Special Chemistry</u>	Mr. R.C. WHITING
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B.Sc. Pass Degree

<u>General</u>	Lt A.C.L. CLARKE, RTR Lt C.V. FUSSELL, RAOC	
<u>Engineering</u>	Capt P. CLEMENTS, RE Lt J.S. FARMBROUGH, RE Lt H.E. VIALOU CLARK, RE Lt R.D.K. THOMPSON, R SIGS Capt L.J. LAUDERDALE, 2 GR Lt D.E. BONNOR-MORIS, REME Lt B.T.E. LIVESEY, REME Lt C.J. SQUIRES, REME	Lt W.I.C. DOBBIE, RE Lt C.B. PRESCOTT, RE Lt P.J. WORTHINGTON, RE Lt M.J.P. VANN, R SIGS Lt N.S. ASHWORTH, REME Lt I.M. CARSWELL, REME Lt D.G. MAVITY, REME Lt P.F. TYZACK, REME

ROYAL MILITARY COLLEGE OF SCIENCE PRIZES

<u>1963 Cobb Memorial Essay Prize</u>	Major P.W. STOCK, RA
<u>1963 Advisory Council Essay Prize</u>	Lt D.M. ROBERTS, RE
<u>1964 Advisory Council Essay Prize</u>	Lt K.J.A'C. OSMAN, REME
<u>1963 Degree Course Prizes</u>	
<u>The 'Shapland' Prize</u>	Lt R.C. ARMSTRONG, RHF
<u>The 'Eldridge' Prize</u>	Capt P. de la HAYE, RAEC
<u>The 'Davey' Prizes</u>	

<u>Civil Engineering</u>	Lt R.O.M. DOBBIE, RE
<u>Electrical Engineering</u>	Lt K.P. BURKE, R SIGS

<u>Commandant's Special Awards for Sport</u>	Major D.E.N. CAMERON, CAMERONIANS Major J.R. VARLEY, REME
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Programme for the visit of her MAJESTY QUEEN ELIZABETH

29th. JUNE 1964

- 1230 hrs Her Majesty Queen Elizabeth the Queen Mother arrives in the grounds of the Royal Military College of Science and is greeted by The Hon. David Smith, JP, Her Majesty's Lieutenant of the Royal County of Berkshire and the Lady Helen Smith.
- Her Majesty's Lieutenant presents:-
Major General E.J.H. Bates, OBE, MC, MA, The Commandant, who then presents:-
Sir Donald Bailey, Kt, OBE, JP, The Dean.
Lieutenant General Sir Kenneth Darling, KCB, CBE, DSO, GOC in C Southern Command.
Dr. P.S. Noble, MA, LL.D, Vice Chancellor, University of London.
General Sir Robert Mansergh, GCB, KBE, MC, RHA, Master Gunner.
General Sir Charles Jones, KCB, CBE, MC, President of the TSOs Club.
Lieutenant General Sir John Hackett, KCB, CBE, DSO, MC, MA, B Litt, Deputy Chief of the General Staff. 1515 hrs
Major General D.B. Lang, DSO, MC, Director of Army Training.
- 1235 hrs Her Majesty drives to Allenby Hall. 1525 hrs
- Mrs. Bates, Lady Bailey, The Deputy Commandant and Mrs. Birkett and Members of the College Council and their ladies are presented to Her Majesty by the Commandant in the Ladies Room. The Commandant then presents the wives of guests who have been invited to luncheon. 1600 hrs
- 1300 hrs Her Majesty lunches with members of the staff and students of the Royal Military College of Science and their guests. At the conclusion of luncheon the Commandant proposes the Health of Her Majesty The Queen, followed by the Health of Her Majesty Queen Elizabeth the Queen Mother.
- 1420 hrs Her Majesty Queen Elizabeth the Queen Mother visits Beckett School. Mrs. Skinner, some of the staff and pupils are presented to Her Majesty. 1615 hrs
- 1430 hrs Her Majesty arrives at College Hall where Heads of Branches are presented. Professors and Associate Professors precede Her Majesty into the Hall. 1700 hrs

Her MAJESTY QUEEN ELIZABETH the QUEEN MOTHER

29th. JUNE 1964

ounds of
n. David
Berkshire

Her Majesty takes her place on the dais and is greeted with the National Anthem. Her Majesty then receives a bouquet from Miss Susan Jordan.

who then

The Commandant makes a speech of welcome and invites Her Majesty to present degree diplomas and prizes.

GOC in C

Her Majesty presents degree diplomas and prizes. Her Majesty then addresses the assembled company.

London.
Gunner.
SOs Club.
A, B Litt,

The Dean thanks Her Majesty for gracing the ceremony with her presence.

g.

1515 hrs

Her Majesty leaves College Hall. Members of the Directing Staff and Students are presented in the entrance tent.

1525 hrs

Her Majesty walks to the Armstrong Laboratory. On arrival, members of the staff are presented to Her Majesty. Her Majesty sees exhibits arranged in the Armstrong Laboratory by the Academic Departments of the College. Details of exhibits are shown at page 8.

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d to Her
dant then

1600 hrs

Her Majesty drives to the Library. The Commandant presents the Rev. R.E. Kingston, MBE, MC, CF and the Registrar, Mr. D.J. Chapman, BA, who then presents the Librarian, Mrs. K.L. Farquhar, BA, and representatives of the civilian staff. Her Majesty sees an exhibition of photographs and documents relating to the history of Royal Military College of Science, and displays by constituent Societies of the College Arts Council. Her Majesty is invited to sign the Visitors Book.

he Royal
luncheon
followed

1615 hrs

Her Majesty drives to Beckett Hall. Her Majesty takes tea in the Ante Room. After tea Her Majesty walks on the lawns of Beckett Hall where further presentations are made.

t School.
Majesty.

1700 hrs

Her Majesty Queen Elizabeth the Queen Mother leaves The Royal Military College of Science.

resented.
the Hall.

CENTENARY YEAR EVENTS

- 18-21 March - Choral and Orchestral Societies Production of 'La Perichole' by Jacques Offenbach in the College Theatre
- 10 April - Senior Common Room Dinner, Allenby Hall
- 23 April - Astronomical Society Lecture 'The Moon and how to get there' by Dr J.G. Porter, BSc, PhD, FCS, FRAS, in Lander Lecture Theatre
- 6 May - College Golf Club Centenary Challenge Cup
- 12 May - Orchestral Society Concert in the College Hall with Rohan de Sarum (solo cello). Programme included:
- The Good Humoured Ladies Scarlatti/Tommasini
Cello Concerto Saint-Saens
Scenes and Dances (Part One) from
The Three-Cornered Hat De Fella
- 20 May - Children's Sports, Sports Field opposite Burgoyne House
- 21-22 May - Dramatic Society Production: 'The Skin of our Teeth' by Thornton Wilder
- 3 June - Golf Society Match: Past v Present at Frilford Heath GC
- 5 June - Finals of AD Drama Festival in College Theatre Winners:- RMCS
- 15-16 June - Choral Society Concert. Programme included:
- Children's Overture Quilter
Three Jovial Huntsmen Walford Davies
Suite: Pineapple Poll Sullivan/Mackerras
Trial by Jury Gilbert and Sullivan
- 20 June - 4 July - Exhibition of Paintings, Library (West Crush Hall)
- 26-29 June - Civilian Staff Social Club Arts and Crafts Exhibition
- 26 June - Summer Ball, Beckett Hall
- 28 June - College Chapel, Centenary Year Service
- 29 June - Commemoration Day
- Cricket Match - Commandant's XI v College
- Tennis Match - College v Berkshire
- Beckett Hall - Cocktail Party on lawn
Masque sponsored by Arts Council, followed by
Fireworks Display
- October - Publication of Centenary Year number of College Journal
- 28 October - TSOs Club and Advanced Class Dinner Club Cocktail Party in London

PRINCIP

Command

Dean:

Deputy C

GSO 1 (C

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Head of M

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Head of F

Head of C

Head of A

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Military

Military

Military

PRINCIPAL MEMBERS OF STAFF OF THE ROYAL MILITARY COLLEGE OF SCIENCE

<u>Commandant:</u>	Major General E.J.H. Bates, OBE, MC, MA
<u>Dean:</u>	Sir Donald Bailey, Kt, OBE, D Eng, MI Struct E, AMICE, JP
<u>Deputy Commandant:</u>	Brigadier J.B. Birkett, OBE
<u>GSO 1 (Coord):</u>	Lt Col P.J.C. Trousdell, R IR F
<u>Camp Commandant:</u>	Major F.A. Norris, 3 DG

HEAD OF DEPARTMENT OF MATHEMATICS AND BALLISTICS

Professor C.J. Tranter, OBE, MA, D Sc

<u>Head of Mathematics Branch:</u>	A/Professor C.G. Lambe, BA, Ph D
<u>Head of Ballistics Branch:</u>	A/Professor A.K. Weaver, MA, AFR Ae S

HEAD OF DEPARTMENT OF PHYSICS

Professor A. Charlesby, D Sc, Ph D, ARCS, DIC, F Inst P

<u>Head of Physics Branch:</u>	A/Professor A.J. Woodall, OBE, B Sc, Ph D, F Inst P
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HEAD OF DEPARTMENT OF CHEMISTRY AND METALLURGY

Professor E.C. Baughan, OBE, MA, B Sc

<u>Head of Chemistry Branch:</u>	A/Professor H.I. Stonehill, D Sc, Ph D, DIC, FRIC
<u>Head of Applied Chemistry Branch:</u>	A/Professor J.H. Turnbull, B Sc, Ph D, ARIC
<u>Head of Metallurgy Branch:</u>	A/Professor A.E.W. Smith, B Sc, Ph D, FIM

HEAD OF DEPARTMENTS OF CIVIL AND MECHANICAL ENGINEERING

Professor A.D.S. Carter, B.Sc., MI Mech E, F R Ae S

<u>Head of Materials Branch:</u>	A/Professor G.R. Higginson, Ph D, AMI Mech E
<u>Head of Structures Branch:</u>	A/Professor J.M. Hawkes, B Sc, Ph D, AMICE, AMI Struct E
<u>Head of Applied Thermodynamics Branch:</u>	A/Professor D.P. Hutchinson, B Sc, Ph D, AMI Mech E
<u>Head of Applied Mechanics Branch:</u>	A/Professor D.S. Houghton, M Sc, AMI Mech E, AFR Ae S

HEAD OF DEPARTMENT OF ELECTRICAL ENGINEERING

Professor A. Lee, MA, MIEE

<u>Head of Electrical Engineering Branch:</u>	Professor K.A. Hayes, OBE, B Sc, MIEE
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HEAD OF DEPARTMENT OF INSTRUMENT TECHNOLOGY

Professor C. Holt Smith, CBE, M Sc, MIEE

<u>Head of Engineering Physics Branch:</u>	A/Professor E.B. Pearson, M Sc, F Inst P, MIEE, AFRAeS, CI Mech E
<u>Head of Electronics Branch:</u>	A/Professor M.H.N. Potok, MA, B Sc, Ph D, AMIEE, AMIERE, MIEE

<u>Military Director of Studies (General):</u>	Colonel O.R.W. Oswald, DSO
<u>Military Director of Studies (Weapons & Vehicles):</u>	Colonel A. Simmons, OBE, M Sc, AMI Mech E, AMBIM
<u>Military Director of Studies (Electronics & Guided Weapons):</u>	Colonel T.C. Temple Carrington

EXHIBITS BY THE ACADEMIC DEPARTMENTS

Department of Mathematics and Ballistics

High-speed Photography and Speed Measurement

High speed cameras are used extensively in ballistic studies of rapid events such as the launching of a missile or the firing of a gun. The films to be demonstrated show the slow-motion effects obtained with such cameras.

A demonstration is also given of a chronometer designed to measure accurately short time intervals. In this demonstration the equipment is used to measure the velocity of a steel ball fired from an air gun.

Department of Chemistry and Metallurgy

The Use of Television in the Microscopic Examination of Metal Structures

The grains of which metals and alloys are composed are usually so small that a microscope image is needed to see them.

For teaching purposes the microscope image can be shown on a television screen. This will be demonstrated.

Department of Mechanical Engineering

A Guided Missile in Flight

An anti-tank missile is shown in flight in a wind tunnel; the flow past the missile is made visible by means of wool tufts and smoke. The influence of change of control surface attitude will also be shown.

Department of Civil Engineering

Photo-elasticity

When a load is to be applied to part of a machine or structure, it is necessary for the designer to know how the load is spread through the material.

This exhibit shows a load being applied to a small model of the part made of a transparent plastic whose optical properties change in response to the load it carries. 'Polarised' (filtered) light is used and a colour pattern is seen, which is a 'contour' map of loading throughout the model. The same pattern is followed in the full sized member.

Department of Physics

Effects of Nuclear Radiation on Materials

Radiation is used in medical treatment, sterilisation of food and pharmaceuticals, to improve plastics, and for research in radiobiology.

Examples of irradiated foods and materials are on display.

Department of Electrical Engineering

Simple and not-so-simple Electric Motors

Working models of the earliest electric motors (using permanent magnets) invented about 1830 by Faraday and Barlow and their modern magnet-free equivalents, together with two recently developed linear motors with possible applications to traction.

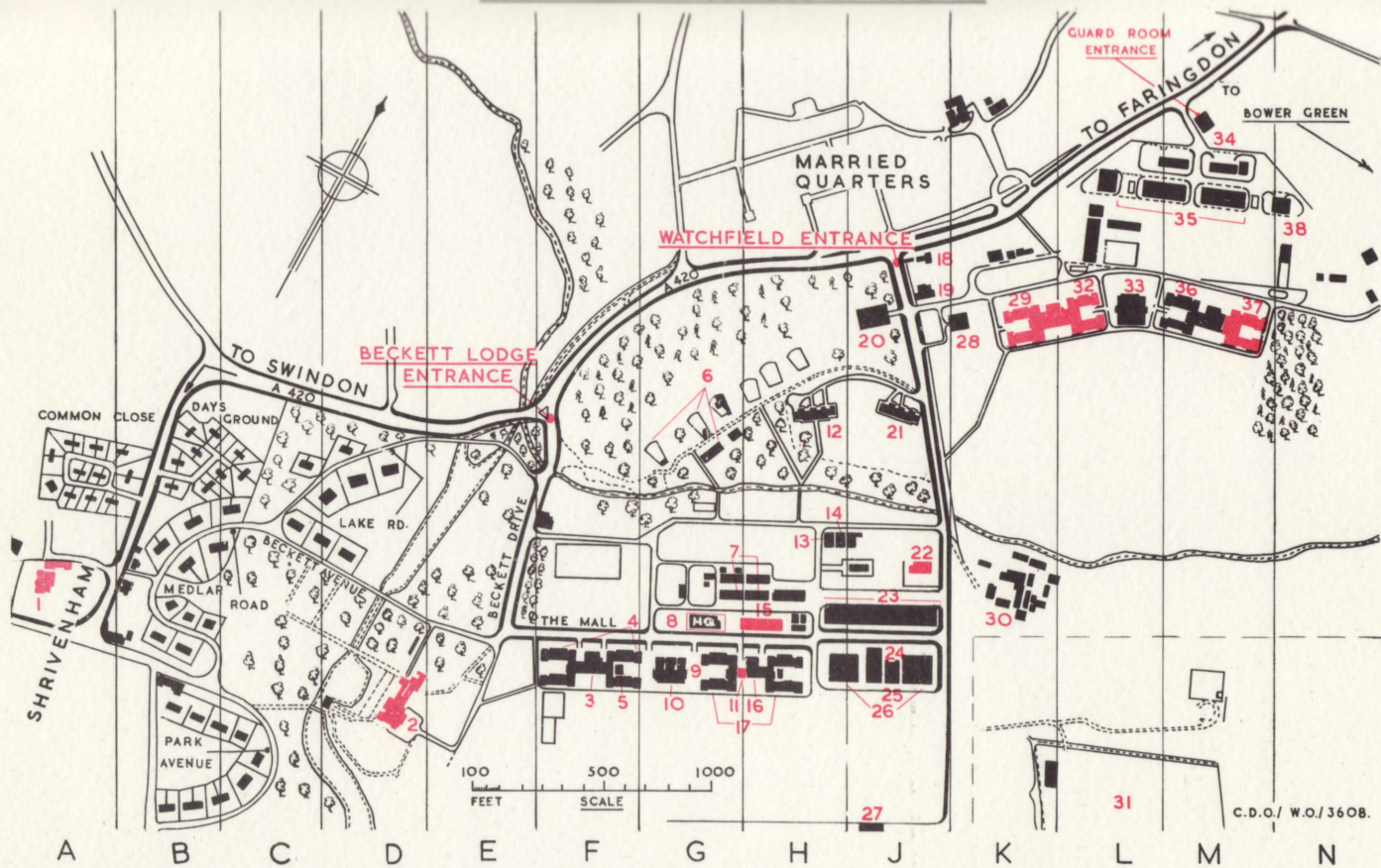
Department of Instrument Technology

Malkara Anti-tank Missile and Training Simulator

The anti-tank missile 'Malkara' is manually guided to the target by signals transmitted along wires. In the training simulator an oscilloscope screen displays the missile as a moving green spot which is manually guided on to the image of a tank.



ROYAL MILITARY COLLEGE OF SCIENCE



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|------|---------------------------|-------|---------------------------|------|---------------------------------|
| H 15 | Admin Commandant | J 22 | College Hall | L 31 | Radar Test Field |
| K 29 | Allenby Hall | H 13 | Common Lecture Room No. 3 | G 6 | Ranges (30 yds); Ballistics Lab |
| J 26 | Armstrong Labs | H 16 | Drawing Office No. 1 | L 32 | Roberts Hall |
| J 24 | Armstrong Lecture Theatre | K 30 | MPBW Depot Office | J 27 | Rocket Lab |
| K 28 | College Theatre | G 10 | Greenhill House | H 14 | Rutherford Lab |
| D 2 | Beckett Hall | M 34 | Guard Room | G 9 | Senior Common Room |
| M 36 | Borgard Hall | G 8 | Headquarters | J 21 | Sergeants' Mess |
| L 33 | Burgoyne House | J 23 | Heaviside Laboratories | A 1 | Shrivenham House |
| N 38 | Central Workshops | M 37 | Kitchener Hall | G 7 | Stephenson Labs |
| L 33 | College Chapel | G 11 | Lander Lecture Theatre | F 5 | Thomson Lab |
| J 18 | RC Church | F 3 | Library | F 4 | Wellington Hall |
| J 20 | Cinema (Bromhead) | GH 17 | Marlborough Hall | M 35 | Whitworth Labs & Tank Hangers |
| H 12 | Civilian S.S. Club | J 19 | Medical Centre | H 15 | QM & Equipment Officer |