

N/ATOM/2

Apprenticeship



Lord Rutherford

A·E·R·E Harwell

Lord Rutherford was one of the great pioneers in the field of atomic physics. In 1911, he put forward the revolutionary theory that all atoms have a central core or nucleus, with a positive electrical charge, which accounts for virtually the entire weight of the atom. This nucleus is surrounded by one or more electrons (charges of negative electricity) revolving in orbits that are relatively enormous compared with the nucleus.

Further research by physicists working under Rutherford's direction showed that the nuclei of all atoms are built up of a positively charged proton, or nucleus of the hydrogen atom, and an electrically neutral particle named the "neutron". They discovered how to chip off part of the nucleus, and so to transmute one element into another. They also established that this chipping liberated vast amounts of energy "locked up" in the nucleus. At that time, this did not constitute a method of obtaining useful energy, because the amount of energy used to break up the nuclei exceeded the amount given out. It did, however, indicate the possibility, which has become fact with the fission of the uranium nucleus. These British discoveries were fundamental, and all recent developments in the atomic field would have been impossible without them. Born at Nelson, New Zealand, in 1871, Ernest Rutherford was elected to the Chair of Physics at McGill University, Montreal, when only 27, and ten years later to the corresponding post at Victoria University, Manchester. In 1919 he succeeded his old master, Sir J. J. Thomson, in the Cavendish professorship of Experimental Physics at Cambridge—the world's outstanding post in physical research. He was created a knight in 1914, and a baron six years before his death in 1937.

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UNITED KINGDOM
ATOMIC ENERGY AUTHORITY



APPRENTICESHIP SCHEMES

AT

A.E.R.E. HARWELL

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A.E.R.E. HARWELL.
BERKS.

January, 1957.

The information in this booklet is liable to be changed without notice at any time at the discretion of the United Kingdom Atomic Energy Authority.

APPRENTICESHIPS

AT

A. E. R. E. HARWELL

INTRODUCTION

The new apprentice at Harwell will find himself in an establishment quite different from any factory he has ever been in. The machine tools in the workshops will be familiar but they will be used for different ends. One-off jobs will be the rule - there will be no mass-production line. The variety of work will be enormous and the precision to which some pieces are made, unique. For the workshops at the Atomic Energy Research Establishment serve a research team, not a production unit. They serve scientists and engineers working on the very fringe of atomic energy development, men whose constantly-advancing ideas demand new instruments, new machines, new materials, new methods, from the engineers and craftsmen in the shops.

Atomic energy development in this country has been placed by the Government in the hands of the United Kingdom Atomic Energy Authority. Within this Authority the Atomic Energy Research Establishment is the Research Group, responsible for exploring the whole field of atomic energy but especially and principally for suggesting new ways by which this energy can be made to produce power for industry. The Establishment is also known throughout the world for its work with radioactive isotopes; it makes the isotopes, sells them, and advises industrial and other users on the best ways in which they can be applied to particular problems. Through the Atomic Energy Research Establishment's efforts, Great Britain has become the largest exporter of radioisotopes in the world.

Atomic energy is made to produce electric power by "burning" nuclear fuel - uranium and plutonium - in nuclear reactors, the furnaces of the new age. The heat from these furnaces is used to raise steam and drive ordinary turbo-electric generators. Much of A.E.R.E.'s work deals with deciding upon which types of reactor are likely to be most efficient and economical for power production,

and to solve the basic problems that will arise if the selected types are built. The first-fruits of Harwell's work in this field are to be seen in the atomic power station at Calder Hall in Cumberland, which was officially opened by Her Majesty the Queen in October 1956. This station is the first of its kind in Great Britain and the first in the world to produce electric power from the atomic nucleus on a truly industrial scale. Research at Harwell showed that it was feasible to build such a station and the Establishment's engineers worked out a design upon which Calder Hall is based.

Scientists developing reactors for power production need research reactors in which to test materials and equipment, or to investigate experimentally the conditions that will exist in the reactors to be used for producing power. Important contributions to the construction of these reactors for research and their operating equipment have been made by the skilled craftsmen in the workshops at Harwell. The latest and most powerful reactor at Harwell is called Dido. It began operating in November 1956 and is now being worked up to full power. A model of this reactor was made for the 'Atoms for Peace' Conference held at Geneva in August 1955, and apprentices contributed to its manufacture. A low-power research reactor that began operating in 1956 is Lido, which is being used for experiments on radiation shields. Another low-power machine is Zeus; this burns nearly pure uranium-235 and is being used to provide answers to the problems presented by the fast-fission breeder reactor now being built at Dounreay in Scotland - the most advanced machine yet undertaken in the U.K.

Radioisotopes are activated forms of ordinary elements which are made by irradiating samples of the elements in an atomic reactor. Bepo, the second oldest pile at Harwell, is used to make nearly all the radioisotopes produced in this country. In a sense radioisotopes are a by-product of atomic energy but their enormous usefulness to industry, medicine, and research gives them a high place in social and economic importance.

Radioisotopes are useful because they emit radiations which can be detected and identified and which, like x-rays, can penetrate solid material. In medicine they are most valuable as aids to diagnosis and as tools for research; some radioisotopes are replacing radium for certain treatments. In industry an important application is to radiography; a piece of radioactive material smaller than a lump of sugar can often be made to do the work of a cumbersome x-ray plant and so

enable radiographs to be taken of small castings, or welds in pipes, which would otherwise be inaccessible. There are dozens of other ways in which radioisotopes are helping to increase production and reduce costs in industry. Because these materials emit radiations they have to be handled with special and complicated equipment. The skilled craftsmen have made an essential contribution to the construction of this equipment, which is designed and made in the Establishment.

There has been no room to speak of other activities at Harwell and of the demands they make on craftsmen - of the great particle accelerators or atom-smashers, of special furnaces and metal treatment plant, of chemical engineering experiments that require glass work accurate to a thousandth of an inch. Enough has been said however to show the importance of the Establishment's work in keeping the nation in the fore-front of industrial development. It is therefore essential that its engineers and craftsmen shall be of the highest possible standard.

OBJECTS OF APPRENTICESHIP SCHEME

The Research Establishment at Harwell opened in 1946 and very early in the development of the engineering programme it was decided that an apprenticeship scheme should be incorporated into the work of the Establishment. The apprenticeship training was planned by a committee, now known as the Apprenticeship Board, and the first group of Apprentices commenced at Harwell in 1948.

Every year since then has seen a further intake of Craft and Student apprentices who receive training in all branches of engineering. There are now over one hundred boys in various stages of training.

The objects of the apprenticeship scheme are:-

- (a) to give each boy a sound basic knowledge of engineering workshops practice and to train him in the practical aspects of this work so that he may take his place with confidence in industry.
- (b) to plan a theoretical course of training that will enable the apprentice to take the examinations and tests appropriate to the trade or profession for which he is being trained.

- (c) to develop in each boy personal qualities of loyalty and self-discipline.
- (d) to meet the future requirements of the United Kingdom Atomic Energy Authority and industry for skilled craftsmen and engineers.

TRAINING FACILITIES

Each apprentice undergoes an initial period of training in the Apprentice training workshop under the supervision of a staff of skilled Instructors in order to obtain experience in the basic engineering techniques; particularly the correct use of machine tools.

During his training the apprentice will spend a specified period in the Main Workshops which are fully equipped to manufacture a wide range of mechanical and electrical apparatus.

The Services and Operations Group carry out comprehensive engineering maintenance work at the Establishment and have workshops which provide facilities for Mechanical and Electrical Maintenance, Instrument Repair, Maintenance and Installation, Maintenance of Special Plant and Heating and Ventilation.

The Engineering Division Drawing Offices built in 1948 are of modern design and well lit by natural and up-to-date artificial lighting. Drawing Office Apprentices are selected from Craft Apprentices (see paragraph headed Drawing Office Apprentices).

ASPECTS OF APPRENTICESHIP TRAINING AT HARWELL

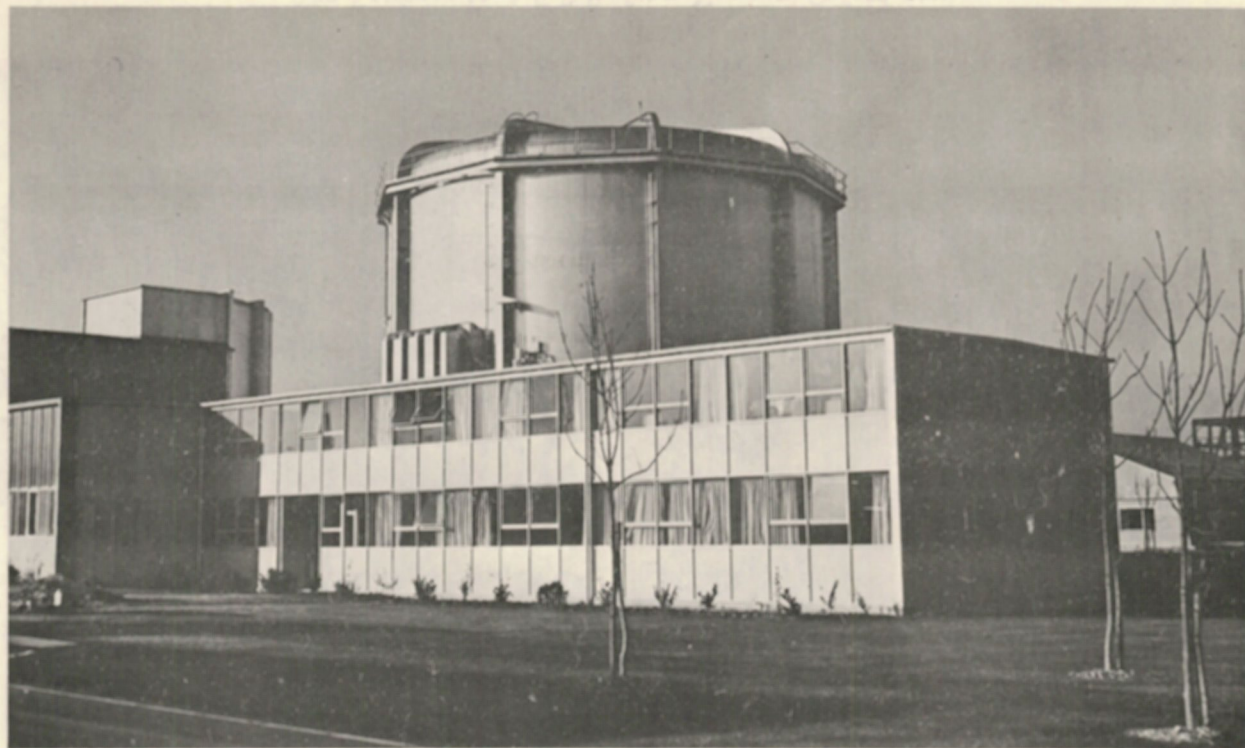
The Scheme at A.E.R.E., Harwell caters for the following types of apprenticeship training:-

- | | |
|--|------------------------------|
| • (a) Craft Apprentices | (d) Student Apprentices |
| • (b) Drawing Office Apprentices | (e) Pre-graduate Apprentices |
| (c) Scientific Glass Working Apprentices | (f) Graduate Apprentices |

* This booklet is principally concerned with the first three types of training. An outline of the scheme and the qualifications required, for Student Apprentices, Pre-graduate apprentices, Graduate Apprentices, are given but further details are obtainable on application to The Secretary, Apprenticeship Board. (See heading "How To Apply").

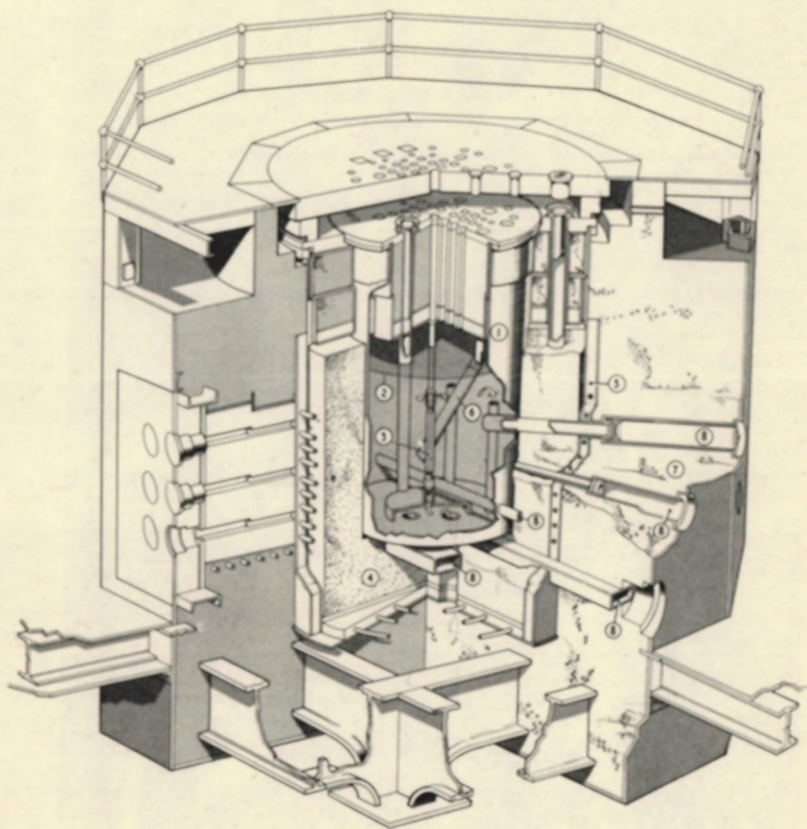


The Entrance to A.E.R.E. from Newbury-Oxford road.

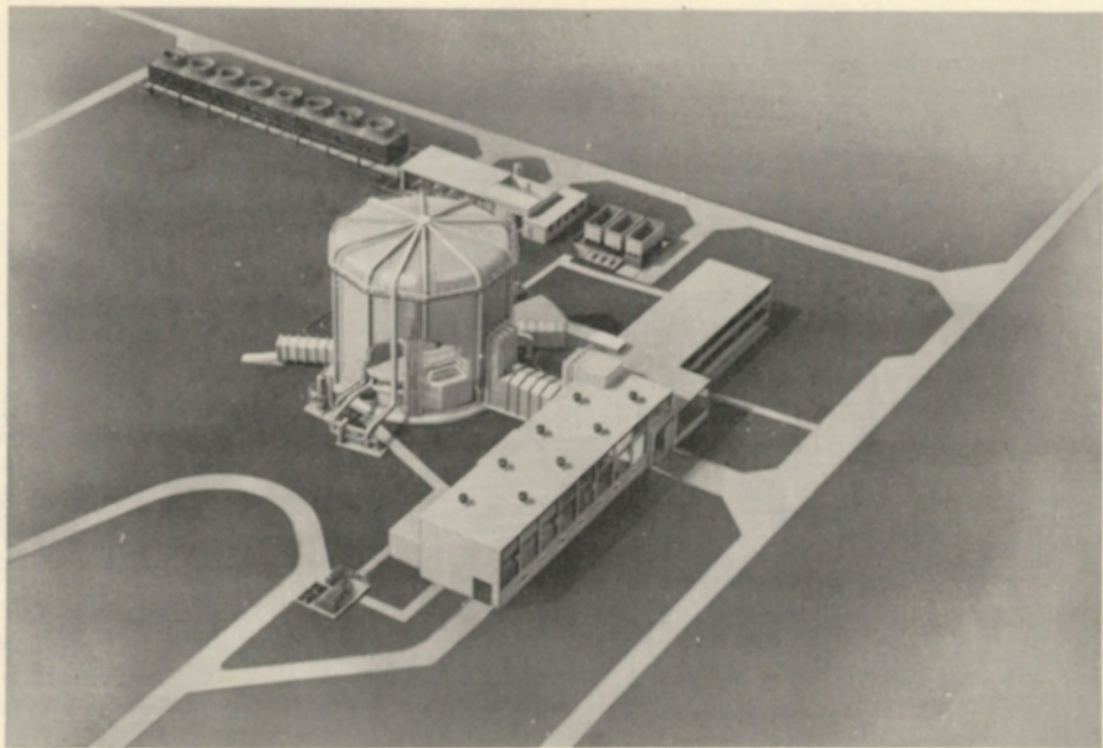


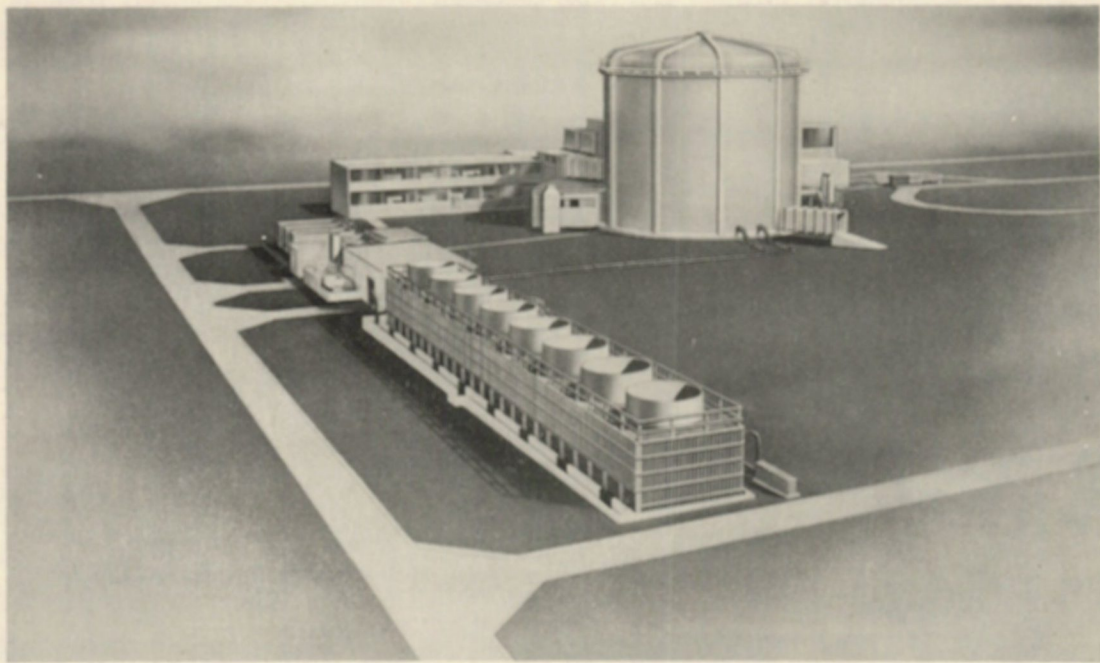
Dido, the heavy-water reactor at Harwell, opened in November, 1956.

Simplified cut-away view of Dido.

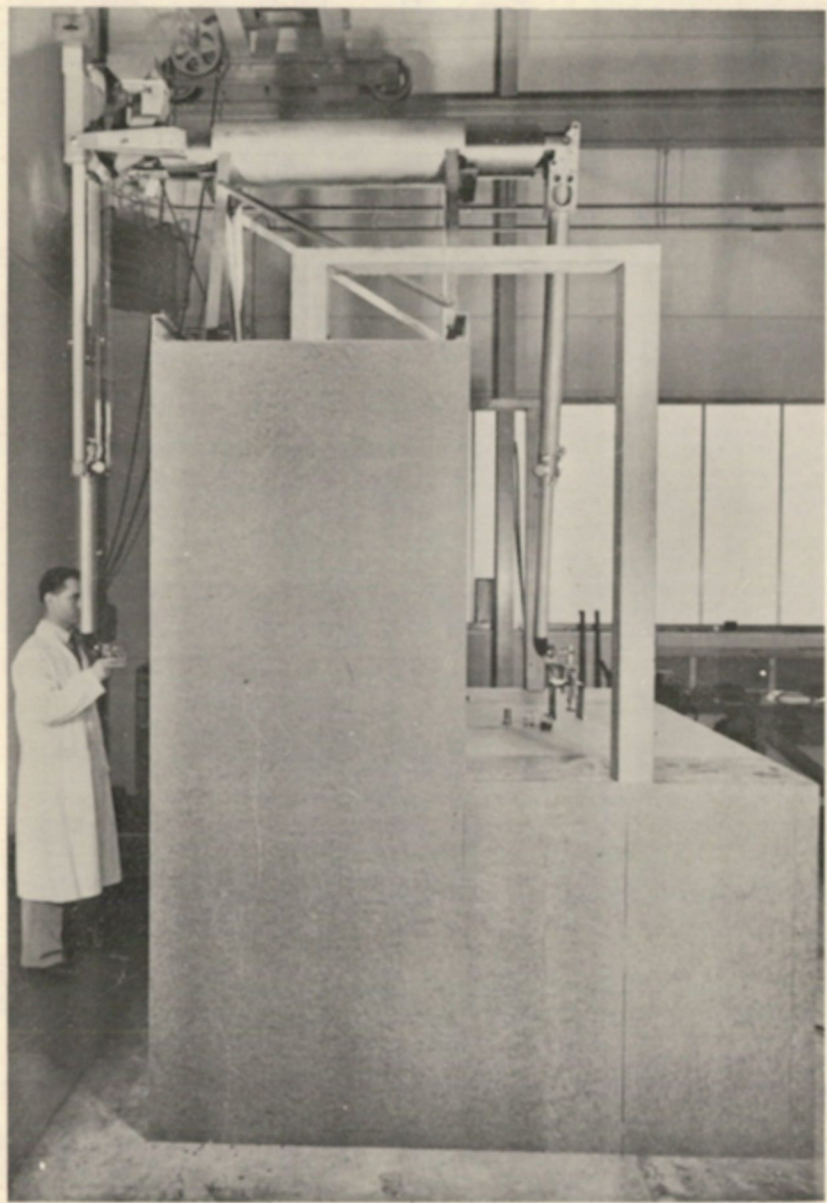


1. Reactor aluminium tank containing heavy water.
2. Level of heavy water.
3. Fuel element.
4. Graphite reflector.
5. Water-cooled thermal shield.
6. One of six control arms.
7. Concrete biological shield.
8. Experimental hole.



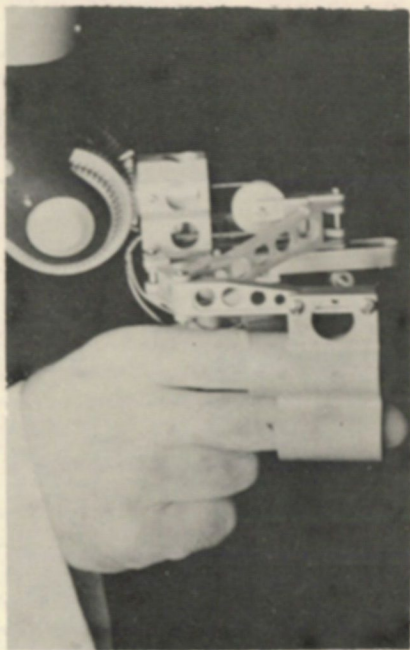


Apprentices assisted in the construction of this model of Dido which was exhibited at the Geneva conference 1956.



Remote handling manipulation of the type made by skilled craftsmen at Harwell.

Close-up of operators end of the Manipulator. Motions at the operators end follow accurately motions at the Workhead.



The Work-head.

GAMMA RADIOGRAPHY.

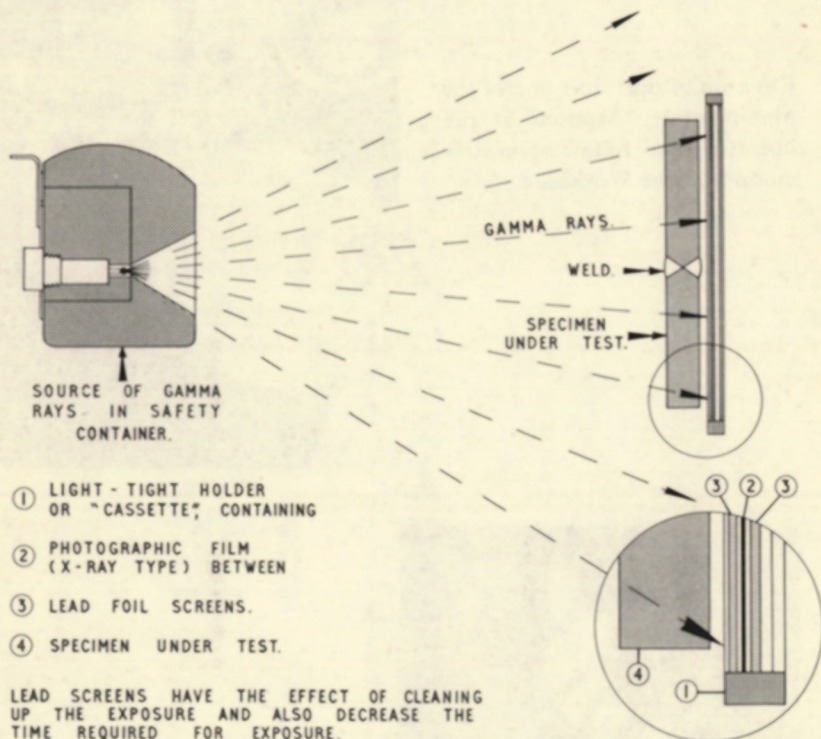


DIAGRAM OF SET-UP
FOR RADIOGRAPH No 5.

This is one of the industrial uses of radioactive isotopes. The penetrating gamma radiations are used to take shadow pictures on the photographic film as illustrated. For example, a crack in the weld would allow greater penetration of the rays to the photographic plate at that point, and would show its position and shape as an area of increased blackness on the film.

CRAFT APPRENTICES

Young men are accepted at yearly intervals for training in certain engineering trades. Advertisements are inserted in local newspapers, generally in March inviting applications for the year beginning in the first week of September.

AGE LIMITS

Boys must be passed their 15th Birthday and under 17 on the 1st September of the year of entry.

Exceptionally boys up to the age of 18 may be accepted provided that they have had technical training to at least the standard of the second year of an Ordinary National Certificate Course. As apprenticeship is to the age of 21 the Selection Board will give preference to younger candidates in order that the fullest period of training can be given.

Boys under the age of 16 years are accepted as Pre-apprentice learners in the first instance and subject to satisfactory progress become apprentices from their 16th Birthday.

SCHOLASTIC ATTAINMENTS

The Selection Board does not look for, or necessarily accept boys with the highest record of scholastic attainment. The education afforded by a Modern Secondary School or Technical Secondary School is sufficient to ensure acceptance if other qualifications are present. They are:-

- (a) Mechanical aptitude
- (b) An abiding interest in practical mechanics
- (c) Possession of an alert mind.

If there is any choice in school subjects during the last year, Woodwork, Metalwork, Mathematics, Elementary Science, English and Technical Drawing are suitable.

The above statement on scholastic attainment does not mean that the more advanced training usually given at Grammar School is not valued and boys from such schools are acceptable, particularly if they are likely to be suitable for, and interested in, a career in the Drawing Office.

RESIDENTIAL QUALIFICATIONS

The Craft Apprenticeship scheme is intended to cater for the needs of local boys and apprentices are expected to live at home and within range of the transport provided by the Establishment.

Seventy-five percent of the vacancies are filled each year by those who live at Abingdon, Didcot, Harwell, Wantage or in the immediate neighbourhood. The remainder of the vacancies are available to candidates from other areas so long as A.E.R.E. or local transport facilities are available from those places.

Hostel accommodation for Craft Apprentices is not available at this Establishment but under exceptional circumstances apprentices over the age of 19 may apply to live in the Junior Hostel and may be accepted if accommodation is available.

SELECTION OF APPRENTICES

Selected candidates will be asked to attend at Harwell for two preliminary tests consisting of:-

- (a) a written exercise designed to show the extent of intelligent interest in practical mechanical subjects, and certain subjects of general interest, and,
- (b) a simple practical test designed to show manipulative aptitude.

Candidates who reach the required standard in these tests will be asked to attend for an interview in order to discuss their interest in apprenticeship and their preference for any particular trade. Questions are also asked about social activities, hobbies, and leisure time pursuits.

CHOICE OF CRAFT AND SUBSEQUENT TRAINING SYLLABUSES AND COURSES

All apprentices spend the first year of their apprenticeship in the Apprentices' Training Shop where they obtain experience of fitting, and machining. After the initial period the apprentice is consulted about the particular craft he wishes to follow. In general if his capabilities are in accord with the choice he is allowed to proceed into that craft.

The Apprenticeship Board reserve the right to refuse admission to a particular craft and to substitute another if they consider this step is in the interest of the Apprentice.

During the years following the basic training apprentices are placed in the various sections of the Workshops in accordance with the training programme laid down for each particular craft. The following trades are catered for at Harwell:-

Fitter General	Tool Maker
Centre Lathe Turner	Sheet Metal Worker
Universal Miller	Electrician
Millwright	Woodworker
Instrument Maker	Welder
Instrument Mechanic	Electronic Mechanic
Scientific Glassblower	

Examples of Apprentice Training Syllabuses for General Fitters, Instrument Makers, and Electricians are given as appendix 'A' at end of booklet.

COURSES AT TECHNICAL COLLEGES

Up to one and a half days a week may be allowed to attend courses in Engineering Instruction at Local Technical Colleges. The fees, cost of books and travelling are covered by the Establishment.

The standard course is the Technological Certificate of the City & Guilds Institute in Machine Shop Engineering which takes four years to complete. An alternative for apprentices with a more advanced education is the Ordinary National Certificate in Mechanical or Electrical Engineering from which they may proceed to the Higher National Certificate.

In preparation for these Courses a preliminary Course (P.S.I.) may be taken during the first year. In every case apprentices are started on courses and at stages commensurate with their previous educational attainments and advice is frequently given by the Technical College teacher.

Permission to remain at these part time day courses and the continuance of facilities by the Establishment are dependent on the apprentice making satisfactory progress, attending regularly, and doing the homework set.

Craft Apprentices are eligible for regrading to Drawing Office Apprentices and to Student Apprentices under certain conditions; for details see later headings.

DRAWING OFFICE APPRENTICES

For those who are interested in a career in the Drawing Office a workshop apprenticeship is essential. They must enter as Craft Apprentices (or exceptionally as Student Apprentices) and spend at least three and half years in the workshops. After two or three years a Craft Apprentice with a special aptitude for Drawing Office work may be nominated for the Drawing Office if he has passed at least the second year of the Ordinary National Certificate Course or the City and Guilds Intermediate Certificate in Machine Shop Engineering by the end of the second or third year; he must be capable of obtaining at least Ordinary National Certificate by the end of his Apprenticeship and he should have reasonable prospects of obtaining a Higher National Certificate by the age of 25; there must be vacancies for Drawing Office Apprentices.

A Drawing Office Apprenticeship is for five years starting from the date of entry as a Craft Apprentice. Training is given in the Drawing Offices for a period of at least a year.

SCIENTIFIC GLASSBLOWING APPRENTICES

In addition to the engineering apprenticeships mentioned elsewhere in this booklet there are a few vacancies from time to time for Scientific Glassblowing Apprentices under the same conditions of

If you are interested in the Apprenticeship Scheme at
A.E.R.E. Harwell and wish to make an application please
complete and return this detachable form.

This form should be folded as indicated.

No Postage Stamp is required.

UNITED KINGDOM ATOMIC ENERGY AUTHORITY
A.E.R.E. HARWELL : APPRENTICESHIP SCHEME

APPLICATION FORM

Type of Apprenticeship for which you wish to apply : * Craft/Student/Pre-Graduate/Graduate

* Delete as applicable.

Age on 1st September, 1956. _____ Years. _____ Months _____

Surname (Block letters) _____

Date of Birth _____

Christian Names _____

Address _____

School Attended _____
(Please give full name and address
and type of school e.g. Secondary Modern) _____

Present Form _____

Any special prizes or awards _____

Sports and Games Played _____

Hobbies and other interests _____

Membership of Societies
Clubs, Scouts or Youth Organisations _____

State Position Held _____

Newspapers and Periodicals Read _____

Please state briefly why you wish to become an apprentice at

A.E.R.E. Harwell. _____

Applicants for Craft Apprenticeship please complete this section

TRADE PREFERRED

	Fitter General		Instrument Maker		Electrician
	Turner		Instrument Mechanic		Electronic Mechanic
	Miller		Tool Maker		Welder
	Millwright		Sheet Metal Worker		Any other Trade
	Sci. Glassblower				

Please insert figures 1, 2 and 3 against 1st, 2nd 3rd choice

Applicants for Student, Pre-graduate and Graduate Apprenticeships
please complete this Section

DETAILS OF EXAMINATIONS TAKEN WITH DATES

Languages spoken and/or written _____

Any other information you wish to give in connection with your
application (include present employment if any) _____

Signature of Parent or Guardian

Signed _____

Dated _____

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necessary if
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Great Britain
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For the attention of SECRETARY APPRENTICESHIP BOARD

United Kingdom Atomic Energy Authority,
Atomic Energy Research Establishment,
Harwell,
DIDCOT, Berks.

Fold Along Line

employment that apply to other Craft Apprentices in the Engineering trades at A.E.R.E. These are open to both boys and girls. There are special rates of pay applicable to girls.

Glassblowing is a craft requiring a good deal of natural ability and a six month probationary period in the glass department is necessary in order to assess whether potential glass workers show the required aptitude.

The establishment has a fully equipped glassblowing department where expert instruction is given to apprentices by highly skilled staff. The apprenticeship is nominally for five years as in the case of craft apprentices, and in the last year a considerable amount of time is spent in the various laboratories of the establishment assembling complex glass assemblies used in scientific research.

A comprehensive training is given in all branches of the glassblowers' craft so that those who complete an apprenticeship should be able to obtain employment as fully skilled glassblowers in any industrial or research laboratory specialising in this type of work.

STUDENT APPRENTICES

Outstanding Craft Apprentices may be considered for re-grading to Student Apprentices under the following conditions.

(a) They must be nominated by the Apprenticeship Board and normally be between the ages of 18 and 19 on 1st September in the year of re-grading.

(b) They must show satisfactory ability in their practical work, possess the necessary qualities of personality and character and obtain a pass in second or third year of Ordinary National Certificate after two years of apprenticeship.

Direct recruitment to Student Apprenticeship is made by a Central Selection Board of the United Kingdom Atomic Energy Authority. Advertisements are placed in the National Press at the end of December or beginning of January each year and applications are invited on a National basis. A number of the successful candidates are accepted for training at A.E.R.E. Harwell.

The qualification for direct entry is a General Certificate of Education with passes at ordinary or advanced level in at least four subjects two of which must be Mathematics, Physics or General Science, and English Language. Exceptionally a pass in S.I. National Certificate (or exemption therefrom) may be accepted. Personality and character are considered when the final selection is made.

The first year of this five year apprenticeship is spent in the apprentice Training Shop. The syllabus followed subsequently includes periods in Workshops, Laboratories, Drawing Office, and Divisional Workshops. The wide range of work undertaken at Harwell enables the apprentice to obtain experience in many aspects of his work.

The training is planned to give a comprehensive knowledge of ENGINEERING and to prepare candidates for professional examinations. Facilities exist for those who possess the necessary aptitude, and are suitably qualified, to take a more specialised course of study in METALLURGY, CHEMICAL ENGINEERING OR PHYSICS/ENGINEERING.

FULL-TIME UNIVERSITY COURSES may be available to selected Student Apprentices.

PRE-GRADUATE APPRENTICES

Pre-graduate Apprenticeships are designed to give practical training for a maximum of one year, prior to full-time University Degree or Diploma Course in Engineering or Metallurgy.

The candidate must be under 19 years of age and have obtained a General Certificate of Education at Advanced Level in Mathematics and Physics or Mathematics, Physics, Chemistry for a Pre-graduate apprenticeship in Metallurgy. He must make his own arrangements, to proceed to a full-time University or Diploma Course and will be responsible for the fees of the Course.

Applicants outside the age limits who have been prevented by National Service from applying at normal ages are considered.

GRADUATE APPRENTICES

The training provided for the Graduate Apprentice is designed to enable him to obtain a comprehensive back ground of engineering workshop processes, methods, organisation and planning, and to acquire an appreciation of craft skill and a knowledge of industrial labour working conditions.

The candidate must be 21 years of age or over and have obtained a good Degree or Diploma in Engineering awarded by an approved University or College as a result of a full-time course of study. Candidates over 24 years of age will not normally be accepted as Graduate Apprentices.

The training is for a minimum of two years but if a period of Pre-graduate training has been undertaken this may be taken into account. Special rates of pay and in general, staff conditions of employment apply to the Graduate Apprentice.

GENERAL CONDITIONS OF SERVICE

DEED OF APPRENTICESHIP

These conditions apply to all apprentices except Graduate Apprentices. Pre-graduate Apprentices are not required to sign Deeds of Apprenticeship but otherwise the following conditions apply:-

ADMISSION TO APPRENTICESHIP

Apprentices and their parents or guardians are required to sign, jointly with the Authority a legal Deed of Apprenticeship. The rules state,

(a) that apprentices shall undertake to remain in Apprenticeship with the United Kingdom Atomic Energy Authority for a stated period. In the case of Craft and Scientific Glassblowing Apprentices, the apprenticeship is until the age of 21 years; it is, however, usual for apprentices to complete the final year of training particularly the Technical College course in order to take the final examinations.

(b) for the first six months apprentices are on probation and they may leave on giving one week's notice, or be dismissed if they do not maintain the standard of progress required. At the end of the probationary period satisfactory apprentices are confirmed in their apprenticeship.

(c) continuance as an apprentice is at all times dependent on good behaviour, punctuality and satisfactory progress both in the workshops and at Technical College.

NATIONALITY

Applicants are normally required to be natural-born British subjects born within the United Kingdom or in one of the self-governing Dominions, of parents also natural-born British subjects born within the United Kingdom or in one of the self-governing Dominions.

HOURS OF WORK

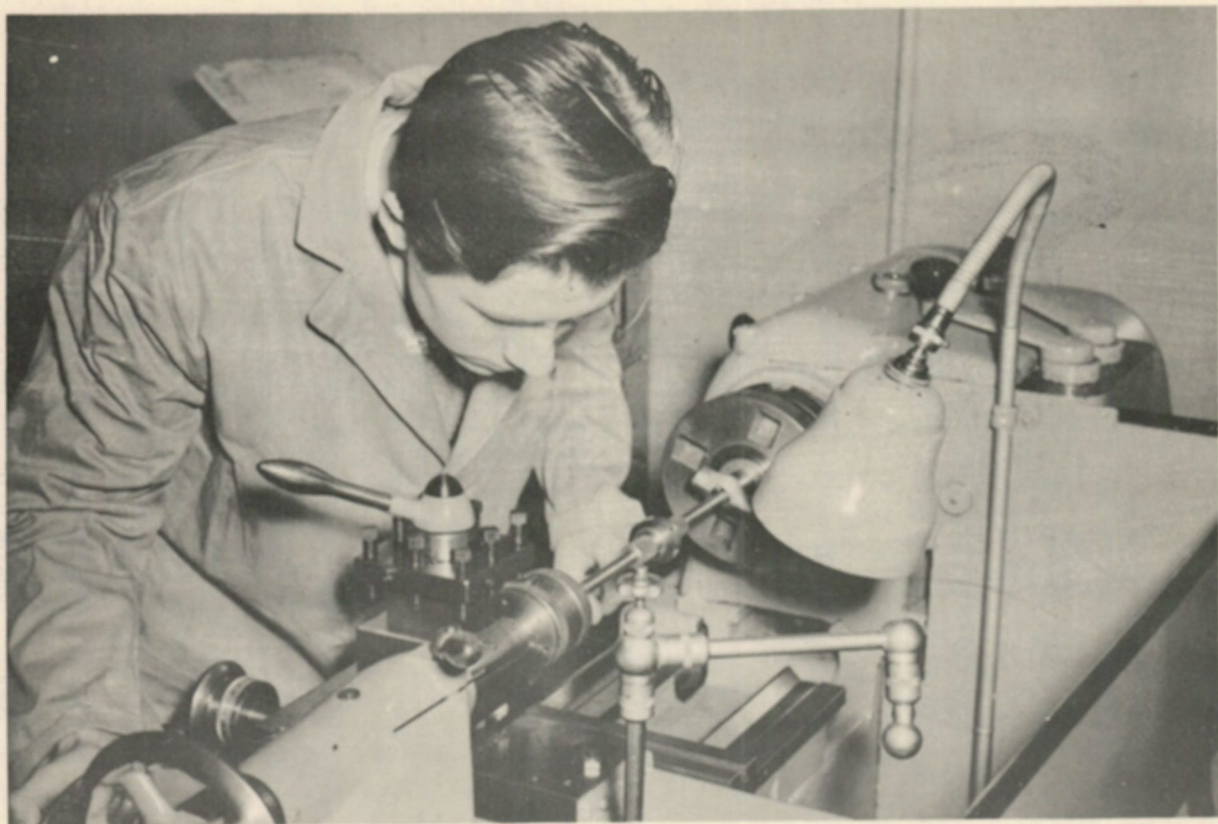
The hours of work are from 7.45 a.m. to 5.20 p.m. on Monday and Tuesday and Wednesday and from 7.45 a.m. to 5.15 p.m. on Thursday and Friday; three quarters of an hour is allowed for the mid-day break; giving a five day week of 44 hours.

For Student, Pre-graduate and Graduate Apprentices the hours of work will be regulated by the shops, section or offices in which they are employed.

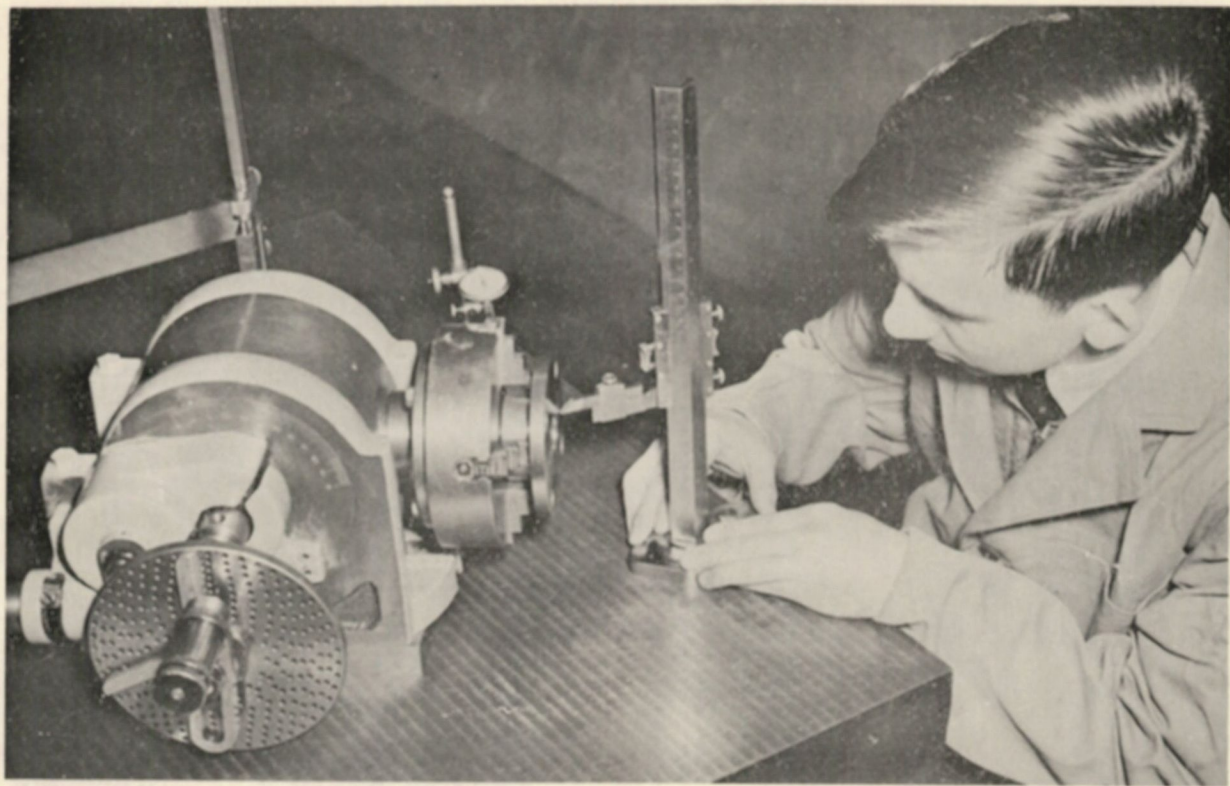


THE INDUSTRIAL GROUP DIRECTORS CUP

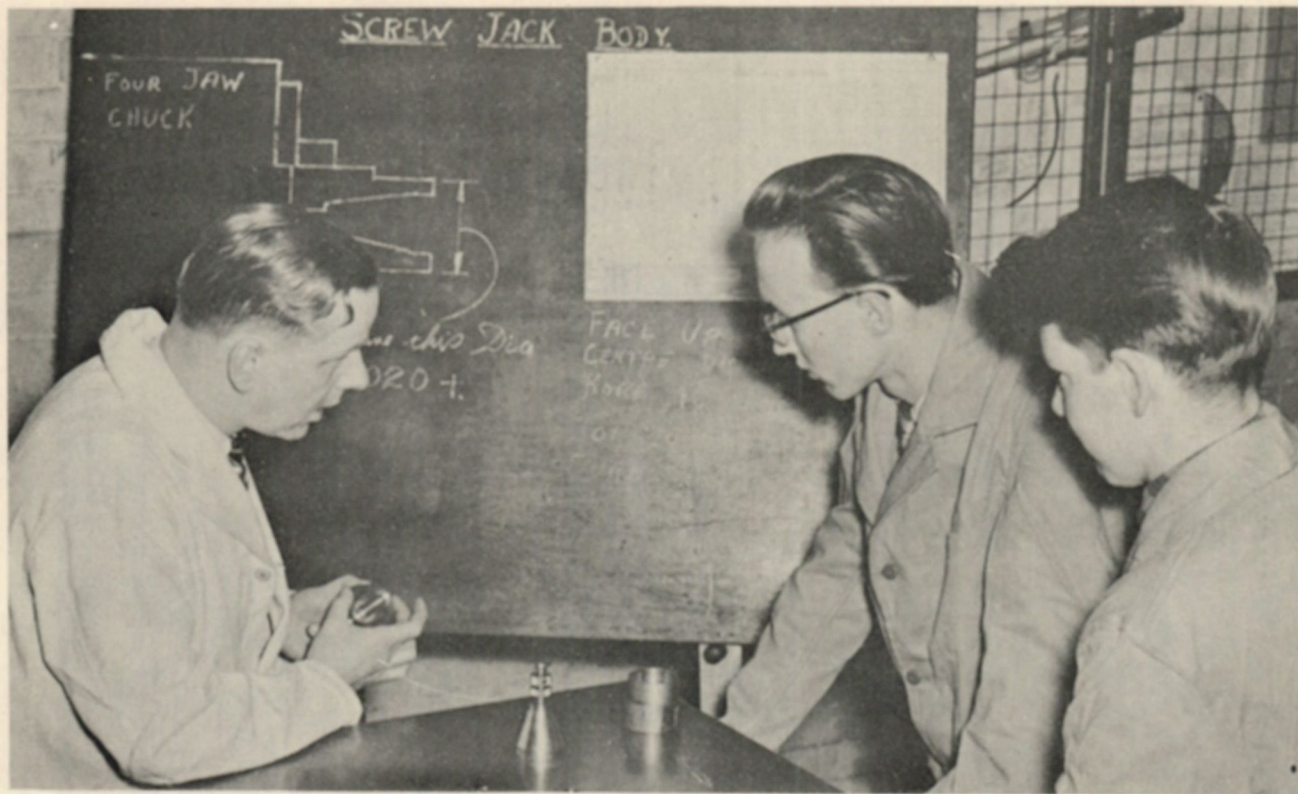
Awarded annually to the best final year apprentice
of the United Kingdom Atomic Energy Authority.



1st year apprentice using a lathe in Training Shop.



The intricacies of the dividing head have been mastered by this first year apprentice who is seen here marking off a flange.



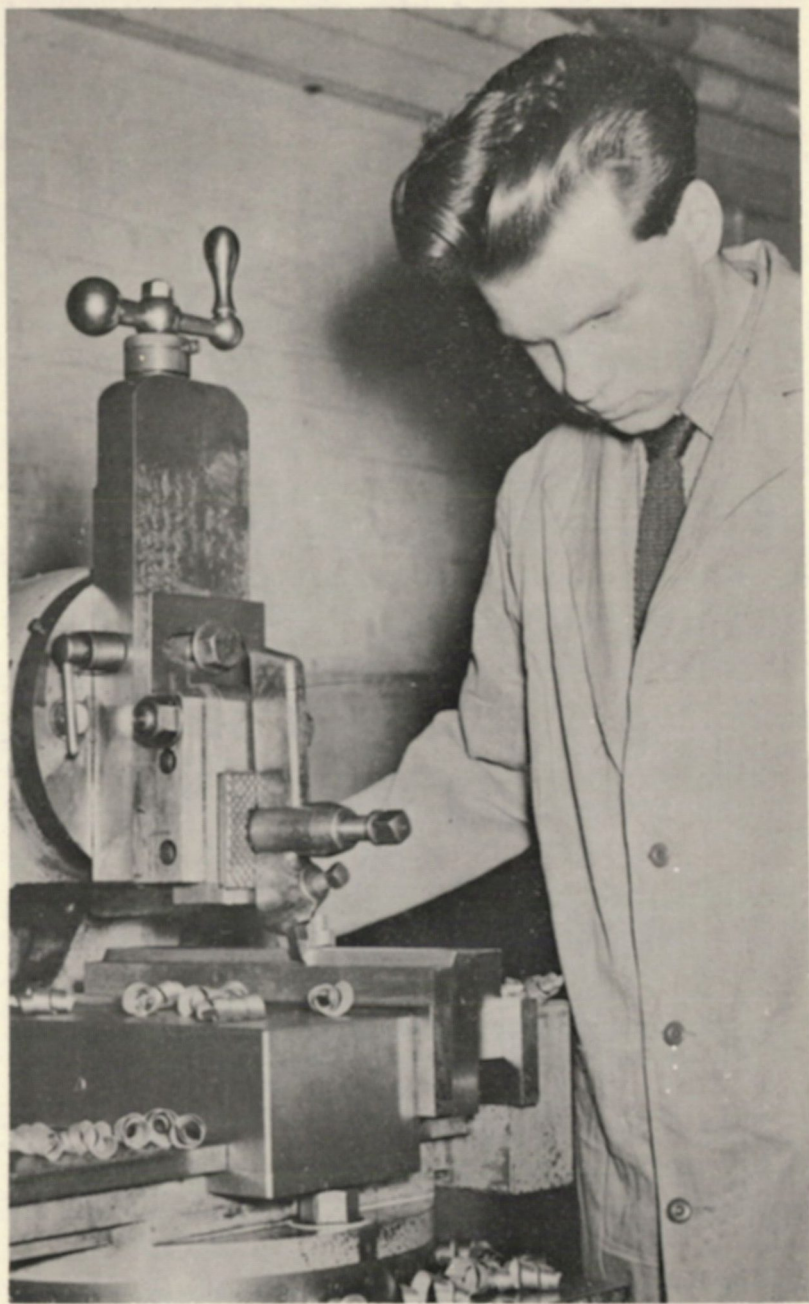
Instruction is given to first year apprentices on the correct interpretation of engineering drawings and the importance of systematic work.



A fifth year apprentice in final stages of Drawing Office training. After selection for Drawing Office in his fourth year an apprentice will complete his training in the General Drawing Office and in Divisional Drawing Office.



Having machined all the details himself, this first year apprentice is now checking the accuracy of his work as he fits the parts of his vice together.



An early lesson in the machining of metal is given on the Shaper in the first year training shop.



The Harold Tongue Cup competed for annually by first year apprentices of all United Kingdom Atomic Energy Authority Establishments.

LEAVE ALLOWANCE

The annual leave allowance is 88 hours for 12 months service and in addition there are $8\frac{1}{2}$ days allowed for public holidays.

NATIONAL SERVICE

After registration for National Service an apprentice should apply for deferment to enable him to complete his apprenticeship.

TRANSPORT

For Craft Apprentices and those who live locally A.E.R.E. transport is available at a charge of 5/- a week.

MEDICAL EXAMINATION

Candidates on the final short list will be required to undergo a Medical examination before they are accepted.

BOOKS AND INSTRUMENTS

These can either be bought by the apprentices or borrowed from the Establishment.

HOSTELS

Hostel accommodation is available for apprentices recruited from outside the A.E.R.E. transport area. This does not normally apply to Craft and Scientific Glassblowing Apprentices who are recruited locally; see paragraph headed 'Residential Qualifications'.

FUTURE EMPLOYMENT

Employment cannot be guaranteed to any apprentice in the completion of his apprenticeship.

Skilled craftsmen in all engineering trades are at present required by the United Kingdom Atomic Energy Authority. The range of pay for

Research & Experimental Mechanics is 207/- to 231/- per week.
These rates are subject to alteration following wage awards.

SCIENTIFIC GLASSBLOWING APPRENTICES

Are not eligible for entry as Research & Experimental Mechanics on completion of apprenticeship. When vacancies are available Scientific Glassblowing apprentices will be accepted on Staff Conditions of employment.

DRAWING OFFICE APPRENTICE

Should, on the completion of the apprenticeship, have the necessary qualifications to be considered for the Drawing Office in the grade of Draughtsman. The present rates of pay are:-

Draughtsman	£505 (at age 21) to £795 p.a.
Leading Draughtsman	£795 to £940 p.a.
Senior Draughtsman	£965 to £1180 p.a.

RATES OF PAY

The following rates of pay apply to all apprentices except Graduate Apprentices. The maintenance allowance is only payable to those apprentices who are recruited from outside the A.E.R.E. transport area and for whom the Establishment undertakes to provide accommodation in the Junior Hostel.

<u>Age</u>	<u>Weekly Rate</u>	<u>Maintenance Allowance</u>
15 years	48/-	30/-
16	58/5	24/-
17	68/9	19/-
18	93/4	5/6
19	109/4	NIL
20	129/2	NIL
21 and over	153/3	NIL

HOW TO APPLY

CRAFT AND SCIENTIFIC GLASSBLOWING APPRENTICES

Candidates may apply by completing the preliminary application form in the centre page or by writing for an application form to The Secretary, Apprenticeship Board, A.E.R.E. Harwell, Didcot, Berks. Applications must be received by the date specified in the advertisement which is placed in the local press towards the end of March each year. There are a very limited number of places for Glassblowing and Woodworking Apprentices.

STUDENT AND PRE-GRADUATE, APPRENTICES

Further information on these grades may be found in the United Kingdom Atomic Energy Authority booklet, 'Atomic Energy, Career for Youth' which is available from The Secretary, Apprenticeship Board, at the above address.

GRADUATE APPRENTICES

Applications and enquiries should be sent to The Secretary, Apprenticeship Board at the above address.

ADVICE ON APPRENTICESHIP

The members and Secretary of the Apprenticeship Board and the Senior Labour Manager are always willing to give advice to parents, and appointments may be made by telephoning Abingdon 1220 (Extn. 3084 or Extn. 2986).

CAREERS FOR GIRLS

Whilst this booklet generally refers to Apprenticeships for boys, the Authority is prepared to consider applications from girls who have shown a special aptitude for this type of work.

APPENDIX 'A'

APPRENTICE TRAINING SCHEME SYLLABUS FOR

GENERAL FITTER

1st Year	Apprentice Training Shop	12 months
2nd Year	Main Workshops	
	Fitting Section	6 months
	Turning Section	6 months
3rd Year	Main Workshops	
	Sheet Metal and Welding Sections	4 months
	Milling Section	4 months
	Fitting Section	4 months
4th Year	Services & Operations Group	
	Maintenance Workshops	8 months
	Main Workshops	
	Fitting Section	4 months
5th Year	Main Workshops	
	Fitting Section	12 months

RECOMMENDED TECHNICAL TRAINING

City and Guilds Machine Shop Engineering Certificate and/or
Ordinary National Certificate (Mechanical).

APPRENTICE TRAINING SCHEME SYLLABUS FOR
INSTRUMENT MAKER

1st Year	Apprentice Training Shop	12 months
2nd Year	Main Workshops	
	Instrument Section	6 months
	Turning Section	6 months
3rd Year	Main Workshops	
	Fitting Section	6 months
	Milling Section	4 months
	Transformer Workshops	2 months
4th Year	Main Workshop	
	Instrument Section	6 months
	Laboratory Workshops	
	Instrument Section	6 months
5th Year	Main Workshops	
	Instrument Section	12 months
	or other location	
	as required	

RECOMMENDED TECHNICAL TRAINING

City and Guilds Machine Shop Engineering Certificate and/or
Ordinary National Certificate (Mechanical or Electrical)

APPRENTICE TRAINING SCHEME SYLLABUS FOR

ELECTRICIAN

1st Year	Apprentice Training Shop	12 months
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2nd Year	Services & Operations Group	
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Electrical Section (new work)	6 months
Main Workshops	

Transformer Shop	2 months
Services & Operations Group	

Instrument Section	4 months
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3rd Year	Services & Operations Group	
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Electrical Section (Shop Work)	4 months
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Planned Maintenance	4 months
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Inspection and Test	4 months
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4th Year	Electrical Section	
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Sub-stations	6 months
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Services & Operations Group	
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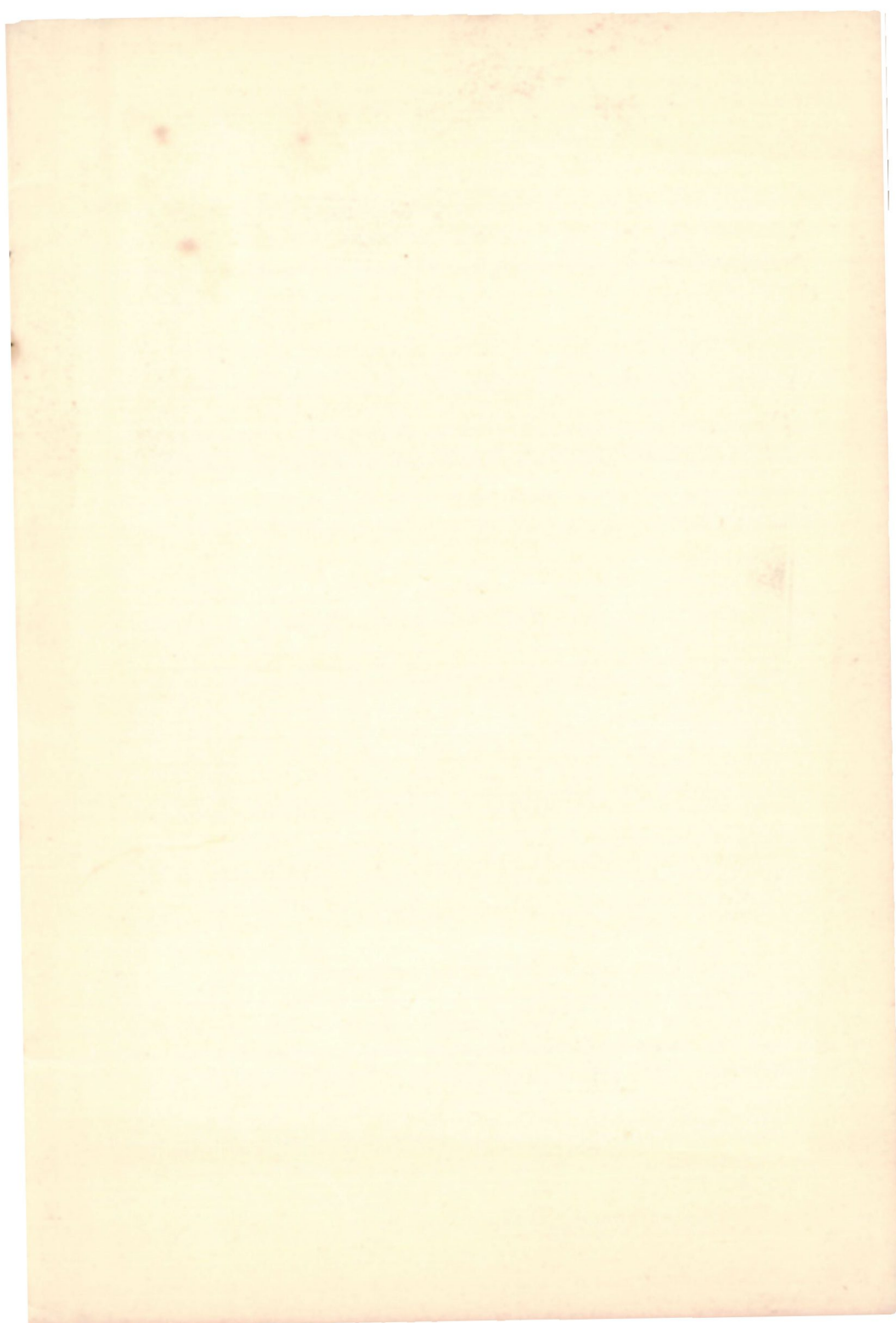
Special Plant Section	6 months
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5th Year	Services & Operations Group	
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Electrical Section	4 months
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Electrical Section or Pile Engineering Group or Special Plant	8 months
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(The Management reserves the right to alter any syllabus to suit the needs of an apprentice)



UNITED KINGDOM ATOMIC ENERGY AUTHORITY
A.E.R.E. HARWELL.

Certificate of Apprenticeship

AWARDED TO

James Smith

ON THE COMPLETION OF HIS APPRENTICESHIP TO THE
PRESCRIBED STANDARD OF EDUCATION AND TRAINING REQUIRED

CRAFT APPRENTICE (INSTRUMENT MAKING) 6TH SEPTEMBER, 1960 TO 6TH SEPTEMBER, 1965.

WORKS TRAINING

Twelve months basic training in Apprentice Training Shop
Turning Section, Milling Section, Fitting Section
Mechanical Maintenance, Instrument Making in the Workshops
of Engineering Laboratory, Electronics Division and Isotope Division

COLLEGE COURSE

City and Guilds Certificate Course in Machine Shop Engineering
Calculations, Science and Drawing
Workshops Technology
Workshops Practice

EXAMINATION SUCCESSORS

City and Guilds of London Institute, Intermediate Certificate (Second Class)
in Machine Shop Engineering

DATE *6th September 1965*

James Smith
SIGNATURE OF HOLDER

J. D. G. Smith
HEAD OF ESTABLISHMENT