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ABSTRACT

This revised edition of a 1955 publication is designed to help those who have chosen careers in engineering or science, and in particular, those who wish to pursue their technical training in some association with industry on leaving school. The introduction discusses: changes in this edition; trends in sandwich training; industrial awards; how to qualify as an engineer (university entrance, CNAA degrees, HND, the CEI Examination, and technicians), application to firms. Section 1, Students in Engineering and Science, lists firms in alphabetical order showing the products, the subjects in which they offer training, age limits, pattern of training, and availability of sponsorship at colleges. Section 2, Group Apprenticeships, discusses The Engineering Industries Group Apprenticeship and The Scottish Electrical Training Scheme. Section 3, Industrial Awards for Degree Courses, includes firms and other organizations offering full support (maintenance and fees, or salary) for students at university or polytechnic. Section 4, Training with the Armed Forces, presents engineering and science training schemes in the Army, the Royal Navy and the Royal Air Force. In Section 5, The Professional Institutions, The Council of Engineering Institutions, its constituent professional bodies, and the other main professional institutions in engineering and science fields are discussed. An index, bibliography, and glossary are provided. (DB)

Public Schools Appointments Bureau

ENGINEERING AND SCIENTIFIC TRAINING SCHEMES

Edited by Joan Hills

Engineering and Scientific Training Schemes

including Industrial Awards for Degree Courses

For those leaving school in 1972 and 1973

Published by The Public Schools Appointments Bureau

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Preface

by E. R. L. Lewis
Chief Adviser on Industrial Training,
Department of Employment

YOUNG MEN AND WOMEN setting out on a career have two problems to solve. The first is, of course, deciding on the career they wish to follow. Many factors affect this choice, both rational and personal, but in my view it is not too important how the choice is made provided that it stems from an interest in the kind of work involved, that the individual has the necessary ability and aptitudes for the job, and, most important, that he develops a determination to succeed. Clearly, one should choose a job with a future.

This book is to help those who have chosen careers in engineering or science. We have a long history of highly technical industry in this country. Railway traction, and more recently radio and television, were first developed and operated in Britain. We had the world's first atomic power stations. The industry will be as important in the future as it ever was and will continue to need highly able and well qualified entrants. Advances in technology extend the scope of the industry and widen the range of skills and academic disciplines needed by it.

This leads us to the second problem. Having chosen this career, how do you set about obtaining the necessary education and training? Many booklets are published by firms describing the opportunities they provide and the courses they run. The difficulty arises in having all this relevant information readily available. The Public Schools Appointments Bureau was the first organisation to tackle this problem when it published the first edition of this reference book in 1955. It has provided an invaluable service which is clearly demonstrated by the fact that it is now in its ninth edition. As someone directly responsible for industrial training schemes for many years, I have become very conscious of the practical assistance it has provided to many young people seeking technical training in industry and I very much welcome the initiative of the P.S.A.B. in bringing out this new edition. Although I am not writing this on behalf of the Department of Employment, the latter has a special interest in the placement of young people in employment and the stimulation of good industrial training and warmly supports all measures to disseminate information about the opportunities available.

This book is particularly designed to help those who wish to pursue their technical training in some association with industry on leaving school. This can have several advantages. Besides the financial assistance which is sometimes available, the student can obtain experience of the practical world of engineering and science and their application to real problems. Firms can be helpful in providing industrial training and guidance on such matters as the most appropriate courses or subjects to study at college. Firms are very ready to give what help and guidance they can.

In particular, this book contains a wealth of information which can be readily extracted, and will repay careful study.

Contents

Introduction

Changes in this edition

As our new edition of 'Engineering and Scientific Training Schemes' is already a year behind schedule, we decided to produce it this year in spite of the present chilly employment climate, one effect of which has been a reduction in the number of industrial firms wishing to appear in a publication of this nature. All the organisations included in the 1967 edition were asked to revise their material, but many replied that they were taking no students this year and were unable to commit themselves to doing so next year or the one after that; while other firms simply did not reply, and have therefore been omitted.

As the Confederation of British Industry commented in a recent statement, no one is immune from the effects of economic change, but before making severe cuts in recruitment firms should consider carefully whether such cuts 'might have damaging effects on their long term prospects for achieving a balanced supply of qualified manpower at different levels of activity, and create disruptions in their age structures'.

The omission of so many firms has resulted in a somewhat slimmer publication than before, and we have reduced its size still further by amalgamating the science training schemes, which previously had a separate section, into the engineering section, so that many firms which formerly appeared twice now have only one entry. This should not occasion any difficulty to users, since the *Index* at Section 6 lists the firms under the branches of engineering or science in which they offer training.

We have made still another reduction in size by omitting the column which previously gave details of entry qualifications. Now that most engineers train by way of a degree course, entry qualification consists in the main of obtaining a place at a university or college, and is no longer a matter for local decision by the firm. A few Government or public organisations (e.g. the Post Office) still have their own minimum qualifications apart from the attainment of a college place; but these are exceptional.

As we have fewer entries this time we have tried to provide fuller information about training arrangements than in previous editions. Many employers have preferences as to the universities or colleges their students should attend, often on grounds of locality – it is easier for tutorial staff and training officers to co-ordinate their activities if college and works are not too far apart. Another reason for preferring a particular course at a particular college is that it fits in with the firm's own activities and training programme. Wherever possible, we have ascertained from the firm whether there are any such restrictions or preferences, and have given the resulting information in the fourth column of Section 1.

Students intending to apply to the firm concerned will thus be able to include one of the preferred universities on their U.C.C.A. form; while applicants for polytechnics or colleges of technology will be able to start enquiries with an appropriate establishment at the same time as they write to the firm.

We have also given, wherever possible, the approximate size of the firm's annual intake of students, but at a time when so many companies are uncertain about the future it is not easy for them to be specific about numbers.

Finally, we have added a bibliography (Section 7) of essential reference books on higher and further education and general careers literature relating to engineering and science careers.

Trends in sandwich training

Since the brochure last appeared there has been a general move among employers away from the 1:3:1 course, by which the student spends a preliminary year in industry (nine months in the case of Oxbridge entrants), three years

Terminology used in Technical Education

A number of terms commonly used in technical education, which may not be familiar to the reader, will be found in these pages. An explanation of the principal terms and abbreviations, together with definitions of the difference between a technologist and technician, and between block release courses and sandwich courses, etc, will be found in the **Glossary** *(Section 8) on p. 106.*

at university, and a postgraduate training year with the firm. In the past, firms have been very willing to take students on this basis, but, as a study of Section 1 column 4 will show, the 1:3:1 course has now become the exception rather than the rule.

This is an important change. The P.S.A.B.'s annual statistics of leavers show that most Public School boys still intend to qualify through the full-time or 1:3:1 university course at a traditional university. Out of 1578 candidates who left our member schools in 1970 to take up engineering, 1083 were applying for full-time university courses, but only 63 for thin sandwich courses at technological universities, and 245 for full-time or sandwich courses at other colleges (which includes the polytechnics). If industry is becoming less interested in the 1:3:1 course, while the majority of school leavers are still opting for it, the latter might be faced with considerable difficulty in arranging any pre-entry practical training.

Some firms appear to have given up this type of training because they found that the student seldom became integrated into the company or wished to join it on completion of his course. They instanced the not uncommon case of the student who failed even to return for his postgraduate year, so that all they had done was provide him with some pre-university training at considerable cost to themselves. In the present economic situation, it is natural that industry should tend to move away from the philanthropic attitude towards training which has been characteristic of it for so long, and look for some material return on expenditure.

The Engineering Industry Training Board has played a part in encouraging the swing towards the thin sandwich course by providing firms with a special grant for the student's first industrial period, which would otherwise be very expensive for the company. No similar grant exists for the training of 1:3:1 students. But a more fundamental reason for the change of emphasis is probably the enormous improvement which has taken place in sandwich course training in recent years. Close co-operation between industrial training officers and university and polytechnic tutors can and does produce a truly integrated course, the end product of which is a first-class engineer of the kind that industry wants.

It is not surprising then, that most industrial sponsorship is now concentrated on the thin sandwich at technological universities and polytechnics, by which the student spends half of each year with the firm and half at college, and is much more likely to regard himself as a member of the company.

A word of advice for school leavers who intend to take thin sandwich courses. Most of them are probably applying to be sponsored by firms, but some will be applying to become college-based students, which means that the college will be responsible for arranging their practical training periods in industry. In the past there has been no difficulty about this; but in present economic circumstances employers are beginning to show reluctance to offer training places for college-based students. The colleges, keen to fill all their places, are sometimes tempted to accept students without being quite sure that industrial places will be available when the time comes, and it is evident that some of them are already having considerable difficulty in arranging appropriate experience for their students. We think, therefore, that school leavers would be wise to become sponsored by a firm if they can, at the outset of the course. Most of the 200 or more employers listed in this brochure are willing to sponsor students, though not, perhaps, in such large numbers as in the past.

Industrial Awards

The reduction in 1:3:1 courses has naturally been accompanied by a cut in scholarship schemes providing full support (maintenance and fees, or salary) for the full-time student while at university: nor has there been any noticeable increase in full support at college for the thin sandwich student. Some familiar names have disappeared from Section 3 of this brochure, *INDUSTRIAL AWARDS FOR DEGREE COURSES*. Caltex Oil, Crompton Parkinson, Davy and United Engineering, Dunlop, Alfred Herbert Group, H.M. Hobson, Parkinson-Cowan, Rolls-Royce, Unilever, Vickers, Viyella, and all the steel companies constituting the British Steel Corporation have discontinued their schemes.

We have, it is true, been able to add a few new schemes, including those of BP Chemicals International, Burmah Oil Trading, Ford, Hayward Tyler, H. J. Heinz, and London Transport. But in general the largest sector of the employment market which is continuing to keep up full-support schemes for degrees is the Government Department/public corporation sector, which perhaps does not react quite so quickly as the rest of industry to economic fluctuations.

The number of firms willing to support students on degree courses in non-technical subjects is much diminished, as the brief list on p. 100 will show.

However, most students can obtain L.E.A. grants, and it is now almost standard practice for a firm to supplement the grant as far as the regulations allow without occasioning a reduction in the grant. This means that the firm may provide a 1:3:1 student with £100 per annum and a man on a thin (6 months:6 months) sandwich course with £66 per annum in addition to the L.E.A. grant. The employer may also pay National Health Insurance. Our symbol 'Sch' in the final column of Section 1 shows which firms provide supplementary support of this kind. Where full support is provided, the letters 'Sch' are followed by a reference to further information in Section 3. In just a few instances firms providing full support do not have a separate entry in

Section 3, and in these cases we have inserted an explanatory note in the final column after the letters 'Sch'.

HOW TO QUALIFY AS AN ENGINEER

To become a Chartered Engineer (abbreviation 'C.Eng.') it is necessary to be elected a corporate member of one of the professional Institutions listed in Section 5 (p. 77). This requires:

(a) an academic qualification of degree standard acceptable to the Council of Engineering Institutions;
(b) a period of training and experience of at least three years;
(c) minimum age of 25;
(d) registration by the C.E.I. for the qualification C.Eng.

The academic qualification can be satisfied in several ways, as shown by the chart on p. 78. The training and experience requirements are slightly different for the different Institutions, to whom requests for information should be sent.

The main routes are the full-time university degree course of three or four years' duration, followed by a two-year period of practical training; a full-time degree course preceded and followed by a year of practical training, which is known as a thick sandwich or 1:3:1 course: or a thin sandwich course of four years' duration, dividing each year between industry and college, either at a technological university (Aston in Birmingham, Bath, Bradford, Brunel, City, Loughborough, Salford, Surrey, and University of Wales Institute of Science and Technology) or at a polytechnic or college of technology. There is also a 2:1:1 sandwich pattern, with the third year spent in industry and the remaining three years at a polytechnic: and a number of variations on the thin sandwich form are to be found at the different colleges. A three-year thin sandwich course for H.N.D. can also lead on to full professional qualification.

The examinations of the *Council of Engineering Institutions* provide a route for the H.N.D. graduate and for other students who have been unable to qualify by means of a degree course. More details about the C.E.I. examinations are given in subsequent paragraphs. (Also see Section 5, p. 77.)

University entrance

Students should refer in the first instance to 'A Compendium of University Entrance Requirements' published by the Association of Commonwealth Universities and available at all schools (see Section 7, Bibliography). This gives details both of General Requirements and Course Requirements. Entrance qualifications are, however, extremely complicated, and the student will gain much enlightenment [illegible]ading the 'CRAC Degree Course Guide' on the subject [illegible]shes to study (see Section 7, Bibliography).

Students must first satisfy the university *General Requirement* for entry, usually involving the possession of passes in five approved subjects at 'O' and 'A' level, no subject to be counted at both levels, the passes to include at least two subjects at 'A' level. Where three 'A' levels are offered, many universities reduce the number of required subjects to four. Most universities require an English Language qualification. General Requirements in the Scottish Certificate of Education (S.C.E.) vary very much between universities, and a Higher Grade is seldom equated with 'A' level G.C.E. Three, four, or even five H grades may be asked for by universities which only require two 'A' levels – the extent of variation is well illustrated by the fact that whereas Cambridge accepts H grades as equivalent to 'A' levels, Exeter will only accept them in lieu of passes at 'O' level.

All universities will consider O.N.C./D. and H.N.C./D. as entrance qualifications in place of 'A' levels, subject to certain conditions, usually that the average mark should have been 60% in three subjects and that the candidate can provide satisfactory evidence of general education.

All universities in England, Wales and Ireland are prepared to recognise a Grade 1 pass in the Certificate of Secondary Education (C.S.E.) as equivalent to 'O' level for their General Requirements and sometimes for Course Requirements also, but some make the condition that the particular C.S.E. syllabus must be suitable. At the time of writing, universities in Scotland have not recognised C.S.E. as an entrance qualification.

Course Requirements have many variations in detail, but the average requirement for entry to an engineering degree course is 'A' level in Mathematics and Physics. Some universities ask for a third science 'A' level, and Chemistry is often a requirement at 'O' level. In the case of Chemical Engineering, most universities require three 'A' levels of which Chemistry must be one. Similarly for Metallurgy and Materials Science, three science 'A' levels are often required. It is also an advantage to offer three 'A' levels for Chemistry and for Biological subjects, and here the subjects need not always include Mathematics if this has been passed at 'O' level.

Entrance qualifications for C.N.A.A. degrees

Minimum entry requirements for degrees of the Council for National Academic Awards at polytechnics and colleges of technology are much more clearly defined than those of universities. The following information is taken from the 'Compendium of Degree Courses 1971' (which the student should consult) published by the C.N.A.A. (see Section 7, Bibliography):

For colleges in England and Wales, one of the following:

A General Certificate of Education with passes in five subjects, including two appropriate subjects at Advanced level;

A General Certificate of Education with passes in four subjects, including three appropriate subjects at Advanced Level;

An appropriate Ordinary National Certificate or Diploma at a good standard.

Passes at a sufficiently high standard in the Certificate of Secondary Education will be accepted in lieu of passes at Ordinary Level in the General Certificate of Education.

(*The word 'appropriate' in the above entrance requirements means appropriate to the course as designed by the college offering it.*)

For colleges in Scotland:

The Scottish Certificate of Education with passes in five subjects of which three are at the higher grade, or four subjects all at the higher grade, or

An appropriate Ordinary National Certificate or Diploma at a good standard.

Colleges have the discretion to admit in exceptional cases students who do not have the standard entry qualifications but who are regarded as having a qualification of an equivalent standard.

Apart from the standard entry qualifications required by the Council, there are often special admission requirements for a particular course, for example, passes in G.C.E. at 'A' and/or 'O' level in certain subjects. This applies to a number of courses in Science and Technology. Similarly a college may require a pass at a particular level in the Ordinary National Certificate or Ordinary National Diploma examinations.

The C.N.A.A. Compendium gives full details of the special requirements of the colleges for the various courses. Requirements at 'A' level follow the pattern of those for university degrees, i.e. Mathematics and Physics for engineering degrees, or two from Mathematics, Physics and Chemistry for Chemical Engineering or Metallurgy. For Chemistry degrees, 'A' level Chemistry is essential plus either Mathematics or Physics, and for degrees in biological subjects there is a wide choice of science subjects. Although the basic requirement is two 'A' levels, in many cases a third science must have been studied to 'A' level.

Higher National Diploma

As mentioned above, another route to qualification as a professional engineer is by way of the H.N.D. Entry qualifications for this course are five G.C.E. passes including Mathematics and Physics, one of these two having been passed at 'A' level and the other having been studied to the same level. For Metallurgy, the choice of science 'A' levels includes Chemistry. To take an H.N.D. in a science subject, the student would normally offer 'A' level in that subject, e.g. Chemistry, Biology, Physics, or Mathematics, although colleges will consider other subjects.

The H.N.D. is usually taken as a three-year sandwich course, though there are some two-year full-time courses. Holders of the H.N.D. in engineering can, after a further year's study, take the Part 2 examination of the Council of Engineering Institutions, and so qualify as Chartered Engineers (C.Eng.).

A list of colleges offering H.N.D. courses, and those offering College or Polytechnic Diploma courses for H.N.D. graduates which carry exemption from C.E.I. Part 2, will be found in 'A Compendium of Advanced Courses in Technical Colleges' published by the Regional Advisory Council for Technological Education (see Section 7, Bibliography).

Other courses leading to exemption from the C.E.I. Examination

There are a few colleges and polytechnics with full-time or sandwich courses leading to a College or Polytechnic Associateship or Diploma, which are open to school leavers with one 'A' level science, and which give exemption from C.E.I. Part 2. These courses also are listed in the Compendium mentioned in the previous paragraph. It is not, however, recommended that students should qualify in this way if they can obtain a place on a course for a degree or H.N.D.

There is only one course (at the Polytechnic of the South Bank) specifically for C.E.I. Part 1 but if a student is in the position of having to sit this examination his local technical college will usually help him to do so.

Finally, students who take a Higher National Certificate in engineering by day release while working with a firm, can gain exemption from C.E.I. Part 1 if they obtain two Distinctions or three endorsement subjects. But the H.N.C. is primarily a technician qualification, and this concession is only intended for the exceptional case. Anyone with a bare pass in H.N.C. and three endorsements would find it difficult to contend with the C.E.I. Part 2 examination.

Qualifications for Technician Entry

Employers recruit technician apprentices in their immediate area, and send them to local colleges on a day-release (or, increasingly, a block release) basis. They are recruited from school leavers aged 16–17½, and many schoolboys find greater interest in this kind of practical training than they would have done in staying at school to take 'A' levels. There is no need for them to feel that they can never progress beyond technician level, in view of the fact that universities and polytechnics will consider applicants with O.N.C./D. as explained above. A high proportion of polytechnic students are in fact O.N.C./D. people.

O.N.C. and O.N.D. usually take two years, but in some areas firms and colleges are operating a one-year block

release course as a 'safety-net' for students who have spent two years in the Sixth Form but have not quite made the grade for university. If, at the end of the year, they have a mark of 60% in the O.N.C., they can then go on to a degree course. Students who fail their 'A' levels might find it worth while enquiring from firms about this possibility.

Technicians recruited from schools to do O.N.C. or O.N.D. (as distinct from those promoted from Craft Apprentice) are expected to have four 'O' levels, or four Grade 1 passes in C.S.E. Subjects should include Mathematics and an appropriate science. In addition, a subject showing ability to use English is required for courses in Construction, Building, Food Technology, Nautical Science, Surveying, and Textiles, but is not insisted on for Engineering, Mining, Naval Architecture, or Science.

In Scotland, students only require three O grades for O.N.C./D. courses, but these have to be in Physics, Applied Mechanics, and Technical Drawing. Some firms prefer applicants to have O grade in English as well. Candidates are also accepted with O grades in Mathematics, Physics or Applied Mechanics, and two other subjects.

School leavers with less than the specified number of 'O' levels can take a more practical type of course leading to the City and Guilds full technological certificate. This is a Technician course proper, often called a T course, lasting five years. (For more details of Technician courses see Glossary, p. 106.)

There is likely to be considerable change in the structure of technician education if and when the Haslegrave Report is fully implemented (Report of the Committee on Technician Courses and Examinations, D.E.S. 1969). The need for the existence side by side of O.N.C./D. and T courses was questioned by the Committee, which recommended the gradual phasing out of the former, and substitution of a Technician Certificate and Diploma (T.C./D.) and a Higher Technician Certificate and Diploma (H.T.C./D.), with provision for transfer to degree courses at appropriate stages. In November 1970 the Secretary of State for Education and Science accepted in principle the main administrative recommendations in the report. Since then discussions have been going on with a view to establishing the new Technician Education Council which the report recommended and when this comes into existence it will consider the future pattern of courses for technicians.

Students will be advised about courses by their employers, but they can also ask for information from the nearest Regional Advisory Council for Further Education (see addresses on p. 101) and can consult the Cornmarket Press publication 'A Directory of Further Education' which contains a list of full-time and part-time courses (see Section [illegible]bliography).

APPLICATIONS TO FIRMS

University candidates

Early application is essential, whether for full-time courses or for thin sandwich courses at the technological universities. It should be noted that a few firms require their scholarship applicants to apply very early indeed; for instance, the Automotive Products Group (Section 3) ask for applications for its Oxford scholarship two years in advance of university entry, and British Petroleum prefer applications 'at least one year before sitting 'A' level examinations'.

In general, however, it is sufficient for the student to apply at the same time as he puts in his U.C.C.A. application, i.e. early in the autumn term.

Full details of the synchronisation of the U.C.C.A. programme with firms' selection procedures are given in the pamphlet 'Industrial Awards and the Universities Central Admissions Scheme' obtainable free of charge from U.C.C.A., P.O. Box 28, Cheltenham, GL50 1HY. The following paragraphs summarise the information contained in it.

The candidate will apply to industrial firms about October and may expect to be informed by the firm if he has been given a place in the spring of the following year – usually conditional on his obtaining a place at university. He should know, before submitting his U.C.C.A. application, whether the awards he is applying for are tenable only at certain universities. (If this information is not given in Sections 1 or 3 of this brochure, he should first make sure from the firm whether any such special arrangement exists.)

If he finds that he must apply to a college he has not named in his U.C.C.A. selection, he must immediately write to U.C.C.A. to ask for an amendment to his application. Provided this is done before the end of March he will be allowed to substitute the new choice and also retain *one* of his existing choices. If he leaves it until after the end of March, an application in the September Clearing scheme will be necessary, and he should write at once to U.C.C.A. for advice as to what he should do.

The applicant for a 1:3:1 course (who will be spending a preliminary year in industry) must decide whether to apply for a university place for two years ahead, or to apply for the following October and then ask the university to defer his place for a year, if he obtains an industrial place. For reasons explained in the U.C.C.A. leaflet the latter procedure may be best; and to enable universities to fill any resulting vacancies within the framework of the U.C.C.A. timetable, firms have been asked to select such candidates by 15th March.

Candidates who receive such 'first-round' offers must obtain at least a conditional offer from a university by 1st June or the firm's offer may be withdrawn, and the place

given to someone on the reserve list who has a conditional university offer. In August the university notifies U.C.C.A. which candidates holding conditional offers are acceptable and which are not, and also which candidates on their reserve list are acceptable. Industrial vacancies caused by failure to obtain a university place can then be filled from the remaining acceptable candidates.

The procedure for those applying for thin sandwich courses is very similar. If a candidate wants to include such a course at a technological university among his other choices when completing his U.C.C.A. form, he should first consult firms and the appropriate university, and then enter it as one of his choices.

If he comes to a *definite agreement* with a firm to sponsor him and send him to a particular university, he must name that university only on his form.

The U.C.C.A. form must not be used by candidates already employed in industry who are applying to one of the technological universities. Such candidates and their employers must make arrangements direct with the university concerned. This, however, does not affect school leaver entrants. It concerns in the main those who joined the firm at a younger age and qualified for a degree course through the O.N.C.

Applicants for C.N.A.A. degrees

Applicants for sandwich courses leading to the degrees of the Council for National Academic Awards at polytechnics and colleges of technology should apply direct to the firm and the college, if they wish to be sponsored. (In a few cases the firm will arrange the college place.) Those wishing to be college-based apply to the college only. There is no central U.C.C.A. type of scheme for polytechnic or college places at present. The time factor is not quite so vital for these courses, and Section 1 of this brochure gives some idea of firms' closing dates. It is advisable, in general, to start making enquiries in the Autumn term, as there is considerable pressure on some courses.

1 Employers offering Studentships and Technician Training in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
Aiton & Co. Ltd, Head Office and Works: Stores Road, Derby Part of the Whessoe Group (Applications to: The Personnel Manager)	Specialised pipework and ancillary equipment for power stations, ships and Industry, also evaporator distillers and process plant, including mixers	Mechanical Chemical Eng.	*16–18* *'O' level* Day release for O.N.C., proceeding to thin sandwich course for degree *'A' level* Thin or thick sandwich course for degree, at college of student's choice; some preference for Nottingham Polytechnic	G Sch Intake variable
Alcan Booth Industries Ltd, 1 Mount Street, Berkeley Square, London W1Y 6HP (Applications to: The Personnel Officer) *Works at:* Banbury, Birmingham, Rogerstone (Mon.), Skelmersdale Subsidiaries in most areas	Wrought aluminium; conversion of aluminium ingots into sheet, plate, sections, tube, castings, forgings and paste. Subsidiary companies produce industrial and consumer goods in many markets	Metallurgy Mechanical Production	*17–20 'A' level* For Metallurgists, day release for H.N.C. with possibility of selection for degree sandwich course. Student Engineers go straight on sandwich course for degree or H.N.D. with own choice of college, but no 1:3:1 students. In both branches it is possible to transfer to the Graduate Training Course after qualification	G Sch
W. H. Allen, Sons & Co. Ltd, Bedford (Applications to: The Training Manager) *Also at:* Atlas Works, Pershore, Worcs. (Apply to Bedford in each case)	Diesel engines, steam and gas turbines, pumps, gearing	Mechanical Production	*16–17 'O' level* Block release for O.N.C. course *18–19 'A' level* Take suitable day release course during first year as 'lead-in' to university studies. Both 1:3:1 and thin sandwich courses. Own choice of university, but for thin sandwich students the Company has special arrangements with Bath, Brunel, City, Aston, Salford, and Loughborough Universities	G P Applications by 31st March ('O' level), 28th Feb. ('A' level) of relevant year. Form on application. 6–8 p.a.
Allen West-EAC Ltd, Brighton BN2 4QE pplications to Chief aining Officer)	Electrical motor control gear for all aspects of industry, electrical traction and marine service	Electrical Mechanical Industrial Production	*16–17½ Technical Apprenticeship* Four or five-year indentured course with day or block release for O.N.D. and either H.N.C. or H.N.D.	Sch

(*Continued on page 2*)

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
Allen West-EAC Ltd – *continued*			*18–19½ Student Apprenticeship* Sandwich course in electrical or mechanical engineering leading to honours B.Sc. (Eng.) at Brighton Polytechnic	2 p.a.
The A.P.V. Co. Ltd, Head Office and Works: Manor Royal, Crawley, Sussex *Subsidiary companies at* Croydon, Thetford, Greenhithe, E. Kilbride, Carlisle, Thornton Heath, Pulborough, Blackpool (Applications to: Group Training Officer)	Specialised process plant and heat transfer equipment. Fabricators and founders	Mechanical Chemical Eng. Metallurgy Electrical Chemistry	*16–18 Technician Apprenticeship* Day release for O.N.C. and H.N.C., or may transfer to H.N.D. or degree *18–19 Student Engineer Apprenticeship* Degree course, usually thick sandwich, either 1:3:1 at university or 2:1:1 course for C.N.A.A. degree. Six-year Apprenticeship	Applications by April each year P G Sch 40–60 p.a.
Andrews-Weatherfoil Ltd, 185 Bath Road, Slough, Bucks. (Applications to: The Training Officer)	Design and installation of heating, ventilating and air conditioning systems and other mechanical services for all types of buildings and industrial premises	Initially Mechanical, then Environmental	*Up to 18 Senior Technician Apprenticeship: 'O' level* Day release for O.N.C. in Engineering then two-year thin sandwich diploma course in Environmental Engineering at the Polytechnic of the South Bank	G H (Diploma course periods only) About 6 p.a. Applications preferred by end April
Ashton Bros. & Co. Ltd, P.O. Box 19, Carrfield Mills, Newton Street, Hyde, Cheshire SK14 4NR Branch of Courtaulds Northern Textiles Ltd (Applications to: Personnel Manager)	Textiles, yarns and fabrics for all household, dress and industrial purposes	Textile Technology	*Up to 18 'O' level* Day release for study at Salford College of Technology for Associateship of the Textile Institute.	G For scholarships see section 3, Textile Institute
Automotive Products Group (Lockheed Hydraulic Brake Co. Ltd, and Associated Companies), Tachbrook Road, Leamington Spa (Applications to: Group Education Officer)	Light engineering products mainly for the automobile and aircraft industries. Brakes, clutches, filters, steering joints, automatic transmissions, self-sealing couplings, aircraft undercarriages and hydraulic systems, industrial hydraulics	Production Mechanical Automotive	*About 18 University entry level* Thick or thin sandwich course leading to degree: Prod. and Mech. Eng. often at University of Aston: Mech. Eng. at Lanchester Polytechnic (Coventry or Rugby); Automotive Eng. at Loughborough University; but students may opt for other colleges – see section 3 *About 18 'A' level Maths. or Physics* Student apprenticeship with block release for second year of O.N.C. Can then go on to H.N.C. or transfer to degree course according to level attained	G P H Sch (see section 3) Closing dates for applications (a) Sandwich Scholarships 15th February (b) Student Apprenticeships Application may be made at any time but preferably as early as possible in the year of entry

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
W. & T. Avery Ltd, Soho Foundry, Birmingham 40 (Applications to: The Training Officer)	Weighing, counting and testing machines	Mechanical Production Chemistry Metallurgy	(a) *17 'O' level* Day and block release for O.N.C. and H.N.C. in Mech. or Prod. Eng. (b) *17 'O' level* Day release for H.N.C. in Chemistry or Metallurgy, followed by Grad. R.I.C. or L.I.M. (c) *17–19 'A' level* Four-year thin sandwich degree course in Mech. or Prod. Eng. at University of Aston in Birmingham (d) *18–19 'A' level in Maths. or Phys. (both studied to 'A' level)* Three-year sandwich course for H.N.D. in Mech. or Prod. Eng. at local technical colleges	(a) 10 p.a. (b) 1 p.a. (c) 2 p.a. (d) 8 p.a. G Sch Applications by July
Birmid Qualcast (Foundries) Ltd, Dartmouth Road, Smethwick, Warley, Worcs. (Applications to: Divisional Training Officer) *Associated companies operating the scheme include:* Birmidal Developments Ltd Birmingham Aluminium Casting (1903) Co. Ltd Coneygre Foundry Ltd Dartmouth Auto Castings Ltd Midland Motor Cylinder Co. Ltd Perry Barr Metal Co. Ltd Sterling Metals Ltd Trucast Ltd Qualcast Ltd	Ferrous and non-ferrous castings of all types	Mechanical Production Metallurgy Foundry Technology Electrical	*16–20 'O' level upwards* Day release for O.N.C. Sandwich course for H.N.D. or degree. Students usually attend Loughborough University	G Sch
Bovis Ltd, Liscartan House, 127 Sloane Street, London SW1X 9BA	Building, civil engineering, property, housing	Management in Building, Civil, Structural and Mechanical Engineering	*18–21 'A' levels (a few accepted with four 'O' levels)* Day release for O.N.C. and H.N.C. or sandwich study for H.N.D. or degree. Most trainees follow courses leading to qualifications in Building, but a few vacancies exist each year for trainees in Engineering	G About 16 trainees p.a.
BP Chemicals International Ltd, Stratton House, Stratton Street, London W1X 6LS (Application to: Staff Manager) Locations at Epsom, Sunbury, Hull, Grangemouth, Baglan Bay, Barry	Organic chemicals and Plastics	Mechanical Electrical Control Chemical Eng. Chemistry Applied Physics Applied Maths.	*17–19 'A' level for Engineering course* Sponsored sandwich course for degree at university or polytechnic of student's choice *17–23 'A' level for Science course* Day release for Grad.R.I.C., H.N.C. or Grad.Inst.P.	G P 15 p.a. Sch (see section 3) About 40 p.a.

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
Brico Engineering Ltd, Coventry (Applications to: Apprentice Supervisor) *Also at* Lydney (Glos.)	Piston, piston rings, cylinder liners, valve guide, valve seat inserts, tappets, swirl chambers, drill bushes	Mechanical Production Metallurgy	*16–17 'O' level* Day release for O.N.C. and H.N.C. *17–18 'A' (one or two)* Start on day release; sandwich course for degree may be offered on recommendation by college. There is also a three-year H.N.D. sandwich course in Metallurgy leading to A.I.M. Most students attend Lanchester Polytechnic	G Applications should be made by Easter if possible
British Aircraft Corporation Ltd *Enquiries to:* Manager, Group Education and Training Services, Brooklands Road, Weybridge, Surrey *Applications* should be sent to the Training Manager at one of the following divisions: British Aircraft Corporation Commercial Aircraft Division, Filton House, Bristol. British Aircraft Corporation, Preston Division, Warton Aerodrome, Nr. Preston, Lancs. British Aircraft Corporation, Commercial Aircraft Division, Weybridge, Surrey British Aircraft Corporation, Guided Weapons Division, Six Hills Way, Stevenage, Herts. *Also at* Filton House, Bristol	Aircraft, guided missiles, electronics, space satellites	Aeronautical Mechanical Electrical Electronics Production Mathematics Physics	*16–17½ Technician Apprenticeship* Part-time day or block release for O.N.C. Further education to H.N.C., H.N.D. or degree depending on results. (Those with fewer than four 'O' levels but with C.S.E. passes take the City and Guilds Technological Certificate) *17–19 Undergraduate Apprenticeship* 1:3:1 and thin sandwich schemes for university degree. (Applicants must have a place at university to read an engineering science; there is a particular need for those taking thin sandwich courses)	G P Sch H (Bristol only) Potential undergraduate apprentices should apply before 28th Feb. Preference given to those applying before Christmas. Apprentices can be transferred from one category to another if their progress warrants this.
The British Broadcasting Corporation, Engineering Departments, Broadcasting House, London W1A 1AA (Applications to: The Engineering Recruitment Officer) *Engineering Training Centre* is at Evesham, Worcestershire *Practical training* may take place at studio centres or transmitting stations in any part of the country		Electronics Radio Telecommunications (sound and television)	*18, for Technical Traineeships* Four-year sandwich course leading to C.N.A.A. honours degree in telecommunications engineering (usually read at Plymouth Polytechnic) *18, for Technical Assistants* ('O' level, but must have studied Maths. or Physics to 'A' level.) Initial training comprises a three months' full-time residential course at the Engineering Training Centre, followed by several months' practical training on the job. After gaining experience, Technical Assistants may take further courses to enable them to qualify as Engineers *18, for Technical Operators* *'O' level* During first year, Technical Operators attend a three-month full-time residential course at the Engineering Training Centre, followed by several months' practical training on the job. After gaining experience, they may (*Continued on page 5*)	P (one year's pre-university industrial course for those reading electrical engineering, electronics or Physics) G (two-year traineeship in Research and Design Dept. or direct appointment to Engineering Dept.) H (only at the Engineering Training Centre) 6 Technical Trainees p.a. and 50–100 in other two categories Applicants must

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
The British Broadcasting Corporation – *continued*			apply to take a further course to qualify them for more senior appointments	have keen interest in some aspect of radio or television. Normal colour vision is essential
British European Airways, Bealine House, Ruislip, Middlesex (Applications to: Personnel Officer (Apprentices), BEA Engineering Base, Heathrow Airport – London, Hounslow, Middlesex)	Civil Aviation	Air Transport Engineering	*17½–20 'A' level* Four-year integrated sandwich course between BEA Engineering Base and City University, London, for degree in Air Transport Engineering	Applications not later than March 31st Applicants must have obtained a provisional place at the City University Sch (full pay plus other allowances throughout course) G Normally 5 p.a.
British India Steam Navigation Co. Ltd, P & O Building, Leadenhall Street, London EC3 (Applications to: Personnel Department)		Marine (sea-going)	*16–18 'O' Maths., English, Physics or other Science, and one other* Two-year O.N.D. course in Mech. Eng., or Marine Engineering Technician's Certificate course (depending on suitability of 'O' levels) at a technical college. One year at sea as Engineer Cadet. Final year at a technical college studying for endorsements to O.N.D. or Marine Engineering Technician's Certificate. Should be qualified at end of training for exemption from Part A of examinations for Second Class and, in some cases, First Class Department of Trade and Industry Certificates of Competency for Engineer Officers	H Applications in March or April
British Insulated Callender's Cables Ltd, Central Research and Engineering Division, 38 Wood Lane, London W12 (Applications to: Administration Manager)	All types of cables used in heavy and light current transmission and all ancillary equipment; railway traction: capacitors; copper forgings, rods, sections and sheet; steel structures for power transmission, radio and television	Chemistry Physics Metallurgy Electronics Mathematics	*17 Technician Apprenticeships* Day release for approved courses of study, usually O.N.C. Good results can lead to transfer to degree or diploma course *17–18 Student Science Apprenticeship* Thin and thick sandwich degree courses at university or polytechnic	6–10 p.a. G P Sch
British Leather Manufacturers' Research Association, Milton Park, Egham, Surrey	Research work in chemical, physical and biological fields related to the leather industry	Chemistry Physics Biology	*16 upwards, minimum two 'O' levels* Day release to improve G.C.E. qualifications, then O.N.C. and H.N.C., B.Sc. (Ext.) of London (*Continued on page 6*)	5 p.a. P Sch

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
British Leather Manufacturers' Research Association – *continued* (Applications to: The Director)			University, Grad.R.I.C. or membership of the Inst. of Physics. Sandwich degree courses sometimes supported	
BRITISH LEYLAND MOTOR CORPORATION Applications should be sent to the *Training Department* of the Division or Plant in which the Student is interested; see below.	More details of products and training schemes will be found in the brochure 'Opportunities for School Leavers' obtainable from British Leyland Central Training, 309 Tyburn Road, Birmingham 24	All Divisions follow this general pattern but there are variations to suit the particular needs of product, locality and size of plant	*Under 18, four 'O' levels, Technician Apprentices* Day or block release for O.N.C. and H.N.C. or City and Guilds Certificates *Under 20 'A' level Engineering Student (Technologist)* Thin and 1:3:1 Sandwich courses for degrees at polytechnics, universities and colleges of technology; thin sandwich courses for H.N.D.	G P H in some Divisions; training staff help find lodgings in others Sch (see section 3)
1 AUSTIN MORRIS AND MANUFACTURING GROUP **British Leyland (Austin Morris) Ltd,** Longbridge, Birmingham 31	Cars, transmissions, engines, medium and light vans, carburettors, suspension units, axles, gearboxes, pressings, press tools, jigs, etc	Mechanical Production Automobile Metallurgy Computer Sciences Foundry Technology	Technician and Technologist	
British Leyland (Austin Morris) Ltd, Service Division, Cowley, Oxford			Technician only	
Power and Transmission Division **British Leyland (Austin Morris) Ltd,** Longbridge, Birmingham 31		Mechanical Production Automobile Electrical Electronics Computer Science	Technician and Technologist	
British Leyland (Austin Morris) Ltd, Transmissions Division, Drews Lane, Ward End, Birmingham 8		Mechanical Production Metallurgy Computer Science Industrial	Technician and Technologist	
Pressed Steel Fisher Ltd, Common Lane, Birmingham 8			Technician only	
British Leyland (Austin Morris) Ltd, Coventry Engine Plant, P.O. Box 20, Bell Green Road, Coventry CV6 7GN		Mechanical Production	Technician and Technologist	

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
BRITISH LEYLAND MOTOR CORPORATION – *continued* *Body and Assembly Division* **Pressed Steel Fisher Ltd,** Cowley, Oxford OX4 5NL		Automobile Production Mechanical Electrical Electronic Chemical Eng. Metallurgy ComputerScience Industrial Eng.	Technician and Technologist	
British Leyland (Austin Morris) Ltd, MG Division, Abingdon, Berks		Industrial (Work Study etc)	Technician and Technologist	1 or 2 p.a.
Pressed Steel Fisher Ltd, Stratton St Margaret, Swindon, Wilts.		Mechanical Production	Technician only	
Pressed Steel Fisher Ltd, P.O. Box 268, Albion Works, Kingsbury Road, Birmingham 24		Mechanical Production	Technician and Technologist	
British Leyland (Austin Morris) Ltd, Radiator Operations, Woodstock Road, Oxford OX2 7PB		Mechanical Production	Technician and Technologist	
Pressed Steel Fisher Ltd, Llethri Road, Felinfoel, Llanelli. Carms.		Mechanical Production Electrical	Technician and Technologist	
2 SPECIALIST CAR DIVISION **Alvis Ltd,** Holyhead Road, Coventry	Prestige cars – Jaguar, Daimler, Rover, Triumph; Coventry Climax engines; military vehicles, helicopter engines, automatic gearboxes, press dies, etc	Mechanical Production	Technician only, but may qualify for sandwich diploma or degree course during training	
Rover Co. Ltd, Meteor Works, Lode Lane, Solihull, Warwickshire		Mechanical Production Automobile Electrical Metallurgy	Technician only, but may qualify for sandwich diploma or degree course during training	
Jaguar Cars Ltd, Daimler Works, Radford, Coventry CV5 9DR (Applications for Coventry Climax to be sent to Jaguar)		Mechanical Production Automobile	Technician and Technologist	
Triumph Motor Co. Ltd, Canley, Coventry CV4 9DB		Mechanical Production Automobile Metallurgy Chemistry	Technician and Technologist	

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
BRITISH LEYLAND MOTOR CORPORATION – *continued*				
3 TRUCK AND BUS DIVISION **A.E.C. Ltd,** Windmill Lane, Southall, Middlesex	Commercial vehicles, buses, coaches, tractors, military vehicles, bus and coach bodywork, petrol, diesel and gas turbine power units, gearboxes, axles, heavy duty electrical equipment, vehicles spares, etc	Production Mechanical	Technician only, but may qualify for sandwich diploma or degree course during training	
Albion Motors, Ltd, South Street, Scotstoun, Glasgow W4		Mechanical Production	Technician and Technologist	
Bristol Commercial Vehicles Ltd, Bath Road, Brislington, Bristol 4			Technician only	
Eastern Coach Works Ltd, Eastern Way, Lowestoft		Production	Technician only, but may qualify for sandwich diploma or degree course during training	
Guy Motors Ltd, Fallings Park, Wolverhampton			Technician only	
Leyland Motors, Leyland, Preston PR5 1SN		Mechanical Production Automobile	Technician and Technologist	
Leyland Motors (Scotland), Blackburn Road, Bathgate, West Lothian		Mechanical Production Automobile Metallurgy Chemistry Computer Science	Technician and Technologist	About 15 p.a.
Maudslay Motor Co. Ltd, Castle Maudslay, Alcester, Warwickshire		Mechanical Production	Technician and Technologist	
4 SPECIAL PRODUCTS DIVISION **Alford & Alder (Engineers) Ltd,** Maylands Avenue, Hemel Hempstead, Herts.	Road rollers, motor graders, tractor shovels, dump trucks, concrete mixers, hoists, quarry plant, stone crushers, mixers, electric motors, construction work, commercial vehicles, trailers, die castings, cylinder blocks and heads, axles, steering gear, airfield tenders,		Technician only	
Aveling-Barford Ltd, Invicta Works, Grantham, Lincs.		Mechanical Production Electrical (occasionally)	Technician and Technologist	
Beans Industries Ltd, Hurst Lane, Tipton, Staffs.			Technician only	

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
BRITISH LEYLAND MOTOR CORPORATION – *continued*	car components, etc			
Rearsby Automotive Ltd, Rearsby, Leicester			Technician only	
Scammell Lorries Ltd, Tolpitts Road, Watford, Herts.		Automobile Mechanical	Technician and Technologist	
Transport Equipment (Thornycroft) Ltd, Worthing Road, Basingstoke, Hants.			Technician only	
Wellingborough Foundry, Wellingborough, Northants.		Foundry Technology	Technician and Technologist	
West Yorkshire Foundries Ltd, Sayner Lane, Leeds LS1 1QX			Technician only	
S PRESTCOLD DIVISION **Prestcold Ltd,** Station Road, Theale, Berks.	Industrial refrigeration; an extensive range of refrigeration compressors, condensing units and cooling equipment for world markets	Mechanical Production	Technician and Technologist	
The British Non-Ferrous Metals Research Association, Euston Street, London NW1 2EU	Research for the non-ferrous metals industry	Metallurgy	*16–17 'O' level* Day release for O.N.C. and H.N.C. followed by L.I.M., A.I.M. *18–19 'A' level* Day release for H.N.C. followed by L.I.M., A.I.M. Students occasionally go on sandwich courses, but most are part-time at City of London Polytechnic	About 10 p.a. G
British Overseas Airways Corporation, P.O. Box 10, Hounslow, Middlesex (Applications to: Manager Selection Services)	Civil Aviation	Electrical, Electronic and Mechanical relating to aircraft maintenance Air Transport or Electrical and Electronic	*Between 16 and 17 on 1st September in year of entry* *'O' level or good C.S.E.* Block release leading to O.N.C. thence to H.N.D., or B.Sc. in Air Transport Engineering *Between 17½ and 19½ on 1st September in year of entry. 'A' level* Integrated sandwich course at City University for B.Sc. honours degree	For 'O' level entry applications accepted in anticipation of results Applicants must have provisional acceptance by City University; final decision only after 'A' level results published in August H Sch (full pay plus other allowances throughout course) Closing date 31st March for both entries

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
The British Petroleum Co. Ltd, Britannic House, Moor Lane, London EC2Y 9BU (Applications to: Manager, External Recruitment) Practical training in head office departments or refineries in England, Scotland, Wales and N. Ireland or other company centres	Petroleum and petro-chemicals	Chemical Eng. Mechanical Chemistry Physics Mathematics and related subjects	*Not more than 19: 'A' level* *Full-time Apprenticeships* Full-time degree courses, usually at one of the following universities: Birmingham, Manchester, Swansea, Edinburgh, Oxford, Warwick, Cambridge (Mech. Eng.) *Sandwich Course Apprenticeships* Sandwich courses for degrees in Chemical Engineering at Glamorgan College of Technology, and in Mechanical Engineering at Thames Polytechnic *Full-time Apprenticeships* Full-time degree course in Chemistry, Physics, Mathematics or related subjects, usually at one of the following universities: Belfast, Birmingham, Edinburgh, Kent, Manchester, Oxford, Swansea, Warwick *Sandwich Course Apprenticeships* Sandwich course for degrees in Chemistry at Kingston College of Technology or Northern Polytechnic	G Sch (see section 3) Application for full-time apprenticeship should be made before approaching U.C.C.A. and at least one year before taking 'A' level Application for sandwich course by December in final school year
British Rail (a) *For B.R. Scholarships* Principal Management Recruitment Officer, Royal London House, 22/25 Finsbury Square, London EC2P 2BQ (b) For Sponsored Thin Sandwich Courses and *entry at 'O' level* General Manager, British Rail, Eastern Region, York Scottish Region, Buchanan House, 58 Port Dundas Road, Glasgow C4 London Midland Region, Euston House, Eversholt Street, London NW1 Western Region, Paddington Station, London W2 Southern Region, Waterloo Station, London SE1 British Rail Engineering Ltd, B.R. Technical Centre, London Road, Derby		Civil Mechanical and Electrical (heavy Current) Signal and Telecommunications (Light Current Electrical) Electronic and Production Engineering	(a) *16–17 Technician* Day release for O.N.C. and H.N.C. (b) *17–20 'A' level* Scholarships and sponsorships for full-time and thin sandwich degree courses at universities, polytechnics and regional colleges	(a) About 10 Civil, 10 Mechanical and Electrical (heavy current), 10 Electrical (light current) or Electronics (b) 20 p.a. Closing date for scholarship applications 30th November G P

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
British Steel Corporation, General Steels Division, Teesside & Workington Group *Training* within Works of the Group (Applications to: Training Development and Administration Officer (Group) P.O. Box 11, British Steel Corporation, Middlesbrough, Teesside)	Iron and steel manufacture	Mechanical Electrical Civil Chemistry Metallurgy Physics Fuel Technology Mathematics	*17–19 'A' level* Thin and 1:3:1 sandwich degree courses, with own choice of college or university	G P Sch About 6 p.a.
British Steel Corporation, General Steels Division, Teesside and Workington Group, Consett Works, Consett, Co. Durham	Iron and steel slabs, plates, blooms, billets, sections, angles, rounds, refractories	Chemistry Metallurgy	*16–18 'O' level Technical trainee* Day release for H.N.C. (Chemistry or Metallurgy) and I.I.M. or Grad. R.I.C. Possibility of transfer to sandwich course for outstanding trainees	12 p.a.
British Steel Corporation, Special Steels Division, The Mount, Broomhill, Sheffield S10 2PZ (Applications to: Senior Education and Training Officer) *Works at* Sheffield, Cumberland, Scotland, Wales and Birmingham	Alloy and special steels	Mechanical Electrical Metallurgy	*17–18 'A' level* Thick and thin sandwich degree courses, with free choice of college or university	Sch P 10–15 p.a.
British Steel Corporation, Tubes Division, Corby, Northamptonshire *Also at:* Coombs Wood Works, Halesowen, Nr Birmingham Stanton & Staveley, P.O. Box 72, Nr. Nottingham NG2 5AA Tollcross Works, Tollcross, Glasgow (Applications to: Divisional Training Office, British Steel Corporation, Tubes Division, Corby, Northamptonshire)	Iron, steel, concrete and plastic tubes	Mechanical Electrical Production Chemistry Metallurgy Fuel Technology Instrument Technology	*16 upwards 'O' level, Technical Apprenticeship* Technical apprenticeships are offered in the branches named and also in Foundry Technology, Industrial Radiology, Technical Estimating and Draughtsmanship. Day or block release for appropriate courses, usually O.N.C. and H.N.C. May be promoted to H.N.D. sandwich course followed by study for professional qualifications *18 upwards 'A' level, Student Apprenticeship* Thin or 1:3:1 sandwich courses for degrees at universities or colleges of students' own choice	Closing date for technicians: England – 31st July for September intake: Scotland 31st March for July intake P G Sch H – Corby only About 15 p.a. Closing date for Students: England – 31st March for September intake; Scotland 31st March for July intake

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
British Timken Division of the Timken Company, Duston, Northampton (Applications to: Education Manager) *Works at* Duston and Daventry	Tapered roller bearings	Mechanical Production	*16–17 'O' level Technician* Block release for O.N.C. and H.N.C. *18–19 'A' level Student Apprentice* Thin sandwich course leading to honours degree at university or polytechnic	G P Sch
British United Shoe Machinery Co. Ltd, Leicester (Applications to: Personnel Manager)	A large range of machinery of a high standard of precision used mainly in the boot and shoe industry	Mechanical Production	*16–17 Technician Apprenticeships* Day or block release for O.N.C. and H.N.C. *18 Student Apprenticeship* Thin sandwich course for H.N.D. or degree at college of student's choice. No 1:3:1 courses	G Sch Closing date end April 1 or 2 p.a.
The David Brown Group of Companies, Huddersfield, Meltham (Yorks.), Sunderland, Penistone, Salford, Leigh, Southampton, Portsmouth, Newport Pagnell, Wokingham, Cheltenham (Applications to: Manager, Training and Management Development, David Brown Corporation (Central Staff) Ltd, 'Durker Roods', Meltham, Huddersfield HD7 3AG	Gears, gear units, steel and bronze castings, agricultural tractors, high speed marine craft, automobiles, industrial electronic heating equipment, honing equipment	Mechanical Marine Electrical	*19 'A' level* Thin sandwich courses for degrees at technological universities (Salford, Bradford and Loughborough preferred). A few 1:3:1 students accepted	G P Sch Applications should be submitted as early as possible in the final school year. No fixed number of vacancies
John Brown Engineering (Clydebank) Ltd, Clydebank, Scotland (Applications to: Personnel Manager)	Industrial gas turbines, marine gas and steam turbines	Marine and general	*School-leavers, Scottish Higher Leaving Certificate or equivalent in England* Evening classes for H.N.C.; may transfer to degree or diploma course if suitable *School-leavers: University entrance standard* Thin sandwich course at Glasgow University for degree, or at University of Strathclyde, or full-time degree course at Cambridge with pre-university year and vacation training	2 p.a. G (5 p.a.) P
Brush Electrical Engineering Co. Ltd, Loughborough, Leics. LE11 1EZ A Hawker Siddeley Company (Applications to: Education and Training Officer)	Rotating electrical machines, control gear, switchgear, transformers, complete electric power plants	Power Electrical Industrial Electronics Mechanical Production	*16–17 'O' level* Day release for O.N.C., H.N.C. and Technicians' courses *17–19 'A' level* Thin sandwich scheme for degree or H.N.D. at technological university or polytechnic of student's choice	Sch Applications should preferably be in by end of April About 20 p.a.

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of courses	Notes (see p. 54) and approx. no. of vacancies p.a.
C. Bryant & Son Ltd, Whitmore Road, Birmingham B10 0NT (Applications to: Personnel Manager)	Buildi... ...ivil Engir... ...g work	Building Civil Engineering	*16–18 'O' level (one 'A' preferred)* Articled pupilship with day release for O.N.C. and H.N.C. in Building, followed by the Associateship of the Inst. of Building; or Engineering Assistants who follow day release courses for O.N.C. and H.N.C. in Civil Engineering	G
Cadbury Schweppes Ltd, Bournville, Birmingham (Applications to: Personnel Manager) *Also:* J. S. Fry & Sons Ltd, Keynsham, Bristol	Cocoa, chocolate, confectionery, soft drinks, wines and food products	Mechanical Chemistry Food Technology	*17–19 'A' level (3 preferred)* Full-time study or sandwich course for degree or H.N.D. or day release for H.N.C. Trainee chemists normally study by day release for Ext. B.Sc., H.N.C., or Grad. R.I.C.	Sch (see section 3) 2–3 p.a. G P
Cambridge Scientific Instruments Ltd, Chesterton Road, Cambridge (Applications to: Training Officer) The Medical and Scientific Division of Kent Instruments Ltd, Luton	Scientific and medical instruments	Electronics Physics Mechanical Production	*Under 18 Trainee Instrument Technician* Four-year course with day release for O.N.C. or City and Guilds courses. *Note:* Those wishing to specialise in draughting procedures should have Technical Drawing *17¼ upwards Student Engineers* Three to four-year thin sandwich course in Applied Physics, Electrical or Mech. Eng. for H.N.D. or B.Sc. Both can lead to membership of professional Institutes. For Electronics and Applied Physics, Company prefers City University and Portsmouth Polytechnic; for Electronics and Mechanical Engineering, Hatfield or Glamorgan Polytechnic	G Sch No 1:3:1 students sponsored
C.A.V. Ltd, P.O. Box 36, Warple Way, Acton, London W3 *and* C.A.V. Ltd, The Esplanade, Rochester, Kent A member of the Joseph Lucas Organisation (Applications to: The Company Training Manager)	Light engineering products including electrical and fuel injection equipment for vehicles, marine, agricultural and stationary engines	Diesel Mechanical Electrical Production Physics Metallurgy	*16–17 'O' level* Day release for O.N.C. and H.N.C. with possibility of upgrading on attaining good O.N.C., to H.N.D. or degree *17–19 'A' level* Sandwich course for B.Tech. at technological universities, or B.Sc. or H.N.D. at polytechnics. Some 1:3:1 sponsorships also	G Sch P (as part of thick sandwich) 10–12 p.a.
Chance Bros. Ltd, Glassworks, Smethwick 40 ...mber of the Pilkington Group	Glass	Mechanical Production Chemistry Physics Glass Technology	*16 upwards 'O' level* Day release for O.N.C. and H.N.C. *'A' level* Would consider applications for sandwich courses	2 p.a.

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
Chrysler United Kingdom Ltd, P.O. Box 46, London Road, Ryton-on-Dunsmore, Coventry CV8 3DZ (Applications to: Training Manager) *Major manufacturing plants:* in Coventry, Luton, Dunstable, Maidstone and Linwood (Scotland)	Cars and commerical vehicles – Hillman, Humber, Sunbeam, Commer, Karrier and Dodge; diesel engines, air conditioning equipment, plastic and metal die castings	Automobile Design Production Automobile Service Metallurgy Chemistry	*Under 18½ on 1st September – Technical Apprenticeship* *'O' level, or if over 18, one 'A' level* Day release, block release or sandwich course for O.N.C. or H.N.C. or other appropriate qualifications *Over 18 and under 19½ on 1st September – Student Apprenticeship* Four-year thin sandwich course leading to degree or H.N.D. in Mechanical or Production Eng., Chemistry or Metallurgy. Preferred colleges are University of Aston in Birmingham, Loughborough University and Lanchester Polytechnic	G Sch Closing date end February
Cincinnati Milacron Ltd, Dells Lane, Biggleswade, Beds	Machine tools	Mechanical Electrical Hydraulic Production Electronic	*16–17 Engineering Apprentice – 'O' level* Day release for O.N.C. and H.N.C. in Mechanical Eng. *18–19 Student Apprentice – 'A' level* Sandwich course at a technological university. (Special arrangement with Brunel but others equally acceptable.) All entrants do a year's pre-university training	P Sch G (2 year)
J. & P. Coats Ltd, 155 St Vincent Street, Glasgow C2 (Applications to: Personnel Officer (Staff) *Also at* Paisley, Scotland	Sewing thread	Textile Technology Chemistry Physics	*16–18 'O' level* Day or block release for O.N.C. and H.N.C. in science or A.T.I.	2–3 p.a. G
Courtaulds Ltd, Group Management Careers Department, Foleshill Road, Coventry CV6 5AE (Applications to: The Senior Education & Training Officer) The Courtaulds Group now comprises some 350 companies operating throughout the UK. Main areas for apprenticeship training are Coventry, Manchester, Nottingham, Derby and Leicester	Man-made fibres, textiles, chemicals, woodpulp, packaging, paint, plastics, engineering, design and construction of buildings, plant and services; manufacture of textile machinery	Chemical Eng. Civil/Structural Electrical (Power Electrical Eng. and Electronics) Instrument and Control Mechanical Mathematics Textile Technology	*17–19 'A' level* 1:3:1 or thin sandwich degree course at university or polytechnic. Student normally has free choice of college, but those applying for Civil Engineering must take degree course which has Structures as principal subject; and those interested in Textile Technology should be taking courses at Bradford, Leeds or Manchester University, or Leicester or Huddersfield Polytechnic	G P Sch (both full and supplementary) Applicants should consult the Group booklet 'Student Apprenticeships' and state by which company or division they wish to be considered
Coventry Gauge & Tool Co. Ltd, P.O. Box 39, Fletchamstead Highway, Coventry CV4 9DA (Applications to: ning Officer)	Precision machine tools, cutting tools, general precision engineering	Production Mechanical Electrical	*16–17½ 'O' level* Day release to local technical college for O.N.C. and H.N.C. Those reaching sufficiently high standard in O.N.C. may transfer to sandwich course for degree	Applications before 30th June; prefer local applicants for technician entry

(*Continued on page 15*)

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
Coventry Gauge & Tool Co. Ltd, – *continued*			*17½–19½ 'A' level* Sandwich course for degree, usually at Lanchester Polytechnic. Company also sponsors 1:3:1 students at University of Warwick (which has special provision for applicants with 'A' levels in non-science subjects)	Applications before 31st July for thin sandwich course; by 15th January for 1:3:1 Sch 4–5 p.a.
Croda International Ltd, Cowick Hall, Snaith, Goole, Yorkshire ON14 9AA (Applications to: Executive Training Officer) Various *Works* throughout UK and *General Research Laboratories* at Hull	Wide range including lanolin, rolling oils, rust preventives, edible vegetable oils, adhesives, paints, edible and photographic gelatines, food additives, fertilisers, etc	Chemistry	*16–19 'O' level – 'A' level an advantage* Day release for O.N.C. and H.N.C. Laboratory, Works and Office training divided between Snaith and Hull. Scheme of approximately 3½ years' duration, intended to lead to junior management in Works, sales or technical service representative posts, research and development chemists, shipping executives etc *Note:* Company places most value on drive and ambition and will consider applicants without the basic academic qualifications, if prepared to study	Usually 3–4 p.a.
John Crossley & Sons Ltd, Dean Clough Mills, Halifax Part of Carpets International Ltd Group (Applications to: Personnel and Training Manager) Applications may also be sent to: Giltedge Carpets Ltd, Kidderminster	Carpets	Carpet Technology Textile Technology	*18–19 'A' level* One year's general training with company, then two-year sandwich course for O.N.D. in Textiles followed by H.N.D. in Carpet Technology at Kidderminster College, or degree in Textiles at Leeds University	Sch
Delta Metal Co. Ltd, Delta Works, Dartmouth Street, Birmingham 7 (Applications to: Group Training Officer) *Also* London area, North, Midlands, and overseas	Extrusion of copper-based alloys: brass foundry; metal refining; pressings, forgings, rolled metals, turned parts. Components of many types for industrial use	Mechanical Electrical Production Metallurgy Natural Sciences Mathematics	*16–17 'O' level* Day or block release for O.N.C. and H.N.C. *17–19 'A' level* Full-time, 1:3:1 or sandwich course for degree. Candidates find own place	G Sch (see section 3) P About 17 p.a.
J. & J. Denholm (Management) Ltd, 120 St Vincent Street, Glasgow C2	Shipowners	Marine (sea-going)	*16½–18 'O' level* Two-year O.N.D. course at Glasgow Nautical College, followed by one year at sea, then final year at college followed by two-year Company contract. Should attain First Class Certificate in Engineering at 25/26 *University entrance* Full-time degree course at Glasgow University	Entries by August Sch (£100 p.a. for four years at Glasgow University)

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
Dennis Bros. Ltd, Guildford, Surrey (Applications to: Training Manager)	Commercial vehicles, municipal vehicles, fire engines, motor mowers, tractors	Automobile Electrical (Vehicle maintenance) Mechanical Production	*16–17½ Technician* Day release for O.N.C. and H.N.C.	4 p.a.
Department of the Environment Studentships in Mechanical and Electrical Engineering (Applications to: DEP/EP2/4 Department of the Environment, Room 543, Lambeth Bridge House, London SE1) *Training at:* Royal Military College of Science, Shrivenham, Wiltshire	Design, installation, operation and maintenance of plant and services for projects in Government Establishments at home and abroad including: heating, ventilating, air conditioning, refrigeration, electric power and lighting, airfield lighting, M.V. and H.V. distribution and protection, electrical control systems, power generators, communications, heavy mechanical plant installations, compressed air services, fuel oil storage, lifts and catering equipment	Electrical Electro-mechanical	*17–21 'A' level* Three-year degree course including practical training during the summer vacations, and leading to an appointment as Cadet or Graduate Engineer with further practical and professional training to meet the requirements of the Inst. of Mechanical and/or Electrical Engineers	Course begins in September Applications as early as possible same year Size of intake depends on no. of successful applicants Sch (all fees and maintenance grant)
The Dove Group, 98 Lower Addiscombe Road, Croydon, Surrey CR9 6AE (Applications to: Joint Managing Director for training scheme. For temporary positions apply to Personnel and Training Manager, The Dove Group, 127 Tunstall Road, Croydon CR0 6TZ or to the Manager of any branch) *Branches* in Croydon, Wimbledon and Woking	Distributors for British Leyland trucks and cars and vehicle accessorics. Run a number of petrol stations and a self-drive hire fleet of cars and vans	Mechanical	*16½–17 'O' level or good C.S.E.* Indentured apprenticeship to age 21 in Motor Engineering Practice. Day release (one day a week) for study for O.N.C. Progress to administration or sales after apprenticeship, with good prospects of promotion to management	Applications by 15th June G (1 p.a.) P (temporary employment in petrol stations, clerical work, or cleaning cars)
Dowty Group Ltd, Arle Court, Cheltenham, Glos. (Applications to: Training Manager, Dowty Group Ltd, Arle Court, Cheltenham, Glos. *or to:* The Personnel Manager, Dowty Boulton Paul Ltd, Wolverhampton *or to:* The Personnel Manager, Coventry Precision Ltd, [illegible]n Works, Coventry)	Aircraft components (undercarriages, hydraulic equipment, propellors, engine fuel systems and flying controls). Hydraulic equipment for mining and railways. General industrial hydraulics. Oil seals. Jet units for marine applications	Mechanical Hydraulic Production Metallurgy and Materials Rubber Technology	*16–17 'O' level* Day or block release for O.N.C. and H.N.C. *17–18 'A' level* Sandwich course for H.N.D. or degree. Financial support and works practical experience while at university or technical college	G Sch Applications before January of year of entry 16–17 year olds are only recruited locally About 40 'A' level trainees p.a.

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
Dunford Hadfields Ltd, East Hecla Works, Tinsley, Sheffield S9 1TZ	Steel	Mechanical Metallurgy	*'O' level* Day release for O.N.C., followed by degree in Metallurgy or Mech. Eng. at Sheffield University, or H.N.D. course at Rotherham College of Technology and Sheffield Polytechnic. Trainees recruited locally and no 'A' level candidates are taken	G Sch
Dunlop Ltd, *Engineering applicants:* Dunlop Engineering Group, Holbrooks Lane, Foleshill, Coventry *Science students:* Dunlop Ltd, Fort Dunlop, Erdington, Birmingham 24 (Applications to: Training Manager, in each case)	Rims, wheels, brakes, 'Maxaret' anti-skid units, pneumatic systems for the operation of aircraft auxiliary services, de-icing systems, guided missile components and flexible pipes for aviation and industrial use, rubber tyres and suspension for cars, hydrolastic suspensions	Mechanical Production Chemistry Physics Rubber Technology	*16 'O' levels* Day release for O.N.C. *17–18 'A' level* Day release for G.R.I.C., or G.Inst.P., or sandwich course for degree in Chemistry or Textile Physics. Sandwich or full-time course in rubber technology leading to A.N.C.R.T.	G Intake variable Sch
East Midlands Gas Board, De Montfort Street, Leicester (Applications to: Head of Training) Throughout East Midlands area but industrial periods would usually be at Leicester, Nottingham or Sheffield	Gas Board	Gas Engineering	*From 17 'A' level* Entrants normally proceed straight to a four-year sandwich course at the University of Salford, which leads to an honours degree in Gas Engineering. They should include Salford on the U.C.C.A. form	G Sch
Eastern Gas Board, Star House, Mutton Lane, Potters Bar, Herts. (Applications to: The Chief Education and Training Manager, The John Dyde Training College, Anchor Street, Bishop's Stortford, Herts.) Throughout Eastern Gas Board's area	Gas and coke	Chemical Eng. Civil Gas Mechanical	*17–19 'A' level* Sandwich degree course leading to Membership of appropriate professional body. Preference for City University, Salford University, or Enfield Polytechnic	G Sch
E.C.C. Quarries Ltd, St Stephen's House, Exeter EX1 1LJ (Applications to: The Training Officer) A member of the English China Clays Group. There are 38 quarries, manufacturing units and associated services mainly concentrated in the West Country but also in the [illegible]ion area, Leicester and [illegible]eots	Sand, aggregates, coated stone, lime building blocks, paving and kerbstone, concrete pipes, standard and specialist concrete products	Quarry Management	*17–18 'A' level Maths. or Science (pref. Physics)* Thin sandwich course at Doncaster College of Technology of three years' duration, leading to the Diploma in Quarrying and Associate Membership of the Institute of Quarrying. Then two to three years' practical training for management	Sch (fees plus salary throughout course)

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
Electric Power Storage Ltd, Clifton Junction, Swinton, Manchester M27 2LR (Applications to: The Training Manager)	Electrical storage batteries of all types. Brand names: Chloride, Dagenite, Exide, Chloride-Tudor	Electrical Mechanical Production Chemistry Metallurgy Physics	*16½ 'O' level* Day release for O.N.C. *17–18 'A' level* Sandwich course for degrees at Salford University (should be put on U.C.C.A. form) or H.N.D. at Salford College of Technology or Manchester Polytechnic. Some Chemistry trainees take Grad. R.I.C. by day release	G Sch 2–6 p.a.
Electricity Supply Industry For employment in *Generation and Transmission* enquiries should be sent to: Central Electricity Generating Board, Sudbury House, 15 Newgate Street, London EC1 For employment in *Distribution and Utilisation Engineering*, enquiries should be sent to the Area Electricity Boards, addresses as follows: London Electricity Board, 46 New Broad Street, London EC2M 1LS South Eastern Electricity Board, 10 Queen's Gardens, Hove, Sussex BN3 2LS Southern Electricity Board, Southern Electricity House, Littlewick Green, Maidenhead, Berks. South Western Electricity Board, Electricity House, Colston Avenue, Bristol BS1 4TS Yorkshire Electricity Board, Scarcroft, Leeds LS14 3HS North Eastern Electricity Board, Carliol House, Newcastle-upon-Tyne NE99 1SE Merseyside and N. Wales Electricity Board, Sealand Road, Chester Eastern Electricity Board, Wherstead, Nr. Ipswich, Suffolk (*Continued on page 19*)	Electricity supply	*C.E.G.B.* Electrical Mechanical Chemistry *Area Boards* Electrical	*Under 18 at start of training in September 'O' level* Day or block release for O.N.C. and H.N.C. Can qualify for higher courses according to progress *Under 19 at start of training in September* Normally, though not exclusively, thin sandwich course at university or polytechnic leading to a degree or H.N.D. Arrangements are made with the various regions as to the colleges students will attend. 1:3:1 scholarship holders make own arrangements (see section 3)	G Number of vacancies varies P Sch (see section 3 for 1:3:1 scholarships; supplementary grants are paid to thin sandwich students)

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
Electricity Supply Industry – *continued* East Midlands Electricity Board, P.O. Box 4, North PDO, 398 Coppice Road, Arnold, Nottingham NG5 7HX Midlands Electricity Board, Mucklow Hill, Halesowen, Worcs. South Wales Electricity Board, St Mellons, Cardiff CF3 9XW North Western Electricity Board, Cheetwood Road, Manchester M8 8BA				
EMI Limited, Blyth Road, Hayes, Middlesex (Applications to: Training Manager) *Training at* Hayes, Ruislip, Feltham (Middlesex), and Wells (Somerset)	Advanced radar, aerials, colour camera tubes, cognitive machines, control equipment, infra-red systems, information storage, magnetic tape, microelectronics, photo-multipliers, recording equipment, solid state devices, special valves, telemetry etc, etc	Electrical Electronics Mechanical Physics	*16–17½ 'O' level* Day release for O.N.C. leading to H.N.C., or City and Guilds Certificate *17–19 'A' level* Full-time or thick sandwich university course, at university of student's choice. There is also a thin sandwich degree course, normally at Brunel University	G (1 year and 2 year post-graduate) Sch (see section 3) P
English Calico Ltd, 56 Oxford Street, Manchester M60 1HJ (Applications to: Group Appointments Manager) *Also at* Glossop	Textile products, from natural and man-made fibres	Chemistry	*16–17 'O' level, 18–19 'A' level* Day release course for O.N.C. and/or H.N.C. according to entry qualifications, followed by day release for A.S.D.C. or Grad. R.I.C. at Manchester Polytechnic. The latter may sometimes be completed by a full-time year at Salford University	3 p.a. G
Fairey Hydraulics Ltd, Heston, Middlesex (Applications to: Training Officer) **Fairey Engineering Ltd,** Stockport, Cheshire (Applications to: Personnel Officer)	Design and manufacture of aircraft hydraulic powered flying controls, high performance filtration equipment, servo valves, other hydraulic and electro hydraulic equipment Components for atomic reactors. Machine tool design and development. Design and development of structures in steel and aluminium, etc	Electrical Electronics Communications Mechanics Automatic Control Atomics	*16 upwards 'O' level – Engineer Apprenticeship* Day release for O.N.C., and selected students are then upgraded to thin sandwich course for B.Tech. at Brunel University	

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
J. H. Fenner & Co. Ltd, Marfleet, Hull (Applications to: Personnel Manager)	Power transmission equipment	Mechanical Chemistry for Rubber and Textile Technology	*Engineering* *16–17 'O' level* Day release for O.N.C. and H.N.C. Those who make satisfactory progress may be selected for sandwich course for degree *Chemistry* *16–18 'O' or 'A' level* Day release for O.N.C. and H.N.C. Those with two 'A' levels go straight on H.N.C. course, followed by a one-year full-time sponsored course at National College of Rubber Technology leading to Associateship of the Institution of the Rubber Industry (A.I.R.I.)	G
Ferranti Ltd, Hollinwood, Lancs. (Applications to: Head of Education and Training) *Training* provided within Manchester and Oldham group of factories	Power transformers, meters, precision instruments, industrial valves, silicon semi-conductors, electronic devices, digital computer systems, guided weapons control systems, radar and aircraft equipment and gyroscopic instruments	Electrical Electronics Mechanical Physics	*Under 17·6 on 1st Sept., 'O' level* Day or block release for O.N.C. Day release for H.N.C., and City and Guilds Technician Final and Full Technological Certificates. Can qualify at O.N.C. stage for transfer to sandwich degree course *Under 19·6 on 1st Sept. 'A' level* Thin sandwich course for H.N.D. or B.Sc. Honours degree, or 1:3:1 course	G P Sch 50–60 p.a. normally
Ferranti Ltd, Ferry Road, Edinburgh 5 (Applications to: Personnel Officer)	Airborne and ground radar and fire control equipment; electronic components	Electronics Mechanical Electrical	*16–17 'O' level Technician* Day release for O.N.C. After one or two years, selected candidates may be sponsored for sandwich degree course, often at Brunel University. Others continue for H.N.C. by day release *18–19 'A' level* *Pre-University training* This is a six-months training mainly for Cambridge entrants, including basic workshop training, and a period in design and development	About 2 p.a. Sch (salary and fees paid throughout) P (not tied to sandwich course, see previous column)
Ford Motor Co. Ltd, Warley, Essex (Applications to: Apprentice Supervisor, Room 34/138, Faringdon Avenue, Harold Hill, Romford, Essex RM3 8ST) *Training also at:* Basildon Dagenham, Dunton	Motor vehicles	Mechanical Automobile Production Industrial Vehicle Metallurgy Materials Technology	*17–19 'A' level* Four-year sandwich course leading to B.Sc./B. Tech. in Mech. Eng. at University of Bradford or University of Salford; B.Tech. in Automobile Eng. or Production Eng. or Metallurgical Eng. at Loughborough University; B.Sc. in Production Eng. at University of Aston. *Include as appropriate on U.C.C.A. form*	G P Sch (see section 3) 25 vacancies p.a. for Student Engineers

(Continued on page 21)

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
Ford Motor Co. Ltd – *continued*			Also B.Sc. in Industrial Eng. and B.Sc. in Vehicle Eng. at Hatfield Polytechnic. Metallurgy and Materials Technology students take four-year sandwich course for B. Tech at Brunel University	2 p.a. for Metallurgy or Materials Technology
Foseco International Ltd, Long Acre, Birmingham B7 5JR (Applications to: Personnel Department) *Also at* Drayton Manor, Nr. Tamworth, Staffs.	Chemical and metallurgical products for the foundry and steelworks industries	Chemistry Metallurgy	*Age limits flexible, 'O' or 'A' level* All trainees start on day release for O.N.C. or H.N.C. followed by Grad. R.I.C. or A.I.M. Final qualification year may sometimes be done full-time at a local college. A few selected after first year for sandwich degree course	G 2–3 p.a.
THE GENERAL ELECTRIC CO. LTD A brochure 'From School to Industry' will be sent on application to the Personnel Department, The General Electric Co. Ltd, 1 Stanhope Gate, London W1Y 6AA	One of the world's largest electrical groups, formed from mergers in 1967 and 1968 between G.E.C., A.E.I. and English Electric. Products range from steam turbine generators to the smallest devices of micro-electronics, and include diesel engines, cables, telecommunications, radar and avionics, control systems, communications satellites and ground stations, computers, switchgear, gas turbines, locomotives and traction equipment, lamps and lighting, domestic appliances etc.	*See below*	*See below*	G P H (in some areas) Sch (supplementary to L.E.A. grant, but all companies can vary or extend the arrangements when circumstances warrant)
1 G.E.C. POWER ENGINEERING **G.E.C. Power Engineering Ltd,** Trafford Park, Manchester M17 1PR (Education Manager)	Large steam turbines, industrial and marine steam turbines	Mechanical Production Electrical Electronics Applied Physics Chemistry Metallurgy Mathematics	Technician and Student. Thin and 1:3:1 sandwich courses for degrees at universities, polytechnics or colleges of technology. 1:3:1 students have free choice of university; thin sandwich applicants should consult the training location as to whether any colleges are preferred. Science vacancies only occasionally.	Candidates are asked to indicate at interview the particular products or functions in which they are interested Apply Oct./Dec.
English Electric – A.E.I. Turbine Generators Ltd, Willans Works, Rugby, Warwickshire (Manager, Personnel and Education)	Large steam turbines	Mechanical Chemistry	At Stafford, mainly thin sandwich, but some 1:3:1 courses in Mech. Eng., Computer Science and Power Electrical Eng.	

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
English Electric Ltd, Stafford (Manager – Central Education)	Electrical generators	Mechanical Electrical Computer Science Chemistry		
G.E.C. Power Engineering Ltd, Cambridge Road, Whetstone, Leicestershire (Education Officer)	Gas turbines	Mechanical		
English Electric Reactor Division, Cambridge Road, Whetstone, Leicestershire (Head of Administration)	Reactor systems	Mechanical		
2 ENGLISH ELECTRIC – A.E.I. MACHINES LTD, Mill Road, Rugby, Warwickshire (The Senior Recruitment Officer) *Also at* Bradford, Farsley, Doncaster, Warley (Worcs.), Newcastle (Staffs.), Witton (Birmingham)	Electrical rotating machines from fractional h.p. to about 70,000 h.p. both A.C. and D.C.	Mechanical Production Power Electrical Mathematics	Technician and Student. 1:3:1 and thin sandwich courses for degrees (sometimes H.N.D.) Free choice of university for 1:3:1 students. Company has close contact with Lanchester Polytechnic (at Rugby) for thin sandwich courses, but will consider other colleges	Apply as early in last school year as possible
3 ENGLISH ELECTRIC DIESELS **English Electric Diesels Ltd,** Ruston Lincoln Estates Division, P.O. Box 25, Lincoln (Senior Training Officer) Ruston Paxman Diesels Ltd, Vulcan Works, Newton-le-Willows, Lancs. (The Senior Training Officer) **Standard Ironworks,** Colchester, Essex (The Senior Training Officer) **Dorman Diesels Ltd,** Tixall Road, Stafford (The Personnel Manager)	Diesel engines from 5 h.p. to 8850 h.p. – Dorman, English Electric, Kelvin, Napier, Paxman, Ruston – gas turbines, turbo blowers, hydraulic motors	Mechanical Production Light Electrical	Technician and Student. Thin and 1:3:1 sandwich courses at universities and colleges: thin sandwich for H.N.D. Light Electrical Eng. offered at Colchester only. Students are currently sponsored at Brunel, Bath, Salford and Aston Universities, and at Lancaster, Trent, and Hatfield Polytechnics	12 p.a. H
4 G.E.C. – MARCONI ELECTRONICS **The Marconi Co. Ltd,** Marconi House, Chelmsford CM1 1PL *Works at:* Chelmsford, Basildon, Gateshead, Birmingham, Wembley (Chief Training Officer, Chelmsford)	Capital electronic equipment; radar communications, broadcasting, etc	Electrical Mechanical Production Applied Mathematics Applied Physics Computer Science	*16–17 'O' level Technician Apprentice* Block release for O.N.C. and H.N.C. (4 year course) *17–19 'O' level plus science VI course but having failed 'A' or achieved one pass* Block release for O.N.C. and H.N.C. (3 year course) *17–19 'A' level Student Apprentice* Thin or 1:3:1 sandwich degree course. For thin sandwich, Company has arrangements with the following (*Continued on page 23*)	Apply after Christmas in last year at school About 35 technicians p.a. For Student apprenticeship apply as early as possible after

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
The Marconi Co. Ltd, – *continued*			universities which should be included among U.C.C.A. choices: *Electrical/Electronic Engineering* Loughborough, Brunel, Bradford *Applied Mathematics* Brunel *Production Engineering* Loughborough *Mechanical Engineering* Aston Mechanical Eng. also sponsored at Hatfield Polytechnic, Applied Physics at Brighton Polytechnic, Computer Science at Hatfield. 1:3:1 applicants should preferably be choosing one of the following Universities: Bangor, Birmingham, Bristol, Cambridge, Essex, London (Imperial College), Manchester, Nottingham, Oxford, Southampton	September in last year at school 35 thin sandwich students p.a. 15–20 1:3:1 students G P H
Elliott Automation Ltd, Elstree Way, Borehamwood, Herts. (Training Officer)	Avionic systems; specialised radar detection systems; X-ray devices, lasers	Mechanical Production Electrical Electronics Physics Mathematics ComputerScience	Technician and Student entries Mainly thin sandwich degree courses but some 1:3:1 places for Mathematics and Computer Science	
Elliott Automation Ltd, Hillend Industrial Estate, By Dunfermline, Fife (Training Officer)	Development of simulators such as aircraft cockpits and submarine control rooms	Production	Technician and Student entries. Thin sandwich degree course only	
Marconi Space and Defence Systems Ltd, Chobham Road, Frimley, Camberley, Surrey	Development of weapon control systems and military operational centres; control units for rockets and satellites; investigation of space, military and related civil field systems	Mechanical Physics Mathematics ComputerScience Electronics	Technician and Student entries. Only occasional vacancies in Mech. Eng., Physics and Mathematics. 1:3:1 and thin sandwich degree courses. Free choice of college or university. Technician entrants have block release for O.N.D. and may go on to H.N.D. or transfer to degree course	
G.E.C. – A.E.I. Electronics Ltd, New Parks, Leicester LE3 1UF (Training Officer)	Large surveillance and target tracking radar and marine radar; power servo-systems	Mechanical Production Electronics Mathematics	Technician and Student entries. Thin and 1:3:1 sandwich degree courses. No H.N.D. Flexible as to choice of college or university as long as course is suitable	
G.E.C. – A.E.I. Electronics Ltd, The Grove, Warren Lane, Stanmore, Middlesex (Training Officer)	Space and defence systems; satellite communications; control engineering for weapon guidance systems	Mechanical Electronics Physics Mathematics	Student entry only. 1:3:1 course for Mechanical Eng., either 1:3:1 or thin sandwich degree for others. Occasionally H.N.D. 1:3:1 students have free choice of university. Thin sandwich students should consult the Company – many go to Brunel University	

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
G.E.C. – A.E.I. Electronics Ltd, Broad Oak Works, The Airport, Portsmouth, Hants. PO3 5PQ (Training Officer)	Space and defence systems; electronic equipment for use in satellites including data transmission and command equipment	Electronics	Technician and Student entry. Thin or 1:3:1 sandwich degree course; no H.N.D. 1:3:1 students normally go to Southampton, Bristol or Essex University; thin sandwich degree at Portsmouth Polytechnic	Prefer applicants resident in area
Elliott Flight Automation Ltd, Airport Works, Rochester, Kent (Training Officer)	Avionic Systems; automated aircraft systems as applied to flight control, automatic landing, engine instrumentation and control; inertial navigation systems and head-up displays	Production Electronics	Technician and Student entry. Thin sandwich degree courses only; own choice of college or university. Present students are at City, Bradford and Brunel Universities and Brighton Polytechnic. If fail to reach standard for degree, can take H.N.D. at Medway and Maidstone College of Technology	
Marconi Instruments Ltd, Longacres, St Albans, Herts. (Training Officer)	Test equipment, oscilloscopes and signal generators, X-ray image intensifiers for medical applications, programmable fully automatic test systems	Electronics Computer Science Production Industrial	Technician and Student entries. 1:3:1 for Electronics only; otherwise thin sandwich degree course. Free choice of university for 1:3:1 students. Thin sandwich course at University of Salford, Loughborough or Brunel, or Hatfield Polytechnic. No H.N.D. but students who do not reach degree entrance level can take O.N.C. in one year by block release and then transfer to degree sandwich course	
5 THE ENGLISH ELECTRIC VALVE CO. LTD, Waterhouse Lane, Chelmsford, Essex CM1 2QU (Training Officer) *Production units also at* Maldon (Essex) and Lincoln	Specialised valves and tubes for broadcasting, telecommunications, radar and industrial electronics. *Microwave Division* produces magnetrons klystrons and travelling wave tubes; *Light Conversion Devices Division* specialised electronic tubes and *Power Valve Division* heavy duty valves also gas lasers	Light Electrical Applied Physics	Thin sandwich degree course at City University or Loughborough University. Company is prepared to consider students with provisional acceptance at other universities. If students apply direct to the Company, degree course places will be arranged at Brighton, Hatfield or Lanchester Polytechnics. There is also a thin sandwich course for H.N.C. in Electrical and Electronic Eng. at Mid-Essex Technical College, leading to post of Technician Engineer. No 1:3:1 courses or H.N.D. courses	Apply at start of final school year
6 G.E.C. – A.E.I. TELECOMMUNICATIONS LTD, P.O. Box 53 Telephone Works, Coventry CV3 1HJ (The Controller of Training) *Also at:* Coventry, Rugby, Co. Durham, Yorkshire, Fife, Glamorgan	Largest manufacturer of telecommunications equipment in UK, from smallest intercommunication system to largest international network. Four main product divisions are Transmission, Private Systems, Telephone, and Telephone Switching	Mechanical Production Light Electrical Electronics	Technician and Student entry. Thin or 1:3:1 sandwich courses at universities or polytechnics. Free choice of university for 1:3:1 students, most of whom take Electronic or light-current Electrical Eng. Thin sandwich students are sponsored at the University of Aston, Bradford University or Lanchester Polytechnic. For Technicians, three-year sandwich course at Coventry Technical College for Diploma in Telecommunications and Electronic Eng.	H at Coventry Apply at start of final school year

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
7 HIRST RESEARCH CENTRE East Lane, Wembley, Middlesex (The Staff Manager)	Research and development for all parts of G.E.C. and for Government Departments	Light Electrical Electronics Physics Mathematics Computer Science Chemistry Metallurgy	Technician and Student entry. 1:3:1 university courses mainly in Physics or Electrical Eng. with own choice of university. No thin sandwich courses. Day release for H.N.C. in science subjects	3 Thick sandwich Students p.a.
8 G.E.C. – ELLIOTT AUTOMATION				
G.E.C. – Elliott Control Valves Ltd, Airport Works, Rochester, Kent *Also in* Fifeshire	Automatic fluid control equipment for the chemical processing industry	Mechanical	Thin sandwich course for degree or H.N.D., no Technician entry. Student makes own choice of college	
G.E.C. – Elliott Process Instruments Ltd, Century Works, Lewisham, London SE13 *Other units* S.E. and N.W. of England	Pneumatic, electric and electronic instruments; all types of nucleonic instrumentation for submarines and power stations; X-ray spectroscopy; gas analysis equipment	Mechanical Electronics Physics Mathematics Computer Science	Mainly Technician but a few Student entries occasionally. Technicians can be upgraded at O.N.C. stage to degree or H.N.D. sandwich course. A sponsored Student could make own choice of college (usually thin sandwich)	
G.E.C. – Elliott Precision Controls Ltd, Century Works, Lewisham, London SE13 *Other units* S.E. and N.W. of England	Strain gauge load cells for measurement of weight or force; recording instruments; computing devices; automation systems and automatic mechanical systems			
G.E.C. Elliott Automation Ltd, Scientific Apparatus Division, Barton Dock Road, Urmston, Manchester M31 2LD *Also at* Harlow, Essex	Mass spectrometers, electron microscopes, X-ray equipment	Electronics Physics	1:3:1 courses only. No Technician entry. Own choice of university	
G.E.C. – Elliott Process Automation Ltd, New Parks, Leicester LE3 1UF *Also at* Borehamwood and Kidsgrove	Computerised process control systems for paper mills, food production etc	Production Power Electrical Light Electrical Electronics Physics Mathematics Computer Science	Technician and Student entries. Thin and 1:3:1 sandwich degree courses in all branches. A few students take H.N.D. Free choice of college or university	
G.E.C. – Elliott Industrial Controls Ltd, Kidsgrove, Stoke-on-Trent ST7 1TW	Industrial controls from small components to largest custom-built equipment and power rectifier installations	Mechanical Light Electrical Electronics	Technician and Student entries. Thin sandwich course only; only occasional vacancies in Mechanical Eng. Some H.N.D. courses. Most students attend North Staffordshire Polytechnic	

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
G.E.C. – Elliott Traffic Automation Ltd, East Lane, Wembley, Middlesex HA9 7PL	Road signalling equipment for local authorities; solid state systems with integrated circuits; motorway signalling systems	Light Electrical Electronic	Thin sandwich degree course only. No Technician entry. No preference as to college but intake very small	
G.E.C. Electrical Projects Ltd, Mill Road, Rugby, Warwickshire *Also at* Kidsgrove (Applications to Personnel Manager of the unit or units in which the student is interested)	Comprehensive electrical projects covering metal industries, mining, power and marine installations, paper and plastics industries; automation systems for power generation and distribution industries and ships	Production Power Electrical Light Electrical Electronics Mathematics Computer Science	Technician and Student entries. Thin and 1:3:1 sandwich degree course in all branches. H.N.D. course available. Company will advise 1:3:1 students if any of their U.C.C.A. choices are unsuitable. Thin sandwich students normally go to Lanchester Polytechnic (at Rugby)	
9 MARCONI ELLIOTT COMPUTER SYSTEMS LTD, Elstree Way, Borehamwood, Herts. (The Personnel Manager) *Also in* Fifeshire	Combines the computer interests of Elliott Automation, Marconi and English Electric Scientific ranges of fast computers, many purpose-built, including miniature machines. Hardware and Software	Mechanical Production Light Electrical Electronics Physics Mathematics Computer Science	Technician and Student entries. Mainly thin sandwich degree courses, but 1:3:1 possible in Mathematics and Computer Science. Flexible as to colleges, but most students attend Hatfield or Lanchester Polytechnic, the Polytechnic of North London, Hendon College of Technology, City University, Loughborough University, University of Bradford. Computer Students go to University of Manchester I.S.T.	
10 OSRAM (G.E.C.) LTD, P.O. Box 17, East Lane, Wembley, Middlesex HA9 7PG (The Personnel Manager) *Factories at* Wembley, Manchester, Newcastle, Birmingham, Erith and St Helens	Lamps and lighting fittings; lighting schemes for public and industrial concerns	Mechanical Production Light Electrical Physics	Technician and Student entries. Thin sandwich degree courses only, normally at colleges in London area including Brunel University, the Polytechnic of the South Bank, and Hendon College of Technology	Prefer applicants resident in London
11 TELEPHONE CABLES LTD, Dagenham, Essex (The Personnel Manager)	Largest company in Europe concerned with manufacture and installation of telephone cables. Principal supplier to G.P.O.	Mechanical Production Power Electrical Light Electrical Electronics	Technician and Student entries. Thin sandwich degree courses only, usually at North East London Polytechnic	
12 ASSOCIATED AUTOMATION LTD, 70 Dudden Hill Lane, London NW10 1DJ (The Personnel Manager)	Vending machines; coin collecting boxes for Post Office; duplicators, relays for control systems	Mechanical Production Light Electrical Electronics	Technician and Student entries. Thin sandwich degree course only. Prefer colleges and universities in London area	

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
13 G.E.C. CABLES AND EQUIPMENT **A.E.I. Cables Ltd,** Crete Hall Road, Gravesend, Kent (The Personnel Manager) *Also at* Birtley (Co. Durham)	All types of electric cable for transmission and distribution purposes	Electrical Mechanical	Technician and Student entries. Thin sandwich degree courses only, preferably (but not essentially) at City University, Brunel University or Thames Polytechnic	
English Electric Fusegear Ltd, East Lancashire Road, Liverpool L10 5HB (The Personnel Manager)	H.R.C. fuse-links, M.V. and H.V. for industry and electricity supply; fuse handles and bases, distribution fuseboards	Mechanical Production Power Electrical	Technician and Student entries. Thin sandwich degree courses only; not many vacancies, free choice of college	
14 THE EXPRESS LIFT CO. LTD, Abbey Works, Weedon Road, Northampton NN5 5BT (The Personnel Manager)	Lifts and escalators	Mechanical Electrical Electronics	Technician and Student entries. Thin sandwich courses are supported at University of Aston and Lanchester Polytechnic (at Rugby). Sometimes thick sandwich degree course at Nottingham University	
15 G.C.E. ELECTRICAL COMPONENTS LTD **Salford Electrical Instruments Ltd,** Peel Works, Barton Lane, Eccles, Manchester M30 0HL (The Personnel Manager) *Also at* Rochdale	Components, capacitors, electrical measuring instruments, selenium rectifiers, thermostats, quartz crystal units and test equipment, electronic instruments	Light Electrical Electronics	Limited places available for thin sandwich courses in Light Electrical Eng. at University of Salford or Bradford, or Electrical/Electronic course at John Dalton College of Technology for H.N.C. (for Technicians)	
16 G.E.C. – HENLEY LTD, Crete Hall Road, Gravesend, Kent (The Personnel Manager) *Also at* Halesowen, Worcs.	Distribution and installation equipment; sub-station distribution pillars, complete rising mains systems, fuse switchgear, plugs	Electrical Production	Thin sandwich degree courses only. Free choice of college, with some preference for London or South East area	
Giddings & Lewis Fraser Ltd, Arbroath, Angus, Scotland (Applications to: Training Department)	Numerically controlled and special purpose machine tools; textile machinery	Mechanical Electrical Production	*17–18 S.C.E. 'O' Grade* Day release for O.N.C. with possible promotion to sandwich course for H.N.D. Others continue to H.N.C. *17–18 University or College entrance standard* University or College of Technology course on thick or thin sandwich basis. Students normally attend colleges or universities in Scotland, and the Company has a special arrangement with Dundee College of Technology	G P Sch Closing date for applications – mid-April About 2 p.a.

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
Goodlass, Wall & Co. Ltd, Goodlass Road, Speke, Liverpool L24 9HJ (Applications to: The Personnel Manager)	Paints, varnishes, lacquers and allied materials	Chemistry	*17–21 'A' level* Day release for H.N.C. or Grad. R.I.C.	G Intake variable P – not tied to sandwich course – would consider one year before university
Greater London Council, County Hall, London SE1 7PB (Applications to: The Director of Establishments (PSI)) Applicants are advised to read the Council's literature before applying		Building Building Surveying Quantity Surveying Civil Engineering (Technician)	*16–22 'A' level – Building* Day release for two-year course for O.N.C. Construction, then further two years for H.N.C. (Building). May be followed by membership of the Society of Surveying Technicians *18–25 'A' level – Building Surveying* Part-time day release Diploma course leading to full exemption from final of R.I.C.S. *18–25 'A' level – Quantity Surveying* Part-time day release Diploma course leading to full exemption from final of R.I.C.S. *Up to 21 'O' level – Civil Engineering Technician* Day release for O.N.C. (Engineering) or O.N.C. (Construction) leading to H.N.C. in Civil Engineering and Technicians' Certificate	12–18 p.a. Interviews mainly at Easter but some Technicians June-July 25–35 p.a.
Applications to: Director of Mechanical Engineering Services, Room 510, 1 Queen Anne's Gate Buildings, Dartmouth Street, London SW1 Applications to: Scientific Adviser, Greater London Council, County Hall, London SE1 7PB		Electrical Environmental (Heating and Ventilation) Mechanical Chemistry Physics	*18–22 'A' level* Thin sandwich B.Sc. courses at Polytechnic of the South Bank for Electrical or Environmental Eng. or City University or Thames Polytechnic for Mechanical Eng. *16–25 'O' level (five)* Day release leading either to two 'A' levels in science subjects or to O.N.C. in Chemistry or Physics *18–25 'A' level* Day release for H.N.C. or equivalent in Chemistry or Physics	3 p.a. in each branch Interview Easter Interviews from Easter to end of school year – apply early in final school year 10 p.a. combined
GR-Stein Refractories Ltd, Genefax House, Tapton Park Road, Sheffield S10 3FJ (Applications to: Personnel Manager)	Complete range of ceramic high temperature materials for all industrial processes and applications where heat is involved, including the production of iron (*Continued on page 29*)	Chemistry Ceramics Metallurgy Chemical Eng. Refractories Materials Sciences	*17–18 'O' level only* Day release for O.N.C. and H.N.C. in appropriate disciplines. According to O.N.C. result, may transfer to thin sandwich degree course at Sheffield Polytechnic or (for Ceramics) North Staffordshire Polytechnic	G 3 p.a.

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
GR-Stein Refractories Ltd – *continued* *Also at* Central Research Department, Sandy Lane, Worksop, Notts.	and steel, non-ferrous metallurgy, and the manufacture of glass and cement			
Guest Keen & Nettlefolds Group of Companies mainly in the Midlands and South Wales (Applications to: The Director of Administration (SB), Guest Keen & Nettlefolds Ltd, 22 Kingsway, London WC2B 6LG)	The majority of GKN companies are concerned with the manufacture of finished and semi-finished products for every industry in almost every country in the world: forgings, castings, pressings, fasteners, vending machines, machine tools, vehicle wheels, furnaces, plastics machinery and products, engineering equipment, equipment for brewing, for welding, for mining, as well as components for motor and commercial vehicles of every type	Electrical Mechanical Production Structural Design Metallurgy	*Up to 19½ – 'O' or 'A' level according to age* Trainees undergo practical training with block release or thin or thick sandwich courses leading to H.N.C., H.N.D. or degrees, according to their starting qualifications. Students make their own arrangements with colleges and universities	G P Sch No definite closing date but should apply in early Spring 40–50 vacancies p.a.
G. N. Haden & Sons Ltd, 7-12 Tavistock Square, London WC1H 9LZ (Applications to: Group Personnel Manager)	Design and installation of mechanical services for all kinds of buildings and industrial premises	Mechanical, then Heating and Ventilating (Environmental Engineering) Electrical	*16–17 'O' level* Day release for O.N.C. in Mech. Eng. then sandwich course for Diploma in Environmental Engineering at Polytechnic of the South Bank, Newcastle-upon-Tyne Polytechnic, or Grimsby College of Technology *Up to 18 'A' level* Honours degree in Environmental Engineering at University of Strathclyde, Liverpool, Loughborough, or Bath	G P Sch About 12–15 Diploma Students p.a. and about 15 degree Students
Hamworthy Engineering Ltd, Fleets Corner, Poole, Dorset (Applications to: Training Officer)	Pumps and compressors; combustion equipment; hydraulic equipment	Mechanical Production Design	*18–18¼ 'A' level (age limits flexible) Student* Thin sandwich course for degree in Mech. or Prod. Eng. usually at Brunel, Loughborough, Bath or City University. No 1:3:1 students	5 p.a. Preference given to students resident in area local to works Sch (supplement to L.E.A. grant plus lodging allowance)
Hawker Siddeley Aviation Ltd, (Applications may be made to the Education and Training Officer at any of the following units: H.S.A. Brough, Brough, Nr. Hull, Yorks.	Aircraft	Aeronautical Mechanical Electrical Production Applied Physics Mathematics Metallurgy ComputerScience	*Up to 17½ 'O' level* Day release for O.N.C. followed by sandwich course for H.N.D. Good results in the O.N.C. can gain entry to a thin sandwich degree course (*Continued on page 30*)	Vacancies are limited in science and computer fields and application should be made as early as possible

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
Hawker Siddeley Aviation Ltd – *continued* H.S.A. Hatfield, Hatfield, Herts. H.S.A. Kingston, Richmond Road, Kingston-upon-Thames, Surrey H.S.A. Manchester. Greengate, Middleton, Manchester)			*Up to 19 'A' level Engineering or Student apprenticeship (Two 'A' levels)* Thin sandwich H.N.D. course followed by professional study *Undergraduate apprenticeship* Thin sandwich or 1:3:1 degree course. For the thin sandwich course each factory has associations with local technological universities and polytechnics and may prefer students to study at a particular college. Write to the factory concerned for its policy on this	G P Sch
Hawker Siddeley Power Transformers Ltd, Forest Works, Fulbourne Road, Walthamstow, London E17 4EF (Applications to: Training Officer)	Large power transformers, on-load tap changers, control gear	Electrical Mechanical Production	*Up to 17 'O' level* Day release for O.N.C. and H.N.C. *Up to 18½ 'A' level* Thin or thick sandwich courses for degrees at university of student's choice, or (with one 'A') thin sandwich for H.N.D.	G Sch P Closing date 1st June
Hayward Tyler & Co. Ltd, Luton, Beds. (Applications to: The Training Manager)	Pumps, turbines, electric motors, etc	Mechanical	*16–17 'O' level* Day release for O.N.C. Promotion to sandwich course on merit *18–19 'A' level* Thin sandwich course for degree. Those with one 'A' level take H.N.D. Some preference for Aston, Brunel, or City University, Hatfield Polytechnic, or Luton College of Technology. No 1:3:1 courses	G Sch (see section 3) 2 p.a. Closing date 1st May
H. J. Heinz Co. Ltd, Hayes Park, Hayes, Middlesex (Applications to: Personnel Officer) Employment may be at: Head Offices at Hayes; the London NW10 Factory or at the Northern Factories in Lancashire P – *Note on Pre-University Training* Students selected for sandwich courses in food technology and engineering spend one year in industrial training with the Company before proceeding to university. There are also occasional vacancies in the laboratories for young men wishing to spend a year in industry before going to university to study chemistry or biological sciences	Food	Chemistry Food Technology Engineering (Mechanical or Electrical) Food Science, Microbiology or Applied Biology	*17–19 'A' Chemistry and one or two other science subjects* Day release for H.N.C. and Grad. R.I.C. *17–19 'A' Chemistry and Physics plus another science* Four-year sandwich course at National College of Food Technology, Reading University, for B.Sc. Food Technology *17–19 'A' Maths and Physics* Four-year sandwich course for B.Tech. at Brunel University *17–19 Two 'A' level sciences* Day release for H.N.C. and Inst. of Biology qualifications	3–5 p.a. 2–3 p.a. 1 p.a. 1 p.a. Apply as early as possible in final school year G Sch (see section 3) P – see note in first column

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
Alfred Herbert Ltd, P.O. Box 30, Edgwick Works, Coventry CV6 5GT (Applications to: Personnel Services Manager) Seven companies in Group, of which main sponsoring Company is Herbert-BSA Ltd, at Birmingham, Coventry and Leicester. Other sites are Godalming (Surrey), Altrincham and Runcorn (Cheshire), Rugby, Rotherham, Falmouth, Letchworth and Daventry	Machine tools	Mechanical Production Electrical	*16–18 Technician Apprenticeship 'O' level* Day release for O.N.C. and H.N.C. Outstanding progress may qualify at O.N.C. stage for sandwich studies leading to B.Sc. or membership of Professional Institutions *18–19 Student Trainees 'A' level* Sandwich course for B.Sc. honours or ordinary at Lanchester Polytechnic. Other colleges would be considered, reflecting the distribution of factories within the Group	G Sch
Holman Brothers Ltd, Camborne, Cornwall (Applications to: Personnel Manager) A member of International Compressed Air Corporation	Compressed air machinery, fluidics and control systems	Mechanical Production	*16–17 'O' level* Sandwich course for O.N.D. at Cornwall Technical College *17–18 'A' level* One 'A' level: Sandwich course for H.N.D. at Cornwall Technical College Two 'A' levels: Degree course for B.Sc. at Portsmouth Polytechnic	Sch 4 p.a.
Hoover Ltd, Perivale, Greenford, Middlesex	Domestic electrical and gas appliances and electric motors	Electrical Mechanical Production	*Up to 18 'A' level* Sandwich course at Brunel or Loughborough Universities for B.Tech. Sponsorships for H.N.D. in engineering are also considered locally	G Sch About 6 vacancies p.a.
Hunting & Sons Ltd, Milburn House, Newcastle-upon-Tyne NE99 1TA (Applications to: Personnel Manager)	Tanker and cargo ship owners	Marine (sea-going)	*16–18 'O' level* Two years at technical college for O.N.D.; one year afloat; one year ashore training in Engineering establishment approved by Dept. of Trade and Industry	Closing date 31st May each year 4 p.a. H
IBM United Kingdom Laboratories Ltd, Hursley Park, Winchester, Hants. *or* **IBM United Kingdom Ltd,** P.O. Box 30, Inverkip Road, Spango Valley, Greenock, Renfrewshire *or* **IBM United Kingdom Ltd,** P.O. Box 6, Solent Road, Havant, Hants. (Applications to: The Personnel Manager in each	Electronic data processing systems and office equipment	Mathematics Computer Science Engineering	*17–19 'A' level* Four-year thin sandwich course at technological university or polytechnic, leading to an honours degree *Note:* Engineering is not offered at the Hursley Park Branch	Sch (see section 3) G P (see section 3)

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
Imperial Chemical Industries Ltd, Central Personnel Department, Imperial Chemical House, Millbank, London SW1 (Applications to: The Personnel Department of the Division concerned) *Locations* Agricultural Division, Billingham, Teesside Dyestuffs Division, Hexagon House, Blackley, Manchester 9 ICI Fibres Ltd, Hookstone Road, Harrogate, Yorkshire Heavy Organic Chemicals Division, Wilton Works, Middlesbrough, Yorkshire Mond Division, The Heath, Runcorn, Cheshire Nobel Division, Nobel House, Stevenston, Ayrshire Paints Division, Wexham Road, Slough, Bucks. Pharmaceuticals Division, Alderley Park, Macclesfield, Cheshire Plant Protection Limited, Fernhurst, Haslemere, Surrey Plastics Division, Bessemer Road, Welwyn Garden City, Herts.	ICI's interests include synthetic fibres, plastics, fertilisers and other agricultural chemicals, dyestuffs, pharmaceuticals, paints and industrial explosives (for details see brochure mentioned in Notes column)	Mechanical Electrical Chemical Eng. Instrument Control Electronics (only Mech. and Electrical for Heavy Organic Chemicals Division) Chemistry Physics Metallurgy Biochemistry Biology and various technologies (textiles, leather, paper, plastics, paints, rubber etc)	Variable according to Division concerned *16–19 Minimum four 'O' levels* Day release or sandwich courses for O.N.C. and H.N.C., Grad. R.I.C., City and Guilds; can qualify at O.N.C. level for sandwich course for H.N.D. or degree. 'A' level entrants take thin sandwich courses for H.N.D. or degree, and some Divisions have 1:3:1 schemes	G P Sch H in some Divisions Intake variable according to Divisional needs Full details in brochure 'Into Industry' obtainable from Central Personnel Department All Divisions recruit Laboratory Assistants Student Apprentices are recruited by Agricultural Division, Heavy Organic Chemicals Division, and Mond Division
Imperial Metal Industries (Kynoch) Ltd, Witton, Birmingham B6 7BA (Applications to: Kynoch Group Personnel Manager) *Other locations* South Wales, Leeds, Wolverhampton	Manufacture and fabrication of non-ferrous metals and alloys, ammunition, printing, zip fasteners, etc	Mechanical Metallurgy	*16–18 Technical Apprenticeship* 'O' level entrants take day release course for O.N.C. and H.N.C. but can qualify at O.N.C. for transfer to Student Apprenticeship. Entrants with one 'A' level take thin sandwich course for H.N.D., which can lead to the C.E.I. Part 2 and membership of a professional engineering Institution. *16–17 Laboratory technician 'O' level* Day release for O.N.C. and H.N.C. followed by professional qualifications	

(*Continued on page 33*)

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
Imperial Metal Industries (Kynoch) Ltd – *continued*			*17–20 Student Apprenticeship* Thick and thin sandwich degree courses at universities and polytechnics of student's choice	About 6 p.a. for Mech. Eng.; 'a few' for Metallurgy P Sch G
International Computers Ltd, ICL House, Putney, London SW15 (Applications to: Recruitment and Academic Relations, Computer House, Euston Centre, London NW1) *Training Centres:* Castlereagh (N. Ireland) Letchworth (Herts.) Croydon (Surrey), and Manchester	Largest British manufacturer of electronic computers and data processing equipment	Mechanical Electro-mechanical Electronic	*15½–17½ Craft or Technician Apprenticeship (need not have 'O' level)* Five-year course; two years at Company training school followed by classification into craft or technician apprentice. Further studies lead either to City and Guilds or O.N.C. and H.N.C.	Craft or Technician applicants should live within working distance of one of Company's training schools
		Electronic Mathematics Mechanical Electrical Applied Physics	*17½–19 'A' level* Thin sandwich course at university or technical college or 1:3:1 thick sandwich university course for honours degree. Applicants obtain own university or college places. A pre-university course is available for those leaving school in December	G Sch P Lodging allowance payable plus up to £100 p.a. while at university or college Intake variable Closing date for applications is 31st January but applicants for pre-university course should apply in the summer before they plan to leave school
Johnson, Matthey & Co. Ltd, 78 Hatton Garden, London EC1 (Applications to: Assistant Staff Manager) *Also at:* Wembley (Research), Royston, Brimsdown, Enfield, Shepherd's Bush, Harlow, Burslem, Staffs.	Refining of precious and rare metals; high purity inorganic chemicals; high precision engineering products in precious and rare metals and their alloys	Chemistry Metallurgy Mechanical Production	*Up to 23: Chemists and Metallurgists, 'A' level* Day release for Grad. R.I.C. and A.I.M. respectively, through H.N.C. course *Under 19: Engineers, 'A' level* Four-year thin sandwich course for B.Tech. at Brunel University or B.Sc. at City University	4 science and 4 engineering Students p.a. Sch
A. A. Jones & Shipman Ltd, P.O. Box 89, Narborough Road South, Leicester LE3 2LF (Applications to: The Personnel and Training Officer)	Machine tools (precision grinding and honing machinery)	Mechanical Production	*16–17 'O' level Technician Apprenticeship* Day release for City and Guilds Technician's Certificate or O.N.C. and H.N.C. May be upgraded on attainment of good O.N.C. *18–19 'A' level Student Apprenticeship* Thin sandwich course for honours or ordinary degree in engineering. Applicants should have been offered at least one university or polytechnic place. No 1:3:1 courses	G Sch 5 Technicians p.a. 2 Students p.a.

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
George Kent Ltd, Luton, Beds. (Applications to: Education and Training Officer)	Industrial measuring instruments and automatic control equipment	Electronic Instrument	*16–17½ 'O' level* Day release for O.N.C. and H.N.C. or preparation for degree or H.N.D. course *17–19 'A' level* Sandwich course for degree in Instrument and Control Engineering at City University, which must be included among U.C.C.A. choices. Alternatively, sandwich course for H.N.D. in Electrical and Electronic Eng. or 1:3:1 university course with free choice of college	G (2 year) Applications should preferably be in by the first week in April P
Kodak Ltd, Kodak House, Hemel Hempstead, Herts (Applications to: Personnel Manager, Kodak Ltd, Harrow, Middlesex HA1 4TY for Engineering training and to: Scholarship Co-ordinator, Kodak Ltd, Harrow, Middlesex HA1 4TY for Science training) *Works at* Harrow, Hemel Hempstead, Stevenage and Kirkby *Note:* For pre-university employment (see end column) apply to Personnel Manager (Research) at Harrow	Photographic materials and equipment	(a) Trade Apprenticeship: Mechanical Electrical Instrumentation Building (b) Student Technician: Electrical Electronics Mechanical (c) Student Graduate Engineer: Mechanical Production Environmental Process Control Electrical/ Electronic Chemical Eng. (d) Science Student: Chemistry Physics	(a) *Up to 17·2 'O' levels or C.S.E. 1, 2 or 3* Day release to study for City and Guilds qualifications (b) *16 'O' level* Block release for appropriate H.N.C. (c) *17 'A' level* Thin sandwich course in various branches depending on current requirements – Kodak makes annual announcement of type of training available. Student has free choice of college, preferably within area (d) *17 'A' level* Up to a day and a half release for H.N.C., or thin sandwich course for degree at college of student's choice, preferably within area	Apply before 15th April Sch G P – one year or nine months as research assistant in chemistry or physics before university, not part of sandwich course About 10 sandwich students p.a.
John Laing & Son Ltd, London NW7 (Applications to: Education Officer) Location of employment may be anywhere in Great Britain	Building and engineering contractors	Architecture* Civil Eng.* Building Quantity Surveying Plant Engineering * at Technician level only	*16–17 'O' level: Draughtsmen and Technicians* Day or block release for O.N.C. in Construction or Engineering, and H.N.C. in Building, Architecture or Civil Eng., leading to M.Soc. of Architectural and Associated Technicians, or Civil Engineering Technician's Certificate or Inst. of Building Technicians' Certificate or Lic. of Inst. of Building	G (about 35 p.a.) Sch (about 20 sponsored students p.a.) P– not tied to sandwich course – up to 6 boys p.a. can be offered pre-university work as assistants to Civil Engineers on construction sites

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Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
John Laing & Son Ltd – *continued*			*16–19½ 'O' level, 'A' preferred* To train as production controllers, supply officers, estimators, site engineers; day or block release for O.N.C. in Construction and H.N.C. in Building followed by Assoc. of Inst. of Building *17–19½ 'A' level* Day or block release for course leading direct to Assoc. of Inst. of Quantity Surveyors *17–19½ 'A' level* Sandwich course for honours degree in Building (which can have specialisation in Environmental Engineering), Quantity Surveying or Mech. Eng. leading to Assoc. of Inst. of Building or Qty. Surveyors or M.I.Mech.E. *Note:* No 1:3:1 courses	Degree candidates should apply as early as possible in final school year Students make own choice of university or college
Laurence, Scott and Electromotors Ltd, Norwich	Rotating electrical machines and control gear	Electrical Mechanical Mechanical/ Production	*16–17 'O' level* Day release for O.N.C. and H.N.C. at Norwich City College *17–18½ 'A' level* Thin sandwich course for H.N.D. or degree, with own choice of college, but no 1:3:1 students	G Sch Closing date 31st May each year About 12 p.a.
R. A. Lister & Co. Ltd, Dursley, Glos. (Applications to: The Training Officer)	Stationary diesel engines. Marine propulsion engines. Diesel electric generating plants. Marine auxiliary electric generating plants. Agricultural machines	Electrical Mechanical	*16 or over, usually 'O' level, some 'A' level candidates considered* 'O' level entrants have day release for O.N.C. and H.N.C. and on getting a good pass in O.N.C. can qualify for B.Sc. or H.N.D. thin sandwich course. 'A' level entrants must spend a year in the training centre before being sponsored for sandwich degree course	H No closing date; training starts in September About 3 p.a. Sch P
London Transport Executive 55 Broadway, London SW1 (Applications to: Appointments and Welfare Officer)	Public passenger transport service	CIVIL (a) General – Drawing office work on specifications and contract preparation, and outside work taking measurements, surveying, setting out, etc (b) Heating and Ventilating – Design and installation of all equipment in road and rail	*17–19 'A' level* Sandwich course for degree in Civil Eng. at any appropriate university or college in London *16–18 'O' level* Day release for recognised technical qualifications, normally O.N.C. and H.N.C.	G Sch (see section 3) Technician students in all branches can, if they gain a good O.N.C., be considered for transfer to a sandwich course for a degree

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1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
London Transport Executive – *continued*		buildings and tunnels (c) Permanent way, design layout, installation and maintenance of railway track		Those applying for sandwich courses at university should include that university in their U.C.C.A. choices 3 Civil 3 Electrical and 3 Mech. Eng. degree places each year; rather larger numbers of technician vacancies Apply for preliminary interview early in last year at school No 1:3:1 courses
		ELECTRICAL (a) Railway Rolling Stock – Design, development and servicing of electric traction equipment (b) Railway Signals and Telecommunications – Design, installation and maintenance of signalling and associated electronic equipment	*17–19 'A' level* Sandwich course for degree in Electrical Eng. at any appropriate university or college in London *17–19 'A' level* Sandwich course for C.N.A.A. degree in Electrical Eng. at the Polytechnic of the South Bank	
		(c) Railway Rolling Stock – Training in draughtmanship and engineering design (d) Electric power generation and distribution, and maintenance of generating stations and sub-stations	*16–18 'O' level* Day release for recognised technical qualifications, normally O.N.C. and H.N.C.	
		MECHANICAL Railway Rolling Stock – Design and development of new railway rolling stock and associated equipment and servicing at works and depots; training in draughtmanship and engineering design	*17–19 'A' level* Sandwich course for degree in Mechanical Eng. at any appropriate university or college in London *16–18 'O' level* Day release for recognised technical qualifications, normally O.N.C. and H.N.C.	

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
Joseph Lucas Ltd, Great King Street, Birmingham 19 (Applications to: Director of Education and Training) *See also* C.A.V. Ltd	Light engineering products for the motor vehicle, aircraft and other industries	Mechanical Electrical Electronic Production Physics Mathematics	*School-leaving age: 'A' level* Thin sandwich course for degree at technological university, or 1:3:1 degree course. Occasionally, sandwich course for H.N.D.	G P Sch About 30 p.a.
Sir Robert McAlpine & Sons Ltd, 40 Bernard Street, London WC1 For work on construction sites in England, Wales and Scotland	Civil engineering and building	Civil Building Mechanical	*About 18 'A' level* Degree or H.N.D. courses, either full-time or sandwich; applicants should have obtained a provisional place at a university or polytechnic	G P Sch
The Marley Tile Co. Ltd, Riverhead, Sevenoaks, Kent (Applications to: The Staff Executive)	Largest manufacturers of roof and floor tiles in UK; acoustic materials, plastics, pre-cast concrete structures, moulded foam products for motor industry	Production Mechanical Chemistry	*18–20 'A' level (for Engineering)* Thin sandwich degree course at Brunel or Loughborough, one of which should be included among U.C.C.A. choices *16–19 'O' or 'A' level for Chemistry* Day release for O.N.C., H.N.C. and Grad R.I.C. ('A' level candidates can qualify for direct entry to H.N.C.)	*Engineering* Sch 6 p.a. *Chemistry* Candidates should live within travelling distance 4 p.a.
Marshall-Fowler Ltd, Britannia Works, Gainsborough, Lincs. (Applications to: Personnel Manager	Road rollers, tractors, excavators, boilers, tea machinery, castings, etc	Mechanical Production	*16–17 'O' level* Day release for O.N.C. and H.N.C. High attainment in O.N.C. may lead to sandwich course for degree *18 'A' level* After probationary period in Works the student may be nominated for a sandwich course for degree	About 6 Technician vacancies p.a. Not more than 1–2 Students Sch
Mather & Platt Ltd, Park Works, Manchester M10 6BA *Works at:* Manchester, Radcliffe, Preston, Glasgow (Applications to: Education and Training Director at Park Works)	Textile finishing machinery, electric motors, centrifugal pumps installed and portable fire fighting equipment, food canning and deep-freeze machinery, packaging machinery and pipe fabrication work	Mechanical Electrical Hydraulic Fire Protection Production	*16–17 'O' level* Day and block release for O.N.C. and H.N.C. *17–19 'A' level* Thin sandwich course for H.N.D. or degree or 1:3:1 degree course	Age limits are flexible G P Sch Apply in February or March each year Knowledge of European languages an asset
Mawdsley's Ltd, Dursley, Glos. (Applications to: Personnel and Training Officer)	Rotating electrical machinery, motors, generators, alternators, control gear, static equipment and electronic instruments	Electrical Mechanical Production Control	*16–17 'O' level Technician* Day release for O.N.C. and H.N.C. or two-year O.N.D. sandwich course *17–18 'A' level Student* Thin and 1:3:1 sandwich degree courses, thin sandwich H.N.D. courses. Own choice of college or university, with slight preference for those nearest, e.g. Bath, Bristol, Cardiff	6 or more technicians p.a. G P Sch (permitted supplement to L.E.A. grant plus half textbooks, and N.H.I.) About 4 p.a.

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
May & Baker Ltd, Dagenham, Essex RM10 7XS (Applications to: The Personnel Officer) *Also at:* Ongar Research Station, Norwich	Pharmaceutical, photographic, agricultural, veterinary and industrial chemicals	Chemistry Biology	*16–18 'O' level for Laboratory Assistant, 'A' level for Laboratory Technician* According to qualifications, day release for City and Guilds Chemical Technicians' Certificate, O.N.C. in Science, H.N.C. in Chemistry or Biology, leading to Grad R.I.C. or M.I.Biol. A few take degrees by day release	Intake variable G P – temporary employment before university in chemical analysis or simple organic preparation and investigation
Medical Research Council, 20 Park Crescent, London W1N 4AL (Applications to: The Personnel Officer at above address or at: National Institute for Medical Research, The Ridgeway, Mill Hill, London NW7) There are research units throughout the country	Medical research	Chemistry Physics Biology	*Under 20 'O' level Junior Technician, two 'A' levels for Junior Technical Officer* Day release for Ext.B.Sc., Grad R.I.C., H.N.C. or equivalent qualifications	G Sch for selected members of staff (see section 3) After qualification, students are considered for promotion to higher grades
The Metal Box Co. Ltd, 37 Baker Street, London W1A 1AN (Applications to: Head of Staff Recruitment Division) *Factories at:* London*†, Arbroath, Carlisle, Crawley, Hull, Leicester, Liverpool*†, Manchester, Mansfield, Neath, Portadown (N.I.), Portslade*, Portsmouth*, Poole, Rochester, Shipley, Swindon*, Westhoughton, Wisbech, Worcester, Sutton-in-Ashfield, Glasgow, Timperley, Winsford, Wrexham, Bromborough * train Plastics Technologists † train Printing Technologists (also trained in other areas) Engineering training in most areas	Metal, paper board and plastic containers and closures, domestic hardware, polythene wrapping and packaging machinery	Mechanical Production Electrical Plastics Technology Printing Technology	*About 18, 'A' level* Sandwich course for degree at either Brunel or Loughborough Universities (one to be included among U.C.C.A. choices) or 1:3:1 degree course at university of student's own choice *About 18, 'A' level* Sandwich course at the Polytechnic of the South Bank for degree in Chemical Technology and Associateship of the Plastics Institute; *or* sandwich course at Watford College of Technology leading to a degree in Printing Technology	G P Sch About 8 thin sandwich engineering trainees p.a. and 5 for 1:3:1 courses 1 Plastics trainee and 2 Printing trainees p.a. Apply as soon as possible after 1st October and not later than following 1st April
Metal Industries Ltd, Seymour Mews House, Wigmore Street, London W1H 0BS (Applications to: Group Personnel Officer)	Head Office only – co-ordinating agency for firms below	*See below*	*See below*	G Sch

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Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
Metal Industries Ltd – *continued* **Brookhirst Igranic Ltd,** Elstow Road, Bedford	Electric motor controls and switchgear	Electrical Mechanical Production	*Up to 19 'A' level* Thin sandwich course for B.Sc. at technological universities, e.g. Bath and City, and polytechnics	2 p.a. average
Dynamo and Motor Repairs Ltd, North End Road, Wembley, Middlesex	Electrical repairs	Electrical		Occasional intake only
Foster Transformers Ltd, Morden Road, London SW19	Electrical transformers, regulators, rectifiers and test equipment	Electrical		1 p.a. average
Thorn Automation Ltd, Rugeley, Staffs.	Industrial electronics	Electrical Electronic Production		5 p.a. average
Towler Hydraulics Ltd, Rodley, Nr. Leeds	Hydraulic pumps, motor rams, valves and control gear	Mechanical Production		1 p.a. average P – not tied to sandwich course; a few school-leavers taken each year before university for temporary work
Michelin Tyre Co. Ltd, Stoke-on-Trent, Staffs. (Applications to: Recruitment Manager) Apprentice training at Stoke-on-Trent, Ballymena, Burnley, and Dundee	Vehicle tyres and tubes	Mechanical Electrical Rubber Technology Mechanical Electrical Industrial Chemistry Polymer Science	*15½–18 Technician Apprentice* Day release for O.N.C. and H.N.C. or City and Guilds Full Technological Certificate *17–19½ Student Apprentice* Honours degree on 1:3:1 or thin sandwich basis, or H.N.D. A list of the Company's preferred universities and colleges will be found in section 3	Sch (see section 3) G P Early application advisable, preferably but not exclusively by 15th December No. of vacancies varies
Ministry of Defence (a) Student Apprenticeships or (b) Student Engineer appointments at Research and Development Establishments and Royal Ordnance Factories (Applications to: The Industrial Training Officer CM(Ind)1c, Ministry of Defence, Room 302, Sentinel House, Southampton Row, London WC1B 4AX)	Research, development, manufacture and maintenance of equipment for the Services	(a) Electrical Electronic Mechanical Aeronautical Chemical (b) Civil Electronic Electrical Production Mechanical Metallurgy	*16–19 on 1st September, 'O' level* Day release for O.N.C., H.N.C. or City & Guilds Final Certificates. Opportunity exists for selected students to pursue sandwich courses leading to degrees or H.N.D. in Engineering *Under 20 on 1st September, 'A' level* Sponsored sandwich and full-time courses leading to degrees	Closing date about end February each year G P Sch (see section 3)
Ministry of Defence (Navy Department): Royal Naval Engineering Service (Schools Entry)	Design and development of systems, machinery and equipment used in (Continued on page 46)	Mechanical Electrical 50	*Not more than 19½, three 'A' levels* Entrants are trained at the Royal Naval Engineering College, Manadon, Plymouth, undergoing, during their	G Sch (Full support) Application by the end of June

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
Ministry of Defence (Navy Department) – *continued* (Applications to: Civil Service Commission, Alencon Link, Basingstoke, Hants.)	warships; organising and controlling installation projects in ships under construction; planning, organising and managing refit facilities in HM Dockyards		first year academic, practical, and workshop training in mechanical and electrical engineering subjects and their applications to naval purposes. They then read for an honours degree in mechanical or electrical engineering. There is some training during vacations, including visits to firms and naval establishments. Students are expected to obtain a 1st or upper 2nd Class honours degree. After obtaining their degree, they receive further training at naval establishments and at sea before taking up appointment as professional electrical or mechanical engineer	
Ministry of Defence (Navy Department), Probationers in the Royal Corps of Naval Constructors *Training* at R.N. Engineering College, Manadon, and University College, London (Applications to: Ministry of Defence (Navy Department), Civilian Management (Specialists), Empire Hotel, Bath)	Design, production and maintenance of ships of the Royal Navy	Naval Architecture	*Not more than 19½ on 1st September, 'A' level* One-year course at R.N. Engineering College, Manadon, with instruction in ship construction, shipyard practice and theoretical naval architecture at the Constructors' Training Office, HM Dockyard, Devonport, followed by a three-year undergraduate course at University College, London, working for a B.Sc. Students who gain a 1st, 2nd or 3rd class honours degree then undertake a postgraduate year for a M.Sc. degree. Probationers are then appointed Assistant Constructors in the R.C.N.C.; thereafter they undergo a further year's training at sea. All members of the R.C.N.C. are civilian officers, liable to serve at sea or at any establishment at home or abroad. Assistant Constructors, after they leave U.C.L. and have acquired practical experience, may make application for membership of the Institution of Naval Architects	Applications by mid-May Sch (Full support)
Ministry of Defence (Navy Department), Technician Apprenticeships in the Royal Dockyards at Chatham, Devonport, Portsmouth and Rosyth (Applications to: Personnel Manager of one of the Royal Dockyards listed above)	Fitting and repair of ships	Mechanical Electrical Naval Architecture	*Under 18 on 1st September, 'O' level* 16 hours a week attendance (day release) at technical colleges, leading to O.N.C. in Engineering or Naval Architecture, followed by courses leading to H.N.C. in Electrical Engineering, Mechanical Engineering, or Naval Architecture. On completion of training qualified technician apprentices are offered permanent non-industrial appointments as Draughtsmen or Technical Officers Grade III: may be selected for training to honours degree standard with a view to becoming Naval Constructors or professional mechanical and electrical engineers	Those with less than the four required 'O' levels take an examination in Mathematics, Science and English, held each Spring Interviews in May/June/July each year Sch H – Rosyth only

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
Mirrlees Blackstone Ltd, Hazel Grove, Stockport, Cheshire SK7 5AH (Applications to: The Training Officer) A Hawker Siddeley Company	Diesel engines	Mechanical Production Computer Science	*Up to 17 'O' level* Day or block release for O.N.C. and H.N.C. with opportunity to transfer to sandwich course for H.N.D. or degree *Up to 19 'A' level* Thin sandwich degree course at University of Salford. No 1:3:1 courses	 G Sch Applications by 31st March
Mullard Ltd, Central Personnel Department, Berkshire House, High Holborn, London WC1V 7AQ (Applications to: Technical Training Adviser) *Training at:* Mitcham, Surrey; Southampton, Blackburn, Crossens and Simonstone, Lancs., Thornaby, Teesside	Valves, photo-cells, cathode ray tubes, semi-conductor devices, magnetic and electronic components, information storage devices, tuners	Electrical Mechanical Production Electronic Physics Chemistry	*16–17 'O' level* Day and block release for O.N.C. and H.N.C. *18–19 'A' level* Day release in some cases or sandwich course for H.N.D. or degree *16–18 'O' or 'A' level* Day release for H.N.C., Grad. R.I.C., Grad. Inst.P.	 G P Sch (at Mitcham) Closing date end May at Mitcham, Southampton mid-April About 10 p.a. for engineering and 8 for science
National Coal Board, Hobart House, Grosvenor Place, London SW1 (Applications to: Head of Recruitment, Education and Training Staff Department) Training in mining areas	Coal, premium and smokeless fuel, coke, by-products and bricks	Mining Mechanical Electrical Mining Mechanical Electrical Chemical Eng.	*Normally not over 18, but may be older – 'O' level* Day release to O.N.C. level followed by sandwich courses for H.N.D. or C.N.A.A. degree, or day release for H.N.C. according to standard reached *18–25 'A' level* Full-time or sandwich honours degree course on full or supplementary scholarship	No. of vacancies variable Applications should be received in the early months of the year Lodging allowance available G Sch (see section 3) P
Norris Warming Co. Ltd, Burley House, Theobald's Road, London WC1 *Branches at:* Ipswich, Manchester, Newcastle, Bristol (Applications to: Personnel Officer)	Design and installation; heating, ventilating and air conditioning	Mechanical then Heating and Ventilating	*16–18 'O' level* Day release for O.N.C. then 18 months sandwich course for Diploma at Polytechnic of the South Bank: and finally Associate Membership of Institution of Heating and Ventilating Engineers	Closing date July H 10 p.a.
North Thames Gas Board, 30 Kensington Church Street, London W8 (Applications to: The Staff Controller)	Natural gas	Civil Mechanical	*18 upwards 'A' level* Sandwich training for degree, usually thin sandwich at Brunel, City University or other colleges in London area; 1:3:1 courses considered	1 or 2 p.a. G Sch

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
North Western Gas Board, Welman House, Altrincham, Cheshire (Applications to: Chief Training Officer) *Training* in towns throughout the North West	Gas	Gas Engineering, specialising in Distribution or Industrial Gas Engineering	*16–19 'O' level or 'A' level Technician Apprenticeship* Block release for Inst. of Gas Engineers Advanced Certificate for Senior Gas Engineering Technicians, at Stretford Technical College. Up to four Technicians selected each year for honours degree course in Gas Engineering at University of Salford	G Sch (full support and fees) Industrial training available for college or university-based students
C. A. Parsons & Co. Ltd, Heaton Works, Newcastle-upon-Tyne 6 A member of the Reyrolle Parsons Group (Applications to: Training Manager)	Steam turbines, alternators, and power plant auxiliary equipment	Mechanical Electrical	*16½ 'O' level* Day or block release for O.N.C. and H.N.C. *17–18½ 'A' level* Thin or 1:3:1 sandwich course for B.Sc. at universities or polytechnics of student's choice, also 3:2 university courses	G (20 p.a.) Sch P – usually part of 1:3:1 scheme but exceptions may be made for other pre-university school-leavers wanting works experience 6 students p.a.
Parsons Peebles Ltd, East Pilton, Edinburgh EH5 2XT (Applications to: Chief of Engineering Training)	Medium and heavy transformers, motors and generators	Electrical Mechanical Production	*16½–18 S.C.E. 'O' grades* Day release for O.N.C. and H.N.C. or City and Guilds Electrical or Mechanical Technician's Certificate. Own technical apprentices sometimes supported on H.N.D. or degree sandwich courses in electrical, mechanical or production engineering	G P – not tied to sandwich course: basic workshop experience between school and university, often via Scottish Electrical Training Scheme (see section 2) 2–4 p.a. Applicants resident in Edinburgh preferred
P & O Lines Ltd, Beaufort House, St Botolph Street, London EC3A 7DX	Shipping	Marine (sea-going)	*16–18 'O' level* Four year Cadetship on Agreement; first two years on full-time O.N.D. course at a college of technology; 18 months at sea; then a further year's study at college in workshop theory and practice. On completion, Cadets serve 18–21 months as Junior Engineer Officers before taking examination for Second Class Certificate of Competency, for which O.N.D. gives certain exemptions (*Continued on page 43*)	H

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
P & O Lines Ltd – *continued*			*18–19½ 'A' level* Three-and-a-half year H.N.D. Cadetship on Agreement: Year 1: 2 terms academic, 1 term workshop training. Year 2: 2 terms academic, 1 term seagoing. Year 3: 2 terms academic, take H.N.D. finals. 6 months seagoing or industrial project. H.N.D. grants exemption from C.E.I. Part 1 and First and Second Class Certificates of Competency	
Perkins Engine Group, Peterborough (Applications to: The Technical Training Manager)	High speed diesel engines	Mechanical Production Metallurgy	*16–17 'O' level Student Technician* Day release for O.N.C. and H.N.C. *18 'A' level Student Engineer or Metallurgist* Thin or 1:3:1 sandwich course for degree in Engineering or thin sandwich course for degree in Metallurgy. Thin sandwich courses are normally at Loughborough University, which should be included among U.C.C.A. choices	G P Sch Candidates accepted subject to reaching qualifications in their examinations
Permali Ltd, Bristol Road, Gloucester GL1 5SU (Applications to: Training Manager)	Cellulose and fibreglass-based laminates for electrical and mechanical applications. Cast resins. H.V. bakelised paper bushings (indoor and outdoor). Polytetrafluoro-ethylene components	Electrical Mechanical Plastics Technology Industrial Chemistry Production	*Up to 20 'A' level* Sandwich course for H.N.D. or B.Sc. at technological university	Sch Recruitment normally limited to local candidates
Pfizer Ltd, Richborough, Sandwich, Kent (Applications to: Development and Training Manager)	Pharmaceutical, veterinary, agricultural, fine chemicals, vaccines, dietary foods	Chemistry Biochemistry Microbiology Pharmacology Parasitology	*16–18 with 'O' level, 17–19 with 'A' level, Laboratory Technician* Day release for O.N.C. (with 'O' level) or H.N.C. (with 'A' level). O.N.C. is in Science or Applied Biology, and H.N.C. in Chemistry or Applied Biology. Can continue studies to Grad. R.I.C., L.I.Biol. etc	G Applications preferably before Easter. Most vacancies occur in the Research Division P – gap-filling employment, mainly for Oxbridge scholars, in Research laboratories
Pilkington Brothers Ltd, St Helens, Lancashire (Applications to: Recruitment Officer) *Works at:* St Helens, Glasgow, Birmingham, Doncaster, Pontypool, Queenborough, St Asaph	Sheet, flat and rolled glass; pressed glassware for industrial use; armourplate; optical glass, decorative panels: cathode ray tubes for television	Mechanical Electrical Applied Physics	*Up to 19 'A' level* Student engineers take thick or thin sandwich courses for B.Sc. at university or polytechnic of their choice. Applied Physics students take thin sandwich course at university or polytechnic of their choice	G P H 5 p.a. approx.

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
Platt International Ltd, Holcombe Road, Helmshore, Rossendale BB4 4NG (Applications to: Training Officer) *Also at:* Accrington, Bolton, Oldham	Cotton, woollen, worsted and synthetic processing machinery, general engineering	Mechanical Production Engineering Science	*Age limits flexible: 'A' level* Full-time (1:3:1) or thin sandwich for degree courses, or sandwich courses for H.N.D. Those taking thin sandwich for degree should name University of Salford among U.C.C.A. choices. Own choice of university for 1:3:1 students	G P Sch (see section 3) 10 p.a.
The Plessey Co. Ltd, *Dynamics Group* *Works at:* Titchfield, Romford, Swindon, Enfield (Applications to: Group Training Manager, Plessey Dynamics Group, Titchfield, Fareham, Hants.) *Telecommunications Group* *Works at:* Liverpool, Nottingham, Sunderland, Wigan, and *Research establishments* at P.T.R., Taplow Court, Maidenhead (Applications to: Group Training Manager, Plessey Telecommunications Ltd, Edge Lane, Liverpool) *Electronics Group* *Works at:* Ilford, Surrey, S. Hampshire, Poole, Wincanton, Essex, I.O.W., W. Drayton, Alexandria, Scotland: *Research* at Wincanton and Romsey (Hants.) (Applications to: Group Training Manager, Plessey Electronics Group, Surrey House, Temple Place, London WC2) *Components Group* *Works at:* Swindon, Ilford, Titchfield, Towcester, Chessington, Northampton, Liversedge, Bathgate (Scotland) and *Allan Clark Research Centre*, Northampton (Applications to: Group Training Manager, Plessey Components Group, Kembrey Street, Swindon, Wilts.)	Systems equipment and components for the aerospace industry. Equipment and components for industrial hydraulics – particularly off road vehicles International, national and private telephone networks and total range of communications systems A.T.C. Systems and radar, radio communications, transmission, processing and presentation of data, instrumentation for meteorology and oceanology. Machine tool control. Traffic systems Discrete and passive components for professional and entertainment electronics; micro electronics; memories	Aeronautical (Dynamics Group only) Communications Electrical Electronic Telecommunications Production Mechanical Industrial Instrument and Control Mathematics Physics Chemistry Metallurgy	*16–17 'O' level, Technician* Day or block release for City and Guilds Certificate or O.N.C. and H.N.C., with possible transfer to sandwich course after O.N.C. stage *17–19 'A' level* Sandwich course for H.N.D. or degree, or 1:3:1 university course	G P Sch About 50 p.a.
Post Office (Full Details from: Post Office Appointments Centre, Euston Tower, 286 Euston Road, London NW1 3DD)	Telecommunications Engineering	*Studentship* Electrical Electronic Eng. Mechanical Physics Electronics	*17–20 'A' level Mathematics and Science subjects (min. three)* Training within the Post Office for one year followed by a full-time university degree course	G P Apply by 31st October

(*Continued on page 45*)

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
Post Office – *continued*		Computer Science Mathematics *Assistant Executive Engineer* Electrical Electronic Mechanical	 *17½–27 'A' level Physics and Mathematics* Bursaries and thin sandwich courses for degree In both schemes, student makes own choice of college	 Sch (see section 3) Continuous recruitment programme
Powell Duffryn Group, Enquiries should be sent to Personnel Officer, Group Personnel Department, Powell Duffryn Ltd, Powell Duffryn House, 8 Great Tower Street, London EC3R 5AE	Main interests throughout UK and overseas are in engineering, shipping, heating and air treatment, fuel distribution, oil and chemical storage, wharfage and transport, timber and quarrying	*No information available at time of going to press* but see separate entries for Andrews-Weatherfoil Ltd and Hamworthy Engineering Ltd		
Priestman Bros. Ltd, Hedon Road, Hull (Applications to: Personnel Manager)	Excavators, grabs, grab dredgers	Mechanical	*16–17 'O' level* Day release for O.N.C. and H.N.C. at Hull College of Technology. Some selected for H.N.D. sandwich course at Hull after O.N.C. stage	Closing date 30th June
Pye-T.M.C. Ltd, Hollingsworth Works, Martell, West Dulwich, SE21 (Applications to: Personnel Officer) *Works also at:* St Mary Cray, Kent	Telecommunication equipment for G.P.O. and export	Electrical Mechanical Telecommunications	*16–17 'O' level* Day release for O.N.C. *16–18 'A' level* Thin sandwich courses for H.N.D. or degree at student's own choice of college or university. No 1:3:1 students	Closing date end August G Sch About 4 technicians and 4 students p.a.
Pye Unicam Ltd, York Street, Cambridge (Applications to: Personnel Manager)	Scientific Instruments	Production Electronics Instrument Technology Design Chemistry Applied Physics	*18–19 'A' level* Thin sandwich course at technological university or polytechnic for degree or H.N.D. Students should ask firm's advice about preferred colleges before putting in U.C.C.A. applications or approaching polytechnics. No 1:3:1 courses. Student chemists may start by day release course for G.R.I.C., or sandwich course for H.N.D. or degree	3 p.a. for Engineering 1 p.a. for Chemistry 1 p.a. for Physics G Sch

1 Studentships in Engineering and Science

Name and address of firm and any other locations where training may take place	Products	Branches of engineering or science	Age at entry and details of course	Notes (see p. 54) and approx. no. of vacancies p.a.
The Fyrene Co. Ltd, Pyrene House, Sunbury-on-Thames, Middlesex (Applications to: The Personnel Manager) *Other locations at:* Iver, Feltham and Ferndale	Fire protection equipment, fire extinguishers, fire fighting vehicles, metal finishing processes, fire detection and security apparatus	Mechanical Electrical Chemistry Metallurgy	*Under 18 for Engineering, under 21 for Science, 'O' level* Day release for O.N.C. or City and Guilds Certificate	G (2-year) Applications before end of April
Raleigh Industries Ltd, Nottingham (Applications to: Training Officer) A member of the T.I. Group	Bicycles and accessories, toys and prams, car seats, office furniture	Mechanical Production	*Ic 17½ 'O' level* Day or block release for O.N.C. and H.N.C. *17–19 Student Apprenticeship 'A' level* Thin sandwich course for H.N.D. or degree, or 1:3:1 degree course; own choice of college or university	G P Sch 3 or 4 Students p.a.
Ransome Hoffmann Pollard Ltd, P.O. Box 18, Newark, Notts. (Applications to: Chief Education and Training Officer)	Ball and roller bearings	Mechanical Production	*'O' level, under 18 on 1st September* Day release for O.N.C. leading to H.N.D. or degree course *'A' level, age limit flexible* Thin sandwich course at technological university or polytechnic for degree; own choice of college but preferably within reasonable distance, e.g. Loughborough University or Trent Polytechnic	G 4 p.a. Sch No closing date
Ransomes, Sims & Jefferies Ltd, Ipswich, IP3 9QG (Applications to: Training Officer)	Farm machinery, grass machinery, electric trucks	Mechanical Electrical Production Agricultural	*17–18 'A' level* Thin sandwich course leading to H.N.D. or degree, usually B.Tech. at Brunel University. Occasionally full-time C.N.A.A. degree course at National College of Agricultural Engineering	G Sch 1–2 p.a. Closing date 30th April each year
Reed International Ltd, Larkfield, Nr. Maidstone, Kent (Applications to: Senior Education Officer) Place of work is normally at Larkfield, but occasionally at other centres in the UK	Paper and board manufacturers and converters	Mechanical Electrical Chemistry Chemical Eng. Physics Applied Physics Paper Science	*Engineering Students* *18–20 'A' level* Thin or 1:3:1 sandwich course for degrees or H.N D. with free choice of university or polytechnic *Science Students* *16–18 'O' level, 18–20 'A' level* Day release for O.N C. and H.N.C. Chemistry or Applied Physics, leading to Grad. R.I.C. or Grad. Inst.P. For Paper Science, full-time sponsored B.Sc. at Manchester University	G Sch (supplement to grant, but may be extended if circumstances warrant)