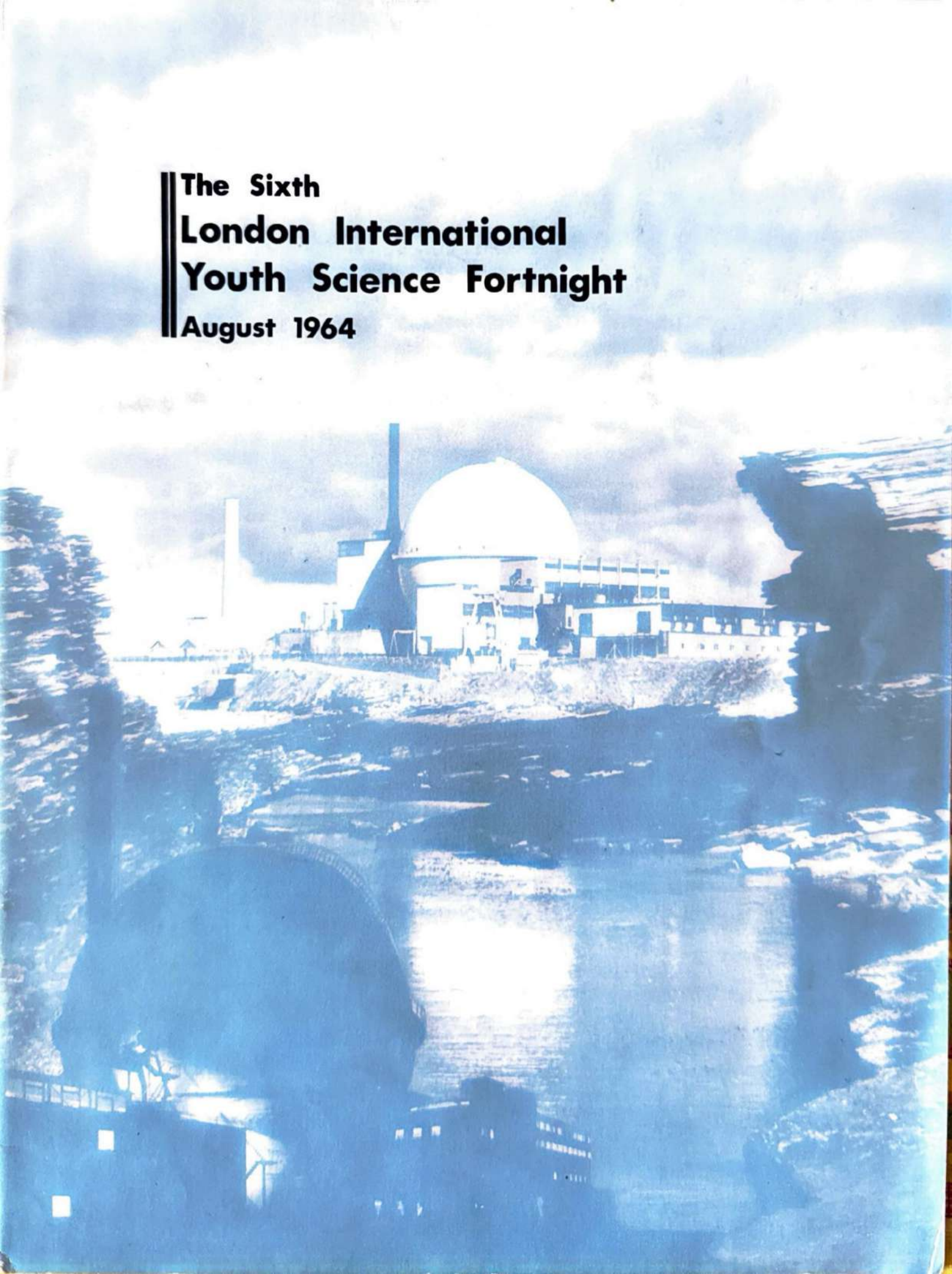
The Sixth
London International
Youth Science Fortnight
August 1964



Contents

The Sixth London International Youth Science Fortnight

Patron — His Royal Highness the Duke of Edinburgh, K.G.

President — Sir John Cockcroft, O.M., F.R.S.

Vice-Presidents — Dame Kathleen Lonsdale, D.B.E., F.R.S.

Dame Irene Ward, D.B.E., J.P., M.P.

Sir Lawrence Bragg, F.R.S.

W. J. Langford, Esq., C.B.E., M.Sc., J.P.

The Rt Hon. Lord Luke of Pavenham, T.D., D.L., J.P.

Organized by Worldfriends International Service for Youth in conjunction with the British Association for the Advancement of Science.

Administrative Headquarters — **308 Earl's Court Road, London, S.W.5**
Telephone FREmantle 7071

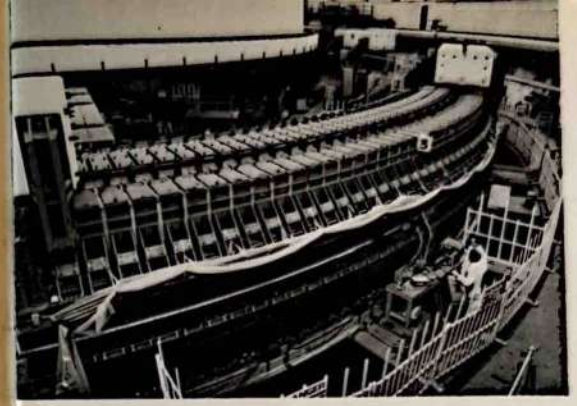
BUCKINGHAM PALACE

I am delighted to offer a welcome to all the delegates attending the 1964 Youth Science Fortnight. I hope this will prove a rewarding and stimulating experience both scientifically and as an exercise in human contacts.

I should also like to congratulate those former members of the Fortnight whose efforts produced "Science and Technology", the London Science Club and the European Tour. This initiative is very encouraging and I am sure it will make a substantial contribution to the whole idea behind these annual gatherings.

Philip

June, 1964.



The GeV proton synchrotron "Nimrod" at the Rutherford High Energy Laboratory, Chilton, Berkshire. Two scientists carrying out a survey of the magnetic field of one of the octants of the 7,000-ton electro-magnet which holds the protons in their orbit as they are accelerated

"Science has always been international, and long may it remain so," said Lord Rutherford thirty years ago. As a New Zealander who worked as a research student in Cambridge, as Professor at McGill University in Canada, at Manchester where he discovered the nuclear atom, and at Cambridge as Director of the Cavendish Laboratory, he demonstrated through the international character of his laboratories the great advantage of constant interchange of, and communication between, members of the scientific world. The collaboration between Rutherford and Niels Bohr led to the Rutherford/Bohr model of atomic structure which has had such a profound effect. The collaboration between Rutherford and Hevesy was the starting point for the world-wide application of radioactive isotopes which has had such a profound effect on biology.

Today the spirit and practice of international collaboration in science has developed still further. The European Council for Nuclear Research (C.E.R.N.) has, through its Geneva laboratory, demonstrated the great advantage of twelve European nations collaborating to build and operate one of the world's most powerful nuclear accelerators and extremely important experimental results are now being obtained. Britain collaborates with the United States and European nations to share rocket launchers and satellites for space research. The organization of the International Geophysical Year, the International Biological Year, the International Indian Ocean Expedition by the International Council of Scientific Unions are examples of collaboration on a world-wide scale.

In the application of science to underdeveloped countries, the Rockefeller and Ford Foundations have shown that tremendously important results can be achieved in increasing food production and in control of disease by collaboration between scientists from both advanced countries and less developed countries.

Young people can help by taking part in organizations such as the Voluntary Service Overseas, and thus become acquainted with the problems of the countries at first hand during their early careers. Later in their careers, they can take up temporary posts overseas, either in the universities or in Britain through the Overseas Service Aid Scheme, whereby Britain sends out and pays for trained and experienced men and women of all kinds to help carry the burden of government until such time as they can be replaced by local people. There are, today, many schemes of this kind in different countries.

John Cockcroft

President of the Science Fortnight

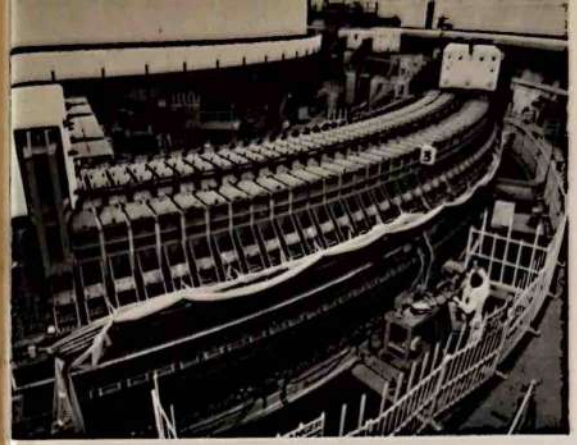
BUCKINGHAM PALACE

I am delighted to offer a welcome to all the delegates attending the 1964 Youth Science Fortnight. I hope this will prove a rewarding and stimulating experience both scientifically and as an exercise in human contacts.

I should also like to congratulate those former members of the Fortnight whose efforts produced "Science and Technology", the London Science Club and the European Tour. This initiative is very encouraging and I am sure it will make a substantial contribution to the whole idea behind these annual gatherings.

Philip

June, 1964.



The GeV proton synchrotron "Nimrod" at the Rutherford High Energy Laboratory, Chilton, Berkshire. Two scientists carrying out a survey of the magnetic field of one of the octants of the 7,000-ton electro-magnet which holds the protons in their orbit as they are accelerated

"Science has always been international, and long may it remain so," said Lord Rutherford thirty years ago. As a New Zealander who worked as a research student in Cambridge, as Professor at McGill University in Canada, at Manchester where he discovered the nuclear atom, and at Cambridge as Director of the Cavendish Laboratory, he demonstrated through the international character of his laboratories the great advantage of constant interchange of, and communication between, members of the scientific world. The collaboration between Rutherford and Niels Bohr led to the Rutherford/Bohr model of atomic structure which has had such a profound effect. The collaboration between Rutherford and Hevesy was the starting point for the world-wide application of radioactive isotopes which has had such a profound effect on biology.

Today the spirit and practice of international collaboration in science has developed still further. The European Council for Nuclear Research (C.E.R.N.) has, through its Geneva laboratory, demonstrated the great advantage of twelve European nations collaborating to build and operate one of the world's most powerful nuclear accelerators and extremely important experimental results are now being obtained. Britain collaborates with the United States and European nations to share rocket launchers and satellites for space research. The organization of the International Geophysical Year, the International Biological Year, the International Indian Ocean Expedition by the International Council of Scientific Unions are examples of collaboration on a world-wide scale.

In the application of science to underdeveloped countries, the Rockefeller and Ford Foundations have shown that tremendously important results can be achieved in increasing food production and in control of disease by collaboration between scientists from both advanced countries and less developed countries.

Young people can help by taking part in organizations such as the Voluntary Service Overseas, and thus become acquainted with the problems of the countries at first hand during their early careers. Later in their careers, they can take up temporary posts overseas, either in the universities or in Britain through the Overseas Service Aid Scheme, whereby Britain sends out and pays for trained and experienced men and women of all kinds to help carry the burden of government until such time as they can be replaced by local people. There are, today, many schemes of this kind in different countries.

John Cockcroft

President of the Science Fortnight

A Message from
Lord Nelson of Stafford

Chairman and Chief Executive of
The English Electric Company Limited

As leader of a world-wide organization manufacturing all types of equipment from solid state devices to nuclear power stations, I am conscious of the complex changes which technology introduces in every community. We, as engineers and scientists, can make great contributions to the well-being of all mankind if the possibilities which we develop are used effectively by people who understand them. New ideas as well as new machines have to be absorbed into our society, and our way of life must be adapted to take advantage of them. This makes communication and discussion on these matters on an international basis of the greatest importance.

It is my belief that such gatherings as the International Youth Science Fortnight help fulfil this need for world-wide understanding of the problems of technical change and development. It is therefore with the greatest pleasure that English Electric sponsor this programme and wish you all a very happy and successful fortnight.

Nelson of Stafford

What is the Science Fortnight trying to achieve —any answers?

George McGowan, Executive Secretary, Worldfriends International Service for Youth

Even though the 1964 Science Fortnight is over two months away as this is being written, no more applications can be considered. All the accommodation which was originally reserved, and an additional thirty places besides, have been filled. Why is this so? Why are countries all over the world so keen to be represented in London? There are many possible answers – knowledge, understanding, tolerance, trust – any one of these could be reasonably expected.

In the preceding six months, when we have been at work organizing this two-week congress and in planning the programme, a thought which has exercised our minds and which has often caused divergencies of opinion has been quite simply – "What is the Fortnight trying to achieve?"

At its inception in 1959 the Fortnight brought together five hundred Europeans with the common link of science. Each spent two weeks in the home of his or her partner – the European in London for the Fortnight and the Londoner subsequently in a European home. Soon the Fortnight attracted enquiries from towns and counties in Britain remote from London, and throughout the world continents far from Europe also sought to take part. So the pattern changed, and groups came to London from the length and breadth of Britain and from the five continents. The principle of exchanges was impossible but an alternative scheme took its place whereby groups from abroad lived together in University Halls with groups from the British Isles. This proved an equally exciting concept and opened up new possibilities.

By 1962 murmurs began to be heard about the importance of building on that foundation of understanding and respect which had become the keynote of life in the Halls of Residence. These murmurs did not come from any "fifth column" of hosts or couriers but from participants themselves. It soon became apparent that the date when the Fortnight could be regarded as an end in itself was over. Something more was demanded.

But what? Contact and communications demanded a written medium – *Science and Technology*, the magazine of the Fortnight, is now in existence. Getting together with old friends required reunions – these have already been staged in London and Glasgow – and a special reunion in the shape of the tour this August by fifty ex-participants will link up with others from Belgium, France, Austria, and Germany. A club has been formed in London to keep Londoners and any other participants in London together and to enable them to meet regularly for lectures and discussions of scientific interest and for social occasions.

Despite all this, the question "What are we trying to do?" remains unanswered. In 1963 we took the theme of "Social Implications of Science" as the background for the programme. Widespread criticism ensued because we had not developed the theme throughout the Fortnight. This year we shall try to do better with "Adaptation to Change". This theme will be in the minds of all lecturers, discussion-group leaders, and demonstrators. We hope that it will occupy your mind.

But still we have no answer to our query. We baited the trap with "Social Implications of Science" but the trap was never sprung. Whether "Adaptation to Change" will give the clue is unknown – only you know the answer.

Possibly we may be allowed a brief thought on the subject of the purpose of the Fortnight. In 1963 a group of participants visited Coventry. Coventry is an old city which was rebuilt, following war damage, in a style which the British, at any rate, regard as somewhat *avant-garde*. It is a centre of industry and commerce. Its cathedral is famous. Even for the non-Christian the building is an inspiration. Modern in concept, its fabric and furnishings represent co-operation between nations, and its atmosphere is truly international. This year's visit to Coventry by the Fortnight is an innovation in the programme. We have introduced it to show you something of the industrial heart of Britain, and also because we hope you will find inspiration in the story of the city and its cathedral. However, the visit is not a religious pilgrimage. Coventry is international – in one week last autumn the Patriarch of the Orthodox Russian Church preached and the Berlin Philharmonic Orchestra played. These two events are not insignificant – can they be paralleled elsewhere in the world? Coventry has been described as a "symbol of unity in an age of change". Would that phrase perhaps provide purpose for our Fortnight?

FACTS AND FIGMENTS
the ancillaries of the Science Fortnight

by Robin J. Marlow

The world is divided, cynical, and embittered. Any opportunity to exchange knowledge and opinions leading to greater understanding between those of us separated by culture, history, and geography is a contribution to unity and to a happier world. In producing such an opportunity, the International Youth Science Fortnight, within its limited capacity, is performing this important function. But does the Science Fortnight in itself offer sufficient opportunity for direct communication between the world's science students on whom so much responsibility rests? We former participants of the Science Fortnight believe not.

It is with this conviction that we have mooted the idea of an association of the world's science students, to promote and provide opportunity for the exchange of knowledge and opinion in all aspects of science and its philosophy. The possibilities are numerous. Our own discussions have produced ideas for conferences, publications, science tours, and clubs on international, national, and local scales. These are a few of the less sanguine ideas (short-wave radio, we felt, was the product of excess enthusiasm).

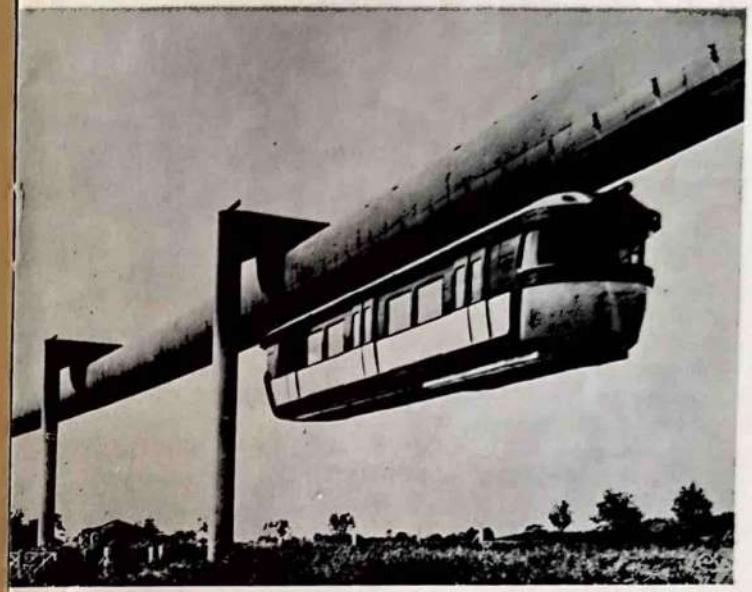
It is futile just to list ideas, no matter how inspired. Science demands that ideas be proven true by experiment. As students of science, we have attempted to follow this principle and during the last few months we have made a practical start with a magazine, a London Science Club, and a European Science Tour.

The magazine was originally intended to be an independent publication for former participants of the Science Fortnight and for this purpose an editorial board of past participants was formed. At this point, for reasons of finance (always lacking inexplicably in the right place for the right purpose), time (limited), and ability (similar to finance and time), the story might well have ended had we not been fortunate in contacting a London publishing house (Fountain Press). They received the idea of a magazine for young scientists with great enthusiasm, but although sympathetic to the cause of internationalism they were, apologetically, unable to go all the way with us in a commercial venture. They have, however, been most generous in offering four pages in each issue to the editorial board so that they may publish items of specific interest to the Science Fortnight. In addition, articles submitted through the editorial board will be considered for publication in the main body of the magazine. The first issue was published in June under the title *Science and Technology – a magazine for students*. It contained several articles written by past participants. We hope that there will be many more articles from participants in the Sixth Fortnight. Copies of *Science and Technology* will be available during the Fortnight.

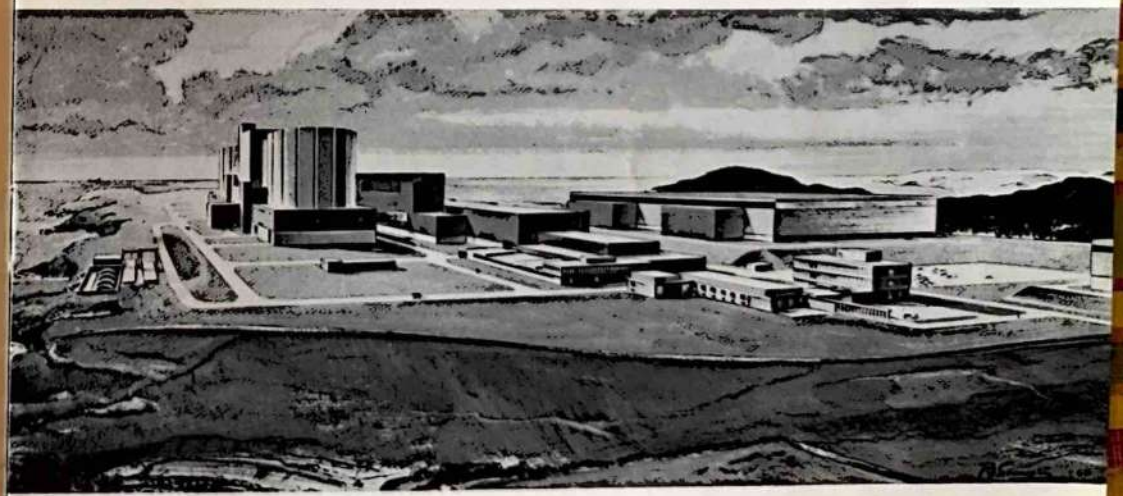
The success of a club lies partially in its members and partially in its premises. The London Science Club at present exists only in the former context since the possibility of obtaining suitable premises in central London at a modest rent is negligible. However, despite this handicap the London Science Club is well on the way to becoming established. At its first meeting the Club was addressed by Sir Lawrence Bragg, Director of the Royal Institution and Vice-President of the Science Fortnight, who has given his valuable support and advice since the early days. The club has met regularly on the last Friday of each month, the meetings taking the forms of lectures, visits of scientific interest, and a forum on the first issue of *Science and Technology*. During the autumn an equally varied programme is planned by the newly elected committee.

Naturally a local science club tends towards insularity, the precise opposite to the aims which the proposed association for young scientists would try to foster. To counteract this we suggested to Worldfriends, the sponsors of the Science Fortnight, the organization of a European Tour which will take place immediately after the Science Fortnight. This tour will make short stops of a few days in centres where there are concentrations of former participants and establishments of special scientific interest and it is hoped that the 1964 Tour will be the forerunner of many tours and visits with science clubs as the centres providing hospitality.

By these experiments, we think we have proved, if not conclusively at least to a reasonable degree of certainty, that the association we desire is not just a pipe-dream. Admittedly these schemes are small, but they point the way. Whether or not they develop depends very much on you. Let us speculate on the possible organization of an association membered by students of the sciences grouped into local science clubs; on representatives of these clubs forming national committees for co-ordination and international liaison; on one international committee assuming responsibility for a defined period of one or two years for the task of international co-ordination. Let us also consider the establishment of national publication boards to ensure the flow of information, news, and articles to a central board for the production of a truly international journal of the association. The potential is boundless, but we are well aware that ideas and reality are poles apart.



A monorail car on the SAFEGE test track at Chateauneuf-sur-Loire. A licence has been obtained by the Taylor Woodrow Group to build this monorail in the United Kingdom and Canada. Taylor Woodrow will associate with English Electric for the supply of carriages and traction equipment



An artist's impression of the 1,180-MW nuclear power station at Wylfa, Anglesey, which is being constructed by the English Electric, Babcock & Wilcox, Taylor Woodrow Atomic Power Construction Company

International Praesidium of Honour

The Right Honourable Quintin Hogg, Q.C., M.P.
Lord President of the Council,
Secretary of State for Education and for Science

His Excellency the High Commissioner for the Commonwealth of Australia

His Excellency the Austrian Ambassador

His Excellency the Belgian Ambassador

His Excellency the High Commissioner for Canada

His Excellency the Danish Ambassador

His Excellency the French Ambassador

His Excellency the German Ambassador

His Excellency the High Commissioner for India

His Excellency the Ambassador of the Republic of Ireland

His Excellency the Italian Ambassador

His Excellency the Ambassador of Japan

His Excellency the Ambassador of Luxembourg

His Excellency the High Commissioner for the Federation of Malaysia

His Excellency the Ambassador of the Netherlands

His Excellency the High Commissioner for the Federation of Nigeria

His Excellency the Norwegian Ambassador

His Excellency the High Commissioner for Pakistan

His Excellency the Portuguese Ambassador

His Excellency the Ambassador of the Republic of South Africa

His Excellency the Swedish Ambassador

His Excellency the Swiss Ambassador

His Excellency the Ambassador of the United Arab Republic

His Excellency the Ambassador of the United States of America

His Excellency the Ambassador of Yugoslavia

The Right Honourable R. A. Butler, M.P.
Secretary of State for Foreign Affairs

Sir John Cockcroft, President of the Science Fortnight, giving his 1961 address

Administrative Committee of the London International Youth Science Fortnight

Chairman

*Mr S. Moore-Coulson, C.B., E.R.D.
Education and Research Section, Federation of British Industries

Members

Mr R. H. A. Carter, M.B.E.
Royal Radar Establishment and Worldfriends International Service for Youth

Miss F. M. Eastwood, B.A., B.SC., F.R.I.C.
Association of Science Education

Mr R. M. Gordon, M.A.
Education Committee, London County Council

Mr D. M. Hall, M.A.
Mill Hill School

Miss M. P. C. Mackenzie, B.SC.
Putney High School for Girls

*Mr E. N. Mathews
De Beauvoir School and Deputy Chairman, Worldfriends International Service for Youth

Mr H. Matthews
Esso Petroleum Company Ltd, and Worldfriends International Service for Youth

Mr J. Platt
Central Bureau for Educational Visits and Exchanges

Mr T. M. Pyke, O.B.E., T.D., H.M.I.
Department of Education and Science

*Mr F. R. Reavell
Unilever Ltd

*Mr R. W. P. Rule
Shell International Petroleum Company Limited

Mr A. R. Sinclair
Foreign Office

Mr W. F. Spinks, M.A.
St Marylebone Grammar School

*Mr R. A. Stevens
Assistant Secretary, British Association for the Advancement of Science

Mr A. E. J. Trinder
Association of Science Education

Mr A. F. Wilshire, B.SC.
National Union of Teachers

Honorary Public Relations Officer

Mr John Hayward
The Rank Organisation

Director

*Mr Philip S. Green, M.B.E.
Chief Adviser, Worldfriends International Service for Youth

Organizer

*Mr George McGowan
Executive Secretary, Worldfriends International Service for Youth

** Denotes membership of the Executive Committee*

Worldfriends International Service for Youth

Founded in 1948 by Arthur McTaggart-Short as an Exchange Holiday organization, Worldfriends has widened the sphere of its activities to meet the changing needs of the younger generation.

Over a quarter of a million young people have visited each other in their own homes over the past sixteen years. There are few European countries to which the organization has not sent young travellers. Additionally 1964 has seen the first transatlantic visit. Plans are in hand to repeat this type of visit in the future.

From the common link which brought together young people in 1953 for the Coronation of Queen Elizabeth II, the idea of a holiday with a common denominator grew. This led to other international gatherings and in particular to the Science Fortnight which now forms an important part of the work of the organization.

The need for understanding through language has brought Worldfriends into the field of Language Courses. Courses based on university colleges and on families are now organized each summer and bring young people from European countries to Britain in large numbers. Indeed, almost one-third of the total visitors to Britain who travel under the aegis of the movement, come to language courses.

Specialist travel has attracted the interest of youth organizations, and groups of student teachers, young farmers, choirs, dance groups, etc. have all visited foreign countries through the initiative of Worldfriends. This year sees the addition of a further group – young scientists who will tour Europe to see science in other countries. This tour will be composed not only of British students but also of Canadians, Libyans, and Japanese.

Through its parent body, the World Friendship Federation, which has full consultative status at UNESCO, Worldfriends is able to keep in touch with kindred organizations throughout the world.

The day when young people will travel to the five continents of the world for their holidays is not a pipe-dream. Worldfriends International Service for Youth eagerly awaits the day when they will do so. It will gladly take its members to the farthest corners of the earth, as it believes they will wish it to do so before long.

H.R.H. Prince Philip declining to tread on a cloak thrown down by a Portuguese student at the opening ceremony of the 1963 *Science Fortnight.*

When it was explained to him that it is a Portuguese custom to throw down a cloak for the chief man present, the Prince replied, "In this country that's only for ladies."

(*as reported by the* Daily Telegraph)

The British Association for the Advancement of Science

Founded in 1831, the British Association remains unique as an independent institution of national reputation, which brings almost the whole range of science within its scope, and opens its membership, without qualification or nomination, to all who are interested in the progress of science.

It was the example of a German society, the Deutsche Naturforscher Versammlung, which inspired the foundation of the British Association. In 1831 the Yorkshire Philosophical Society organized the first meeting at York, and Sir David Brewster defined the objects of the Association thus: "The principal objects would be to make the cultivators of science acquainted with each other; to stimulate one another to new exertions; to bring the objects of science more before the public eye and to take measures for advancing its interest and for accelerating its progress."

These objects are as valid today as in 1831 despite (and partly because of) the tremendous progress of science. Today science, whether we like it or not, dominates the life of all of us. Only science can provide the answers to some of the major problems which face the world. On the other hand, science has provided also the means to bring life on this planet to an end.

For this reason, the Association regards it as one of its main tasks to promote a better understanding of the significance of scientific research and its impact through its applications on society as a whole.

The principal activity of the Association is still the annual meeting, held every year since 1831 except for the period of the two world wars. It is a movable Festival of Science, held in a different city each year, and is the greatest scientific meeting in Britain each year. This year the meeting is at Southampton.

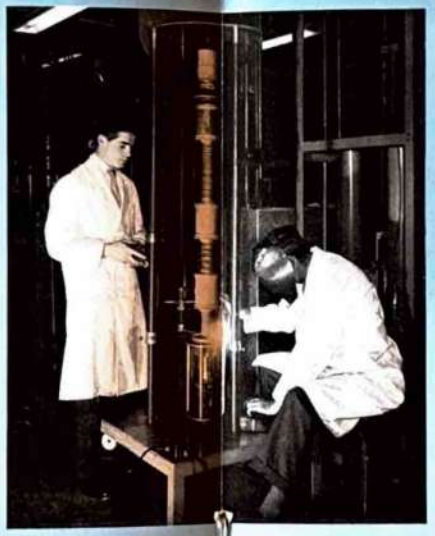
In addition the Association now maintains a Central Lecture Service, a Visual Aids Section, and nineteen area committees in most of the principal centres of population to provide lectures, organize Junior British Association meetings and science fairs, and promote wider use of the many excellent films about science which are available. One of the activities in which it is delighted to be associated with Worldfriends International Service for Youth is the organization of the International Youth Science Fortnight.

As H.R.H. the Duke of Edinburgh, Patron of the International Youth Science Fortnight and a Past-President of the British Association, said at the annual meeting of the Indian Science Congress (at which he represented the British Association in New Delhi on 22 January 1959): "Every human invention or discovery can be used for good or for evil and in the end it is the people as a whole who decide which it is to be. It is therefore essential that the possible consequences of scientific research should be put before the forum of ordinary people. Only in this way can the combined opinion of reasonable, upright, and humane men and women throughout the world exert the necessary pressure to ensure that science is used to set free and not to enslave mankind."

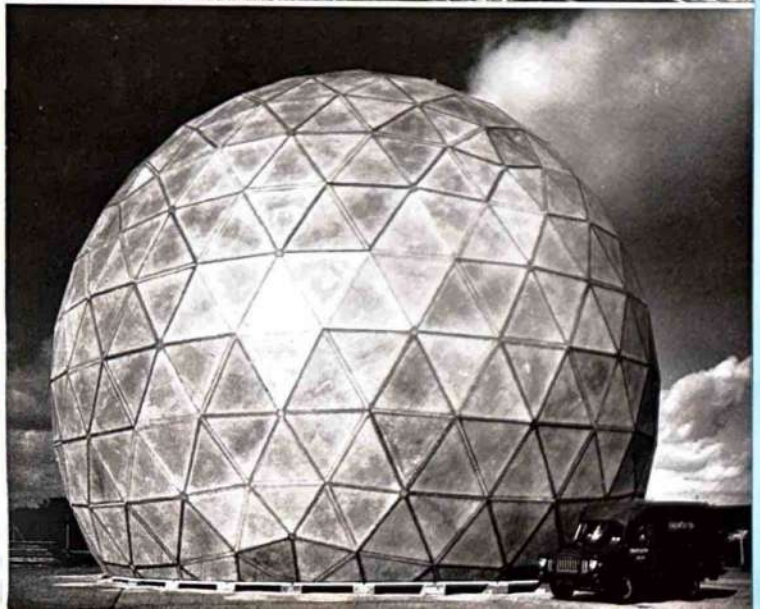
The platform party at the Opening Ceremony of the 1963 *Science Fortnight. Left to right: Mr Christopher Chataway, M.P., then Parliamentary Secretary to the Department of Education; Mr W. J. Langford, C.B.E., M.Sc., J.P., then Chairman of the Science Fortnight; H.R.H. the Duke of Edinburgh, K.G.; the late Lord Nathan, then President of the Science Fortnight; and Mr Philip S. Green, M.B.E., Director of the Science Fortnight*

Technical Advances in Industry, Commerce, and Communications

A 3,000-h.p. 25-kV a.c. electric locomotive fitted with transductor control equipment developed by English Electric to give greatly increased adhesion characteristics



One of the last stages of assembly of a high-power Klystron. The English Electric Valve Company has supplied this type of Klystron for many important applications in the field of communications and radar, and the latest of these is used in the output stages of the new BBC-2 transmitters



One of the many new applications of reinforced plastics – an English Electric radome for the protection of defence radar equipment

Automatic coal-handling system controlled by English Electric static switching equipment

A KDP10 data-processing system dealing with the records of five million insurance policy holders, reviewing and bringing up to date as required 1¼ million policies per day

For the third successive year, the headquarters of the Fortnight will be the Institution of Electrical Engineers. We are deeply indebted to the Institution for its assistance and consideration which do so much to make the Fortnight the success it is. We feel sure you will wish to know more about

The Institution of Electrical Engineers

The Institution was founded on 17 May 1871 as the Society of Telegraph Engineers, and its first ordinary meeting was held on 28 February 1872. C. W. (later Sir William) Siemens was the first president.

Chiefly concerned in its early stages with telegraphy, the Society expanded as the applications of electricity and magnetism developed, becoming in 1880 the Society of Telegraph Engineers and Electricians, and in 1888 the Institution of Electrical Engineers. In 1921 the Institution was honoured by the grant of a Royal Charter of Incorporation. In the same year, H.M. King George V graciously consented to become Patron of the Institution. The present Patron is H.M. the Queen. From a founder membership of about seventy enthusiasts, the Institution has grown to its present-day total of over 52,000 members, of which half are graduate and student members.

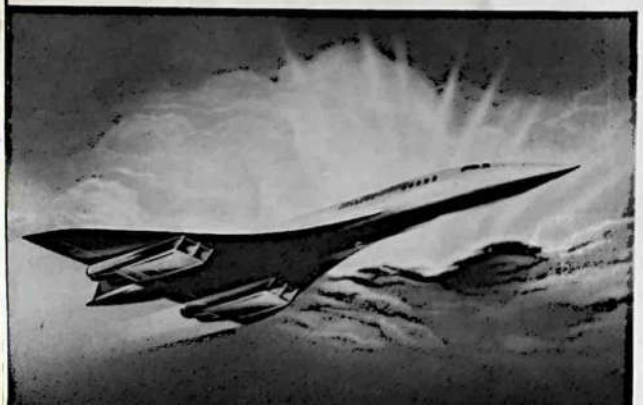
The objects of the Institution as set out in its Royal Charter are, briefly, to promote the general advancement of electrical science and engineering and their applications, and to promote invention and research. In common with other professional societies, the Institution is concerned with the advancement of knowledge, with prescribing proper standards for admission to its various classes of membership, with guiding the education and training of its junior members, and with maintaining a high standard of professional conduct.

The holding of meetings at which papers are read and discussed forms an important part of the I.E.E.'s work. These take place both at the headquarters at Savoy Place, London, and at local centres and sub-centres that exist in the United Kingdom. In addition to ordinary and informal meetings, a large programme of meetings is arranged by the three divisions of the Institution – Electronics, Power, and Science and General – operating mainly through some thirty professional groups which cater for the specialist interests within the fields of the division. Graduates below the age of thirty and students below the age of twenty-eight belong to the nineteen Graduate and Student Sections, which hold meetings in London and in the areas of the local centres.

The Institution awards scholarships to help apprentices and others to attend university courses, and to enable graduates to undertake research at home and abroad. In conjunction with the Ministry of Education, the Institution awards National Certificates and Diplomas in Electrical and Electronic Engineering.

Membership of the Institution is not confined to the United Kingdom; some 8,500 members live overseas. Facilities for them are provided through the overseas committees and branches of the Institution and the joint overseas groups of the three British Engineering Institutions (Civil, Electrical, and Mechanical), all of which arrange technical and social programmes for members in their areas.

Engineers visiting the United Kingdom, whether or not they are members of the Institution, are offered the full facilities of the Institution during their stay in this country and are welcome to take part in all meetings and other activities.



An artist's impression of the developed version of Concord, the Anglo-French supersonic airliner being built by the British Aircraft Corporation and Suid Aviation

Adaptation to Change

by S. Moore-Coulson, Chairman of the Science Fortnight.

This is the theme for the 1964 London International Youth Science Fortnight and the visits and demonstrations are intended to show some of the application of the new scientific knowledge.

Since the world began, adaptation to change has been a controlling element, but never before has the advance of scientific knowledge been so rapid and so far reaching. New sources of power, new methods of travel, new materials and techniques, new means of communication – all have crowded into the space of a few years, and the slow adjustments of the past are no longer possible.

Supersonic travel and satellite communications have contracted both time and space, and no community and no nation can live in isolation. Within communities, new knowledge and new techniques bring increased responsibility for their wise and profitable application, and require a greater flexibility in the educational and vocational preparation of young people to enable them to play their full part and undertake their full responsibilities. Between communities a common purpose and closer understanding have become a vital necessity.

Knowledge must not outrun wisdom nor power human understanding. Material and social progress must proceed hand in hand, and in the application of these new discoveries and enhanced resources to the betterment of mankind, the scientist has perhaps the greatest responsibility of all. His studies must therefore cease to be concerned with isolated disciplines and include the social sciences as well as the natural sciences, and languages as means of communication instead of as barriers to understanding.

More of the best brains among young scientists must be attracted to the technologies which present a new and exciting challenge and upon which in the end our economy and well-being depend.

Britain has a proud record in the application of scientific research, particularly in medicine, in antibiotics, and in surgery; in electronics, in radar and computers; in aircraft, in turbine engines; in nuclear physics, in reactors and radioisotopes. With few natural resources, we depend very greatly on our manufacturing industries, some of the achievements of which you will see during the industrial visits.

There will, however, be opportunities to see something of the other aspects of our country and our people, and I hope you will take back with you, at the end of the Fortnight, pleasant memories of your stay and a deeper understanding of the hopes and aspirations of all with whom you share what I believe will be a most valuable experience.

A 30-ft-diameter tracker dish and radar array at one of the Marconi Company's research stations where radar-tracking experiments are being conducted with passive satellites

Our grateful Acknowledgements and Thanks are due to

Industry, Research Establishments, and Universities for their generous invitations to participants to visit them during the Fortnight.

The Education and Research Committee of the Federation of British Industries and the Rank Organisation for their assistance in arranging the demonstrations and for other guidance in the preparation of the programme.

The Speakers, Lecturers, and Discussion Group Leaders for sparing their valuable time and for their interest and help; also, in many cases, for allowing their premises to be used to meet the needs of Discussion Groups.

The British Association for the Advancement of Science, and in particular Mr Stevens and Miss Birley, for their assistance in arranging lectures and discussions.

The Chairman of the Rank Organisation for the services of Mr John Hayward as Honorary Public Relations Officer for the second year.

The London Transport Executive for their consideration and help throughout the year. Their courtesy and willingness to undertake the solution of so many problems have made numerous innovations to the programme possible. In particular our thanks are due to Mr H. N. Dennis and to Mr T. H. Trussler for their help over the last five years.

The Director of the Commonwealth Institute for inviting the five hundred participants to visit the Institute and for agreeing to welcome them in person.

The Rev. Simon Phipps (Industrial Chaplain to the Diocese of Coventry) for his initiative in organizing the visits to the city and cathedral.

British Petroleum Co. Ltd, The Dunlop Rubber Co. Ltd, Electrical and Musical Industries Ltd, Shell International Petroleum Co. Ltd, and Unilever Ltd, which have contributed so generously during the year to the Capital Fund target of £5,000.

Her Majesty's Government for its consideration and courtesy, and in particular to the Foreign Office for its help overseas and its guarantee against loss.

The Shell International Petroleum Co. Ltd for accommodating meetings of the committee at Shell Centre.

The Chairman of The English Electric Company Ltd for the generous donation of this souvenir programme, and to his staff for their consideration and help in the preparation of it.

The many other people behind the scenes, not only in this country but abroad, the staff of Worldfriends International Service for Youth, and any others inadvertently omitted, for their loyalty and hard work which have made this whole Fortnight possible.

The Sixth London International Youth Science Fortnight

Programme of Events

Wednesday, 5 August	0930	Couriers' Briefing Arrivals
Thursday, 6 August	0930	Business Meeting
	1100	Opening Ceremony
	1415	Demonstrations
	2000	Welcome Ball
Friday, 7 August	0900	Briefing for Scientific Visits
	1100	Visit to Commonwealth Institute and Address by Sir Kenneth Bradley, C.M.G.
	1800	Exchange participants' Supper in Commonwealth Hall
Saturday, 8 August	1000	Shell Centre Visit and Film Shows
Sunday, 9 August	0930	Optional excursions to Stratford-on-Avon and to Brighton
Monday, 10 August		Scientific Visits
Tuesday, 11 August	0930–1130	Discussion Groups Port of London Tour and other Scientific Visits
Wednesday, 12 August	0745–2145	Coventry, Scientific Visits, Lord Mayor's Reception and Tour of the Cathedral with the Rev. Simon Phipps
Thursday, 13 August	1030	Demonstrations
	1400	Discussion Groups
	2000	International Masked Ball
Friday, 14 August		Scientific Visits
Saturday, 15 August	1030	The Saturday Lecture "Animal Machinery", Professor C. F. A. Pantin, F.R.S.
	1200	Ex-participants' Reunion
Sunday, 16 August	0930	Optional excursions to Stratford-on-Avon, to Canterbury and Folkestone
Monday, 17 August	1100	Brains Trust in Reverse
	1430	Reflections and Assessments
	1630	Closing Address
	2000	Farewell Ball
Tuesday, 18 August		Departures

Opening Ceremony

FLAG CEREMONY – the flags of all nations represented at the Fortnight will be brought into the Hall. (The music played will be the March from the suite "Things to Come" by Sir Arthur Bliss, Master of the Queen's Music.)

The President of the Science Fortnight, Sir John Cockcroft, O.M., F.R.S., Master of Churchill College, Cambridge, will preside.

The principal speakers will be Sir Christopher Hinton, F.R.S., who will speak on the industrial aspects of adaptation to change, and Sir Cyril Hinshelwood, F.R.S., who will consider the implications of recent scientific development.

The Saturday Lecture

On Saturday, 15 August, Professor C. F. A. Pantin, F.R.S., the distinguished zoologist, will address the Fortnight on "Animal Machinery".

On this occasion, participants of former Fortnights and members of the London Science Club will be present.

Closing Day

On the morning of 17 August there will be a "Brains Trust in Reverse", presided over by Sir Peter Runge, President of the Federation of British Industries.

The afternoon will be devoted to a period of "Reflections and Assessments", when participants representing the various groups at the Fortnight will be invited to comment upon their experiences and to make suggestions concerning the future of the Fortnight.

Participants are invited to submit questions and topics for discussion not later than Wednesday, 12 August. These should be forwarded via couriers to the Director.

WHERE AND WHO

CONNAUGHT HALL

41 Tavistock Square, London, W.C.1
Telephone: EUSton 6181

HOST AND HOSTESS Dr and Mrs P. J. Rogers

COURIERS
Andrew J. Hayes (Entertainments Officer)
Queen's University, Belfast

Roger Mulberge
Battersea College of Technology

R. William Gage
United States of America

Jill Parker
Nottingham University

Helen Blagdon
Putney High School for Girls

Beverley Davies
Canada

COMMONWEALTH HALL

Cartwright Gardens, London, W.C.1
Telephone: EUSton 0311–4

HOST AND HOSTESS Mr and Mrs W. F. Strange

COURIERS
Paul D. Garwood (Chief Courier)
Imperial College, London

Derek Melleney
Imperial College, London

Nicholas Mabey
St Andrews University

Christopher J. Kennard
St Marylebone Grammar School

Christopher Clarke
Cambridge University

BENTHAM HALL

31–44 Cartwright Gardens, London, W.C.1
Telephone: EUSton 1836

HOST AND HOSTESS Mr and Mrs J. Nicholl

COURIERS
Rosemary Cathels
Edinburgh University

Colin West
Bideford Grammar School

Seamus Coyle
Glasgow University

Frances Neal
Worthing High School for Girls

KING'S COLLEGE HOSTEL

Vincent Square, London, S.W.1
Telephone: VICtoria 4740

HOST Mr P. W. Lawrence

COURIERS
Philippa Smith
London University

Christopher Wolfe
Hampton Grammar School

Harold M. C. Rowe
Hampton Grammar School

Birgit Evjen
London University

Madaleine Thomas
London University

THE CAMBORNE

61–64 Leinster Square, London, W.C.2
Telephone: BAYswater 0306/4806

Details of arrangements are obtainable from the Chief Courier

Scientific visits will be made to the following establishments

Associated Electrical Industries Ltd

ADVANCED LABORATORIES, BLACKHEATH

Serve A.E.I.'s Telecommunications Division. Developing electronic telephone exchanges, improved methods of modulation, and the design of data-processing and transmission equipment.

A visit will also be paid to the Woolwich establishment.

THE LABORATORY AT HARLOW

Undertakes advanced development for A.E.I.'s Cable and Telecommunications Divisions in chemistry, metallurgy, dielectrics, and mechanical engineering. There is also a research section.

Beecham Research Laboratories, Betchworth

Research in pharmaceuticals – particularly penicillin and fermentation chemistry. Allergy research and research in new drugs of a purely chemical nature.

British Aircraft Corporation (Operating) Ltd

Manufacturers of civil airliners, including the Viscount, the Vanguard, and the V.C.10.

British Coal Utilization Research Association

One of Britain's largest research associations with a staff of three hundred.

British Insulated Callenders Cables Ltd

Shepherd's Bush research establishment for the group of companies which manufactures all kinds of electric cables.

British Iron and Steel Research Organization

Research at Battersea for iron and steel industry under the joint sponsorship of the Government and the industry itself.

Cambridge University

Visits will be made to the Cavendish Laboratory, the Chemical Laboratory, and to the School of Veterinary Medicine.

Central Electricity Generating Board

Owns and operates the power stations and main transmission lines in England and Wales. Visits will be made to the Board's nuclear power station at Bradwell.

Chester Beatty Research Institute

Together with the Royal Cancer Hospital's physics and radio-therapy department forms part of the Institute of Cancer Research.

Coventry

On the occasion of the whole-day visit to Coventry, visits will be made to the following notable Midlands firms:

Alvis Limited
Courtaulds Limited
Coventry Gauge and Tool Limited
Coventry Radiators and Presswork Limited
Dunlop Rim and Wheel Limited
General Electric Company (Computer Division)
General Electric Company (Telephone Division)
Alfred Herbert Limited
Massey Ferguson Limited
Standard Triumph International

Department of Scientific and Industrial Research

HYDRAULICS RESEARCH STATION, WALLINGFORD

The Station is concerned with water from the time it falls on land as rain or snow until it reaches the sea. It studies such subjects as hydraulic structures for hydro-electric projects, flood-relief schemes, silting in estuaries, the design of harbours and breakwaters, and coastal erosion.

NATIONAL CHEMICAL LABORATORY, TEDDINGTON

The National Chemical Laboratory carries out research in those areas which are of national importance but which for various reasons may be less effectively studied by other less centrally placed organizations. The research includes a comprehensive programme of chemical thermodynamics, metallic corrosion, development and application of new materials and of analytical methods and techniques.

NATIONAL PHYSICAL LABORATORY

The Laboratory conducts research in aerodynamics, advanced electronic systems, electricity, optics, X-ray, ultraviolet and infra-red radiations, ionizing radiations, mathematics and the development of computational methods, metallurgy, sound and noise, ship hydrodynamics, molecular physics, and phenomena at ultra-high pressure.

RADIO RESEARCH STATION

The work of the station involves research on solar-terrestrial relationships, upper atmospheric physics and radio meteorology, and also on the origin and characteristics of radio noise. The motions of earth satellites are observed and predictions made of orbits of interest to observers in the United Kingdom.

ROAD RESEARCH LABORATORY

The Laboratory aims to achieve more economical ways of designing, constructing, and maintaining roads and of facilitating the flow of traffic on them, and to reduce road accidents. The layout of roads and their traffic, the safety feature of road vehicles, and the behaviour of road users are investigated, and new methods, materials, and processes are developed for building roads.

WATER POLLUTION RESEARCH LABORATORY

The Research Laboratory studies methods of improving the efficiency of existing water treatment processes and devises new ones.

E.M.I. Electronics, Hayes

Manufactures all types of electronic equipment, including radio and television, transmitting and studio equipment, and computers.

The Esso Research Centre, Abingdon

Research and advisory centre for all Esso companies in Europe and North Africa.

General Post Office

POST OFFICE RESEARCH STATION, DOLLIS HILL

Carries out basic research and development work on communications systems and techniques, materials, and components.

TELEPHONE EXCHANGE

At Cunningham Telephone Exchange the visitors will see fully operational automatic telephone switchboards and a Directory Enquiry Bureau, while at Kelvin House the full range of Information Services including "TIM", the Speaking Clock, will be demonstrated.

Hawker Siddeley Aviation Limited

Production of Hunter jet trainers and fighters. Research and development of P.1127/V/STOL strike aircraft.

Imperial Chemical Industries, Paints Division

Visit to factory and research unit at Slough.

International Computers and Tabulators Limited

Visit to the Stevenage factory and tour of the new town afterwards. (The factory forms part of the industrial estate of the town which has been built as a model "new town" to cope with the overflow of population in South East England.)

Kodak Limited

The museum of photography at Harrow contains a number of exhibits which are considered unique. The factory produces all the film and sensitized paper distributed throughout the United Kingdom by the firm.

London Transport

Serves an area of 2,000 square miles by train, bus, and coach. Nine and a half million people are handled each working day. The visit will cover the Aldenham Bus Repair Workshops and the Chiswick Underground Works.

Morganite Carbon Limited

Is part of the Morgan Crucible group. Visitors will see fundamental research laboratories and the technical application and development of carbon products.

National Institute of Medical Research

The Mill Hill establishment is the principal centre of the Medical Research Council.

National Institute for Research in Dairying

Milk production, scientific farm production, and dairying as an industry will be studied at Shinfield.

Oxford University

Visits will be made to the biochemistry, Dyson Perrins (organic chemistry), human anatomy, microbiology, pharmacology, and physiology laboratories, and visitors will see something of the University colleges.

Port of London Authority

Is responsible for administering one of the world's largest ports as well as the River Thames on its passage through London. The visit will include a trip by river on the Authority's own launch.

The Rank Organisation

RANK-BUSH MURPHY COLOURVISION LABORATORIES

These laboratories have been involved in most aspects of the development of colour television. Indeed, a major proportion of colourvision receiving equipment in use or on order by the B.B.C. and G.P.O. for setting the standards of Britain's forthcoming colour television has been made by them. Their colour monitors were used in the transatlantic colour transmission via Telstar from Goonhilly in Cornwall to Washington, U.S.A. The Laboratories are, at present, evaluating the respective merits of all major colour television systems.

RANK DATA SYSTEMS (XERONIC)

The Xeronic Computer Output Printer – the fastest output printer in the world – prints the information it receives from the computer at a speed of up to 4,700 characters per second. It makes practicable in cost and time the new Graduated Pension Scheme in Great Britain. Each machine does the work of 600 copy typists. Other research developments will enable the showing of a character generating tube capable of displaying characters at the rate of one per millionth of a second. This is four times as fast as any known computer. It is expected to have application in space communication.

Royal Botanic Gardens

Three hundred acres of garden herbarium and research.

Shell Petroleum Company Limited

WOODSTOCK AGRICULTURAL RESEARCH CENTRE

Headquarters of the European agricultural research carried out by the Royal Dutch Shell group of companies.

RESEARCH LABORATORIES, EGHAM

The visit to the Laboratories will enable striking advances in the development of chemicals from petroleum to be studied.

SHELLHAVEN

Shell's largest and most modern refinery in the United Kingdom. It covers 500 acres and has an output of 8 million tons of crude oil each year.

Unilever Research Laboratories, Bedford

Research into food preservation with particular reference to frozen and canned food.

The Wellcome Foundation Limited

THE CHEMICAL WORKS, DARTFORD

Principal chemical and pharmaceutical manufacturing unit of the Wellcome Foundation Limited. Extensive laboratories for chemical and biological testing.

Museum of Medical Science

A teaching museum of tropical diseases, used extensively by medical students.

The organizers of the Science Fortnight thank all concerned for making the visits to the above establishments possible.

Discussion Groups

Participants will be grouped under the following headings in accordance with their stated scientific preference and will take part in discussions on Tuesday, 11, and Thursday, 13 August, as detailed below:

PHYSICS	Group A	Dr R. GILES Assistant Lecturer King's College	at Department of Physics King's College
	Group B	Dr D. K. BUTT Lecturer Birkbeck College	at Department of Physics Birkbeck College
CHEMISTRY	Group C	Dr J. C. BROWN University College	at Department of Chemistry University College
	Group D	Dr A. J. B. ROBERTSON Reader King's College	at Department of Chemistry University College
BIOLOGY	Group E	Professor G. R. NEWTH Middlesex Hospital	at Medical School Middlesex Hospital
BIOCHEMISTRY	Group F	Dr P. CAMPBELL Middlesex Hospital	at Medical School Middlesex Hospital
MATHEMATICS	Group G	Dr J. CRANK Head of Maths Department Brunel College of Technology	at Department of Mathematics Brunel College
ENGINEERING	Group H	Mr J. J. SPARKES Senior Lecturer Imperial College	at Department of Electrical Engineering Imperial College
GENERAL	Group I	Mr M. LONGSTAFF Public Relations Officer United Kingdom Atomic Energy Authority	at Gustave Tuck Theatre University College

Demonstrations

Demonstrations will take place at the Institution of Electrical Engineers on the afternoon of Thursday, 6 August, and the forenoon of Thursday, 13 August. The following will take part:

Dr J. M. ZAREK of King's College will present surgeons from a number of countries who will report on the work being done throughout the world on the replacement of sections of the body by man-made parts. The theme is "Man the Unknown".

It is hoped that the following will be present:

Professor F. GAYNOR EVANS, University of Michigan
Professor S. YOSHIMURA, the Jikei University School of Medicine, Japan
Dr RAJKO TOMOVIC, Institute of Nuclear Sciences, Yugoslavia
Dr OTTO RUSSE, Vienna
Dr MAX GEISER, Berne
Professor V. V. PARIN, Academy of Medical Sciences of the U.S.S.R.

Dr E. ATHERTON of I.C.I., who will be demonstrating "Colour Matching by the Use of Computers",
Mr D. T. SHORE of A.P.V. Holdings Ltd, who will be demonstrating "Surgery under Hypothermia",

The co-operation of the following in making arrangements for participation in the Fortnight is greatly appreciated:

Office of the High Commissioner for Australia
Worldfriends, Austria
Bayerischer Jugendring
Belgian Ministry of Education
Canadian Science Fair Council
World Friendship Federation (Danish Branch)
The Royal Dublin Society, Eire
Office National des Universites et Ecoles Francaises
Office of the High Commissioner for India
Worldfriends, Italiana
Deutsch Englische Gesellschaft, Berlin
World Friendship Federation (Japanese Branch)
Mouvement Jeunes Sciences
College of Advanced Technology, Tripoli, Libya
Office of the High Commissioner for Pakistan
Calouste Gulbenkian Foundation, Portugal
South African Association for the Advancement of Knowledge and Culture
Swedish Central Committee for International Exchange between Schools
National Science Teachers Association, United States of America
Worldfriends International Service for Youth, London

It is anticipated that the following countries will be represented in 1964:

Australia
Austria
Belgium
Canada
Eire
France
Germany
Great Britain
Holland
India
Italy
Japan
Kenya
Libya
Malaysia
Morocco
Pakistan
Portugal
South Africa
Sweden
United States of America

SPONSORING AUTHORITIES

England
Cornwall Education Committee
Derbyshire Education Committee
Devon Education Committee
Dorset Education Committee
Gloucestershire Education Committee
Huntingdonshire Education Committee
States of Jersey Education Committee
Lancashire Education Committee
Lincoln Education Committee, Parts of Kesteven
Liverpool Education Committee
Manchester Education Committee
Norfolk Education Committee
Northumberland Education Committee
Nottinghamshire Education Committee
Somerset Education Committee
Sunderland Education Committee
East Sussex Education Committee
West Sussex Education Committee

Ministry of Defence (Royal Navy)

Scotland
Aberdeen County Education Committee
Corporation of the City of Aberdeen Education Committee
Corporation of Dundee Education Committee
Corporation of Edinburgh Education Committee
Fife Education Committee
Corporation of Glasgow Education Committee
Lanark Education Committee
Roxburgh Education Committee
West Lothian Education Committee

Northern Ireland
Ministry of Education in association with:
Antrim County Education Committee
County Armagh Education Committee
Belfast County Borough Education Committee
Down County Education Committee
County Londonderry Education Committee
County Tyrone Education Committee

Wales
Brecon Education Committee
Glamorgan Education Committee
Monmouthshire Education Committee

British Schools and Colleges participating in 1964

Aberdare Boys' Grammar School, Glamorgan
Aberdeen High School for Girls
Abersychan Grammar School, Monmouthshire
Allen Glen's School, Glasgow
Ashford School, Kent

Barry Grammar School, Glamorgan
Bathgate Academy, West Lothian
Beath High School, Cowdenbeath, Fife
Beauchamp Grammar School, Kibworth, Leicestershire
Bede Grammar School for Boys, Sunderland
Bede Grammar School for Girls, Sunderland
Belfast Royal Academy
Bexhill County Grammar School for Girls, East Sussex
Bexley Grammar School, Kent
Bideford Grammar School, Devon
Bloomfield Collegiate College, Belfast
Bognor Regis Grammar School, West Sussex
Bolton School, Lancashire
Bo'ness Academy, West Lothian
Boroughmuir Secondary School, Edinburgh
Bramcote Hills Grammar School, Nottinghamshire
Brecon Grammar Technical School for Boys, Breconshire
Brecon County Grammar School for Girls, Breconshire
Brentwood School, Essex
Bridgend Girls' Grammar School, Glamorgan
Britannia Royal Naval College, Dartmouth
Bromley High School, Kent
Bromsgrove County High School, Worcestershire
Brynmawr County Grammar School Breconshire
Buckhaven High School, Fife
Builth Wells County Secondary School, Breconshire
Bury Grammar School for Girls, Lancashire

Carr's Grammar School, Lincolnshire
Campbell College, Belfast
Cheltenham Ladies' College, Gloucestershire
Chesterfield Grammar School, Derbyshire
Childwall Valley School, Lanarkshire
Coleraine High School, County Antrim
Crediton High School, Devon
Crossley & Porter Grammar School for Girls, Halifax
Cyfarthfa Castle Grammar School, Merthyr Tydfil, Glamorgan

Darwen Grammar School, Lancashire
Down High School, County Down
Dudley Grammar School, Staffordshire
Dunfermline High School, Fife

Ealing Grammar School, Middlesex
Eggar's Grammar School, Hampshire
Elmslie Girls' School, Blackpool, Lancashire
Erith Grammar School, Kent

Fareham Girls' Grammar School, Hampshire
Fleetwood Grammar School, Lancashire
Fowey Grammar School, Cornwall
Frazerburgh Academy, Aberdeenshire
Frome Grammar School, Somerset

Garnethill Convent Secondary School, Glasgow
Godolphin and Latymer School for Girls, London
Gordon School, Aberdeen
Gowerton County Grammar School for Girls, Glamorgan
Grove Academy, Dundee

Hamilton Academy, Lanarkshire
Hampton Grammar School, Middlesex
Harrow School, Middlesex
Hawick High School, Roxburgh
Hawnes School, Bedfordshire
Haywards Heath Grammar School, East Sussex
Hendon County Grammar School, Middlesex
Hollylodge High School, Liverpool
Humphrey Perkins School for Girls, Leicestershire
Ilminster Grammar School for Girls, Somerset
James Gillespie's High School, Edinburgh
Jersey College, Channel Islands
Kesteven and Sleaford High School for Girls, Lincolnshire
Keynsham Grammar School, Somerset
King's School, Canterbury, Kent
King Edward VI Grammar School, Morpeth, Northumberland
King Edward VII Grammar School, Leicestershire
King Henry's School, Monmouthshire
King Henry VIII's School, Monmouthshire
King James' Grammar School, West Riding of Yorkshire
King's School, Ottery St Mary, Devon
Kirkcaldy High School, Fife

Lawside Roman Catholic Academy, Dundee
Lewis School, Pengam, Glamorgan
Linlithgow Academy, West Lothian
Loreto Convent, County Tyrone
Lurgan Technical College, County Armagh

Madras College, St Andrews, Fife
Maes-y-d Derwent County Comprehensive School, Breconshire
Manchester High School for Girls
Market Drayton Grammar School, Shropshire
Market Harborough Grammar School, Leicestershire
Mary Datchelor Girls' School, London
Methodist College, Belfast, Northern Ireland
Mill Hill School, London
Moat Mount Secondary Modern School, London
Monkwearmouth Comprehensive School, Sunderland
Newbridge Grammar School, Monmouthshire
North Walsham High School, Norfolk

Oswestry High School for Boys, Shropshire
Oswestry High School for Girls, Shropshire
Our Lady's High School, Lanark

Pinner County Grammar School, Middlesex
Plymouth College, Devon
Plymouth High School for Girls, Devon
Plymouth Comprehensive School, Devon
Plymstock Comprehensive School, Devon
Pontllanfraith Grammar School, Monmouthshire
Portora Royal School, Enniskillen
Portobello Secondary School, Edinburgh
Price's School, Hampshire

Quarry Bank High School, Liverpool
Queen Elizabeth's Grammar School, Blackburn, Lancashire
Queen Elizabeth's Grammar School for Girls, Mansfield, Nottinghamshire
Queen Elizabeth's Grammar School, Wimborne, Dorset
Queen Mary's School, Basingstoke, Hampshire
Quintin Grammar School, London

Redruth County Grammar School, Cornwall
Rodway Technical School, Gloucestershire
Royal Grammar School, High Wycombe, Buckinghamshire
Royal High School, Edinburgh
Ruthergien Academy, Lanarkshire
Rutlish Merton School, London

St Andrew's High School, Kirkcaldy, Fife
St Mark's Secondary School, London
St Mary Senior Secondary School, West Lothian
St Mary and St Anne School, Abbots Bromley, Staffordshire
St Columb's College, County Down
St Joseph's College, London
St Thomas Aquinas Secondary School, Glasgow
St Thomas of Aquin's School, Edinburgh
St Patrick's High School, Coatbridge, Lanarkshire
Selhurst Grammar School for Girls, Kent
Selhurst Grammar School for Boys, Kent
Sexey's Grammar School, Blackford, Somerset
Shawlands Academy, Glasgow
Shabbar College, Devon
South Devon Technical College
Stavely Netherforde Grammar School, Derbyshire
Strathearn School, Belfast
Swanage Grammar School, Dorset

Thetford Grammar School for Boys, Norfolk
Thornhill Grammar School, County Derry
Thornbury Grammar School, Gloucestershire
Torquay Girls' Grammar School, Devon
Totton Grammar School, Hampshire
Truro County Grammar School, Cornwall
Tynecastle Senior Secondary School, Edinburgh

Victoria College, Jersey, Channel Islands
Vaynor and Penderyn Comprehensive School, Breconshire

Waid Academy, Fife
West Derby High School, Liverpool
Weston-super-Mare Grammar School for Girls, Somerset
Weston-super-Mare Grammar School for Boys, Somerset
Whitehill Secondary School, Glasgow
Whitgift School, Surrey
Whitley Bay Grammar School, Northumberland
William Ellis School, London
Wisbech High School for Girls, Cambridgeshire
Woodside Secondary School, Glasgow
Worcester Grammar School for Girls
Wycombe Abbey School, Buckinghamshire

Yeovil High School, Somerset
Yeovil Grammar School

The Seventh International Youth Science Fortnight will take place in London from 28 July to 10 August 1965

Printed in England by The Broadwater Press Ltd, Welwyn Garden City, Hertfordshire