SOUVENIR PROGRAMME

The Twelfth International Youth Science Fortnight

1970

The Twelfth London International Youth Science Fortnight

The aim of the Fortnight is to give a deeper insight into science and its applications for the benefit of mankind and to develop a greater understanding between young people of all nations.

Patron (1959-1969)	His Royal Highness the Duke of Edinburgh, KG, KT
Vice-Patrons	Sir Lawrence Bragg, CH, FRS Sir Peter Runge
President	Dame Kathleen Lonsdale, DBE, FRS
Vice-Presidents	Dame Irene Ward, DBE, MP Eleanor, Lady Nathan, MA, JP W. J. Langford, CBE, MSc G. F. Gainsborough, PhD, MIEE Major-General S. Moore-Coulson, CB, ERD Sir Barnes Wallis, CBE, FRS Professor J. Rotblat Donald M. Hall, MA
Administrative Headquarters	Contact House 308 Earls Court Road Kensington London SW5 *Telephone*: 01-370 3315 (4 lines) *Cables*: Worlfriend London SW5

The Science Fortnight is a constituent part of a programme of international events aimed to bring together young people from all nations and organised annually by The Council for INTERNATIONAL CONTACT.

ONE of the most interesting features of science in this Century is the emergence of borderline disciplines. A subject like my own, structural crystallography, is concerned with the internal arrangement and properties of solid materials and therefore uses and is of importance in biology, chemistry, engineering, mathematics, medicine, meteorology, physics, statistics and so on. Structural crystallography draws them all together and provides growing-points for new research. Such subjects are young, yet they use, and need, the experience and depth of the older sciences. They are rightly conscious of their own history, all of it within living memory, and yet they have many links with the past. They sometimes have to fight for a place in the academic syllabus, but they have a virility which ensures their importance to the future.

It seems to me that you young scholars are each of you, in a way, like these new growing points of science. You have had the advantage, most of you, of new forms of education. You can see, more easily than older people, the mistakes made in the past and the opportunities of the future. There are many world problems that need a new approach, an approach that combines the best of past experience with a more ecumenical, a wider outlook. You have something to learn from us, but we know that the well-being of the world lies in your hands and not in ours.
We wish you well, with all our hearts.

Kathleen Lonsdale

Kathleen Lonsdale
DBE, FRS

As Chairman of the Council for INTERNATIONAL CONTACT it is frequently my privilege to give a welcome to a variety of groups coming to this country, or to wish *bon voyage* to others about to visit another country.

Despite the comparative frequency with which the phrase "it is a pleasure to welcome you" is used, I feel that I can justify the claim that it is a pleasure to extend this welcome to the participants of yet another Science Fortnight. Each year's group brings with it personalities, who are the very heart of the recollections and memories which the years accumulate. Already from the ranks of past participants we are hearing from doctors, teachers, air line pilots, research workers and parents in many continents. The impressions gained in their visit to London seem to remain strong and the tolerance observed seems to flourish.

In the many programmes of the Council for International Contact we aim to bring people together. What they do once we have effected the initial contact varies greatly. Our programmes can be as simple and straightforward as a home to home exchange for a youth group, or as complex as a study tour for local government officers who want to see local administration in five different forms in five different areas in one week. Contact programmes for High School students, language practice courses, programmes for social workers, and for young workers in training, all have a place in the whole range of activities which bring together in active participation, over 6,000 people from some 30 countries each year. The great majority are involved in our summer programme, but our activities involve visits from and to Britain in twelve months of each year.

The Council is assisted in its activities and projects by many official and semi-official organisations in many parts of the world. Without their help its work could not continue to develop and prosper.

The Science Fortnight is not only the biggest international meeting for which the Council is responsible, it is also, in our view, amongst the most important of our projects. The priorities in science if it is really to be of benefit to mankind must be given early consideration, which, above all else, must grant the Fortnight and its participants a significant place in the field of international meetings.

Eric N. Matthews
Chairman





Top: Left to Right
Sir Barnes Wallis
Mr Donald Hall
Mr Arthur McTaggart Short
Dame Irene Ward
General S. Moore-Coulson

Bottom: Left to Right
Dr G.F. Gainsborough
Mr W. J. Langford
Eleanor, Lady Nathan
Mr Philip S. Green
Professor J. Rotblat

I well recall the cover of a programme of the Science Fortnight which used the phrase "Give a man a fish and you feed him for a day, teach a man to fish and you feed him for a lifetime."

Since these words were used, the world hunger problem seems to have gone unabated. In the present year attention has focussed not only on pollution—which could so easily kill these fish that could bring food for a lifetime; but also, seemingly, with less impact on another of the great problems of the world: Literacy.

Literacy, education and understanding are, for too many of the earth's millions, unknown. Yet so many of the problems of the world can only really be tackled at the root source, and surely literacy and education must be the root source.

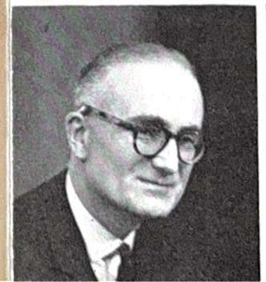
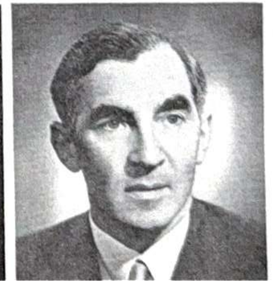
I imagine that the programme of this Fortnight will be to some extent predictable with its focus on the problems of pollution and conservation. However, I believe that just as important will be the times when consideration is given in a constructive and creative manner to life on our planet in thirty years' time.

In an age when the speed of communication is so great that today's news tends to be tomorrow's history, we must not lose sight of the individual and his responsibility for the future. *Without personal commitment there can be no hope of a secure world* and no hope that the problems around us will not have engulfed us before we are able to create that world in which we believe we ought to live in AD 2000.

"Horizons of Science" should be firmly linked to the all-important question of personal responsibilities and priorities. It is not in the nature of Science Fortnight philosophy to present you with the answers and to require your commitment and acceptance of what we believe to be right.

We pose only the questions, we hope that what you hear and learn in London may point you towards *your* answers.

Philip S. Green
Director Emeritus


Pollution and Conservation

As a participant in the International Youth Science Fortnight and therefore a responsible person, you know that all over the world people live in an environment whose pollution is both common and increasing.

Pollution is there for us all to see, smell, hear and taste. In many places the earth is eroded; water is poisoned or at best unfit for many of its proper uses; waste products, some of them practically indestructible, are building up rapidly; our towns and cities are under great pressure; landscapes are spoiled and the variety of animal and vegetable life, symptoms of a balanced environment, diminishes day by day.

But we cannot sit back and blame others for this. Nor is there any point in making our battle against pollution, as President Nixon said in February, a "search for villains". It is for each of us to ensure that our demands for material needs, our attitudes towards our shared surroundings, are ethically sound. We need to infuse a conservation approach into all our primary functions—of agriculture and forestry, urbanisation, industrialisation and leisure.

This was the main task tackled by an unprecedented international conference called by the Council of Europe last February as a springboard for European Conservation Year 1970. From this emerged a Declaration on the Management of the Natural Environment of Europe. This is a document of literally vital importance to us all which points a visible way ahead.

What can we do?

First the Declaration makes it clear that it favours no clock-putting-back exercise. Although most of the pressures that threaten or already affect our environment stem from technological advances in industry and agriculture and from the growth of crowded urban living that they lead to, it would be futile as well as wrong to try to check them. What we have to do is to get our priorities right.

We have to organise things so that technological change goes with wise use of the resources available. For these resources are not limitless. We live in the same earth's atmosphere, breathe the same air, re-cycle the same water as did Joan of Arc and Julius Caesar and their and our paleolithic ancestors half a million years ago. Our means of influencing these resources are infinitely greater now, and what we have to do is to make sure that they are not spoiled or squandered but are used wisely so that the quality of our lives is enhanced, not diminished by our cleverness.

How can we do it?

The Declaration lays down a number of guidelines. First, it says, governments must be willing to give high legislative and administrative priority to management of the environment. Local authorities, industries, the professions and individuals must accept this priority and be willing to go along with whatever measures are found to be necessary. Second, these measures must take these things into account:

(a) Haphazard exploitation is no longer good enough. We must ensure that use of our natural resources and environment is realistically planned in relation to our needs.

(b) Populations are too dense now for a man to broadcast noxious substances regardless of his neighbours. We must ensure that pollution of air, soil and water, and the use of poisonous substances are controlled.

(c) Solid wastes that cannot be broken down by natural processes or are too slowly returned to nature by such processes, must be disposed of without disfiguring town or countryside.

What practical measures does this imply?

This implies that we must, for example, build many more and better plants for purifying water, for reducing dirt from industrial processes, for recovering or destroying waste products such as plastics, glass, tin cans and wrapping materials. It implies that we must pay more attention to care of the world outside our cities, where increasing leisure demands are already putting on heavy pressure.

This costs money; lots of it. And in the end the cost falls on us all whether as consumers or taxpayers. But in fact we have little choice. The price has to be paid either now or later when it will be higher and a great deal more uncomfortable. And "later" is not all that much later . . . ten, twenty years. Of that order. It is a bullet that we have to bite whether we like it or not.

What about us?

It is not enough, however, for the individual to foot the bill willy-nilly for the gigantic, necessary cleaning-up operation. Every one of us, says the Declaration, must will both the ends and the means.

The ends are good management of our environment and the enhancement of our lives by technological progress within that context. In practical terms, decent towns, productive industry, clean air and water, wildlife in balance and a coast and countryside to enjoy.

The means are the organisation, the laws and the regulations, the customs and the self-control that make achievement possible. To these we must not only acquiesce but contribute both personally and corporately by supporting voluntary bodies and our own communities in tackling local problems and enhancing our towns, villages and their surroundings.

Young people have a greater stake in the future than their elders. It is up to the young to act vigorously and wisely in support of these ends, to take trouble to inform themselves, to work out what interim and final objectives are needed, to urge these on the authorities and to support their implementation.

The need transcends frontiers. Birds, river waters, disease germs take no notice of lines on a map. The need transcends the generations. What we spoil or squander now is gone for ever.

The Declaration gives us guidelines for wise management. It is for us, all of us, to see that they do not go unheeded.

R. E. Boote,
Chairman, Conservation and E.C.Y. Committees, Council of Europe

Priorities

AND so it's Pollution . . . Political pollution, space pollution, European Conservation, they are all madly, madly fashionable!

So also in their "year" were "International Co-operation", "Freedom from Hunger", "International Geophysics" and others too ephemeral and esoteric to recall. Each group has ground its axe and will go on doing so. One wonders what epic, mammoth earth-shattering (a dangerous pun!) year to end all years (again an uneasy undertone) we will designate AD 2000.

No doubt there will be those already deeply shocked by the above two paragraphs who will write off the views expressed therein as the ravings of a cynic, and possibly, to their minds, worse, of a non-scientist. However, this is not necessarily the situation. What provokes these thoughts and the reasoning behind the moderately shock tactics used in presenting them is the belief that too little consideration is given to the over-all needs of mankind. In our haste and rush to deal with one of the wide range of problems with which our world is engulfed, is enough care being taken to ensure that the over-all situation is being considered and that action in one direction is not producing by product-like effects which in themselves represent a greater danger to mankind?

There is no doubt a ready and apparent defence of scientific development and all that is being done to ensure the rapid exploitation of our resources and the conservation of the structures of society based on well fed, well housed and healthy individual members of our social order—in whatever part of the world they may live. However, what scientists still insist in calling "pure science" is no longer in its ivory tower, protected by the cocoon-like premise that science — knowledge and that all knowledge must be good and pure. No, these days have gone. Perhaps their passing is not fully appreciated or yet recognised and accepted. The essential epithet "pure" in science could better be replaced by the word "basic" or possibly "fundamental". That knowledge, its application and implications, should now be the more major concern of our political leaders and of the leaders in the field of basic and social science.

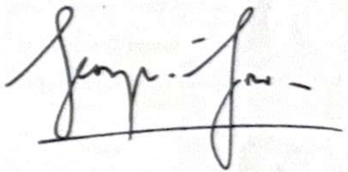
How often in past years in planning the programme of the International Youth Science Fortnight has the battle for social relevance of scientific development been waged and if not lost at least conceded—too often. This year with its intangible and unscientific theme of "Horizons of Science" presents the opportunity to re-assess the situation. Against the theme the two days of the programme devoted to Pollution/Conservation and Life in AD 2000 provide a background and two contrasting concepts which can to some extent only be in opposition. Their challenge is surely the opportunity they provide to assess priorities and to shape personal careers in pursuit of these priorities.

"War, and the pity of war" is still too evident on our planet. Perhaps worse, war and the cost of war—not least the cost, escalates upwards. The triumphs of technology and the world-wide sigh of relief when three men returned in their ruptured craft from the other side of the moon no doubt reverberated through shacks and hovels in which hungry and poverty-stricken children huddled often in fear and sickness. Priorities? Aircraft larger than buildings may well have brought participants to London for the Science Fortnight. Bigger and faster aircraft at ever increasing costs and remuneration to their pilots hurtle over the heads of peasants in the fields tilling the soil behind oxen in efforts to harvest a pathetic crop which one tractor could multiply twenty-fold. Priorities?

But let us take an example nearer to London. In the south-west of England, prosperity and a much increased standard of living has been brought to a small community by the speedy development of the china clay which lies all around. Unfortunately, the excavation of this clay produces a mass of chalky, dusty debris which has marred some rather lovely countryside. The best alternative method of disposal would be to dispose of this waste through a pipeline into the nearby sea. Landlovers deplore the despoliation of the countryside and the ocean lobby fear the destruction of marine life if the latter form of disposal is used. There, then, is the dilemma. But the affluence, employment and well-being of a whole Cornish community is dependent on the continued development of the china clay industry. What then is the priority to be? Perhaps the challenge could be summed up in the question:—

"Is Pollution the price we must pay for prosperity?"

What then, are our priorities?



George McGowan,
Director

Seminars

The following seminars will take place on
Friday 24 July at 1000

A "The New Universe"
Dr H. R. Allan

B "Nuclear Power in the Seventies"
Dr D. K. Butt

C "A New Look at Mathematics"
Professor J. Crank

D "Ideas and Images"
Professor C. Cherry

E "Proteins, their Structures and Functions"
Dr S. Doonan

F "Industry Encounters Conservation"
Roger Mitchell

G "Mechanical Engineering applied in the body"
Dr S. A. V. Swanson

H "Drugs of Abuse"
Mr J. W. Adcock

Friday 31 July Group B at 1000

A "Nuclear Power and Conservation"
Mr R. M. Longstaff

B "Metals and Man-made Organic Chemistry"
Dr M. D. Johnson

C "Dogma in Science"
Mr C. A. Ronan

D "Chemistry of Life"
Dr P. Butterworth

Friday 31 July Group A at 1430

E "Radioisotopes in Environmental Research"
Mr R. M. Longstaff

F "Metals and Man-made Organic Chemistry"
Dr M. D. Johnson

G "Dogma in Science"
Mr C. A. Ronan

H "Chemistry of Life"
Dr P. Butterworth

PROGRAMME

Wednesday 22 July

Arrivals
2000 Briefings in Halls of Residence

Thursday 23 July

1100 *Opening Ceremony

1400 *Lecture: "Yesterday and Tomorrow in Science"
Professor J. H. Fremlin, DSc, MA, AMIEE, FInstP

2000 Welcome Ball at the Empire Rooms

Friday 24 July

1000 Seminars at University Establishments (see panel alongside for details)

1400 *Lecture: "Electronics"
Mr J. H. H. Merriman, CB, OBE, MSc, AInstP, CEng, FIEE

2000 Topics for Tonight
(for details of these informal discussions see panel on opposite page)

Saturday 25 July

1000 Group A: Tour of London

1400 Group B: Tour of London

2000 River Boat Dance

Sunday 26 July

1000 Optional Excursions to:
(a) Stratford-on-Avon
(b) Brighton
(c) Windsor and Oxford
(d) Greenwich by River

2000 Scientific Films in Bentham Hall
Scientific Visits in Greater London Area

Monday 27 July

2000 Scientific Films in Passfield Hall

Tuesday 28 July

1000 *Lecture: "Technology in Medicine: Miracles for the Few or Help for the Many"
Mr H. S. Wolff, BSc

1400 *Lecture: "Waves and Tides"
Dr G. E. R. Deacon, CBE, FRS

Wednesday 29 July

Scientific Visits in Regions followed by general interest visits

Thursday 30 July

Morning Free

1400 *Forum: European Conservation Year
Speakers: Stanley Cramp, BA, FZS
C. R. Tandy, ARIBA, AILA
Arthur Blenkinsop, FCIS, MP

2000 The Thursday Talk-in
(for details of these informal discussions see panel alongside)

Friday 31 July

1000 Group A: Visit Shell Centre
Group B: Seminars

1430 Seminars
Visit Shell Centre
(see panel on opposite page for details on seminars)

2000 Soiree Internationale at the Empire Rooms

Saturday 1 August

1000 *Lecture with Demonstration: "Plastics Past and Present"
Mr A. A. Harness, ARIC

2000 International Folk Evening in College Hall

Sunday 2 August

1000 Optional Excursions to:
(a) Whipsnade Zoo
(b) Chartwell and Canterbury
(c) Cambridge and Ely
(d) Kew Gardens by River

2000 Scientific Films in College Hall

Monday 3 August

1000 *Forum: "Life in AD 2000"

1400 *Continuation of Forum

2000 Scientific Films in Commonwealth Hall

Tuesday 4 August

1000 *Participants Forum: "Responsibilities of the Scientist"

1500 *Closing Address by Professor V. Emelyanov

Wednesday 5 August

2000 Farewell Ball at the Empire Rooms
Departures

*Events marked thus take place at the Institution of Electrical Engineers, Savoy Place, London, WC2

Programme Theme: Horizons of Science

Topics for Tonight

Informal discussions will take place as indicated below:

Friday 24 July	Commonwealth Hall	"Science and Human Values" Dr H. R. Allan
	College Hall	"Medical Ethics" Mr J. W. Adcock
	Passfield Hall	"The Computer and the Future of Mankind" Mr H. G. Effemey

The Thursday Talk-in

Thursday 30 July	Commonwealth Hall	"Pass Back the Buck!" Introduced by George McGowan
	College Hall	"The Participation Myth" Introduced by Christopher Power
	Passfield Hall	"Science for What?" Introduced by Roger Mitchell

Day Out

On **Wednesday, 29 July,** all participants will travel away from the Greater London area to visit local industries in the following: Cambridge, Coventry, Oxford, Southampton, Sussex. In the morning and afternoon there will be a visit to industrial research establishments and the latter part of the day will be spent sight-seeing locally.

The co-operation of industrial research organisations, together with those responsible for the visits to various places of interest, is much appreciated.

Scientific Visits

APV COMPANY LIMITED
Manufacturers and suppliers of process plant to the Dairy, Brewery, Fruit Juice, Food and Chemical Industries.

APV-PARAMOUNT LIMITED
Fabricators and Founders in stainless heat resisting and other alloy steels.

BEECHAM RESEARCH LABORATORIES
Medicinal Research Centre. Chemical, biochemical, pharmacological and toxicological research into active chemical compounds for use in pharmaceuticals.

BCURA INDUSTRIAL LABORATORIES
After 30 years as a Government-aided industrial research association, BCURA changed its status in 1969; and after a transitional period, it will become a wholly owned subsidiary of the National Coal Board in 1971. In addition to meeting the research needs of the coal industry (it is currently engaged in pioneering research into the fluidised system of coal combustion), BCURA is now also functioning as an independent industrial laboratory undertaking research under contract for any industry. It will draw on its long-established expertise and facilities in such subjects as: materials behaviour, pore structure and surface properties of solids, instrumentation and process control systems, carbon and coal products, combustion and heat transfer.

BRITISH AIRCRAFT CORPORATION
Makers of Commercial Airliners including BAC One-Eleven and Concorde.

BRITISH PETROLEUM
BP Research Centre Sunbury.
The main research centre for the whole of the BP group of companies. Research covers all aspects of the petroleum industry, from exploration for new gas or oil reservoirs, through the many processes that lead to a wide variety of chemicals and refined products.

CAMBRIDGE UNIVERSITY SCHOOL OF VETERINARY MEDICINE
The School comprises the two Departments of the University that are responsible for the teaching of veterinary students during the last three years of their course, that is the clinical part of the course. The buildings, which are located in a farm of about 100 acres some two miles from the centre of Cambridge, include a Hospital, a block for teaching and research, and units for the study of animal physiology, comparative ophthalmology and comparative neurology. Much research is in progress at the Veterinary School on such subjects as nutrition, reproduction, immunology virology, bacteriology, parasitology, anaesthetics, and various diseases of animals.

CENTRAL ELECTRICITY GENERATING BOARD, DUNGENESS
Dungeness "A" Nuclear Power Station, on the south coast of Kent, is the sixth in Great Britain's first nuclear programme. Adjacent to it is Dungeness "B" Station, now under construction, which will be the most powerful of its kind in the world, with a capacity of 1,200 megawatts. Dungeness "A" station has a capacity of 550 megawatts and is linked to the National Grid to supply power to London and the south coast of England. The station lies about three miles from Lydd, terminal of the cross-Channel cable link with France.

CENTRAL ELECTRICITY GENERATING BOARD, FAWLEY
A 2,000 MW Power Station situated near the Esso Refinery on Southampton Water. The station will consume over 3 million tons of heavy fuel oil each year, the oil being delivered by pipeline from the refinery. The plant includes four 500 MW generating units, operating at 2,400 psi and 541°C. An advanced computer control scheme is installed to provide automatic operation of the plant. Visits will be paid to the generating station, the 400kV sub-station and the Marine Biological Laboratory situated on the station site.

ESSO PETROLEUM COMPANY LIMITED
The Esso Refinery at Fawley is located on the western shore of Southampton Water. The Refinery has a capacity of 16½ million tons a year and is the largest in the United Kingdom. It represents an investment of about £120 million and employs some 2,400 people.

IBM UNITED KINGDOM LIMITED
Visit to the Education Centre. There will be a programme of lectures on computer hardware and software, and demonstrations of computer systems.

IMPERIAL CHEMICAL INDUSTRIES LIMITED, JEALOTT'S HILL RESEARCH STATION
Six miles south of Maidenhead and three miles north of Bracknell, Berkshire. It was established in 1927 and is the centre of the agricultural research activities of ICI. The Station is concerned with research on crop and animal nutrition for the ICI Agricultural Division and on crop protection for the ICI subsidiary company, Plant Protection Limited.
With the farm, the Station occupies about 543 acres, of which about 473 are farmed and these provide 50-100 acres each year for field experiments and for projects which evaluate new crop and livestock production techniques. Initially, Jealott's Hill was concerned mainly with fertilisers, particularly their use on grassland, and was associated with the introduction of 'Nitro-Chalk' and of granulated NPK fertilisers. During the last decade, many experimental fertilisers produced in the Company's research laboratories at Billingham, Teesside, were tested in field experiments at Jealott's Hill, and this work led to the introduction of more highly concentrated fertilisers by the Agricultural Division. In the laboratories at Jealott's Hill many thousands of soil and herbage samples are analysed as part of a service that is offered to farmers. Crop protection research began at Jealott's Hill in the early 1930s. Early successes were the war-time discovery and development of the hormone-type weedkiller (MCPA) and the insecticide gamma BHC. There have been many other important contributions to agriculture which emanated from or have been associated with Jealott's Hill Research Station and it is now recognised by Reading University as an Associated Institute. The total staff is now about 450.

INTERNATIONAL COMPUTERS LIMITED
The largest British company manufacturing and marketing electronic computers for commercial and scientific use and of punched card machines, computer stationery and computer room furniture and associated equipment and services. It is an independent international company with some 34,000 employees, a turnover of £100 million per annum and marketing activities in more than 70 countries. Among the current products of the group are the highly successful range of computers, the ICL 1900 Series, the ICL System 4 range, and the ICL 4100 range, and the company provides a comprehensive data processing service.
(a) **ICL LETCHWORTH:**
Produces the 1902A and 1903A medium range machines and peripheral equipment for the entire range.
(b) **ICL, PUTNEY:**
Lecture on the British Computer Industry, films and computer demonstrations.

KODAK LIMITED
The factory at Harrow is the principal plant of Kodak in Britain, producing many different kinds of film and sensitised papers. The Photographic Museum completed in 1966 contains many unique exhibits.

MAY & BAKER LIMITED
May & Baker Ltd, founded in London in the 1830s, manufactures chemicals for use in many spheres. Primarily known as a manufacturer of medical products both human and veterinary, the company now produces chemicals for agriculture, horticulture and photography and for many other industries. Centred at Dagenham, where approximately 4,300 people are employed, the company also has associated companies in many overseas countries and manufacturing plants in Australia, New Zealand, India, Pakistan and South Africa.

NATIONAL INSTITUTE FOR MEDICAL RESEARCH
The National Institute for Medical Research, the largest of its kind in the Commonwealth, is the Medical Research Council's principal research establishment. The laboratories are at Mill Hill and Hampstead where over 850 of the Council's Scientific and supporting staff work and facilities are provided for visiting workers, many from abroad. The Institute's research programme covers a wide field of non-clinical research and the investigations undertaken are mostly of a long-term character.

NATIONAL PHYSICAL LABORATORY
The NPL consists of the main laboratory at Teddington, and a ship hydrodynamics laboratory and hovercraft unit at Feltham. The programme and the organisation of the Laboratory reflect three main types of interest and responsibility:
(a) the establishment of basic standards of measurement, the development of new techniques of measurement and the furtherance of their use by industry;
(b) the study of the chemical and physical properties of materials which influence their practical use;
(c) attention to particular industries and technologies, especially those associated with air and sea transport and with computer usage.

ORDNANCE SURVEY, SOUTHAMPTON
The Ordnance Survey is responsible for the official surveying and mapping of Great Britain, including geodetic surveys and the associated scientific work, topographical surveys and the production of maps at appropriate scales from these surveys. The present task of restoration includes bringing the 19th and early 20th Century 1:2500 maps up to date and compiling them on a national sheet line system, and also making entirely new surveys of the major towns at 1-1250 scale and all mountain and moorland areas at 1:10,000 scale. All the new and revised maps produced in this way are kept up to date by a system of continuous revision, which ensures that changes on the ground are surveyed soon after they occur.

PIRELLI: GENERAL CABLE WORKS
Is the British cable making member of the Pirelli Group which has world-wide interests in the rubber, plastics, electrical engineering and related industries. The Company was formed in 1914 and has three factories in Hampshire within 7 miles of each other and manufactures a comprehensive range of electric cables and conductors.

SERVOMEX CONTROLS LIMITED
This is a very small company making scientific instruments for the oil and chemical industries, mainly. The nature of the trade is such that a small unit can remain competitive, due to the short runs of highly specialised equipment. Visitors will be able to see the complete process from design to despatch. Apart from the technical products the Company will welcome discussion on the wider aspects of graduate employment in the field of scientific measurement.

SHELL RESEARCH LIMITED
(a) Egham Laboratories: A centre for research into petroleum chemicals and their application in industry; and also for practical problems connected with the use of oil products, particularly combustion processes.
(b) Woodstock Research Centre (Sittingbourne): Headquarters in Europe of Shell's research into agriculture, concerned with the discovery, testing and development of pesticides, fertilisers, and chemicals for public health schemes.

THE POST OFFICE
(a) Research Station, Dollis Hill: Carries out basic research and development work on communications systems and techniques, materials and components.
(b) Post Office Tower: The Tower is 620 feet high and from the public observation galleries near the top, the panorama of London may be seen. Provides microwave radio channels which carry telephone calls and television programmes to all parts of the country and will eventually provide 150,000 simultaneous telephone conversations and 40 television channels.

UNIVERSITY OF LONDON OBSERVATORY
The visit will give the participants an opportunity to see the Telescopic Laboratories and other Observatory Instruments. There will be an expose of the work that is carried out by the Observatory and arrangements will be made to visit the Lunar and Solar Laboratories.

WELLCOME MUSEUM OF MEDICAL SCIENCE
A medical teaching museum established by Sir Henry Wellcome in 1913. It is intended for medical graduates and undergraduates and students of para-medical professions. The exhibits deal chiefly with matters pertaining to tropical medicine, but recently sections have been added on genetics, molecular biology and other subjects which have considerably broadened its scope and appeal in the field of scientific medicine.

GEORGE WIMPEY & COMPANY LIMITED CENTRAL LABORATORY
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About the Speakers

Professor J. H. Fremlin, DSc, MA, AMIEE, FInstP
Professor Fremlin's research training was under Lord Rutherford in the Cavendish Laboratory. A Research Fellow at the University of Birmingham under Professor Mark Oliphant, and subsequently a lecturer, and latterly a Reader in Physics and Nuclear Physics. In 1966 he became Professor of Applied Radioactivity. At present he is working on applications of nuclear physics to dentistry and medicine.

Mr J. H. H. Merriman, CB, OBE, MSc, AInstP, CEng, FIEE
Mr Merriman is a Board Member for Technology and a Senior Director in development at the Post Office's Telecommunications Headquarters.

Mr H. S. Wolff, BSc
Mr Wolff is now head of the Division of Biomedical Engineering of the National Institute for Medical Research. He received his university training in Physiology and Physics, but would prefer to be known as a bioengineer. His main interests lie in the application of technology to the whole spectrum of human biology, including medicine. He believes that technological development is sterile unless translated into an economically viable product and advocates greater participation by the staffs of academic institutions in industry.

Dr G. E. R. Deacon, CBE, FRS
Dr Deacon was trained as a chemist and went to sea 40 years ago in the Discovery Committee's research vessel 'William Scoresby' to take part in research on the oceanography of the Antarctic whaling grounds. After four such voyages he served during the war in the Royal Naval Scientific Service. He was appointed Director of the National Institute of Oceanography in 1949. He has been associated with progress in most aspects of the physics of the oceans and with the development of modern instruments and techniques. He received the Polar Medal in 1942 and was elected a Fellow of the Royal Society in 1944. He is a past President of the Institute of Navigation and a Vice-President of the Royal Geographical Society.

Mr A. A. Harness, ARIC
Mr Harness has been with the Plastics Division of ICI since 1946. He was in the Research Department until he took on the new post of Academic Liaison Officer in 1969.

Professor V. Emelyanov
Professor Emelyanov is a member of the Soviet Academy of Sciences, a strong supporter of the Pugwash Movement and Chairman of the United Nations Committee for the peaceful uses of Atomic Energy.

Acknowledgements

We are greatly indebted to:
The numerous companies, research establishments and educational establishments who so kindly invite and receive our groups.
The Speakers, Lecturers, Seminar and Discussion Group leaders for giving so freely of their time, and for their continuing interest. The British Association for the Advancement of Science and in particular Mr R. A. Stevens and Miss Joan Dring for their patience and willing assistance in the preparation and execution of the programme.
The Council and Staff of the Institution of Electrical Engineers for their unfailing courtesy and consideration and for allowing their premises to be the home of the Fortnight.
The Shell International Petroleum Company Limited through Miss I. Williamson for its assistance with programme arrangements and also for providing facilities for meetings of the Science Fortnight Advisory Committee.
The Wardens, Bursars and staff of the Halls of Residence where the participants are accommodated, for their patience and consideration at all times.
Messrs J. R. Davies, Coach Operators, for their co-operation with transport arrangements throughout the Fortnight.
The European Conservation Year Committee in the UK and in particular Mr Max Davies for his ready assistance in programme planning and organisation.
The Senior Industrial Chaplain of the Diocese of Coventry together with the industries of the city, who so warmly welcome the students on their day of Scientific Visits.
The many industrial supporters who continue to enable the Science Fortnight to expand and who, together with the educational authorities, provide scholarships which widen the fields from which participants are drawn.
The Advisory Committee of the Science Fortnight who not only greatly assist during the planning of the Science Fortnight, but also help to ensure its smooth running.
The many other individuals who assist both in this country and overseas, not least the Staff of the Council for International Contact.
Without the unfailing co-operation of those mentioned above, and others that must have been inadvertently omitted, the organisation of the Science Fortnight would not be possible.

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Evening Film Programmes

Friday 31 July	Shell Centre	"The Polyolefins" Research in the development of new plastics "The Land Must Provide" Improving agriculture with chemical fertilisers in developing countries "This is Shell" Racy jazz film about oil activities
Sunday 26 July	Bentham Hall	"Hovercraft N4" Hovercraft in use today, and their development "The Threat in the Water" Control of Bilharzia "People and Leisure" Problems of the use of the countryside
Monday 27 July	Passfield Hall	"Something Big in Microcircuits" Research in Microcircuits and changing technology "Carapor—Versatile Foam" Applications and properties of a new plastic
		"Founded on Science" Work at Wimpey's research centre, engineering "The River Must Live" Prevention of river pollution
Sunday 2 August	College Hall	"Paint" History of paint technology "The Changing Forest" Afforestation policies in Britain "Guiseppina" Story-type account of work on an Italian petrol station, light relief
Monday 3 August	Commonwealth Hall	"Pipeline through the Fens" Engineering project illustrated "Shellgrip" Invention of new safety road surface "Man and Computer—a Perspective" Discussion of uses of computers "Shellarama" Cartoon and general account of oil and motoring, light relief

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The Thirteenth London International Youth Science Fortnight will take place from 28 July to 11 August 1971

Printed in England by BKT City Print Ltd (BKT Group) London