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*Mr Tomball.*

MR BARCLAY ✓

8 June 1984

LONDON ECONOMIC SUMMIT - REPORT OF THE TECHNOLOGY, GROWTH AND EMPLOYMENT  
WORKING GROUP

It is not clear to us whether you will have received the final version of the  
Technology, Growth and Employment Working Group Report. I enclose a copy.

  
ELIZABETH RANSOM

REPORT OF THE TECHNOLOGY, GROWTH AND EMPLOYMENT  
WORKING GROUP TO THE LONDON ECONOMIC SUMMIT

INTRODUCTION

1. The Technology, Growth and Employment Working Group was set up after the Versailles Summit in 1982, following a report presented to that Summit by the President of the French Republic. The Group submitted a report to the Williamsburg Summit in 1983. The Group has met twice in 1984 and agreed that in reporting to Heads of State and Government at the London Economic Summit, its role is not only to record progress on the 18 international collaborative projects initiated last year but also to identify key science and technology issues which relate to economic growth and employment. In particular it is concerned to examine the ways in which, in the interests of promoting growth, the development, adoption of and adaptation to new technologies might be enhanced. Accordingly, it is interested in the ways in which economic, trading and other policies impinge on the development and interchange of ideas and technology, as well as how new technology can contribute to the continued revival of industrial and commercial activity, and thereby to employment creation.

2. The Working Group's report to the Williamsburg Summit of 1983 was prepared before the signs of economic recovery now perceptible became apparent. But its themes and recommendations are just as important and relevant today because we are concerned with the strategic impact of modern technology which relates to the whole trend of economic growth rather than to the detail of economic cycles. Decisions taken by governments, commerce and industry about the introduction, exploitation and control of new technologies will critically shape the long term future of our economies and societies. Therefore it is essential that these decisions should be informed not only by an understanding of the great potential of modern technology but also by an appreciation of the human dimension and the need to maximise both human resources and the development of human welfare.

3. The report sets out the role of new technologies in stimulating economic growth, identifies some of the obstacles to the introduction of new technologies which are susceptible to government influence, focusses on one area, technology and the environment, which illustrates some of these issues and the value of international science and technology collaboration, and describes progress in the 18 areas for co-operation.

## TECHNOLOGY AND ECONOMIC GROWTH

4. Technological development is one of the primary sources of economic growth. The inhibition of technological development through, for example, obstacles and barriers to trade in the products of new technologies acts to depress the rate of world economic growth. Thus the Working Group, whilst appreciating that the introduction of labour-saving technology during periods of relatively high unemployment such as those currently experienced by most of the Summit countries may be seen as threatening, is convinced that the necessary impetus to rejuvenate industry, promote trade and develop human welfare must come primarily from the introduction of new technologies. New technology can: -

- i. improve the productivity of the mature industries which will remain major contributors to the economic growth of the industrially developed countries;
- ii. develop new products for industry, commerce and the consumer and so stimulate industrial and commercial activity;
- iii. through robotics and other automated techniques make work less tedious and the workplace less hazardous, whilst enhancing the quality of products through improved manufacturing and quality control techniques;
- iv. create entirely new services (particularly through the use of information technology) and so lead to increased employment opportunities;
- v. improve efficiency in the use of scarce resources, including energy, and conserve rare materials;
- vi. offer solutions to problems of malnutrition and disease especially in less developed countries, through developing advanced technologies in medicine and food production;
- vii. improve the environment, through more efficient manufacturing technologies.

5. For these reasons, the introduction of new technologies must be encouraged. It is important, therefore, to be aware of the obstacles to their introduction, and devise policies which help to overcome these obstacles.

### OBSTACLES TO THE INTRODUCTION OF NEW TECHNOLOGIES

6. In removing obstacles to the introduction of new technologies, two issues face our Governments: -

- i. the maintenance of a free flow of international trade in high technology products compatible with the security interests of the Summit countries;
- ii. the acceptability of new technologies generally in society and particularly in the work place.

7. The free flow of high technology products is influenced by the general climate for trade which will be discussed at the London Economic Summit. But there are also two special factors: -

i. the effect of security considerations in east-west trade on scientific, technological and trading relationships between Summit countries. The possible military application of high technology components, products and production know-how, and the lead in these products and technologies enjoyed particularly by the Summit countries, has persuaded governments of the need for effective controls over the destination of such products and production technologies. Nevertheless, scientific progress, technological innovation and economic development can be maintained only if we continue to exchange scientific and technological information and encourage trade amongst ourselves to the greatest possible extent.

ii. the wish of countries to develop and maintain their own indigenous high technology capacity. The Working Group recognises the necessity to develop and spread appropriate technologies in all countries. However, there is a temptation for countries to erect tariff and non tariff barriers to trade especially whilst high technology industries are in their infancy. There are presently a number of such barriers affecting the free flow of high technology goods between Summit countries. For example, the application of different standards and testing procedures fragments the market, which in turn inhibits the growth of dynamic new industries. It also provides the conditions for the establishment of private and state monopolies and standards with consequential obstacles to international competition. One welcome feature of the international collaboration instigated by the work of the Working Group has been the opportunity it has created to establish common standards at an early stage in the development of certain technologies, eg advanced materials, advanced robots and photovoltaic solar energy. One way forward lies in sustaining science and technology collaboration through to the point of industrial competition. The Working Group urges that these and other measures be taken to reduce and eventually eliminate barriers.

#### TECHNOLOGY AND SOCIETY

8. Our report to the Williamsburg Summit of 1983 noted that

"the fate of our scientific and technological innovations is largely a function of the willingness of the public to accept them. More attention to the problem of public acceptance of new technologies is needed".

9. The introduction and development of new technologies, properly managed, can effect changes which make for a better future, in developed and developing countries alike. In order to realise the benefits of the integration of new technologies with society's needs, consideration needs to be given to the following: -

i. equipping people to handle and exploit these changes, and responding to the education and training implications of life and work in an increasingly technological society;

ii. taking actions to pre-empt the understandable concern of the public about the implications of new technologies. For example, Governments as major users of new technologies, especially information technology, have a special responsibility for introducing such technologies, thereby demonstrating their value and the opportunities they create;

iii. being sensitive to and planning for the structural alterations associated with changing work patterns, eg housing, transport and leisure needs.

10. Two of the 18 areas of collaboration are relevant. One of these is the study of the public acceptance of new technologies: projects have been established in various Summit countries focussing on attitudes to new technologies and case studies of the introduction of new technologies.

11. The second study concerns new technologies applied to education, training and cultural development and aims to promote international collaboration in the biggest change in educational methods since the invention of printing. Information technology will lead to the creation of radically new forms of educational material, particularly software programmes and electronic databases and novel ways to disseminating this eg satellite transmission of television programmes. These should be made available on an international basis, having due regard for proprietary concerns, and experience in the use of these techniques should be shared.

12. Particular attention should be paid to the role of education in preparing for an increasingly technological society. This implies acquainting all school children with key science and technology concepts, but avoiding early or over-specialisation, given the rapid changes in demands for skills and expertise in the employment market. Re-training during the working life will also be important.

#### ENVIRONMENTAL PROTECTION ISSUES

13. The working group considers that it is timely to draw attention to the close relationship between science and technology and environmental protection issues for a number of reasons: -

a. the mounting concern about the impact of industrial and agricultural processes on the environment which could limit the application of new technologies and hence retard economic growth;

b. the extent to which public confidence in technological developments might be tempered by environmental considerations. It should be recognised that all environmental impacts of new technology must be studied at an early stage of development;

c. the international dimension of environmental problems, both in terms of trans-boundary pollution and the necessity for international collaboration in tackling both the basic scientific problems and the technological solutions.

14. The Working Group welcomes the progressive inclusion of environmental issues on the international scientific agenda, particularly the sharing of information and the development of research programmes under the auspices of the United Nations Commission for Europe, the World Meteorological Organisation, the European Communities, the United Nations Environment Programme and the International Council of Scientific Unions.

15. The Working Group recommends that research into environmental protection issues should continue to be given high priority in national and international science and technology organisations (public and private), in particular research into: -

- i. the processes involved in acid deposition and how these relate to perceptible environmental damage such as reductions of freshwater fish stocks and fir and spruce forest deterioration;
- ii. the safe storage and disposal of radio-active waste;
- iii. the protection of the marine environment;
- iv. world climate and climate change eg the impact of increasing levels of carbon-dioxide in the atmosphere;
- v. the development and introduction of more efficient energy generating technologies compatible with a significant reductions in emissions.

16. The Working Group has not thought it appropriate to recommend the inauguration of a new programme of international collaboration on a par with the existing 18 project areas, since it believes patterns of collaboration through existing organisations can be harnessed. Some of the 18 areas of collaboration are relevant, for example, remote sensing from space. However, it considers national Governments must be sensitive to the impact on the environment of their industrial policies and promote the balanced development of new technologies, so that they do not bring with them new environmental problems.

#### PROGRESS IN THE 18 AREAS FOR CO-OPERATION

17. The Working Group has noted with pleasure the growth of international collaboration in the 18 different areas for co-operation identified in its report to the Williamsburg Summit of 1983. Developing effective international collaboration takes time but nonetheless, significant progress has been made in many areas in one or more of the following respects:

- a. the establishment of effective and informal international networks between research institutes in specific fields of science and technology;
- b. the identification and initiation of collaborative research activities within the chosen areas for co-operation;
- c. the involvement of countries outside the Economic Summit grouping and and of relevant international science and technological organisations.

18. Individual progress reports are attached in the Annex, but there are a number of general observations which can be made.

19. The nature of the agreed international co-operation differs between the areas. In several, the working groups have agreed the basis on which they will continue to exchange information arising from existing national programmes. In some, this had led to the inauguration of regular seminars and meetings to discuss research results. In others, the groups have tried to identify a framework for research within which new national projects can be planned, which will mean those projects will produce results which are comparable across national boundaries.

20. In both these types of collaboration, close bilateral and multi-lateral relationships have developed between research institutes, which hold out the prospect of genuine joint projects in the course of future collaboration.

21. In certain other topic areas, notably those where there has been already a good deal of international co-operation through existing institutions (for example remote sensing from space, biological sciences), the setting up of the working groups has created the opportunity to review the effectiveness of current collaborative machinery and to identify ways forward. The aim has been to assist the planning of programmes within existing networks of collaboration.

22. Effective cost sharing is becoming a more important element in the construction of major new facilities. Collaborative projects would benefit if coherent long term plans for the construction and sharing of facilities in our countries were to be developed.

23. Where appropriate, non Summit countries have participated in seminars, and other project activities. The scope for the involvement of non-Summit countries or other scientific and technological organisations is, of course, different in each of the chosen areas for co-operation. The Working Group has reaffirmed that the principal criterion for such involvement must be the benefit that co-operation in a chosen area might acquire by this participation.

24. In sum, the activities stimulated by the Technology, Growth and Employment initiative have both improved the climate of international co-operation and helped to focus national science and technology discussions. In this way, they have strengthened the links between national and international science and technology.

25. In looking to the future, the Working Group is firmly of the view that a failure to take up opportunities for international collaboration may be just as prejudicial to the introduction of new technologies and hence to economic growth as the obstacles referred to earlier in the report.

Area for Collaboration: Photovoltaic Solar Energy

Lead countries: Japan, Italy

Participants: EC, France, FRG, UK

Observers: Canada, USA

Invited international organisations: International Electrotechnical  
Commission

#### Aims

To exchange information and experiences on photovoltaics, including Government incentive policies, basic materials research activities, and national strategic options.

To develop proposals for common research.

To establish common evaluation methods for photovoltaic cells and modules.

To set up a list, to be regularly updated, of photovoltaic research centres open to visiting scientists and exchange programmes.

To mount on site joint studies.

#### Activities

The first joint co-ordination meeting agreed on the need to provide a report on the status of photovoltaic R & D in each country, and the desirability of establishing agreement on common evaluation methods for photovoltaic cells and modules. Japan proposed the organisation of two week long visits to selected institutions and installations in Japan, and it was agreed similar visits would be arranged in relationship to other participating countries. The subsequent experts meeting focussed on establishment of common evaluation methods for photovoltaic cells, starting with reference cells.

#### Outlook

By June 1984, a list of the places for the two weeks visiting programme will be established, and the agenda for the second joint co-ordination meeting will be agreed. This second meeting will take place in Tokyo in November, to be followed by a further experts meeting in June 1985.



Area for Collaboration	Controlled Thermonuclear Fusion
Lead Countries	USA, European Communities
Participants	Canada, France, FRG, Italy, Japan, UK
Observers	--
Invited International Organizations	--

#### AIMS

1. Accelerate world development of a new energy source using practically inexhaustible fuels and possessing potential advantages from an environmental point of view.
2. To avoid duplication of costly equipment and installations.
3. To study the possibility of carrying out joint projects in the medium term.

#### ACTIVITIES

The working group reviewed the present status of the fusion programs of the Summit countries and their associated international activities. The three major programs are those of the USA, Japan and a joint program within the European fusion community. Recognizing that the remaining efforts to develop fusion into a new energy source will require considerable time and expense, the Working Group recommends that a consensus be sought on the desirable strategy in fusion in order to facilitate early joint planning to coordinate individual programs.

#### OUTLOOK

The next step following the London Summit is to establish a process to reach such consensus on the minimum number of objectives and machines that are required on scientific and technological grounds to reach the ultimate goal.

The next step will begin at the next meeting of the Working Group scheduled for July 1984.

Area for collaboration	Photosynthesis and photochemical conversion of solar energy
Lead country	Japan
Participants	France, U.K., U.S.A., European Communities (F.R.G. and Italy)
Observers	-
Invited International Organizations	-

#### Aims

To promote basic research concerning photosynthesis and photochemical conversion and to develop artificial photosynthetic systems through the exchange of information and scientists and cooperative research.

#### Activities

According to the agreement at the first expert meeting held in Tokyo in November, 1982, each participating country is making a list of researchers and institutes engaged in photosynthesis and photochemical conversion of solar energy.

A meeting was held in Brussels during the Sixth International Congress on Photosynthesis in August, 1983. The participants from Japan, France, U.K. and the European Communities ( F.R.G., Italy, Belgium, and the Netherlands) exchanged their views on possible cooperation.

Japan has sent the list of Japanese researchers and institutes to all participating countries.

#### Outlook

Japan is willing to compile a comprehensive list immediately after receiving each country's list.

The second expert meeting is considered to be held in Tokyo in 1984 to study the future mode of cooperation.

Area for Collaboration

Fast Breeder Reactors

Lead Countries

United States, France

Participants

Federal Republic of Germany,  
United Kingdom, Italy,  
Japan, European Communities

Observers

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Invited International Organizations

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#### AIMS

1. To help provide a stable and supportive atmosphere for facilitating orderly breeder development.
2. To encourage international cooperation in breeder development.

#### ACTIVITIES

The working group emphasized that in many areas of breeder R&D a high degree of international cooperation exists already, but there might be a limited number of additional technological areas where international cooperation might be beneficial, e.g. safety collaboration, cost reduction design options. However, the members of the Group agreed that their purpose was not to foster technological cooperation or studies, but rather to encourage national leadership to pursue breeder development as a reliable, economical, and safe energy source. The Group prepared a strong statement supporting breeder technology for the London Summit meeting.

#### OUTLOOK

Consultation during the summer will determine whether another meeting in 1984 is necessary. If so, it would be held in the United States in November.

Area for collaboration:	Food Technology
Lead Countries:	France, UK
Participants:	European Community
Observers:	FRG, Italy
Invited International Organisations:	-

#### Aims

1. To collaborate on food research programmes and to encourage transfer of existing research knowledge to the stage of application.
2. To support international initiatives in the field of safety evaluation and in particular covering good laboratory practice and the harmonization of testing guidelines for food additives and novel foods.
3. To co-ordinate fundamental research programmes in the field of safety evaluation targeted on validation of alternative testing systems and on developing an understanding of the mechanisms of the toxic effect.
4. To collaborate on areas of research and training in the field of food technology and relevant to the Third World.

#### Activities

The initial project report has been considered by all Member States of the Versailles Working Group and the comments received by the co-leaders have been incorporated in an action plan for the project. The action plan contains proposed areas of collaboration and was circulated to Member States in early May 1984.

#### Outlook

Member States have been requested to identify their interests in the areas contained within the action plan. Receipt of this response from Member States will allow the establishment of a detailed programme, involving the appointment of leaders and members of collaborating groups and the identification of interested institutes. It is hoped to establish these groups before the end of 1984 and to initiate the collaborative arrangements during 1985.

Area of Collaboration:  
Lead Country:  
Participants:

Aquaculture  
Canada  
FRG, France, Italy, Japan, UK, USA, EEC

#### Aims

1. To document the present production and R & D programmes in member countries, and estimate the economic trends from aquaculture until 1990.
2. To review and analyse trends that lead to changes in the technological elements (eg water quality, health, reproduction and stock improvement, husbandry, nutrition and food technology and biological optimisation of production systems), and in the economic and legal elements of broad application to aquatic animal and plant production in temperate climates.
3. To stimulate thinking on the research and development resources that will be required by both public and private sectors.
4. To strengthen existing collaborative efforts among member countries and foster initiation of new ones where appropriate, and to specify areas and means of cooperation foreseen until 1990.
5. To provide a continuing forum to consider the contribution that Science and Technology can make to aquaculture in the seven countries and the EEC, to economic growth and employment opportunities, and to outline paths to achieve advances.

#### Activities

The Planning Group on Aquaculture met in France and Canada in 1983, and in UK in 1984, providing a unique role in serving aquaculture growth areas. Three workshops and seven scientific study groups are structured, and extensive documentation has been exchanged. Next meeting will be in May 1985 at Washington, USA.

#### Outlook

Arrangements are in hand for a workshop on shellfish to be held in France, now rescheduled to March 1985, with tentative arrangements for one on salmonids in Japan, and one on crustaceans in Italy. Leadership on study groups is provided by FRG (1), Italy (1), UK (1), USA (2), and Canada (2). Preliminary results of first study group on water quality identified some serious constraints on design criteria that could create unnecessary investment risks, and a collaborative research project to address problems. A logo to identify publications endorsed by Group was accepted with protocols on publication, workshop planning, and role of Secretariat now being finalised. Other initiatives include an effort to foster exchanges in 1985, the International Youth Year, for those developing careers in aquaculture, and identification of spin-off benefits to developing countries.

## Area of Collaboration

Remote Sensing from Space

Lead Country

USA

Participants

Canada, Federal Republic of Germany, France, Italy, Japan, the United Kingdom, and the European Communities

Observers

European Space Agency

Invited International Organizations

European Space Agency

## AIMS

1. To exchange information on remote sensing programs and plans in participating countries.
2. To coordinate remote sensing programs and plans with a view to avoiding duplication of efforts and fostering compatibility of activities to enhance the value of these programs in addressing critical global phenomena.
3. To promote bilateral or multilateral collaboration and cooperation in remote sensing activities in order to enhance scientific return of programs and use budget resources more efficiently.

## ACTIVITIES

The Panel of Experts on Remote Sensing from Space concluded that significant progress has been made on coordinating and implementing remote sensing activities as outlined in last year's report and that the Summit activities have fostered that progress. The Panel recommended new cooperative activities in weather satellites and streamlining of activities in the remote sensing area for future Summits. Specifically, the Panel agreed on establishment of an informal technical group for international cooperation in support of polar-orbiting meteorological satellites. The Panel also proposed merger of several activities involving coordination of national satellite programs, elimination of one project from the Summit process and refinement of the definition of other projects. The Panel took note of new developments in remote sensing and in activities relevant to remote sensing-- such as the recent United States announcement of a Space Station initiative. The Panel discussed the value of remote sensing satellite measurements to climate change detection and offered to support as appropriate any initiative the Working Group undertakes in this area.

## OUTLOOK

Meetings among participating nations on specific topics will be arranged during 1984 and early 1985 as outlined in the Panel report. Other bilateral and multilateral contacts in specific project areas will also continue. The Panel expects to prepare a further status report in the spring of 1985 based on bilateral and multilateral experts' meetings to be held in early 1985.

Area of Collaboration:	High Speed Trains
Lead Countries:	France, Federal Republic of Germany
Participants:	Italy, Japan, UK
Observer:	European Communities
Invited international organisation:	UIC (International Union of Railways)

#### Aims

1. to intensify the exchange of scientific, technical and economic data of the development and construction of high speed systems,
2. to elaborate the methodical basis for the socio-economic assessment of high speed systems.
3. to carry out a feasibility study on high-speed land transport networks.

#### Activities

Two separate working groups have been set up, one for the technological, the other for the socio-economic aspects of high speed systems. A first symposium was held at Munich and Lathen from October 25-27 1983. At this symposium the international state-of-the-art of the development of high speed technology was documented and further cooperation between industries, institutes, railway companies, and ministries concerned has been initiated. The second working group has convened multilateral meetings (including the 11 countries participating in the technology symposium, OECD and CEMT) in order to discuss framework conditions and criteria for the introduction of high-speed systems.

#### Outlook

A second symposium on the socio-economic aspects will take place in Paris from October 22-26 1984. The two working groups will continue their discussions thereafter.

Area for Collaboration:	Housing and Urban Planning in developing countries
Lead countries:	France
Participants:	Italy, Canada, United Kingdom, Japan, European Communities
Observers:	-
Invited International Organisations:	-

### Activities

During the course of contact made with the international secretariat for the project "Housing and Urban Development in Developing Countries", participants were supplied with a working document by the lead country dated February 1984. This document gave rise to an exchange of opinion which has clarified ideas about initial activities which might be adopted with the least delay. Ideas focussed on:

- i. Details concerning cooperation in housing and urban development in developing countries.
- ii. Consideration of training needs, including spreading awareness of and expanding current training programmes, and establishing an international training network.
- iii. Common research programmes

### Outlook

In June 1984, a questionnaire on public organisations and institutions cooperating with developing countries will be proposed, in order to establish a common information base. A Working Group will be set up to define the organisation of the training network, and a colloquium is planned for 1986, with a workshop held in 1985 to prepare for this meeting.



Area for Collaboration:	Advanced Robotics
Lead Countries:	France, Japan
Participants:	Canada, Germany, Italy, UK, USA
Observers:	EC, Austria
Invited International Organisation:	-

#### Aims

1. To hold a "Joint Coordinating Forum" once a year in the participating countries in turn, with the attendance of a limited number of officials from each participating country responsible for R & D policy on advanced robot systems.
2. To exchange data/information, researchers/study missions on R & D activities for advanced robot systems undertaken by appropriate organisations.
3. To suggest common standards (robot components, interfaces, communication and languages).
4. To establish common criteria for evaluation.
5. To do joint evaluation (in particular of technical aspects) and joint experiments.

#### Activities

Based on the discussion on the necessary technologies, ie system architecture, intelligence, sensor, man/machine system, manipulation, locomotion and actuators, the Working Group has identified application areas for collaborative research, and initiative countries and member countries have been nominated for each. The application areas (with initiating countries in brackets) are Space (Italy), Ocean (France, Japan), Nuclear (France, Japan), Mining (France, UK), Agriculture (France), Civil Engineering (Germany, USA), Plant Operations (France, Italy), Fire Fighting and Rescue Operations (Japan, USA) and Services (France, Italy).

#### Outlook

The plan for joint work in each application area will be prepared by initiating countries with the prior agreement of participating organisations in member countries by the end of May 1984. Next joint coordinating forum meeting should endorse the above plans and suggest cross fertilization between plans in different application areas.

Area for Collaboration:	Impact of New Technology on Mature Industries
Lead countries:	Italy, France
Participants:	Germany, EC, United Kingdom, USA
Observers:	Norway National Research Council

#### Aims

1. To cooperate on the technological, economic, organisational and social problems related to the technological upgrading of the traditional sectors;
2. To define common analytic methodologies;
3. To study and compare the effects of impact of new technologies on different mature industries.

#### Activities

At an early stage in discussions, the co-leaders decided to focus attention initially on the textile industry. At the first general meeting, the state of progress in Italian and French research was presented, and there was a wider discussion about methodology. Other participant countries were invited to submit comparable research studies, in the same or different traditional areas. There has been close collaboration between the French and Italian research teams (CESTA and ENEA), including discussions of proposals for a new French case-study of the mechanical industry in the Vallee de l'Arve. At a second general meeting, there was a presentation and discussion of the FRG project on automation of the coutchouc process, and of the European Community initiatives relating to the rejuvenation of traditional sectors and its proposed new project on basic technologies. At this meeting, the group agreed the area of collaboration should be open to non-Summit countries, and plans were made for the proposed International Colloquium on the Rejuvenation of Mature Sectors.

#### Outlook

The first report on the Prato and Castres-Mazamet case studies will be ready in June 1984, and the International Colloquium on the Rejuvenation of Mature Sectors will take place in the latter half of 1984.

Area for collaboration:	Biotechnology
Lead Countries:	France, UK
Participants:	Italy, Canada, Japan, European Communities
Observers:	FRG, USA
Invited international organisations:	FAO, WHO, UNESCO, UNIDO

### Aims

1. To obtain essential information on the enabling technology at a lower cost than through purely national programmes.
2. To assist in the training needs of developed and developing countries.

### Activities

The Working Group has organised the preparation and distribution of a handbook describing training facilities in the six participating countries, and this is now available. The group has also identified areas for collaborative research and a lead country has been nominated for each. The topics (with lead country in brackets) are cellulose bioconversion (Japan), the extraction and purification of the products of fermentation (UK), the nitrogen fixation (Italy/Canada). For each area the lead country is preparing a collaborative research programme, on the basis that each country will bear its own costs.

### Outlook

The three collaborative research projects are now being developed and should be underway by the end of 1984. The duration of the projects will be decided in relationship to the individual topics.

Area for collaboration: Advanced Materials and Standards (VAMAS)  
Lead Countries: UK, USA  
Participants: Canada, France, FRG, Italy, Japan,  
European Communities  
Observers: -  
Invited Organisations: -

#### Aims

1. To promote cooperation on enabling scientific and technological research in advanced engineering materials in order to support the generation of codes of practice for these materials.
2. To exchange information on codes of practice and specifications in advanced materials and on the key organisations in various countries in order to facilitate cooperation and the adoption of agreed standards.

#### Activities

Following three meetings of the participants, a Steering Committee has been established with agreed Terms of Reference. The project will operate within a Memorandum of Understanding to be signed at an early date. .

Agreement has been reached for collaborative research and development on methods and data for standards for wear testing (led by FRG) and for surface analysis (UK and USA). Other subject areas which are being pursued by various countries and which will be progressed at the next meeting are high temperature low cycle fatigue, corrosion, bioengineering materials, fusion weld penetration, polymer composites, ceramics and cryogenic materials.

#### Outlook

The next meeting of the Steering Committee will be held in Washington in June and will be hosted by the NBS. The Secretariat will move to USA after three years. The collaboration will be reviewed after 5 years.

Area for collaboration: New technologies applied to culture,  
education and vocational training (ANTEM)

Lead countries: Canada, France

Participants: Italy, Great Britain

Observers: FRG, European Communities

### Aims

To develop international collaboration and to share experience in the field of new technologies applied to education, through the establishment of databanks, workshops, common terminology, etc.

### Activities

Three different networks have been established. The first concerns instructional technology referral centres, with the assembly of information on the educational technology resources of member countries. France and Canada have committed themselves to national databanks, whilst Italy and Britain are investigating the possibilities. The second network is devoted to promoting workshops experimenting with developed technologies, with three centres now established in France and one network based on suppliers of Telidon information planned in Canada. The third is intended to establish communication between users of new technologies, involving an electronic network, in which Canada, Italy and France are participating. The Interactive Audio-Visual Project is exploring the possibilities of using 'intelligent' video discs in comparative research, and France and Canada are together exploring its application to biotechnology training. Lastly, a working group from the co-leader countries is studying the development of a common terminology bank with reference to robotics and biotechnology.

It has been suggested that organisations in non-member countries be able to participate informally in certain projects.

### Outlook

ANTEM has as an objective to establish and have operating the information networks by mid-summer 1985.

## AREA FOR COLLABORATION

## PUBLIC ACCEPTANCE OF NEW TECHNOLOGIES

Lead country: UK  
Participants: Italy, France, FRG, Japan, Canada  
Observers: -  
Invited International Organisations: -

## AIMS

1. To investigate experience in the introduction of new technologies, in particular public attitudes towards new technologies.
2. To promote research collaboration and to establish complementary research projects in participating countries.
3. To exchange information from participating countries relevant to the study of the public acceptance of new technologies.
4. To draw out implications for corporate and public policy making in this area.

## ACTIVITIES

The working group has agreed a paper discussing the public acceptance of new technologies which proposed a number of areas where collaborative research might be undertaken. The UK DTI has awarded through the Economic and Social Research Council (ERSC) three contracts. These are:

1. The Policy Studies Institute Information Technology and the Organisation
2. Manchester University PREST team New Communications Technology and the Consumer
3. The Technical Change Centre Comparative National Assessment of Attitudes and New Technologies

A fourth contract, Historical Studies of Attitudes to New Technologies has not yet been placed.

Collaboration with the UK research teams by partners in the group has been encouraged since the start. For contract one, there are links with Verin Deutscher Ingenieure (VDI) in Berlin and Bureau d'Information et de Previsions Economiques (BIPE) in Paris. For contract two there are links with the Science Council of Canada and Montreal University and through the British Council in Tokyo. Contract three has links with the Science Centre Berlin (WXB) and Centre d'Etudes des Systemes et des Technologies Avancees (CESTA) in Paris. Seminars arranged by the research teams frequently involve researchers from partner countries. The Japanese and Italian governments have also indicated their interest in this project; the extent of their involvement is being discussed.

## OUTLOOK

For the remainder of 1984 and early 1985 contacts with partners will proceed at the working level. Early draft reports are expected in Spring 1985, and a further meeting of experts will then be convened.

AREA FOR COLLABORATION

BASIC BIOLOGY

Leader

CEC

Participants :

USA, Japan, Canada, UK, Italy,  
Germany, France

Invited International Organisations

EMBL, AMBO, ICSU, ESF, EMBO, IUBS  
(to be contacted)

AIMS

In view of the complexity of modern biology, to intensify international cooperation in order to improve efficiency of efforts undertaken in this sector in recent years.

ACTIVITIES

Taking into account the activities of the biotechnology and photosynthesis working groups, it was decided to develop two types of action in the area of basic biology :

- i. Horizontal activities of value in many different fields of endeavour :
  - development and reinforcement of biological information networks including data banks of nucleotide and protein sequences, data banks on hybridomas and immunoclones, data banks on receptors inventory of genome libraries, inventory of biotics collections, inventory of ecosystems and agro-ecosystem models
  - training through research (initially in the fields of neurosciences and biology of ecosystems) : preparation and distribution of handbooks describing the facilities of the participating countries.
- ii. Specific activities (initially) in :
  - the neurosciences : basic neurobiology, "brain and behaviour" research, research of neurobiological and mental diseases : A system of periodical exchange of information will be developed.
  - basic biological research on a number of ecosystems selected for their global interest : coordination of the work carried out by multinational (ICSU, ECC environmental programme) and national institutions.

OUTLOOK

Horizontal activities : working agreements between American, European and Japanese biological information networks to be established and developed within a year.

Neurosciences : workshop to be organised by Professor P. Calissano (Italy, Autumn 1984).

Ecosystems : EC to undertake inventory within 1984.

for Collaboration

High Energy Physics

Lead Country

USA

Participants

Canada, France, FRG, Italy, Japan,  
UK, European Communities

Observers

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Invited International Organizations

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## AIMS

The aim of the Summit Working Group in high energy physics is to further develop international collaboration to foster progress in this field of scientific research.

## ACTIVITIES

The Working Group has surveyed the existing national programs, their associated international activities and commitments for major new facilities that have been made or proposed by Summit member nations. The general consensus was that worldwide collaboration works well. Major research projects in high energy physics are seldom done exclusively by groups or individuals from any one nation. The existing arrangements for collaboration should be maintained as the essential basis for future international cooperation.

At the present time, a number of major new accelerator projects are being built in Germany, Japan, the United States, and at CERN. Looking further to the future, there are proposals both in Europe and the United States for new colliding beam accelerators. Because these commitments and proposals extend into the 1990's the Working Group concluded that it was not possible to plan for the long-term at this time. However, substantial research and development is needed in the necessary accelerator and detector technology for projects beyond those under construction and proposed. It was decided to explore the possibility that this research and development could be conducted in collaboration in the spirit of the Declaration of Versailles. A subpanel of technical experts from each Summit member was established to recommend specific technical areas for near-term joint collaborative research. The subpanel recommended the areas of superconducting magnets, cryogenics, rf cavities, very high-energy electron linacs, theory and simulation, and new technologies of acceleration.

## OUTLOOK

A July meeting of the Working Group has been scheduled to review the proceedings of the London Summit and also to review the recommendations of the technical subpanel. A proposal will be introduced for the Working Group to organize other technical subpanels of similar composition and work with them to develop a plan identifying the major facilities that will be required to continue to make effective progress in this field, regardless of location. This plan could be completed for the next Summit meeting.



Area for Collaboration	Solar System Exploration
Lead Country	USA
Participants	All Summit Members
Observers	--
Invited International Organizations	--

#### AIMS

1. To exchange information on Summit countries' and the European Space Agency's respective plans for solar system exploration.
2. To identify projects of mutual interest which could be conducted bilaterally or multilaterally.
3. To report on potential cooperative, long term, high risk projects to conduct fundamental research about the nature, origin and evolution of the solar system.

#### ACTIVITIES

Two primary areas of solar system exploration have been identified: solar terrestrial research and the study of planets and small bodies. A program known as the International Solar Terrestrial Physics (ISTP) Program for comprehensive investigation and analyses of the flow of plasmas and energy from the Sun to the Earth has been the subject of trilateral discussions among the US, Japan and the European Space Agency (ESA). ISTP is a multi-satellite program for operation during the 1989-1995 timeframe. Three joint studies are underway concerning planetary missions: (1) NASA and Germany are considering a comet rendezvous/asteroid flyby mission, (2) NASA and ESA are jointly assessing a mission to Saturn and its moon Titan, and (3) NASA and ESA are conducting a broad-based study of possible primitive body missions with special emphasis on an asteroid mission known as Agora. Finally, the US, Japan, ESA and the USSR are coordinating their respective ground-based and spacecraft programs to observe comet Halley in 1986.

#### OUTLOOK

The next trilateral (U.S./Japanese/ESA) meeting on ISTP will take place in June 1984. At this time, the possibility of having additional countries participate in the program will be discussed. Activities leading up to approval, and if approved, the implementation of the project will continue through the 1990's. The comet rendezvous mission study will continue through 1984 and 1985. The Saturn/Titan and asteroid missions will continue to be assessed through late summer 1985, at which time ESA will determine whether to select either or both missions for further study. The comet Halley activities are well underway for Halley's apparition in 1986.