is supported by up-to-date citations. Other articles on, "Gene cloning and transfer to plants; Promoter sequences for the expression of foreign genes in plant cells need special mention. Similarly articles entitled, Regeneration of blast-resistant plantlets from irradiated rice calli; Micropropagation of certain fruit and timber trees through tissue culture regeneration and establishment; Excised root culture—a novel method for germplasm preservation; *In vitro* multiplication of Oil palm (*Elaeis guinensis*): Involvement of polyphoinositidae cycle and calmodulin in cell proliferation and *in vitro* regeneration of plants in *Amaranthus paniculatus*, and Effect of cultural parameters on the growth of cell cultures and production of B-C-3 sterols and gugulsterone in commiphora witii; are a few of the outstanding ones which provide interesting information on the subject of tissue culture.

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NEWS

INDO-BRITISH WORKSHOP ON RABBIT FUR TECHNOLOGY

Dr Farooq Abdullah, the Chief Minister of Jammu & Kashmir, inagurated a workshop on 'Rabbit Fur Technology' at the Regional Research Laboratory in Srinagar. The workshop will provide a unique opportunity not only to rabbit breeders to learn pelt processing technology but also enlighten the fur dressers with improved and scientific techniques of fur processing.

The workshop will be conducted by the staff of Regional Research Laboratory (Branch), Srinagar, and the Overseas Development Natural Resources Institute, London. A number of guest speakers and demonstrators with specialized experience will also share their knowledge and expertize with participants from various parts of India.

Captive rabbit breeding as an alternative source of meat production has been recently started in some parts of India. However, the skins, which could be profitably used by the fur dresser, go a complete waste, as the breeders are not aware of the technology of preserving the skins and processing them into value-added finished products. On the other hand, raw rabbit pelts worth about Rs. 50 lakhs are annually imported to feed the local fur industry. Therefore, harvesting of entire pelts raised through rabbit breeding would go a long way towards making India self-sufficient in fur production and save valuable foreign exchange spent on import of skins. (BIS. B. 322; Published by the British Information Services, British High Commission, Chanakyapuri, New Delhi 110 021.)

NEWLY ELECTED IAEA BOARD OF GOVERNORS

The 32nd regular session of the IAEA General Conference has elected 11 Member States to the IAEA Board of Governors, the 35-member policy-making body.

The 11 Member States newly elected to the Board are Algeria, Argentina, Cote d'Ivoire, Denmark, German Democratic Republic, Ghana, Malaysia, Mexico, Netherlands, Pakistan and Peru. The members were elected for 2-year terms expiring at the end of the regular session of the IAEA General Conference in 1990.

The other remaining 24 Member States of the Board are Australia, Brazil, Canada, China, Colombia, Cuba, Egypt, France, Federal Republic of Germany, Hungary, India, Indonesia, Japan, Republic of Korea, Kuwait, Libyan Arab Jamahiriya, Senegal, Spain, Switzerland, Turkey, Union of Soviet Socialist Republics, United Kingdom of Great Britain and Northern Ireland, United States of America, and Yugoslavia. (IAEA–PR 88/39 dated 22nd September 1988; Issued by International Atomic Energy Agency, Wagramerstrasse 5, P.O. Box 100, A-1400, Vienna).

MRS. THATCHER'S SPEECH AT THE ROYAL SOCIETY

The British Government's commitment to science and to the environment was underlined by the Prime Minister, Mrs. Margaret Thatcher, when she spoke at a Royal Society dinner in London on 27 September.

Following is the text of Mrs. Thatcher's speech:

Mr. President, Your Excellencies, Fellows of the Royal Society, ladies and gentlemen. It was at your annual dinner of 1972 that I had the privilege of speaking to your Society in my capacity as Secretary of State for Education and Science. This is my first opportunity as Prime Minister to address our Society of which I am so proud to be a Fellow.

In confess that I am quite pleased that I did'nt continue my work on glyceride monolayers in the early 1950s or I might never have got here at all. But I am reminded of a reviewer of Solly Zuckerman's recent autobiography who said that as a rule scientists rarely make successful politicians.

Leading academy of science

From my experience let me say this: in today's world it is very good for politicians to have had the benefit of a scientific background. And not only politicians, but also those who work in industry, in commerce, and in investment. Indeed, so important has it become that I believe we are right to make science a compulsory subject for all school children.

Over its 343-year history, the Royal Society has become the leading British academy of science with over 1,000 Fellows and, in keeping with your international tradition and standing, nearly 100 foreign members.

As you know Mr. President, we have tried in No. 10 Downing Street to recognize the enormous contribution that scientists have made and are making to our prosperity and intellectual reputation as a people, by showing prominently portraits of eminent scientists among our pictures of those who have done so much for our country. And so we have Michael Farady in the hall. We have Isaac Newton in the dining room, and paintings of Robert Boyle, Humphrey Davy, Edmund Halley and Dorothy Hodgkin in our other rooms.

Priority to science

Indeed we have just redecorated No. 10 and have changed some of the other pictures, so there are several spaces vacant. I should like to fill them during my years of office by more of today's scientists. Alas we have found that many distinguished scientists do not devote time to being painted by distinguished artists on canvasses of the right size. I should be grateful if you could rectify this state of affairs.

Everyone here, and no one more than myself, will support Whitehead's statement that a nation which does not value trained intelligence is doomed. Science and the pursuit of knowledge are given high priority by successful countries, not because they are a luxury which the prosperous can afford, but because experience has taught us that knowledge and its effective use are vital to national prosperity and international standing.

But we need to guard against two dangerous fallacies: first that research should be driven wholly by utilitarian considerations, and second, the opposite, that excellence in science cannot be attained if work is undertaken for economic or other useful purposes.

We should not forget that industry has had its share of Nobel Prizes; AT and T for the transistor, IBM for warm super-conductors, EMI for X-ray tomography. It is time we won some more.

Industry's task

In a January White Paper and on various occasions since, this Government has made it clear that the commercial development of scientific principles should mainly be the task of industry.

It is in industry's own interest to pursue the research needed for its own business, collaborating with partners as necessary. Industry could also help our academics to spot commercial applications when they arise unexpectedly during the course of more basic work. There are too many stories of British discoveries being published without patent protection, only to make money for foreign lands.

Industry is becoming more scientific-minded, scientists more industry-minded. Both have a responsibility to recognize the practical value of the ideas which are being developed.

In your Dimbleby lecture on knowledge and its power, Mr. President, you stressed the importance of basic science in a challenging way. You will know from our joint attendance at the new Advisory

Council on Science and Technology (ACOST), that this is a view which we share.

Three points

It is mainly by unlocking nature's most basic secrets, whether they be about the structure of matter and the fundamental forces or about the nature of life itself, that we have been able to build the modern world. This is a world which is able to sustain far more people with a decent standard of life than Malthus and even thinkers of a few decades ago would have believed possible.

It is not only material welfare. It is about the access to the arts, no longer the preserve of the very few, which the gramophone, radio, colour photography, satellites and television have already brought, and which holography will transform further.

Of course, the nation as a whole must support the discovery of basic scientific knowledge through Government finance. But there are difficult choices and I should like to make just three points.

First, although basic science can have colossal economic rewards, they are totally unpredictable. And therefore the rewards cannot be judged by immediate results. Nevertheless the value of Faraday's work today must be higher than the capitalization of all the shares on the Stock Exchange.

Indeed it is astonishing how quickly the benefits of curiosity-driven research sometimes appear. During the Great War, our then President, J. J. Thompson, cited the use of X-rays in locating and assessing the damage of bullet wounds. The value of the saving of life and limb was beyond calculation, yet X-rays had only been accidentally discovered in 1895.

Competitive research

Second, no nation has unlimited funds, and it will have even less if it wastes them. A commitment to basic science cannot mean a blank cheque for everyone with—if I may put it colloquially—a bee in his bonnet. That would spread the honey too thinly.

So what projects to support? Politicians can't decide and heaven knows it is difficult enough for our own Advisory Body of Scientists to say yea or nay to the many applications. I have always had a great deal of sympathy for Max Perutz's view that we should be ready to support those teams, however small, which can demonstrate the intellectual flair and leadership which is driven by intense curiosity and dedication.

A good researcher is keenly competitive and wants to be first. The final stage of the race for the DNA structure was as exciting as any Olympic marathon. The natural desire of gifted people to excel and gain the credit for their work must be harnessed. It is a great source of intellectual energy.

We accept that we cannot measure the value of the work by economic output, but this is no argument for lack of careful management in the way specific projects are conducted. The money is not for top-heavy administration but for research.

If only we could cut come £20 million from very large-scale projects—where the non-scientists sometimes out number the scientists—that money could provide support for hundreds of young researchers whose requirements are measured in thousands of pounds.

My third point is that, despite an increase in the basic science budget of 15% in real terms since 1979, the United Kingdom is only able to carry out a small proportion of the world's fundamental research, and that of course is true of most countries.

Increased exchanges

It is therefore very important to encourage our own people to be aware of the work that is going on overseas and to come back here with their broadened outlook and new knowledge. It is also healthy to have overseas people working here.

We already do much to encourage international travel and teamwork. The Royal Society has 44 exchange agreements with learned societies overseas, leading to 1,000 exchanges a year. Through SERC (the Science and Engineering Research Council), the Government funds some 120 postdoctoral fellowships, half of which are tenable overseas for one year and often more. The recent visits of the Presidents of the Soviet and Chinese Academies and the increased exchanges to which they will lead are most welcome. The Society's work in promoting internationalism has my strongest support.

Mr. President, this country will be judged by its contribution to knowledge and its capacity to turn that knowledge to advantage. It is only when industry and academia recognize and mobilize each other's strengths that the full intellectual energy of Britain will be released. In this respect we greatly appreciate your work and that of Sir Francis Tombs, Chairman of ACOST.

Mr. President, the Royal Society's Fellows and other scientists, through hypothesis, experiment and deduction, have solved many of the world's problems.

Research on medicine has saved millions and millions of lives as you have tackled diseases such as malaria, smallpox, tuberculosis and others. Consequently, the world's population which was 1 billion in 1800, 2 billion in 1927 is now 5 billion souls and rising.

Subjects of concern

Research on agriculture has developed seeds and fertilizers sufficient to sustain that rising population, contrary to the gloomy prophesies of two or three decades ago. But we are left with pollution from nitrates and an enormous increase in methane which is causing problems.

Engineering and scientific advance has given us transport by land and air, the capacity and need to exploit fossil fuels which had lain unused for millions of years. One result is a vast increase in carbon dioxide. And this has happened just when great tracts of forests which help to absorb it have been cut down.

For generations, we have assumed that the efforts of mankind would leave the fundamental equilibrium of the world's systems and atmosphere stable. But it is possible that with all these enormous changes (population, agricultural, use of fossil fuels) concentrated into such a short period of time, we have unwittingly begun a massive experiment with the system of this planet itself.

Recently three changes in atmospheric chemistry have become familiar subjects of concern.

The first is the increase in the greenhouse gases—carbon dioxide, methane, and chlorofluorocarbons—which has led some to fear that we are creating a global heat trap which could lead to climatic instability. We are told that a warming effect of 1 degree centigrade per decade would greatly exceed the capacity of our natural habitat to cope. Such warming could cause accelerated melting of glacial ice and a consequent increase in the sea level of several feet over the next century.

This was brought home to me at the Commonwealth Conference in Vancouver last year when the President of the Maldive Islands reminded us that the highest part of the Maldives is only six feet above sea level. The population is 177,000.

Ozone hole

It is noteworthy that the five warmest years in a century of records have all been in the 1980s—though we may have not seen much evidence in Britain.

The second matter under discussion is the discovery by the British Antarctic Survey of a large hole in the ozone layer which protects life from ultra-violet radiation. We don't know the full implications of the ozone hole nor how it may interact with the greenhouse effect.

Nevertheless it was common sense to support a world-wide agreement in Montreral last year to halve world consumption of chlorofluorocarbons by the end of the century.

As the sole measure to limit ozone depletion, this may be insufficient, but it is a start in reducing the pace of change while we continue the detailed study of the problem on which our (the British) Stratospheric Ozone Review Group is about to report.

The third matter is acid deposition which has affected soils, lakes and trees downwind from industrial centres. Extensive action is being taken to cut down emission of sulphur and nitrogen oxides from power stations at great but necessary expense.

In studying the system of the earth and its atmosphere we have no laboratory in which to carry out controlled experiments. We have to rely on observations of natural systems. We need to identify particular areas of research which will help to establish cause and effect. We need to consider in more detail the likely effects of change within precise timescales; and to consider the wider implications for policy—for energy production, for fuel efficiency and for reforestation.

No small task

This is no small task, for the annual increase in atmospheric carbon dioxide alone is of the order of three billion tonnes. And half the carbon emitted since the Industrial Revolution remains in the atmosphere.

We have an extensive research programme at our meteorological office and we provide one of the world's four centres for the study of climatic change.

We must ensure that what we do is founded on good science to establish cause and effect.

In the past when we have identified forms of pollution, we have shown our capacity to act effectively. The great London smogs are now only a nightmare of the past. We have cut airborne lead by 50%. We are spending £4 billion on cleansing the Mersey Basin alone; and the Thames now has the cleanest metropolitan estuary in the world.

Even though this kind of action may cost a lot, I believe it to be money well and necessarily spent because the health of the economy and the health of

our environment are totally dependent upon each other.

The Government espouses the concept of sustainable economic development. Stable prosperity can be achieved throughout the world provided the environment is nurtured and safeguarded.

Protecting the balance of nature

Protecting this balance of nature is therefore one of the great challenges of the late 20th Century and one in which I am sure your advice will be repeatedly sought.

I have spoken about my own commitment to science and to the environment. And I have given you some idea of what Government is doing. I hope that the Royal Society will generate increased popular interest in science by explaining the importance and excitement of your work.

When Arthur Eddington presented his results to this Society in 1919, showing the bending of starlight, it made headlines. It is reported that many people could not get into the meeting, so anxious were the crowds to find out whether the intellectual paradox of curved space had really been demonstrated.

Should we be doing more to explain why we are looking for the Higgs Boson at CERN and trying to decode the human genome. This is a golden age of discovery and new thought. The natural world is full of fascination providing the doors of understanding are opened.

I applaud our Royal Society for its manifold achievements and congratulate you Mr. President on your splendid leadership. (Published by the British Information Services, British High Commission, Chanakyapuri, New Delhi 110 021.)

SHANTHI SWARUP BHATNAGAR PRIZES FOR 1987

The following nine scientists and technologists have been selected for the Shanthi Swarup Bhatnagar Prizes for 1987: for the subject mentioned against each: 1. Prof. Vijay Kumar Kapahi, Tata Institute of Fundamental Research, Bangalore and Prof. Probir Roy, Tata Institute of Fundamental Research, Bombay, for Physical Sciences; 2. Prof. Debashis Mukherjee, Indian Association for the Cultivation of Science, Calcutta, for Chemical Sciences; 3. Prof. Sudhir Kumar Sopary, Jawaharlal Nehru University, New Delhi, and Prof. Awadesh Surolia, Indian Institute of Science, Bangalore, have been jointly awarded the prize in Biological Sciences; 4. Prof. Shrikant Lele of Banaras Hindu University, Varanasi, for Engineering Sciences.

The above announcement has been made on the occasion of the Foundation Day of the Council of Scientific and Industrial Research, New Delhi.

FUNDS AVAILABLE FOR ATTENDING INTERNATIONAL CONFERENCES ON HIGH T_c SUPERCONDUCTORS

The Program Management Board, PMB, (Govt. of India) will consider granting financial assistance to attend international conferences specifically pertaining to the area of high temperature superconductivity (HTSC). Persons who wish to avail of it should write to the respective Chairman of the Task Groups [Basic Sciences: Prof. R. Vijayaraghavan, Head, Superconducting Materials Group, TIFR, Colaba, Bombay 400 005; Applications & Technology: Dr P. K. Iyengar, Director, BARC, Trombay, Bombay 400 085] with all the details in addition to information whether they are presenting papers, asked to chair sessions, delivering invited talks, etc. The request should reach the Chairman at least 3 months before the conference date giving all particulars about support expected from other sources. (High Temperature Superconductors, Vol. 1, No. 6, p. 17; Published by the Indian Institute of Technology, Madras, for the Programme Management Board on High Temperature Superconductivity; for further details please write to Prof. G. V. Subba Rao or Prof. R. Srinivasan, Indian Institute of Technology, Madras 600 036).

Edited and published by Prof. M. R. A. Rao, Current Science Association, Bangalore 560 080.
Typeset and printed at Phoenix Printing Company Pvt Ltd, Attibele Indl Area, Bangalore 562 107.