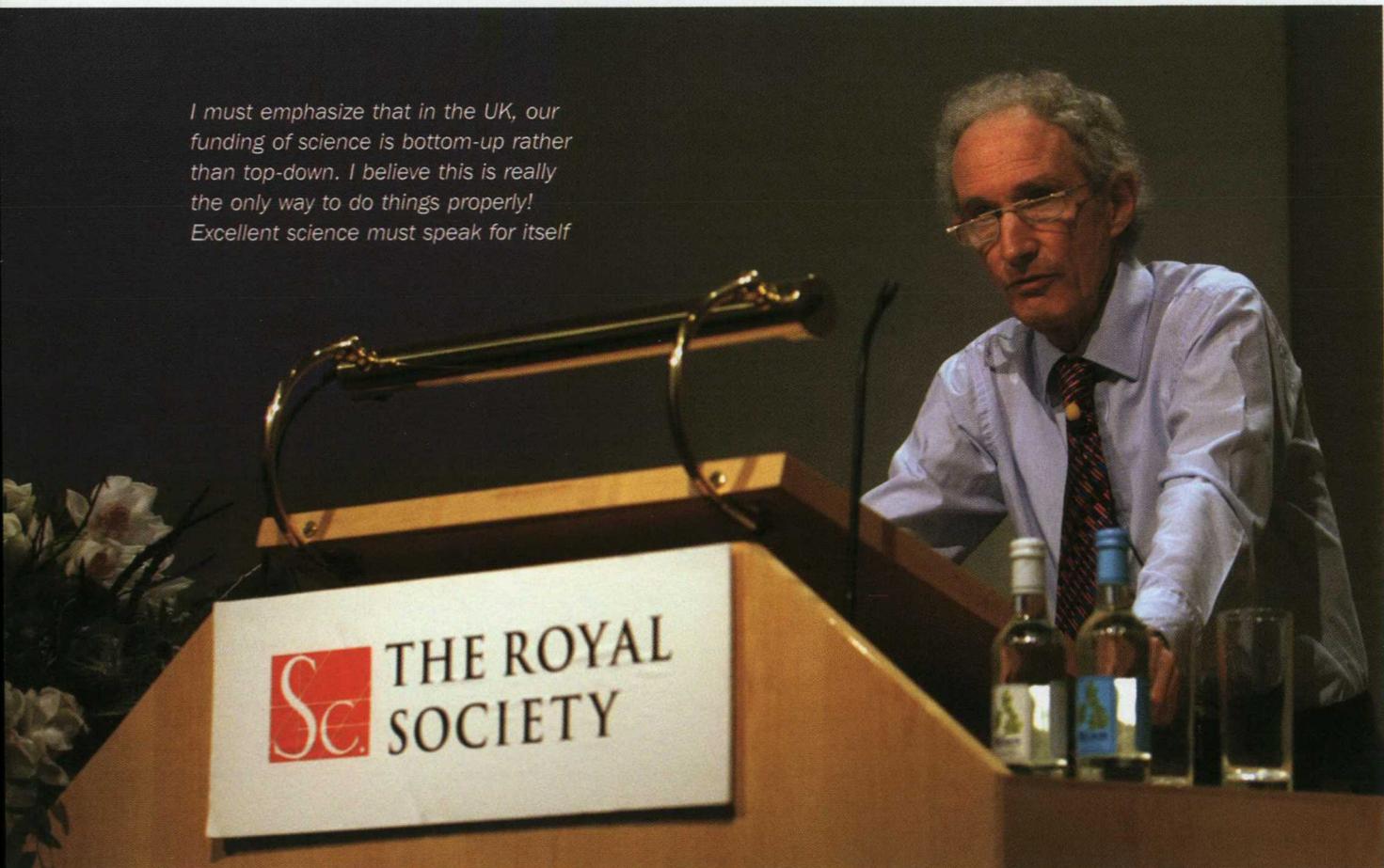


Interview with Lord May of Oxford

Scientific Champions League

I must emphasize that in the UK, our funding of science is bottom-up rather than top-down. I believe this is really the only way to do things properly! Excellent science must speak for itself



The Royal Society

Academia: Do the ties between British and Polish science represent a present necessity, stemming from EU enlargement for example, or are they part of an older tradition?

Lord May of Oxford, President of the Royal Society: The Royal Society is fortunate in having been in continuous existence as an Academy of Science since 1660. Our archives are in a very real sense a record of the history of science. Of course we are aware of the rich history of scientific discovery and research in Poland, from Copernicus to the present day. So it should not be a surprise that even a quick look through our archives uncovers a rich

seam of scientific interaction between Britain and Poland.

Among our very early records is "a letter written to Hevelius concerning his Weather Clock." Indeed, Johannes Hevelius, the founder of the Gdańsk observatory, was among the very early Fellows of the Royal Society, elected to membership on 30 March 1664. There is a rich record of correspondence between him and various Fellows in London over the following years. And of course Hevelius was a key player in one of the leading scientific controversies of the time. Robert Hooke, another great scientist of the seventeenth century, and the "Curator of Experiments" at

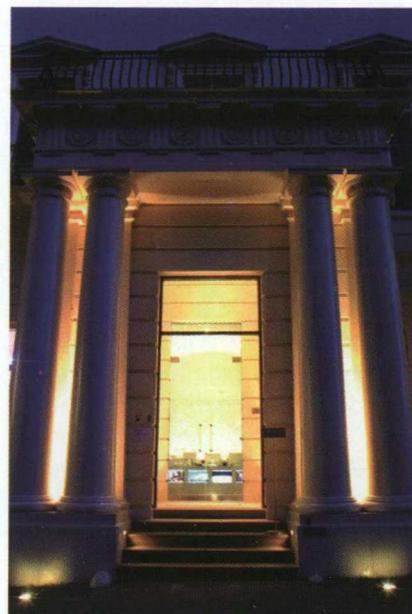
the Royal Society from 1662, started a fierce argument with Hevelius about his catalogue of stars. Hooke claimed that Hevelius' observations could not be accurate since he did not use telescopic sights and micrometers on his telescope. Eventually Edmund Halley, one of the youngest Fellows of the Royal Society ever, and the man after whom the famous comet is named, was sent to Gdańsk to arbitrate in the dispute. He spent two months checking Hevelius' observations and confirmed back to the Royal Society that Hevelius' measurements were as accurate as any that could be made with the latest scientific equipment from London. Sadly, our

records do not show what Hooke's reactions were at being proved wrong! At around the same time, in 1667, our archives contain letters discussing very early experiments in Gdańsk in the art of blood transfusion. They record that "a man who was injected with sheep's blood was still alive" and that people were apparently "cured of the pox and of epilepsy" as a result of the injection of blood into their veins. Scientific relations with Poland continued, with much correspondence and many visits to Poland and London. There are many Polish names among the Fellows of the Royal Society. In 1766 we even elected King Stanislaus Poniatowski to be a Fellow, recording that "his Polish majesty frequently makes natural experiments with his own hands" and "frequently amuses himself with physical, optical and geometrical experiments." In more contemporary times, scientific relations between our countries were also excellent. Even throughout the 20th century our scientific communities were able to remain in contact with each other. Now that Poland is a member of the European Union, I am sure that the level of cooperation will only increase. Personally, I have had some interesting interactions with Adam Łomnicki, a very creative and imaginative ecologist from Krakow; I encouraged him to produce

a monograph which I published in the Princeton series of Monographs of Population Biology. I think we could look forward to a "Frontiers of Science" meeting sometime in the next few years, which I trust the Royal Society will be organizing. This would serve to bring some of our brightest young people together with bright young people from the EU Accession Countries working across a broad spectrum of disciplines (where I would imagine Poland and Hungary will be particularly notable).

Which of these fields would you consider to be the most important for the development of civilization, possessing the greatest potential?

In 1896, a previous Royal Society President, Lord Kelvin, was asked about the future of flight. He said: "Heavier than air flying machines will never be possible." If you had wanted an opinion on this subject at that time, it would have been difficult to find anyone better than Kelvin to ask. But the Wright brothers flew their plane eight years later. Lord Rutherford, another past President of the Royal Society, said in 1935 that his discovery that atoms could be split would have "no practical implications." Five years later the Manhattan Project was in progress, and by 1956 atomic



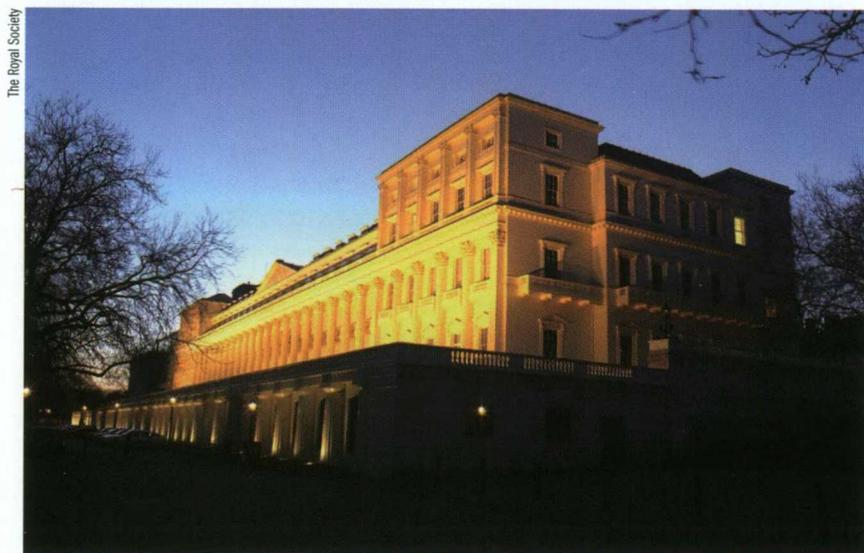
The Royal Society

Entrance to the Royal Society through which the scientific leaders of the world pass on a regular basis

energy was supplying domestic electricity. The point of these stories is that predictions about the future of science are not easy to make. But it is likely to be at the interface of different disciplines that the greatest progress is to be made, which is why I believe we should encourage interdisciplinary research.

Do the particular interests of the chairman or president of a scientific society or academy have an impact on the institution's policy and activities? Do the activities of the Royal Society reflect your own priorities?

The Royal Society is quite a large organization. In addition to being elected by, and answerable to, approximately 1250 Fellows, the President chairs a Council of 21 Trustees and works very closely with five Vice-Presidents, four of whom take active responsibility for particular areas of the Society's work. In matters of implementation, the President is supported by an Executive Secretary who heads up a team of 120 staff, most of whom have degrees in science. So the President does not operate in a vacuum: there are many inputs to policy-making within the Society, and constraints on



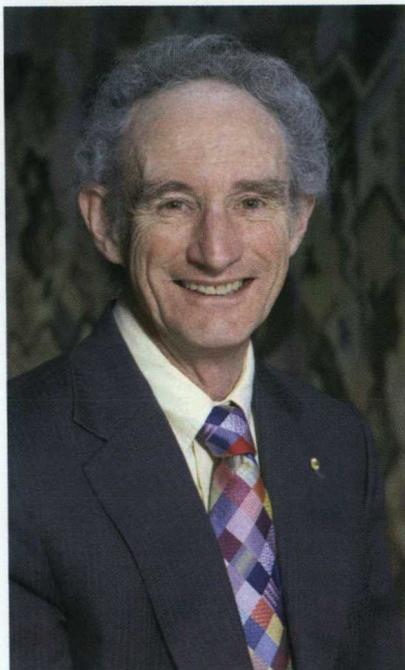
The Royal Society

The Royal Society's London headquarters

what can be done – not least financial. Nevertheless, it is clear that an individual President does have a very considerable impact on the Society's direction and focus. And it is right that he or she should, since the post is held, on a purely voluntary basis, for five years and takes an average of at least two days per week of the President's time. That is a big investment if you are not having an impact! During my Presidency, which finishes at the end of November this year (on "Anniversary Day"), I have concentrated particularly on promoting the Society's public role – our active engagement with Government on a wide range of policy issues, making sure that the scientific perspective and evidence was fully taken into account; our ground-breaking role in promoting early public dialogue on matters of potential controversy and involving the public in studies of contentious issues; and our expanding work on the international scene. Highlights include major studies on infectious diseases in livestock following the outbreak of foot and mouth disease, a recent study on nanotechnology that set new standards in public consultation, and the development of a European science advice capacity through the creation of the European Academies Science Advisory Council (EASAC). I was delighted that Professor Legocki, President of the Polish Academy of Sciences, accepted the post of Vice-Chairman of EASAC. I have equally supported the continued development of our pioneering schemes to promote the careers of outstanding young scientists, and the updating of our international exchange programs.

All such schemes and programs? It seems that large-scale, applied projects are dominant among the project types that receive EU support. But what about the humanities and social sciences, for example?

Understanding the world around us, and our place in it, is a seamless activity which reaches from the physical and biological sciences along a continuum



Lord May of Oxford, President of the Royal Society

embracing the social sciences into the arts and humanities. I therefore hope that the EU Framework Programmes will encourage the building of a European Research Area across this continuum. And the most effective way of doing this is through things like the Marie Curie Fellowship, which enable the best younger people to travel and spend post-doctoral time in the very best and most appropriate laboratories and research centers. The focus should always be on competitively excellent science, rather than on fostering collaborative projects for their own sake.

Will the creation of the European Research Council raise the standard of research done by European scientists and improve their working conditions?

A primary reason for having an ERC is that it will create a larger playing field, helping to raise aspirations. Because different countries have different scientific cultures and ways of doing things, some of which are demonstrably more productive than others, it makes sense to create a mechanism that could raise the standards of European science in the same way that the Champions

League improves national football leagues.

There are at least five motivations for an ERC, which I offer here. The first two I regard as absolutely essential. I do not think that any of the Nobel laureates who signed the long document in support of the ERC would be happy were these first two constraints not satisfied. The others we could, I think, argue about.

The first condition has been put forward many times. Everyone agrees that the ERC must be built on peer-reviewed, uncompromising excellence. What this means in operational terms is that the director has to be a scientist of international stature: someone who knows what excellence and peer review really mean. And the council should not be too large: a dozen or so people representing the worlds of science, innovation, business and industry – all of them still active in those worlds.

The second constraint concerns the urgent need to build scientific capacity in some of the new members of the EU25, and arguably even some in the EU15. Whereas it is vital that this issue be constructively addressed, it is equally vital that it be seen as a separate issue from the creation of a peer-reviewed, excellence-based ERC. I think it is really the EU structural funds that should be used for the hugely important endeavor of capacity building for the knowledge economy.

Third, I greatly admire the way the European Science Foundation has created collegial networks, and yet I recognize that such networks struggle to find funding that crosses national boundaries. I think Europe needs a mechanism that evaluates grant proposals from groups spanning national boundaries using the pure criterion of excellence, just as the best national research councils do, and it seems that the ERC would be ideal for this purpose.

My fourth point focuses on helping the best young people to pursue their own ideas in the best laboratories, free from hierarchical constraints. Existing EU postdoctoral programs already do this

very well, but they could be even better, like the best postdoctoral programs in individual countries, by being administered with much less burdensome bureaucracy. I would therefore like to see parallel schemes created as part of the ERC.

My fifth observation is one with which I believe many would agree. But equally, it will excite some opposition. I believe it is important that the independence of the ERC be underlined, both for substantial and for symbolic reasons, by making sure its headquarters are outside Brussels.

Getting back to your conviction about the huge significance of public dialogue on matters that pertain to science – could the abandonment of such dialogue entail some sort of danger?

There is a real and worrying challenge to the future posed by a clash between culture and anti-culture. On the one hand are the values of enlightenment: rational, humane questioning. These values permeate all activity in the arts,

humanities, medicine, science and engineering, as well as the mainstream expression of all the world's great religions. On the other hand, arising primarily in relatively minor sects of monotheistic religions, are fundamentalist belief systems – in both the West and the East – whose essence is authoritarian, seeking to suppress questioning and to limit people's lives, especially those of women.

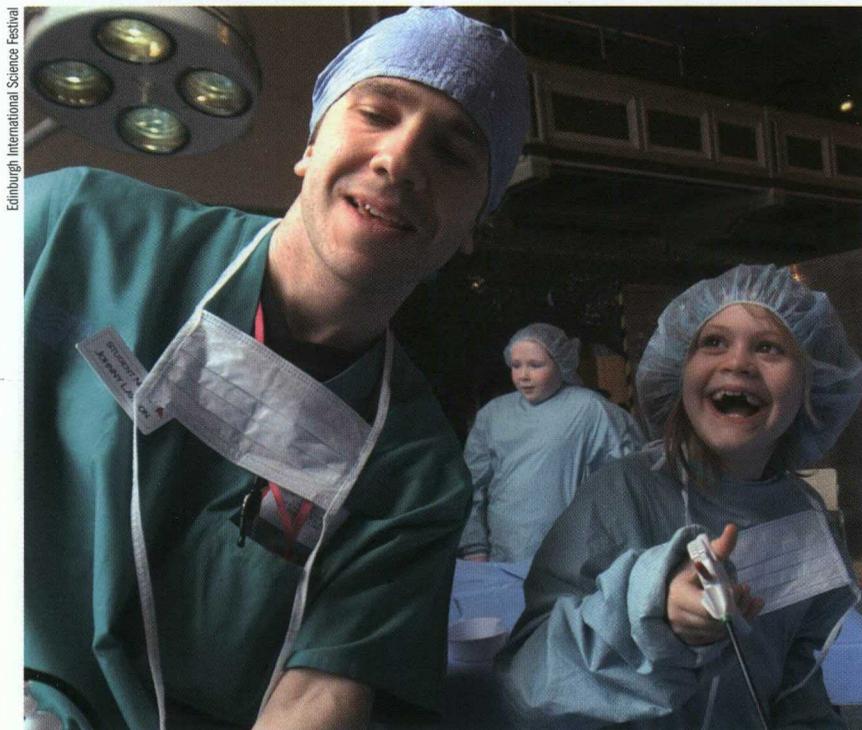
The forces of fundamentalism are on the march in the West as well as the East. The recent controversy over the teaching of creationism and evolution in the UK rang the alarm bells both for scientists and for many religious people (and many are both), who fear the insipid creep into the classroom of a fundamentalist belief in literalist interpretations of the Bible, at the expense of the profound insights offered by Darwin and his successors.

There has always been distrust of new applications of science and technology in our culture because of fears about the associated risks. Two hundred years ago, the advent of the smallpox vaccination

PROFESSOR LORD MAY OF OXFORD

Robert May is President of the Royal Society and also holds a Professorship jointly in the Department of Zoology at the University of Oxford and at Imperial College, London. Until September 2000, he was Chief Scientific Adviser to the UK Government, and Head of its Office of Science and Technology. Lord May's current research deals with factors influencing the diversity and abundance of species, and with the rates, causes and consequences of extinction. He is the author of several books and several hundred papers in scientific journals, along with broader contributions to scientific journalism. He was elected to the Royal Society in 1979, the Australian Academy of Sciences in 1991, Academia Europaea in 1994, and (as a Foreign Member) the US National Academy of Sciences in 1992; he is a Honorary Life Member or Fellow of various other learned societies. He holds honorary degrees from Uppsala University (1990), Yale University (1993), the University of Sydney (1995), Princeton University (1996) and several UK universities.

prompted cartoons caricaturing it as little cows popping out of people's arms, leading to riots in the streets. When the first railways were planned, there were serious fears that fast trains traveling through tunnels would create a vacuum, suffocating the passengers inside. It is awareness of the downsides to the advance of knowledge, rather than a distrust of science, that poses new challenges as we contemplate how to apply our improved understanding of ourselves and our world. To face up to these dilemmas, we need to do a better job of asking what kind of tomorrow we want to create with the possibilities science opens for us, and subject to the constraints that science clarifies, rather than just letting things happen. ■



Raising public awareness to the advances of knowledge poses a great challenge for the research community. Science festivals, involving both researchers and the general public, are perfect example of how this can be achieved