CELEBRATE 350 YEARS

THE ROYAL SOCIETY

Convocation of the Fellowship of the Royal Society at the Royal Festival Hall, 23 June 2010

Address by the President, Lord Rees of Ludlow, OM Kt

Your Majesty, Your Royal Highnesses, Fellows, Lords, Ladies and Gentlemen.

On behalf of us all let me thank your Majesty for being here today and, even more, for your supportive patronage of the Society throughout your reign. And let me also thank Prince William for his eloquent and thought-provoking speech.

It is 59 years since our senior Fellow His Royal Highness the Duke of Edinburgh was elected. His keen involvement ever since in science, engineering and technology has been an immense encouragement and stimulus, not just in this country but throughout the Commonwealth.

Prince William's Royal Fellowship forges a link with a new generation. We wish him an equally close involvement – and an equally long-sustained one. His words today have given us great encouragement.

As we've been reminded already, the Royal Society does not over-indulge in ceremonial celebrations. It is only every 50 years that we have a Convocation like this – gathering under one roof so many of our Fellows and others who share the Society's mission. We specially welcome those who have come great distances to be here. We're touched by the many goodwill messages that we've received from around the world, extolling the Society's work.

There are some differences between today's programme and the 1960 event. Then, the President, Cyril Hinshelwood, spoke for a whole hour. In this soundbite era, I promise to be much more succinct, albeit also less eloquent, than he was.

At the Society's earliest meetings Christopher Wren, Robert Hooke, Robert Boyle, Samuel Pepys and other 'ingenious and curious gentlemen' (as they described themselves) viewed all kinds of experiments, sometimes rather gruesome ones – blood transfusions and the like. They peered through newly-invented telescopes and microscopes; they heard travellers' tales, and dissected weird animals. They were, in Francis Bacon's phrase, 'merchants of light' – seeking knowledge for its own sake. Their curiosity seemed boundless. But, for Bacon, discovery had a second motive: 'the relief of man's estate'. And our founders were indeed immersed in the practical agenda of their era – improving navigation and the navy, exploring the New World, and rebuilding London after the Great Fire.

350 years later, human horizons have hugely expanded; no new continents remain to be discovered. Our Earth no longer offers an open frontier, but seems constricted and crowded – a 'pale blue dot' in the immense cosmos.

And the Royal Society is a vastly different institution. But its essence actually hasn't changed. Today's Fellows – and all the young scientists we support – have the same motivations as their forebears. They probe nature and nature's laws for their intrinsic value. And their engagement with society and with public affairs is still strong – though today's focus is not just on London, nor even on our one nation, but often on issues that affect the entire world.

For most of the Society's history, its Fellows were gentleman amateurs. Indeed there were few professional researchers anywhere before the 20th century: the word 'scientist' was not coined until 1840. An archetype was Joseph Banks – the formidable figure in the biggest picture on this stage. As a young man, he voyaged with Captain Cook to the South Pacific. He later became the Society's President, and remained in office for 42 years.

Modern Presidents do not have Banks's staying power. They serve five-year terms, and I'm delighted that three of my predecessors (Michael Atiyah, Aaron Klug and Bob May) are here today – along with my nominated successor, Paul Nurse. Nor do they have the financial resources of Joseph Banks, who subsidised the Society from his own pocket. And we've moved even further from the situation in the 1690s when Charles Montague (later the Earl of Halifax) was President – and was Chancellor of the Exchequer at the same time. The Society depends today on a combination of private and public funding – and it's good to welcome here today many of those who have supported us.

An even greater 'gentleman scientist' than Joseph Banks was Charles Darwin. His anniversary was widely celebrated last year. His impact on Victorian thought was profound – and resonates even more today. His insights are pivotal to our understanding of all life on Earth, and the vulnerability of our environment to human actions.

20th century scientists, our Fellows prominent among them, have probed the physical world, from atoms to stars, and the complexities of living things. Collectively, they have deepened our perspective on the world and our place in it.

It is a cultural deprivation not to appreciate the panorama offered by modern cosmology and Darwinian evolution – the chain of emergent complexity leading from some still-mysterious beginning to atoms, stars and planets. And how, on our planet, life emerged, and evolved into a biosphere containing creatures with brains able to ponder the wonder of it all. This common understanding should transcend all national differences – and all faiths too.

Science is indeed a global culture. But it is more than that. A former President, George Porter, averred that 'there are two kinds of science: applied and not yet applied'. He was echoing Francis Bacon's sentiment in different words. And of course the applications stemming from the insights of Newton, Faraday, Maxwell, Rutherford and others on the distinguished roll-call of our Fellowship have transformed lives worldwide to an extent that our 17th century founders couldn't have conceived.

Indeed innovations happen with staggering speed. Many things we take for granted would have seemed magic even 50 years ago. The world wide web is only 20 years old – and we're proud to have its inventor, Tim Berners-Lee, as a Fellow. Computers double their power every two years. Spin-offs from genetics could soon be as pervasive as those from the microchip have already been.

The Royal Society embraces science in the broadest sense – to include technology and engineering. Its proud annals show the crucial importance of backing exceptional individuals. We must surely continue that tradition. In the words of another former President, Aaron Klug, "The major insights in science come from people who have the patience to develop an intimate understanding of a problem, who have the space and the freedom to take professional risks and who know how to make creative use of the surprises that they encounter when they do so. These are the people who make the enduring difference. These are the people whom we must nurture wherever we find them."

We don't know what will be the 21st century counterparts of the electron, quantum theory, the

double helix and the computer, nor where the great innovators of the future will get their formative training and inspiration. But one thing seems clear: this country's standing depends on sustaining our edge as discoverers and innovators, on ensuring that some of the key creative ideas of the coming decades germinate, and – even more – are exploited, here in the UK.

Scientific knowledge is public. And it is international – indeed the contribution of Asia is rising spectacularly, and may in the next 50 years surpass that of the US and Europe. But its benefits can only be 'captured' by those who are educated and discerning enough. That's why it is in our national interest to maintain strong and broad expertise. Our science is, overall, at least as strong as that of any country apart from the United States. It would be tragic to jeopardise this strength: once the tap has been turned off, it can't readily be turned on again.

As well as supporting individual excellence, the Royal Society advances research by its publications, printed and electronic, and by its high-quality discussion meetings on topical scientific themes. But its reach extends beyond the professional community – into science education and public engagement.

More and more issues of public policy have a scientific dimension. That's why the Society has recently expanded its Policy Centre, so as to enhance its ability to offer authoritative advice. We cherish our independence: advice is offered whether asked for or not.

Public debate and political decisions should be based on the best assessment of the science. And it's the Society's responsibility, as an independent body, to provide such input to governments and, via the media, to the public. We must confront widely-held anxieties that the uses of genetics, brain science and artificial intelligence may 'run away' too fast, and address questions like: Who should access the 'readout' of our personal genetic code? How will our lengthening life-spans affect society? Should we build nuclear power stations – or wind farms – if we want to keep the lights on? Should we use more insecticides or plant GM crops? How much should computers take over our lives?

Science has never respected national boundaries. Back in the 1660s, the Royal Society proclaimed its intention to promote commerce 'in all parts of the world with the most curious and philosophical persons to be found'. Indeed science has often crossed national boundaries in times of tension or even conflict. Benjamin Franklin urged the American rebels to give free passage to Captain Cook's ship. Humphry Davy travelled freely in France during the Napoleonic wars. Western scientists retained contact with their Soviet counterparts throughout the Cold War. Collaborations straddle today's deepest political divides.

Any leading laboratory, whether it's run by a university or by a multinational company, contains a similarly broad mix of nationalities wherever it is located.

More and more of the challenges confronting us need to be tackled at an international level. To stem the risk of environmental degradation, to adopt clean energy and sustainable agriculture and to prevent pandemics, it is essential to develop appropriate technology, and to apply it optimally in all parts of the world. The Royal Society should be at the forefront of these campaigns. Our Fellowship spans the Commonwealth; our distinguished Foreign Members hail from all over the world. We join forces with all the world's academies, through the InterAcademy Panel and other collaborations, to promote these goals. The new Kavli International Centre at Chicheley Hall will allow a timely step change in our activities in these increasingly important areas.

Incidentally, we specially appreciate our cordial and effective links with the US National Academy of Sciences – though I like to point out that had events panned out differently in 1776, all North America might still be in the Commonwealth, and its members would instead all be Fellows of the Royal Society!

In the 50 years since the last Convocation, not only has science advanced amazingly, but all parts of our ever more crowded world have become more closely interlinked and interdependent. The Earth has existed for 45 million centuries, but we've entered the first century where one species – ours – is sufficiently numerous and empowered to determine the future of the entire biosphere.

All too often, even the gravest global challenges are trumped on the political agenda by the urgent

or the parochial. People tend to downplay what's happening even now in impoverished far-away countries to the lives and life-chances of the world's 'bottom billion'. And they give too little thought to what kind of world we'll leave for future generations. It is fitting that the speaker who will follow me, CNR Rao, is not only himself a great scientist but also an inspirational figure who has dedicated his life to India and the developing world.

Finally, let me quote Bill Bryson, another good friend of the Society: "If we have an Earth worth living on a hundred years from now, the Royal Society will be one of the organisations that our grandchildren will wish to thank."

The Society matters, not just to those gathered here today, but to the wider world and its future. Let us build on our achievements and be worthy of our past.