



**THE LEARNED SOCIETY OF WALES**  
**CYMDEITHAS DDYSGEDIG CYMRU**

CELEBRATING SCHOLARSHIP AND SERVING THE NATION  
DATHLU YSGOLHEICTOD A GWASANAETHU'R GENEDL

## **Launch of the Learned Society of Wales** **25 May 2010**

### **Inaugural Address by The President** **Sir John Cadogan CBE DSc FRSE FRSC PLSW FRS**

My Lord Mayor and Lady Mayoress, distinguished guests and Founding Fellows.

Until today Wales did not have a national academy for learning and scholarship. And, until today, we were alone in this distinction in the United Kingdom and Ireland, in all of Europe and in much of the World.



*Sir John Cadogan delivering  
the Inaugural Presidential Address*

In these Islands we already have the British Academy for Humanities and Social Sciences, founded in 1902, and The Royal Society, the world's first Scientific Academy, founded in 1660. We, in this newest of Societies, were immensely encouraged at the outset by the strong support provide by these world leading academies.

We are delighted to welcome and to thank Professor Dame Jean Thomas FRS who is a Vice

President of the Royal Society and Professor Susan Mendus FBA, a Vice President of the British Academy. They are supporting us in person.



**THE LEARNED SOCIETY OF WALES**  
**CYMDEITHAS DDYSGEDIG CYMRU**

CELEBRATING SCHOLARSHIP AND SERVING THE NATION  
DATHLU YSGOLHEICTOD A GWASANAETHU'R GENEDL

Inaugural Address by the President  
Sir John Cadogan CBE DSc FRSE FRSC PLSW FRS, 25 May 2010

Both of these ladies are immensely distinguished, internationally - both are Welsh, both are from Swansea and both are Founding Fellows of our very own Learned Society. I add that our scientific Vice President-elect, Professor Dianne Edwards FRS, is also from Swansea - as I am. This geographical connection is very pleasing to me.

Thanks, too, to Sir David Davies FEng FRS, past President of the Royal Academy of Engineering and also a Founding Fellow.

We also are very grateful for the encouragement from the Royal Society of Edinburgh, founded in 1786. We welcome and thank Professor Geoffrey Boulton FRSE FRS, its General Secretary - and Dr William Duncan, the Chief Executive.

The Royal Irish Academy, founded in 1786 and the British Library have also sent us warm words of support.

Without diminishing the individual roles of the Universities in the UK, these institutions provide a focus for marshalling national intellectual capacity, for setting and maintaining standards and for providing independent advice based on evidence rather than belief. We have not had such an institution in Wales.

Our Society could not have come into being without help. We are so grateful therefore to the Council of the University of Wales and particularly the Vice Chancellor, Marc Clement, for making it financially possible for us to be here today. We are glad its Deputy Chairman, Mr Alun Thomas, is here with us.



**THE LEARNED SOCIETY OF WALES**  
**CYMDEITHAS DDYSGEDIG CYMRU**

CELEBRATING SCHOLARSHIP AND SERVING THE NATION  
DATHLU YSGOLHEICTOD A GWASANAETHU'R GENEDL

Inaugural Address by the President  
Sir John Cadogan CBE DSc FRSE FRSC PLSW FRS, 25 May 2010

There has been much talk in the past about the need for a learned society in Wales but the University Council brought about the crystallisation of this talk into action. Having done this, the University has stepped away and has left the Society to get on with it.

We have benefited, too, from wise counsel and much effort from our legal advisers, Morgan Cole, quite apart from their meeting the costs of this assembly today. A large amount of legal and administrative work has taken place behind the scenes to create this Society and there is much more to come.

Here I pay tribute also to our excellent Secretary and Chief Executive, Dr Lynn Williams. His talents fit the needs of the Society perfectly.

Why there has been no national academy in Wales is not at all clear - because Welsh love of culture, distinction in the arts and humanities goes back a long time, while the early nineteenth century saw Wales providing world leadership in areas of science and technology - which underpinned the industrial revolution - though it must be said that not all the stars were Welsh.

In particular, remember Vivian's development of copper smelting in Swansea which led to the town becoming the world's centre for metallurgy, and gave us our copper-bottomed ships which came to dominate world trade and sustain the navy.

And where would Nelson have been without the superb metallurgy of the iron foundries of Merthyr which gave him his guns?



**THE LEARNED SOCIETY OF WALES**  
**CYMDEITHAS DDYSGEDIG CYMRU**

CELEBRATING SCHOLARSHIP AND SERVING THE NATION  
DATHLU YSGOLHEICTOD A GWASANAETHU'R GENEDL

Inaugural Address by the President  
Sir John Cadogan CBE DSc FRSE FRSC PLSW FRS, 25 May 2010

Later we saw photography become a stable reproducible process under the Dillwyn Llewellyns, while William Grove came forward with inventions of his electric battery and the fuel cell - with huge implications for today's energy prospects.

When Dillwyn Llewellyn entertained the attendees to the British Association Swansea Meeting at his mansion in Penllergaer in 1848, they turned up in a large convoy of horses and traps to see Grove himself piloting a rowing boat powered by his battery. What a juxtaposition of the very old and the future.

Here was the first example of electrically powered transport.

Grove had moved into Chemistry from the Law for the sake of his health. When this improved he returned to the Law and became an undistinguished Judge. What a loss!

Since then Wales has produced a stream of scholars in the humanities and the sciences many of whom, particularly in recent years, have had huge influence on the affairs of the United Kingdom at large - but it must be noted that many of them had moved outside Wales to achieve their ultimate excellence. Perhaps this has been a factor in the absence of a Learned Society here.

Today we have initiated a new Institution - a new way. I am an organic chemist. I began my research in King's College London under the supervision of Donald Hey FRS, one of the very first graduates in Science at Swansea. He is known as the father of free radical chemistry.



**THE LEARNED SOCIETY OF WALES**  
**CYMDEITHAS DDYSGEDIG CYMRU**

CELEBRATING SCHOLARSHIP AND SERVING THE NATION  
DATHLU YSGOLHEICTOD A GWASANAETHU'R GENEDL

Inaugural Address by the President  
Sir John Cadogan CBE DSc FRSE FRSC PLSW FRS, 25 May 2010

The very first free radical processes to be discovered were known as Chain Reactions. What I learned at the outset was that desirable free radical chain reactions have to be kicked off with initiators. We in this fledgling society see ourselves as initiators of change.

On the other hand some free radical chain reactions are bad news - particularly those initiated by oxygen based radicals leading to chain damage of DNA. Here free radical chain inhibitors in the form of antioxidants are playing a major part in reducing the problem.

Continuing the analogy, we see our Society not only as radical initiator of beneficial outcomes but also a force for inhibiting damaging decisions based only on belief. Our advice might well be ignored but at least these sound opinions will be there for all to see.

Above all, however, our aim is to celebrate, recognise, safeguard and encourage excellence in every one of the scholarly disciplines and in the professions, industry and commerce, the arts and public service, so that Wales should come to widely be seen, justifiably - I repeat justifiably - as a *small but clever* country.

It is evident that many of our scholars have great international distinction. Many of our Founding Fellows have made their mark outside Wales but have enthusiastically joined us. They have no axe to grind other than to support scholarship and learning for the benefit of the homeland.

We see our Society as a means of tapping into the presence both inside and outside Wales of distinguished scholars of Welsh extraction or



**THE LEARNED SOCIETY OF WALES**  
**CYMDEITHAS DDYSGEDIG CYMRU**

CELEBRATING SCHOLARSHIP AND SERVING THE NATION  
DATHLU YSGOLHEICTOD A GWASANAETHU'R GENEDL

Inaugural Address by the President  
Sir John Cadogan CBE DSc FRSE FRSC PLSW FRS, 25 May 2010

affiliation. They will now have a means for lending their weight to further the ambitions of the Society and hence of Wales.

We intend to reach out beyond the Universities wherein our strengths and hopes lie. But let us first examine what we think Universities are for and then consider the prospects for the Universities in Wales in the light of current thinking and actions by the Welsh Assembly Government.

The Universities are there to push back the frontiers of knowledge through research by outstanding researchers of international standard who also have the massive responsibility of training the young by passing on knowledge and expertise and for stretching their minds. The balance will vary from the research intensive Universities to those less so.

It is also by way of these activities through consultancy and spin-off that Universities are there to help industry and commerce. It is not their primary job to be short term problem solvers for industry. If it happens it is a bonus.

Universities have the task of ensuring that the young automatically, almost without thinking, come to act on evidence rather than opinion, to challenge opinion based on their analysis of the facts, to seek evidence where none exists and to bear in mind too, as Warden Sparrow said, "No one is right all the time, not even the youngest of us".

Universities are there to bring the best out of people - to produce people who can think the unthinkable, who will challenge belief with



**THE LEARNED SOCIETY OF WALES**  
**CYMDEITHAS DDYSGEDIG CYMRU**

CELEBRATING SCHOLARSHIP AND SERVING THE NATION  
DATHLU YSGOLHEICTOD A GWASANAETHU'R GENEDL

Inaugural Address by the President  
Sir John Cadogan CBE DSc FRSE FRSC PLSW FRS, 25 May 2010

knowledge, who will heed the motto of The Royal Society: *NULLIS IN VERBA* - "TAKE NOBODY'S WORD FOR IT".

These people may be generalists or specialists but the specialists should have peripheral vision – people who are always aware of what is going on outside their speciality, be it in science, humanities or social studies.

Frankly, the Universities have much to do here. I saw more of this peripheral vision in my industrial career than I did in the Universities.

The welling up of numbers of young people steeped in this way of thinking is a wonderful way of making those at the top constantly renew the vision which put them there in the first place. There are many examples of lack of vision by those at the top. I leave my colleagues in the humanities and social studies to come up with their list but here is a sample:

Lord Kelvin - "Powered flight is impossible"

The Chairman of IBM - "There will be a need in the future for 5 big computers and they will weigh no more than a ton"

Bill Gates - "64K should be enough for anybody"

The great Alexander Bell said "one day in the future every manufactory in the United states will have a telephone"

Sir William Preece, Chief Engineer, The Post Office, in 1876 - "This new telephonic apparatus may be all well and good for our colonial cousins





**THE LEARNED SOCIETY OF WALES**  
**CYMDEITHAS DDYSGEDIG CYMRU**

CELEBRATING SCHOLARSHIP AND SERVING THE NATION  
DATHLU YSGOLHEICTOD A GWASANAETHU'R GENEDL

Inaugural Address by the President  
Sir John Cadogan CBE DSc FRSE FRSC PLSW FRS, 25 May 2010

but it will never catch on in Great Britain because we have an adequate supply of messenger boys”

Preece again in 1886 - “If growth in telephonic communication continues at the current foreseen rate, by the year 2000 every woman of working age in the United Kingdom will have to be a telephone operator”

The underlying message should be nailed to the wall of every class room.

There is no limit to the advance of science and technology but look out for the sometimes immense social consequences.

In science, engineering and medicine we have the added requirement that the young must know what has gone before and have to be trained in the actual “doing” or practice of their discipline. Most of all, we have to make sure that researchers are enabled to discover things that we did not know were there to be discovered.

We have a job to do in helping Government to clarify its thinking on the relationship between science policy and economic policy. For example, to make progress on “the hydrogen economy” “energy research” or “health” or “low carbon” is very important but a catalogue of small businesses or University groups active here is not a Policy for Science.

A science policy must be about how the Assembly Government will generate lots of underpinning world class new science and engineering in the Universities in the almost complete absence of UK Government funded research institutions in Wales.





**THE LEARNED SOCIETY OF WALES**  
**CYMDEITHAS DDYSGEDIG CYMRU**

CELEBRATING SCHOLARSHIP AND SERVING THE NATION  
DATHLU YSGOLHEICTOD A GWASANAETHU'R GENEDL

Inaugural Address by the President  
Sir John Cadogan CBE DSc FRSE FRSC PLSW FRS, 25 May 2010

We will be a focus for a Government hopefully seeking to do this and hopefully seeking real experts to make it an intelligent customer.

A good sign is that the Assembly Government has just taken a big policy step by creating the post of Chief Scientific Adviser and by handing the job to Professor John Harries who has spoken in such warm terms today. We look forward to working with him for the general good.

But, our Masters have to be very careful.

Crucially, short term targets must not be imposed. Rather, support must go to the underlying hard disciplines of strategic importance from which discoveries for the future and support for the present and spin-off will come.

These disciplines must be strengthened in Wales. It is vital, for example, to realise that “health”, “energy research” or “the hydrogen economy” are not disciplines, whereas, genomics, molecular biology, physiology, nuclear engineering, chemical catalysis, optoelectronics, electrochemistry, say, are.

Crucial, too is a deep understanding of the economic and social issues which are integral with these needs. Without underlying strength in these disciplines progress in health, energy or whatever will become part of a meaningless and unrealisable wish list of economic targets.

The entire question of future energy needs cannot be answered without a root and branch techno-economic study of the fundamentals. Governments every where have been slow to do this. In some cases we



**THE LEARNED SOCIETY OF WALES**  
**CYMDEITHAS DDYSGEDIG CYMRU**

CELEBRATING SCHOLARSHIP AND SERVING THE NATION  
DATHLU YSGOLHEICTOD A GWASANAETHU'R GENEDL

Inaugural Address by the President  
Sir John Cadogan CBE DSc FRSE FRSC PLSW FRS, 25 May 2010

have seen policies which seem to be based on quasi-religious belief rather than on the first law of thermodynamics.

This tendency is exposed in a wonderful book by David Mackay, *Sustainable Energy - without the hot air*. He was Professor of Physics in the Cavendish Laboratory and is now Chief Scientific Adviser in the Department of Energy and Climate Change. I wonder if they know what they are in for. Professor MacKay is coming to Wales as part of our programme of lectures and seminars.

We do not have a strong enough private sector in Wales to provide the wealth we need. We must attract more industry, particularly high-tech business. It is worrying that the biggest private employer in Wales is Tesco. Sure, let us welcome foreign owned screwdriver industries but these have a tendency to up sticks and go home or to cheaper regimes when things get tough.

There is no doubt that a really outstanding science and engineering base is the only way to attract high-tech research-based companies anxious to get close to the action. And without such strength, including social and economic studies and the humanities, budding, start-up companies will be thin on the ground.

The Research Director of Astra Zeneca once told me, "We don't much care what University scientists do as long as they are working at the frontiers of disciplines vital to us. We will discover the drugs but we need very bright students to be trained by very bright supervisors in chemistry, pharmacology, immunology, genomics, physiology and so on. Most of all we want to be close to these people."



**THE LEARNED SOCIETY OF WALES**  
**CYMDEITHAS DDYSGEDIG CYMRU**

CELEBRATING SCHOLARSHIP AND SERVING THE NATION  
DATHLU YSGOLHEICTOD A GWASANAETHU'R GENEDL

Inaugural Address by the President  
Sir John Cadogan CBE DSc FRSE FRSC PLSW FRS, 25 May 2010

There is a dangerous tendency for those who hold the purse strings to press the Universities to discover the drug.

This is a very important lesson which may be difficult for politicians and civil servants to take on board, in view of their backgrounds. Short-termism is a great danger. Structure and organisation or worse - reorganisation or "reforms" - are the kiss of death for innovation, but they are attractive to the theorists. Targets reign supreme. New initiatives are more attractive than outputs. Hierarchy is seen to be preferable to teams, while planned invention is attractive - but is impossible. The sequence of consult, consult, analysis, analysis, discuss, discuss, consider, consider stifles innovators. It is easier and less risky to say "no" than "yes".

It is very important to remember that no politician, no civil service administrator and no board of directors has ever made a discovery. Discoveries are made in the library and in the lab.

The great George Porter said: "There are two types of chemistry. Applied and yet to be applied". This can be said of huge tracts of science and - remember that creative engineering underpins applications of discoveries.

The pathways to great success are not always by way of extrapolations from where we are now. All the great breakthroughs which have transformed the way we live have come out of undirected, curiosity driven research.

Just look at some of them:



**THE LEARNED SOCIETY OF WALES**  
**CYMDEITHAS DDYSGEDIG CYMRU**

CELEBRATING SCHOLARSHIP AND SERVING THE NATION  
DATHLU YSGOLHEICTOD A GWASANAETHU'R GENEDL

Inaugural Address by the President  
Sir John Cadogan CBE DSc FRSE FRSC PLSW FRS, 25 May 2010

Antibiotics

The laser

Nuclear fission

Optical fibre – optoelectronics

The transistor

The ozone hole - the first time discovering nothing has changed the world

DNA and genomics

X-rays

Magnetic resonance imaging

Stem cells

We will be examining many of these through a series of lectures and symposia under the banner of FRONTIERS. World experts will speak about the frontiers of research and their ramifications in events which will take place across the Country. Some of these engage with the great questions facing us all, not only in Wales, while others will focus on purely Welsh issues.

We aim to examine:

The problems of the Valleys

Language

What are the Universities for?

Invention, innovation and change

Theory and reality of spin-out companies

The history of science and technology in Wales - the history of the people who have had transforming effects on Wales



**THE LEARNED SOCIETY OF WALES**  
**CYMDEITHAS DDYSGEDIG CYMRU**

CELEBRATING SCHOLARSHIP AND SERVING THE NATION  
DATHLU YSGOLHEICTOD A GWASANAETHU'R GENEDL

Inaugural Address by the President  
Sir John Cadogan CBE DSc FRSE FRSC PLSW FRS, 25 May 2010

We will set and protect standards.

Our Fellowship will grow by election judged by peer review.

To be elected will be a target for our young scholars. We want the worth of our Institution to be judged by the calibre and output of our Fellows rather than by architecture and bricks and mortar.

These are very difficult financial times. Not the best time to launch an Institution, some might say. But we say that this is the very time when the strongest possible voice is needed to protect our centres of learning and expertise so vital for our future.

We are starting from a low base compared with the rest of the UK. Assembly funding of our Universities is based on student numbers *via* a per capita allocation. With two exceptions over the last ten years - the fat years, by the way - the gaps between Wales and both Scotland and England have been negative and have become increasingly so. Leaving aside the Barnett component which is supposed to give a little more to Wales, the integrated like for like gap between England and Wales amounts a frightening £420 million in money of the day. The gap between Wales and Scotland is close to £900 million.

The Assembly Government has big problems to face and to try to solve, no one can deny that - but the result for the Universities in the relatively fat years has been severe.

This Assembly money is supposed to provide the infrastructure. University staff are expected to compete elsewhere for money for



**THE LEARNED SOCIETY OF WALES**  
**CYMDEITHAS DDYSGEDIG CYMRU**

CELEBRATING SCHOLARSHIP AND SERVING THE NATION  
DATHLU YSGOLHEICTOD A GWASANAETHU'R GENEDL

Inaugural Address by the President  
Sir John Cadogan CBE DSc FRSE FRSC PLSW FRS, 25 May 2010

research. The last ten years have seen a steady and serious underfunding.

Two years ago the outgoing Chairman of the Higher Education Funding Council for Wales, Sir Roger Williams, said that, unless the underfunding of scientific research were to be reversed in two years, the position would be beyond retrieval. The gap is now worse.

Without a strong infrastructure in which to work, our researchers will always be at a disadvantage when it comes to competition. As a result they will slide slowly down a dismal spiral of failure. The position is now made seriously worrying for Wales because the last Comprehensive Spending Review allocated large extra funds to the Research Councils rather than to the University funding sector, to provide 80 % of the true economic costs for research in the Universities, as an overhead.

This leads to the Welsh double whammy.

We now have the vicious circle of inferior support for infrastructure leading to lower chances of recruiting and keeping excellent people and providing cutting edge equipment and libraries. Hence we have lower Research Council or industrial success resulting in loss of support money which will go instead to the best wherever they are in the UK outside Wales.

This is not crying wolf.

It is a fact that Wales is already punching below its weight in Research Council competitions. The recent analysis of the distribution of health research money shows that Wales received only 1.6% of the whole.



**THE LEARNED SOCIETY OF WALES**  
**CYMDEITHAS DDYSGEDIG CYMRU**

CELEBRATING SCHOLARSHIP AND SERVING THE NATION  
DATHLU YSGOLHEICTOD A GWASANAETHU'R GENEDL

Inaugural Address by the President  
Sir John Cadogan CBE DSc FRSE FRSC PLSW FRS, 25 May 2010

Edinburgh alone received 5.6%. The last Research Assessment of all British Universities showed that only 14% of research in Welsh Universities was of world class standard.

The horror stories we have been hearing about cuts became reality yesterday. There will now be more pressure on the Welsh Budget.

We argue that the University sector has taken its cuts long in advance. So we reject in advance any noises about the Universities taking their fair share.

Despite this, our people have done surprisingly well. Let us hope we can retain them. Many of our scholars and teams have great international distinction. But to achieve this, the Universities have consumed their seed corn.

We have some pinnacles of excellence but there is a real danger now that Welsh scholarship, learning and research form a pier with too few supports. In these very tough times this pier may be in danger of collapse.

There is a self-imposed onus on the Society to provide the strongest possible arguments to stop this happening. Until now we have not had an independent champion for - and defender of - those very activities and functions which must surely underpin the notion of Welsh cleverness. The Learned Society of Wales intends to fill that chasm.





## THE LEARNED SOCIETY OF WALES CYMDEITHAS DDYSGEDIG CYMRU

CELEBRATING SCHOLARSHIP AND SERVING THE NATION  
DATHLU YSGOLHEICTOD A GWASANAETHU'R GENEDL

### The Launch of The Learned Society of Wales

The Learned Society of Wales was formally launched during a ceremony held at the Reardon Smith Theatre, in the National Museum Cardiff, on Tuesday, 25 May 2010. Founding Fellows were greeted by the Society's President, Sir John Cadogan CBE DSc FRSE FRSC PLSW FRS and, before signing the Roll of Fellows (which had been commissioned from Gwasg Gregynog), were introduced to an enthusiastic audience of specially invited guests which included representatives of other British learned societies, of Welsh and other higher education institutions, and of the Welsh Assembly Government.

Addresses of greeting were given by:

- **Professor John Harries FInstP FRMetS**, Professor of Earth Observation, Imperial College, London; Chief Scientific Adviser for Wales
- **Professor Geoffrey Boulton OBE DSc FGS FRSE FRS**, Senior Honorary Professorial Fellow and Regius Professor of Geology Emeritus, the University of Edinburgh; General Secretary of the Royal Society of Edinburgh
- **Sir David Davies CBE DSc FREng FIET FLSW FRS**, Chairman, The Hazards Forum; formerly: Pender Professor and Head of Department of Electronic and Electrical Engineering, University College, London; Vice-Chancellor, University of Loughborough; Chief Scientific Adviser, Ministry of Defence; President, Royal Academy of Engineering
- **Professor Susan Mendus FLSW FBA**, Professor of Political Philosophy, University of York; Vice-President (Social Sciences) of the British Academy
- **Professor Dame Jean Thomas DBE CBE FMedSci FLSW FRS**, Master, St Catharine's College, and Professor of Macromolecular Biochemistry, the University of Cambridge; Vice-President and Biological Secretary of the Royal Society
- **Mr Paul Loveluck CBE JP**, President of the National Museum Wales

The Launch culminated in the Inaugural Address by Sir John Cadogan.