SPECIAL INTEREST DAY 5th MAY 2020

'CLIMATE CHANGE AND SUSTAINABLE FUTURES'

MARLBOROUGH COLLEGE, BATH ROAD, MARLBOROUGH, WILTSHIRE, SN8 1PA

PROGRAMME

9:15 Coffee available in Ellis Theatre Foyer

09:30 Welcome Memorial Hall

09:45 Climate Change – is it really real? Penny Tranter, Meteorological Office

Global 'Climate Change' has created global concern. In this presentation we will look at: the causes, projected impacts, possible steps for mitigation and the need for greater understanding of climate change and greater global awareness of the issue.

10:45 Coffee Ellis Theatre Foyer

11:05 Fusion Power. Within our grasp? Robin Stafford Allen formerly Culham Centre for Fusion Energy

The world energy issue will be covered and then I will move on to showing what nuclear fusion is (power generation free from CO_2 and nuclear waste) and how it is being researched using the machines in UK (JET) and the latest machine in France (ITER). I will endeavour to show the progress toward putting fusion generated electricity onto the grid within our lifetime

12:05 Buffet Lunch Adderley Room

13:30 The Circular Carbon Economy Professor Peter Edwards FRS, University of Oxford

Carbon will continue as a necessary component for our energy future – *but* – only with its continued use in a sustainable *and* circular manner. **Our *Carbon Economy* must therefore become a closed loop, *Circular Carbon Economy.*** The *Circular Carbon Economy* is the route to a world economy that is both restorative and regenerative

14:30 Societal Perceptions of Climate Change and Support for Low Carbon Lifestyles Dr Katharine Steentjes, University of Cardiff

The challenge set out by international agreements, to keep global warming to below 2°C, will require drastic changes to our lifestyles. This talk will examine current shifts in public perception and look at what motivates behaviour change. The aim being to understand psychological barriers and motivations to embrace low carbon lifestyles on both individual and a societal levels.

15 30 Closing Words; Tea Ellis Theatre Foyer

16:00 Departure

Penny Tranter

Penny Tranter is currently a Met Office Advisor working in Southwest England and is involved in providing professional meteorological and climate advice, primarily on severe weather, to emergency responders and planners. Penny has worked in the Met Office for over 35 years originally as a professional weather forecaster. Previous roles have included: national and international BBC weather presenter between 1992 and 2008, Meteorology Training Manager at the Met Office College 2008 to 2011 and a member of the successful official Met Office weather forecasting team for the sailing events in Weymouth during the London 2012 Olympics and Paralympics.

Penny is a Chartered Meteorologist and a Fellow of the Royal Meteorological Society. She enjoys sailing, powerboat instructing, swimming, walking, cinema, theatre, watching tennis, Bath and 6 Nations Rugby, and girlie weekends.

Climate Change – is it really real?

Global Climate Change is a major concern of the world today, and the foremost environmental problem of the 21st century. Climate is the weather averaged over a long period of time, usually 20 or 30 years; Climate Change refers to an increase in average global temperatures. Natural events and increasingly human activities are believed to be the source of the increase in average global temperatures, caused primarily by increases in "greenhouse" gases such as carbon dioxide (CO2). Human activities having caused most of the recent world warming by releasing such greenhouse gases into the atmosphere.

Although it is difficult to connect specific weather events to Climate Change, increases in global temperatures are predicted to cause broader changes, including glacial retreat, arctic shrinkage, worldwide sea level rise and changes to climates across the world. Climate Change is an emerging threat on a global scale, including to public health, agriculture, infrastructure, unsustainable communities, businesses and economies. Thus, global 'Climate Change' has created global concern. In this presentation we will look at: the causes, projected impacts, possible steps for mitigation and the need for greater understanding of climate change and greater global awareness of the issue.

Robin Stafford Allen

Robin has a BSc in Mechanical Engineering and is a Fellow of the Institution of Mechanical Engineers, he also has an MSc in Bioengineering. He started professional life in the motor industry at Vauxhall/Bedford in Luton. Then worked for several years on the engineering of the first generation of MRI magnets and cryostats with Oxford Magnet Technology.

He joined Culham Centre for Fusion Energy (CCFE)in 1992, and worked in Cryogenics and in the Heating and Fuelling of plasmas. He spent a sabbatical six years as Director of Engineering for a small company on the Culham site designing and constructing a large 1-metre-bore special superconducting magnet for the AMS-2 experiment (a mass-spectrometer) which was launched on the penultimate Shuttle flight to the International Space Station. Until retirement four years ago he worked full time at CCFE on the mechanical engineering of the plasma-heating equipment for the ITER machine, and the British fusion research effort MAST machine.

He works part time for the Institution of Mechanical Engineers and lectures part-time on Engineering at Oxford Brookes University.

Fusion Power. Within our grasp?

The world population is growing at an astounding rate, the standard of living is also rising, consequently the demand for energy is rising faster than the population growth rate. Currently the vast majority of the world's energy comes from fossil fuels. Reserves of these are finite;

their contribution to Global Warming means we may face a serious food shortage, severe weather variations and loss of land mass if the climate changes radically.

Renewable energy sources provide only a few percent of the energy for the world and almost all renewable, with the exception of hydroelectric power, are “in addition” to power stations and not “ instead of” power stations and cannot be relied upon for “base-load” energy supply continuously.

Nuclear fission has contributed a significant amount to the base-load supply, but there are issues with this technology. Consequently Nuclear fusion, the process that powers the sun where hydrogen is transmuted to helium releasing energy in the process, is being examined.

Professor Peter Edwards FRS

Peter Edwards is professor of Inorganic Chemistry at Oxford University and a core member of Oxford Energy (https://www.energy.ox.ac.uk/wordpress/) and a Fellow of St Catherine's College. He is the recipient of the Corday-Morgan Medal (1985), the Tilden Lectureship (1993–94) and Liversidge Award (1999) of the Royal Society of Chemistry. He was awarded the 2003 Hughes Medal of the Royal Society for his distinguished work as a solid state chemist. In the spring of 2012 he was elected International Member of the American Philosophical Society; one of only four people from the UK in that year to be awarded this honour across all subjects and disciplines. He was elected as a Foreign Honorary Member of the American Academy of Arts and Sciences in 2014.

The Circular Carbon Economy

The United Nations Environment Programme finds that global carbon dioxide emissions from burning fossil fuels will reach 41 gigatonnes by 2040 – well above the 19 gigatonnes needed to keep global warming below 2°C. Curbing greenhouse gas emissions will only be solved by strong international collaborations with big fossil-fuel users and producers, notably China, the USA, India, and the Middle East. In this talk, I will outline our vision that carbon will continue as a necessary component for our energy future – *but* – only with its continued use in a sustainable *and* circular manner. **Our *Carbon Economy* must therefore become a closed loop, *Circular Carbon Economy***

Major components to the *Circular Carbon Economy* will centre on :

1. Transforming the greenhouse gas emitters; carbon dioxide and methane into valuable products;
2. Stripping hydrogen from natural hydrocarbon fuels to produce carbon-free, “*Green Hydrogen”*;
3. Converting carbon dioxide *directly* from flue gas emissions of power stations to fuels, high-value chemicals and electricity;
4. Converting nitrogen, oxygen, carbon dioxide and water to safe and sustainable energy stores;
5. Deconstructing plastic waste to its constituent building blocks.

The *Circular Carbon Economy* presents the biggest opportunity for academia, industry, business and governments to make a positive impact on our planet. It is also the route to a world economy that is both restorative and regenerative.

Dr Katharine Steentjes

Katharine Steentjes is a Social Psychologist and currently works for the Centre for Climate Change and Social Transformations

at Cardiff University. She has worked on several international research projects examining public perceptions of environmental risks (such as climate change), policy strategies, energy solutions and psychological factors underlying these views. Katharine's particular research interest concerns social normative processes surrounding climate change, how norms are communicated interpersonally and how society (might) shift towards more sustainable lifestyles. Having a focus on communicating research findings to wider audiences, Katharine has been involved in public engagement events, recommendation reports, launch events and policy briefings.

Societal perceptions of climate change and support for low carbon lifestyles

This talk will provide insights into public understandings of climate change and support for related solutions. The challenge set out by international agreements to keep global warming to below 2°C, will require drastic changes to our lifestyles. Recent public perception data shows that public concern about climate change has increased and the issues has gained prominence in the public discourse.

This talk will outline theories and empirical evidence around these current shifts in public perception and will also look at motivators of behaviour change. Thereby, we will aim to understand psychological barriers as well as motivators to embrace low carbon lifestyles on an individual level and on a societal level.

Joining Arrangements

Travel

Marlborough College is located on the A4 on the Western edge of Marlborough (postcode SN8 1PA). Parking (at no charge) is available on the Water Meadows pitch (see attached map) which is accessible through the gate (no 4) adjacent to the Memorial Hall and will be marked by a U3A 'flag'.

Refreshments and Lunch

Coffee is available from 09:15 in the Ellis Theatre Foyer (No. 31 on the map) The formal events will begin at 09:30 in the Memorial Hall (No. 50)

Morning coffee break is from 10:45 to 11:05 again in the Ellis Theatre Foyer

Lunch will be from 12:05 to 1:30. Regrettably the space for buffet lunch at the College is limited to **110 people because of space restrictions** (the College will be in full operation on May 5th) and places will be distributed on a first come – first served basis. **You may opt not take the lunch in which case the fee is reduced by £5 and if all places for lunch are filled and you cannot be accommodated the £5 reduction will be applied too**. (Marlborough College is generously subsidising all refreshments) Marlborough Town Centre is two minutes' walk from the College and there are numerous places available for lunch from light (Food Gallery; Polly's) to substantial (Rick Stein; Dan's at the Crown). Please note that eating and drinking in the Memorial Hall is not allowed and attendees are requested not to wander about the College apart from between the Memorial Hall and the Ellis theatre.

After the last session and some closing words, tea and cake will be available in the Ellis Theatre Foyer from 3:30.

Please complete and return the accompanying Registration Form if you wish to attend the meeting.