



RCEA
(SUSSEX)

An Association for Retired Professional Engineers

NEWSLETTER December 2013



President's Message

By the time this newsletter is distributed we will have completed the autumn session for our activities and looking forward to our Christmas lunch (Royal Mail permitting)! Our lecture sessions and the AGM have been attended on average by about 35 members who have enjoyed a varied programme which covered:

An historical overview of the Ancient Sugar Mills of Cyprus (yes Cyprus!) It was, apparently, once a major world producer of sugar)

A detailed description of the building of a scale model of a Sopwith Pup rotary aero engine. This one third scale model was available for viewing at the talk. We were assured that it had actually flown.

This year our keynote event, the Cooch Memorial lecture was given by Douglas Hooley a director of the Tangmere military aviation museum. His topic covered the flying activities of the RAF Red Arrows aerobatic display team. The lecture was supported by an impressive selection of videos of the team in action.

Our last lecture before Christmas was given by Alistair Sharpe and entitled "Industrial X Ray Inspection". It covered the design of different types of x-ray sources and how they are used to verify the quality of many manufactured items.

We can now look forward to an equally interesting programme of lectures that has been put together for 2014 and, as we approach summer, visits.

My thanks go out to our committee members who work tirelessly to ensure that we have a well organised, full and interesting programme of events throughout the year. However, it should be noted that many of the current incumbents have now been in place for many years and we need some new blood to come forward with some fresh ideas and help with the organisation of the association. So, I look forward to meeting with as many of you as possible in the forthcoming year because I feel sure that we have many members who could fulfil a useful role on the committee and help ensure the quality of our forthcoming programmes.

All that remains now is for me to wish all our members a very happy Christmas and new year. I look forward to welcoming you at our events in 2014.

David Thomas

PROGRAMME OF EVENTS 2014

Tuesday	14th January	Talk, Field Place, Worthing. Thomas Brassey – Railway Builder
Thursday	16th January	Coffee - at Spotted Cow, Angmering
Thursday	30th September	Coffee - with Partners at the Swallows Return, Worthing
Tuesday	11th February	Talk, Field Place, Worthing, “Korean Rolling Stock”
Thursday	20th February	Coffee - at Spotted Cow, Angmering
Thursday	27th February	Coffee - with Partners at the Swallows Return, Worthing
Wednesday	5th March	Visit, Brookhurst Wood Waste Processing Depot, Horsham
Tuesday	11th March	Talk, Field Place, Worthing, ‘Meccano to email a career in engineering’
Tuesday	18th March	Lunch at Northbrook College, 12.00 for 12.30
Thursday	20th March	Coffee - at Spotted Cow, Angmering
Thursday	27th March	Coffee - with Partners at the Swallows Return, Worthing
Tuesday	8th April	Outing – Southwick House D-Day Wall and Map and Royal Military Police Museum
Thursday	17th April	Coffee - at Spotted Cow, Angmering
Thursday	24th April	Coffee - with Partners at the Swallows Return, Worthing
Wednesday	14th May	Outing, Mary Rose Museum, Portsmouth Historic Dockyard
Thursday	15th May	Coffee - at Spotted Cow, Angmering

Thursday	29th May	Coffee - with Partners at the Swallows Return, Worthing
Monday	9th June	Visit, The Worthing Wurlitzer. (Note change of date).
Thursday	19th June	Coffee - at Spotted Cow, Angmering
Thursday	26th June	Coffee - with Partners at the Swallows Return, Worthing
Wednesday	9th July	Outing, South Downs Planetarium, Chichester
Thursday	17th July	Coffee - at Spotted Cow, Angmering
Thursday	31th July	Coffee - with Partners at the Swallows Return, Worthing
Thursday	21st August	Coffee - at Spotted Cow, Angmering
Thursday	28th August	Coffee - with Partners at the Swallows Return, Worthing

All Talks and Meetings will commence at 2.30 pm and be held in the Chichester Room, Field Place, Worthing; unless another venue or time is indicated.

Timings for visits and outings will be as printed in the detailed description of the activity. Coffee mornings commence at 10.30 a.m.

Website for the RCEA

For latest information, log into www.rceasussex.org.uk

Membership Subscriptions 2013/2014

These were due on 1st October; if you have not already done so, can you please send your cheque for £15 to the Hon. Treasurer,

Tony Tomkins, 2 Badgers Drive, Haywards Heath, RH16 1EP

New Members and Speakers for Talks

The RCEA needs new Members to ensure that we can continue as a thriving organisation. Please think of appropriate people you know and encourage them to join the RCEA.

We need more volunteers to give talks to us on Tuesday afternoons from September to April. Speakers from outside organisations are harder to find and often seek payments for the services. We are aware that many Members have the knowledge from their working careers to provide interesting talks. If you are willing to give a talk please let us know.

New Members

J. A. Morgan, BA, MBA, MA, FGS
50, Marine Crescent, Goring, West Sussex, BN12 4JG

Jennifer & Charles

01903297181 ouselcotjen@talktalk.net

GSI + Halliburton; Geoscientist, Project Manager Non-exclusive surveys, Simon Petroleum Technology: Marketing Geophysicist, TGSnopec (UK) Ltd: Project Manager Non-exclusive surveys, United reform Church: Minister of religion *Interests:* Geology, Art, Fine arts, Theatre, Quilting.

D. Silver, FIMechE, FCIBSE, FBIFM, Eur Ing, C.Eng
Bluebells, 11, Foxwood Avenue, Angmering, West Sussex, BN16 4FU
David & Carolyn 01903782685 silversussex@gmail.com
1960-1972 Building Services Design, NHS Area Engineer 1972-1983, NHS Property Director 1983-1994, NHS Property Consultant 1994-2009
Interests: Music, Reading, Theatre, Travel, Golf, Bridge

C. Wood, MSc, FIMechE
44 Cissbury Road, Worthing, West Sussex, BN14 9LF
Chris & Joy 07732688086
Christopherwood44@btinternet.com
1968-1973 Performance Engineer Dungeness B Nuclear Power Station Technical Analysis, 1973-1975 British Gas Design Department Gas Compressor Station, 1975-1977 Stone Platt Crawley - Head of Air Conditioning Development Department, 1977-1998 Electrowatt, 1998-2006
Divisional Director Mott Macdonald
Interests: Tennis, Croquet, Motoring, Films, Theatre, Finance, Travel

RCEA Insurance.

Members need to be aware that the insurance policy that the Association holds is solely for the protection for the assets and liabilities for the Association as an entity. The policy does not provide cover for personal injury or loss to individual members. Members therefore attend any of the Association's events at their own risk; although under some circumstances there may be some cover from the insurance arrangements of the venue owner.

Newsletter Entries

If you would like to provide an article for inclusion in a future newsletter it would be most welcome. We are always looking for new material. As a guide an article should be prepared as a Microsoft Word document, preferably in font size 10 and font style Times New Roman but this is not essential since all text will be 'standardised and formatted' when composing the newsletter. Pictures can be incorporated into the newsletter and are best supplied as JPEG images as separate files and separately from the text. (Word documents incorporating pictures can sometimes be very large files and are often not easy to manipulate into a suitable format for the newsletter.)

A Request.

Ken Wheeler is working on a new talk and needs some help. He is seeking mechanical, civil or aero engineers who have experience in fracture mechanics as applied to metal structures who are willing to discuss with Ken by e mail (the correct address is in the new yellow handbook).

SOUTHERN RETIRED CHARTERED ENGINEERS

The following events have been arranged by the SRCE between January and June to which our members have a standing invitation. If anyone wishes to participate in any of the events, please email Tony Tomkins tony.tomkins@bcs.org for instructions as how to do so.

11th February	Lunch in Salisbury and talk on "A teacher in China"
15th April	Museum of Army Flying, Middle Wallop
? May	Visit to The Inns of Court, London (details still to be arranged)
15th May	Salisbury Playhouse to see "Betty Blue Eyes"
19th June	Visit to Royal Navy Submarine Museum Gosport and Fort Blockhouse

Brief Detail – Talks, Outings and other activities January - April

Talk

Worthing, Tuesday 14th January, 14.30
'Thomas Brassey – Railway Builder'

Mr David Jones RCEA

Thomas Brassey was responsible for building a third of the railway mileage and a twelfth of the rest of the world. The talk covers many of the individual railways and infrastructure that he was responsible for, much of which survives today.

Talk.

Worthing, Tuesday 11th February, 14.30

‘Korean Rolling Stock’ Mr Philip

Dee

Philip will look at the differences in British and Korean engineering culture and review some aspects of Korean rolling stock.

Visit.

Brookhurst Wood Waste Processing Depot

A conducted tour of the Mechanical and Biological Waste Treatment Facility where processes West Sussex’s black bag household waste is processed.

Booking form is at the end of this newsletter.

Contact: Malcolm Hind 01403 251719 or e mail malcolmhind@ msn.com

Talk.

Worthing, Tuesday 11th March, 14.30, ‘Meccano

to e mail – my career in engineering’ Mr Mike

Wooldridge RCEA

Mike will review his career which covered several diverse areas of engineering, ending as a Business/IT Consultant.

Spring Lunch

Thursday 18th March, Lunch at Northbrook College, Worthing, 12.00 for 12.30

There will be a bar for pre-lunch drinks, the cost to be settled individually by Members and guests. The cost is £13.00 per head including a tip, for a three course meal which in the past has proved to be very good value. The occasion is not only an opportunity for new and existing members to meet socially but will also help to give “work experience” to chefs and waiters.

Because of college “lead times” required applications MUST be made by 18th February.

Should the numbers exceed the maximum seating allowed there will be a waiting list made, as in previous years. So please book early to avoid disappointment. The committee look forward to seeing you there.

Booking form is at the end of this newsletter.

Contact Ms Brenda Whitmell, 01903 762918, e-mail bcwhitmell@talktalk.net

Outing.

Tuesday 8th April 2013, 1.20 pm for visit at 1.30 pm.

Southwick House D-Day Wall Map, used by the Allied Supreme Commander and the Royal Military Police Museum

The Museum traces the history of Britain's Military Police from its origins to current operations in support of the United Nations UN) and the North Atlantic Treaty Organisation (NATO). Artefacts range from Napoleonic medals to an illicit still from a Displaced Persons (DP) Camp in Hamburg. Special displays include Close Protection (CP), the role of the Special Investigation Branch (SIB) and operations in both World Wars and from 1945 onwards. The Museum is located within the Defence Police School, a working military establishment.

If you would like to attend please complete the reply slip at the end of this newsletter and return it to Ray Wort by post or e-mail. There will be a charge of £2.00 per person to pay for the guide for this visit.

Please note, for security reasons, everyone will need to produce photo identification (Driving License or Passport) at the main gate and be checked off against the prepared list of attendees to gain access to the Museum and Southwick House. Car parking is outside of the base and there is a 5 minute walk to the House from the gate. Disabled car access is permissible if we notify them in advance.

We will all meet at the gatehouse at 1.20 pm to allow for the formalities, including the collection of £2.00 cash from each visitor and then the short walk up to the House for the visit to begin at 1.30 pm.

Guides / Archivists will introduce the two venues and give some commentary before we are free to inspect the various exhibits. Duration of visit is likely to be 2.5 – 3 hours.

There are a number of pubs, cafes etc. in the area where lunch could be taken before the visit if required.

Address.

Royal Military Police Museum
Defence School of Policing,
Mail Point 38, Southwick Park,
Southwick, Nr Fareham,
PO17 6EJ

How to get there: Directions to the RMP Museum at Southwick Park: Travelling East along the M27 leave the motorway at Junction 12 signposted Cosham. With the Marriott Hotel on your left, proceed straight ahead at the traffic lights. Continue along this road for 1 mile, passing a smaller set of traffic lights, until you reach a large roundabout. At the roundabout take the first exit, and after 330metres, turn left at the traffic lights up the hill passing the Queen Alexandra Hospital on the left. Continue to the top of the hill and take the second exit at the roundabout onto the B2177. Proceed down the hill for 1 mile and take the third exit at the roundabout towards Southwick Village. After 400metres, bear right up a long drive towards Southwick Park. From London: the A3 (M) from London merges with the A27 8 miles south of Petersfield. Proceed along the A27 westbound for 3 miles, taking the exit signposted to Hilsea and Cosham. At the roundabout take the third exit signposted Cosham along a dual carriageway for 1 mile. Proceed straight over a small roundabout, and then at the next large roundabout take the second exit. After 330 yards turn left at the traffic lights up the hill passing the Queen Alexandra Hospital on the left. Continue to the top of the hill and take the second exit at the roundabout onto the B2177. Proceed down the hill for 1 mile and take the third exit at the roundabout towards Southwick Village. After 400 yards, bear right up a long drive towards Southwick Park.

REPORTS

Talk: Tuesday 17th September 2013.

‘Excavation of a Medieval Sugar Mill in Cyprus’. By Mr Gerald Hennings, RCEA.

The illustrated talk followed the AGM. The theme was “Industrial Archaeology”.

The talk began with a brief history of sugar production. Sugar cane had been known in the Pacific Islands for two millennia. The cane was chewed as a sweet and this use worked its way slowly towards the Levant. On the way, a method of making sugar by a crude manual process originated in India around 600BC. By 700AD, small quantities of sugar were being made in Syria – where it came to the notice of the Venetians who began importing it to Venice for sale in Southern Europe in the 8th C AD. They had lands in Cyprus and introduced the cultivation of sugar cane there around 10th C. When the Crusaders captured the Holy Lands, they refined and mechanized the sugar-making process, going in to large scale production.

At this time, the only source of sweetness in England was honey – unless you were rich enough to be able to buy sugar from Venice. Sugar beet was known, but was only used as a cattle fodder. The process of making sugar from beet was not discovered until 1784 and not used commercially until the 19th C.

When the Knights were expelled from the Holy Lands in 1293, they moved first to Cyprus (where they had estates, and introduced large scale sugar production there. By 16th C, Cyprus was the third largest producer of sugar in the world. The introduction of slave labour and better growing conditions in the West Indies rendered Cyprus sugar uncompetitively priced; production in Cyprus ceased around 1610.

Gerald went on to describe how the mills became derelict, robbed of machinery, buildings demolished – the sites buried and completely forgotten/built over. Archaeologists had found some of the mills in the course of their excavations, but did not know what they were.

He went on to describe the sugar making process. Cane propagation, cutting, crushing to extract the juice, boiling/ refining, crystallisation and sale. He described the layout and showed that the only drawing we had from medieval times was not what excavation revealed. Since only the stonework (most of it below ground) existed, engineering insight was needed to interpret the plant. Photos of what had been found were shown and the interpretation explained. The power to drive the cane crushing mill was derived from a “Greek wheel” which was a horizontal water wheel, fed by an aqueduct and chute in an underground chamber. The wooden wheel was shown to be 5 metres in diameter and the drive taken up through the roof to rotate one or two (?) crushing stone rollers in a stone tub above. A roller was replaced in the tub, using a REME recovery vehicle. The stone weighed 1¼tons. Interpretation of the chute and driving arrangement for the roller(s) had to be interpreted from the remaining stonework. All the stone bearings were replaceable without having to dismantle the mill. The wheel itself must have been assembled in situ – there was no way of getting into the chamber otherwise.

After the juice was extracted from the cane, the crushed cane was dried in the sun and used to fuel the furnaces for the next stage – boiling off the water and refining. The crushed, dried cane (*bagasse*) created very fine ash on burning, which had to be kept clear of the sugar. The furnaces were in a trench on the downwind side of the site and the boiling hearths were inside a building with no windows on the stokehole side. The hearths were limestone slabs, preventing any ash coming into the building. Temperature had to be tightly controlled to prevent burning the sugar; each boiling took 6 hours of continual stirring and skimming. This was repeated three to five times for quality. Boiling was in large copper vats (none found, of course), but experimental archaeology shows that the copper (a major product of Cyprus) has a catalytic effect which allows more water to boil off than if other materials are used.

After boiling, the syrup was poured into pottery cones (made on site – a kiln was found at the Kouklia mill) and allowed to crystallise – taking 8 days. The sugar loaf was extracted and sent for sale or ground and exported as a powder. 3,000 pots were required on each site and 400 people worked at each mill for three months in the year.

After a tea break, Gerald explained how two of the three mills excavated were up-rated by replacing the water wheel with a crude, horizontal turbine system. Power output (estimated at 4 to 7 horsepower) was not increased; the crushing mill itself not being modified, but a smaller diameter wheel could be used – 4metres (large pieces of good timber were hard to come by in Cyprus). This system was less affected by fluctuations in the water supply in the aqueduct. The Royal mill at Kouklia Stavros and the mill run by the Knights of St John at Kolossi Castle had been modified; the Venetian-owned one at Episkopi Serayia had not.

Gerald related how they had found a donkey powered mill alongside the water-powered one at both Episkopi and Kouklia which suggested a standby facility for times when water levels or maintenance prevented use of waterpower. This was a late addition – not shown on the 16th C plan retrieved from the library in Venice.

The talk concluded with a review of activities engineers might like to be involved with in archaeology

Talk:

Tuesday 8th October 2013. ‘Building and Flying a 1/3 scale Sopwith Pup’. By Mr Stephen Wessel.

This talk covered the background to a project which was the idea of Charles Morgan and Stephen Wessel, when they were looking around the Old Warden museum.

Stephen took on the making of a 1/3rd scale Mono rotary engine and Charles built a 1/3rd scale radio controlled Sopwith Pup to fly with the engine.

Stephen’s talk covered in detail the production of CAD drawings and the building of the engine. He showed many pictures of the build and gave details of materials and methods used, pointing out many difficulties that had to be overcome. The only significant deviations from true scale was the use of a modern electronic ignition system as opposed to a magneto, but the delivery of the HT current to the sparking plugs was to scale via a distribution ring

and non insulated distribution wires. Here there was a very difficult problem of interference that had to be overcome

A DVD was shown of the first flight and the wonderful scale sound of the rotary engine was demonstrated. The flying was very exciting and mirrored all the characteristics of the full size aircraft.

The whole idea was developed from the fact that Charles' father flew aircraft in the Royal Flying Corps and a particular favourite of his was the Sopwith Pup. He was also nick named Mono Morgan as he had a reputation for being particularly good at handling the Mono engine. The aircraft was decorated in the same scheme as the aircraft that Charles' father flew and bore the same identification mark.

All in all Stephen's talk was a fascinating adventure into the idea of and the building and flying of a one third scale Sopwith Pup. At the time it was believed that such a complete scale project of the combination of the aircraft and Mono engine had never before been achieved.



Talk:

Cooch Memorial Lecture, Tuesday 12th November 2013 - "The Red Arrows" by Mr Dudley Hooley, Director, Tangmere Military Aviation Museum.

Dudley introduced his talk by saying that he would cover a bit of the history of aerobatics in the RAF, then look at today's Red Arrows.

History: Up to the early 30's RAF aerobatics was generally performed at RAF Pageants with teams selected from frontline squadrons.

In 1932 43(F) Squadron, at the time the 'best' RAF squadron, went to the Henley Air Show flying three Hawker Fury aircraft. These were tied together with ribbon throughout the display i.e. from take-off, aerobatic routines then landing!! By 1936 No 1 Squadron flying the Hawker Fury Mk 11 also gained a reputation for aerobatics, giving displays throughout the United Kingdom. They also flew at the Zurich International Air Meeting in July 1937.

In 1954 111 Squadron flying Hawker Hunters formed a display team named the Black Arrows, who became the RAF's premier aerobatic demonstration team. This team became the first to fly a five-Hunter formation. In 1958 at the Society of British Aircraft Constructors' show at Farnborough the Black Arrows executed a loop of 22 Hawker Hunter formation. This was a world record for the greatest number of aircraft looped in formation, and remains unbroken to this day. After the loop the Black Arrows performed the world's first 16 aircraft barrel roll.

The Black Arrows remained the RAF's premier team up to 1961 when the Blue Diamonds of No 92 Squadron continued their role, flying sixteen blue Hunters.

In the early years of the 1960s The Blue Diamonds of 92 Squadron, the Tigers of 74 Squadron and the Firebirds of 56 Squadron, equipped with the new English Electric Lightning, started flying. By the mid-60s almost every Flying Training School, and several operational squadrons, had their own teams.

In 1964, the Red Pelicans flying six Jet Provost T Mk 4s became the first team to represent the Royal Air Force. Also in 1964 a team of five yellow Folland Gnat jet trainers, known as the Yellowjacks, was formed at No 4 Flying Training School at Royal Air Force Valley in north Wales.

So much time, effort and money was being expended on these non-operational tasks that the Royal Air Force eventually decided to disband them all and form a single, full-time professional team. In 1965 the Central Flying School (CFS) formed the Royal Air Force Aerobatic Team (RAFAT), the formal name of the Red Arrows. The name 'Red Arrows' was chosen to combine the appeal and expertise of two earlier teams, the famous Black Arrows and the Red Pelicans.

The Red Arrows: Initially there were seven display pilots and ten Gnat jet trainers and in their first season the Red Arrows flew 65 displays. The team was awarded the Britannia Trophy by the Royal Aero Club in recognition of its outstanding contribution to British prestige in the field of aviation.

The Red Arrows flew nine aircraft in displays from time to time from mid-1966 onwards, but it was not until 1968 that the Team was officially increased in size to nine. Although there was nothing new in flying nine aircraft in a diamondshaped formation, the Red Arrows' perfectly symmetrical Diamond Nine quickly came to represent the peak of precision flying and it was eventually registered as an official trade mark.

In 1979 the Red Arrows took delivery of the British Aerospace Hawk trainer and during that winter the pilots converted from the Gnat and worked up a display using the new Hawk for the 1980 display season. Since the Team's creation in 1965, the Red Arrows have flown over 4,000 displays in 52 countries.

During displays, the aircraft do not fly directly over the crowd apart from entering the display area by flying over the crowd from behind; any manoeuvres in front of and parallel to the audience can be as low as 300 feet, the 'synchro pair' can go as low as 100 feet straight and level, or 150 feet when in inverted flight. To carry out a full looping display the [cloud base](#) must be above 4,500 feet to avoid the team entering the cloud while looping. If the cloud base is less than 4,500 ft but more than 2,500 ft the Team will perform the Rolling Display, substituting wing-overs and rolls for the loops. If the cloud base is less than 2,500 ft the Team will fly the Flat Display, which consists of a series of fly-pasts and steep turns.

During an aerobatics display, Red Arrows pilots experience forces up to five times [that of gravity \(1g\)](#), and when performing the aerobatic manoeuvre 'Vixen Break', forces up to 7g can be reached, close to the 8g structural limit of the aircraft.

The Pilots: Pilots, all volunteers, must have completed one or more operational tours on a fast jet such as the [Tornado](#), [Harrier](#) or [Jaguar](#), have accumulated at least 1,500 flying hours and have been assessed as above average in their operational role to be eligible. Pilots stay with the Red Arrows for a three-year [tour of duty](#). Three pilots are changed every year, such that there are always three first year pilots, three second year pilots, and three in their final year. In 2010 their first female display pilot Flt Lt Kirsty Moore joined the Red Arrows.

Each pilot always flies the same position in a formation. The pilots spend six months from October to April practicing for the display season. Pilots wear green [flying suits](#) during training, and are only allowed to wear their red flying suits when fully qualified.

The team undertake winter training in the UK then travel to Cyprus in the spring (to take advantage of the good weather) to work up to display standard and gain their Public Display Authority (PDA).

Ejection Seats and Accidents and Incidents: Dudley then covered the use of Ejection Seats, from the early ones that used a solid propellant charge to eject the seat, to the latest rocket powered seats that can be used when the aircraft is on the ground. He then discussed several accidents and incidents, some of which unfortunately resulted in fatalities, along with their likely causes.

R Keir

Christmas Lunch

Worthing Thursday 13th December.

RCEA Christmas Lunch. Windsor Hotel, Worthing

Thirty-six members and guests enjoyed the Christmas lunch at the Windsor Hotel. Our President, David Thomas, thanked everyone for supporting the event and wished everyone a Merry Christmas and a Happy New Year. He thanked our Vice President, Brenda Whitmell, for organising the event. She then led a toast to absent friends.

An Article Submitted by a Member.

GLOBAL WARMING, A FALSE RELIGION?

What are we to believe when a hot summer is forecast and it proves to be disappointing, or when told that melting icecaps will cause widespread flooding while others report that the ice is thicker than a year or two ago? Do we really have any confidence that scientists can predict the climate a century hence? Most of us can remember heat waves while wishing it was warmer now, yet we are continually threatened with global warming, and told of extreme measures and unthinkable expenditure to 'save the planet'. Increasing man-made, 'anthropogenic', carbon dioxide is said to be the trouble, and any questioning of the orthodox view receives scant publicity. 'No global warming' would hardly be a newsworthy item. As to man-made CO₂ being the cause there is now a polarisation into protagonists and antagonists, or 'warmists' and 'deniers'. Each camp is motivated by zeal and mutual antipathy reminiscent of Catholics and Protestants in Tudor times.

The warmist camp is led by former vice-president Al Gore and the Intergovernmental Panel on Climate Change (IPCC). Their supporters include NASA's Goddard Institute for Space Studies run by Dr Hansen, the US Environmental

Protection Agency, our own Royal Society, the Met Office's Hadley Centre, the Climate Research Unit of the University of East Anglia (UEA), former energy minister John Hutton, Nicholas Stern, adviser to the government on climate change, assorted film actors, rock groups, prime ministers, presidents, other political and church leaders and members of the royal family. The deniers of man's influence on warming are at last rallying their troops, including many eminent scientists around the world, the Heartland Institute of Chicago and our Global Warming Policy Foundation chaired by Lord Lawson. The Russian Academy of Sciences was firmly in this camp until undermined by Putin who saw a way of making billions from carbon credits. China's senior climate change negotiator recently questioned anthropogenic global warming. Deniers include the authors of many books on the subject.

Warmists have likened climate change sceptics to holocaust deniers and have called for 'some sort of climate Nuremberg' trials. Deniers have accused the warmists of dubious science and all sorts of dirty tricks such as obfuscation of evidence in the so-called 'Climategate' row involving hacked emails at the UEA, and the 'Glaciergate' row over unfounded predictions by the IPCC of disappearing Himalayan glaciers.

The direst predictions emanate from the IPCC, a body consisting of scientists, not all climatologists, whose research grants depend on predicting global warming. Those producing less than seriously intimidating reports apparently have their work revised before publication. Their computer forecasts are often based on speculative assumptions, so there are wide variations. Just as the media tend to ignore contrary views they seize on the worst case to publish news. Thus if estimates of sea level rise by the year 2100 range between 4 inches and 20 feet, the one hitting the headlines will be 20 feet, the small print saying that some scientists predict that sea levels may rise by this amount with no mention of lesser options. Even so, the books questioning global warming are increasing in number, some being listed below. The first three are based on the premise IF global warming is a result of increasing carbon dioxide, a very big IF. Lomborg, the first author, a professor of statistics and in his own words 'an old left-wing Greenpeace member', says among other things that the IPCC's assumptions for the rates of increase of CO₂ are unrealistic, exaggerating the warming computations. He shows that moderate warming would give more reduction of cold weather than increase of

hot, beneficial both for human health and agricultural output, without increasing hurricanes or storms. He ends by concluding that 'global warming is not anywhere near the most important problem facing the world'.

Booker and North recall a 1975 *New York Times* headline: 'Scientists ponder why world's climate is changing: major **cooling**...inevitable'. They call today's global warming scare 'the new secular religion', expose fallacies in the accepted thinking, show 'skewed evidence' in the arguments of global warming proponents and say it is hard to recall any precedent for the outpouring of hypocrisy shrouding the whole issue.

Lord Lawson, former Chancellor of the Exchequer, quotes the 19th century philosopher, Schopenhauer: 'There is no opinion, however absurd, which men will not readily embrace as soon as they can be brought to the conviction that it is generally adopted'. He concentrates on economics, explaining how the proposed vast expenditure could be mitigated. He says that Singapore and Helsinki are both economic successes despite one having a mean annual temperature 22°C higher than the other, showing that it should be easy to adapt to a predicted change of, say, 3°C (IF it happens) over the next hundred years. He calls global warming 'the new religion of eco-fundamentalism', breeding intolerance of dissent and reasoned argument that is unattractive and dangerous. 'Save the planet' is a strong contender for the most ludicrous slogan ever coined, writes Lawson. The most radical of these books is that of Svensmark and Calder. Danish scientists claim it is water vapour in the form of clouds that affects global warming, not CO₂. In our Galaxy, the Milky Way, there are billions of stars, larger and smaller than our Sun, often collapsing with enormous explosions generating huge amounts of cosmic radiation. When this reaches the Earth's atmosphere electrons are liberated causing nuclei to form, enabling water to condense into clouds, as verified in laboratory experiments. Clouds reflect the Sun's rays, keeping the Earth cool, hence the title 'The Chilling Stars'. Why, then, does the Earth's climate vary so much? Because sunspots cause relatively frequent, irregular increases of the Sun's magnetism that reduce cosmic radiation and cloud formation, giving hotter weather. Also, the Sun and its planets move slowly through the arms of our spiral Galaxy causing low-frequency variations about once every 145 million years. Research shows that, from millions of years ago to the present, climate bears little relationship to carbon dioxide levels but closely follows cosmic radiation intensity, supporting their 'chilling stars' theory. The authors conclude that the idea of CO₂ causing global warming is clearly disproved.

Booker's 'Real Global Warming Disaster', a more recent publication, expands the global warming chapter in the earlier book, 'Scared to Death', with new material. The cover quotes a Massachusetts Institute of Technology professor: 'Future generations will wonder in bemused amazement that the early 21st century's developed world went into hysterical panic over a globally averaged temperature increase of a few tenths of a degree and on the basis of gross exaggerations... proceeded to contemplate a rollback of the industrial age.' Booker describes the history and development of the so-called 'consensus', and goes on to show how it began to crumble in 2007-2009 when it was noticed that despite increasing atmospheric CO₂, temperatures had started dropping instead of accelerating upwards as predicted. Faults in the warmist theories were uncovered and natural reasons for climate change became more widely considered. The 'real disaster' is the likely result of measures to avert a non-existent threat.

Dr Spencer, a distinguished American climatologist, his writing pleasantly laced with humour, is emphatic that '*manmade* global warming' (his italics) is by no means a fact. He gives some explanation of how weather works with huge transfers of latent heat when water evaporates into the atmosphere and condenses again at high altitude to fall as rain. Computer modelling of such effects with a projected increase of CO₂ is very difficult and 'scientists claim to understand more than they really do'. Some think there is positive feedback from global warming that will cause a runaway increase, but Spencer claims negative feedback will cause stabilisation and believes that 'the Earth's climate system is not nearly as sensitive to humanity's greenhouse gas emissions as many scientists think'. Belief in catastrophic global warming 'has little scientific basis, and perpetuates the bad habit scientists have of predicting environmental doom'.

The Australian Professor Plimer's book is the most comprehensive, 500 pages with over 2000 references to scientific literature. He discusses the Sun, and the Earth and its ice, water and air, through 'geological, archaeological, historical and modern' times. Climate change always has and always will be happening, he says. In bygone times before industrialisation began emitting CO₂ the Earth was sometimes hotter than now. Candidates for climate drivers are Sun's variations (even on Mars there is strong evidence that the Sun drives climate), changes in the Earth's orbit and cosmic ray forcing, i.e. Svensmark's theory mentioned above. Greenhouse gases compound this, water vapour being the main contributor, with carbon dioxide only a trace gas at less than 0.04%, although of course essential to life. Like Spencer, he says there is no 'tipping point' because all systems involving CO₂ have natural upper and lower regulators. Plimer says 'to call for lowering the carbon footprint is asinine', and 'to refer to "carbon pollution" is ascientific political spin'. He concludes that a 'new religion has been invented...extreme environmentalism'.

Christian Gerondeau is described as a major figure in French scientific and engineering circles. In the English version of his book, 'Climate: The Great Delusion', he sums up with three final points: I:- On a global level, we can do nothing significant about CO₂ emissions and concentrations. II:- There is no proof CO₂ emissions and concentrations are or will be a significant problem for the planet. III:- We have to stop wasting public and private money in the illusion it will 'save the planet'. Huge savings are at hand.

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The final word should be given to Andrei Kapitsa, former head of the National Academy of Science in Vladivostok, and later a professor at Moscow State University. In 1998 at a London conference he said "global warming as a result of man's activities does not exist", and that claims that the Antarctic ice sheet was shrinking were "absolute nonsense". Global warming, he ended, was "all to do with politics".

Those who still fear global warming and rising sea levels might wish they could consult the highest authority, higher even than the IPCC. Would not the reply be the same as to those terrified men in a storm at sea, thinking themselves at imminent risk of drowning: 'Why are ye fearful, O ye of little faith?' (Matthew 8: 26)

Bibliography for global warming

- 'The Skeptical Environmentalist' (chapter 24), by Bjørn Lomborg.
 - 'Scared to Death' (chapter 14), by Christopher Booker and Richard North.
 - 'An Appeal to Reason, a Cool Look at Global Warming', by Nigel Lawson.
 - 'The Chilling Stars', by Henrik Svensmark and Nigel Calder.
 - 'The Real Global Warming Disaster', by Christopher Booker.
 - 'Climate Confusion', by Roy Spencer.
 - 'Heaven and Earth', by Ian Plimer.
 - 'Climate: The Great Delusion', by Christian Gerondeau.
 - 'Andrei Kapitsa', obituary in *The Daily Telegraph*, August 27 2011
- See also Christopher Booker's regular column in *The Sunday Telegraph*.

Gordon Latham

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REPLY SLIP 1

To: Malcolm Hind, 7, The Castle, Horsham, RH12 5PX *Tel:*
01403251719 or email malcolmhind@msn.com

I /We would like to attend the **visit to Brookhurst Wood Waste Processing Depot, Horsham, on Wednesday, 5th March, 2014 at 10:00am.**

Members may recall that we had a most interesting visit to this facility in 2012 whilst it was under construction. As several members requested the opportunity to see the plant when operational, we have arranged this return visit, which is limited to 30 persons on site.

Name.....Telephone.....
Address.....e-mail.....
.....
..... Number of Persons.....

Applications by 19th February 2014 please.

REPLY SLIP 2

To: Ms B C Whitmell, 12 Brook Way, Lancing, BN15 8DG (New address from 6th January 2014) Tel 01903
762918, or e-mail bcwhitmell@talktalk.net

Please reserve me a place to attend the **Lunch at Northbrook College, Worthing, Thursday 18th March, 12.00 for 12.30**

Name:.....(Block capitals)

Address.....

.....
.....
.....

Telephone Number.....Name of guest/s
E mail address.....Seating Request

I enclose a cheque made payable to RCEA for £.....(**£13.00**) per person
(Separate cheque please)

Applications by 14th February 2013

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REPLY SLIP 3

To Ray Wort, 11 Roberts Marine Mansions, West Parade, Worthing, BN11 5EB email raywort@btinternet.com

I would like to register to attend the **Outing to Southwick House D-Day Wall Map and the Royal Military Police Museum, on Tuesday 8th April 2013, assembling at 1.20 pm for the visit to commence at 1.30 pm.**

Full Name (Member)..... Telephone.....
Address..... e-mail.....
.....

Full name of guest/s or
visitor/s.....

Car Registration Number.....

Have you and your guests Photo ID? YES / NO
Do you need Disabled Parking? YES / NO

Cost £2.00 per person (cash) to be collected at the assembly point before admission to the site

Latest date for applications by **post, or e-mail** **24th March 2014**

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