



An Association for Retired Professional Engineers

NEWSLETTER

MARCH 2005

PROGRAMME OF EVENTS

Every Monday 10.30 am. Coffee at the Denton Lounge, Worthing Pier.

31st Mar Thursday Coffee - with Partners at Beach Hotel, Worthing.

Cancelled – Lack of support

7th Apr Thursday Lunch (2) Northbrook College, Worthing

13th Apr. Wednesday **Visit:** 2.20 pm GSK (Beecham), Worthing.

21st Apr Thursday Coffee - at Spotted Cow, Angmering.

28th Apr Thursday Coffee - with Partners at Beach Hotel, Worthing

19th May Thursday Coffee - at Spotted Cow, Angmering

26th May Thursday Coffee - with Partners at Beach Hotel, Worthing

(New Date and Time)

5th Jun Sunday Outing: 1.30 pm Brighton Railway Station.

15th Jun. Wednesday **Outing:** 2.30 pm Wakehurst Place .

(Revised Date)

16th Jun Thursday Coffee - at Spotted Cow, Angmering

30 th Jun	Thursday	Coffee - with Partners at Highdown Towers, Worthing
13 th Jul.	Wednesday	Outing: 2.30 pm Duncton Croquet Club
21 st Jul.	Thursday	Coffee - at Spotted Cow, Angmering
28 th Jul.	Thursday	Coffee - with Partners at Highdown Towers, Worthing
18 th Aug.	Thursday	Coffee - at Spotted Cow, Angmering
25 th Aug	Thursday	Coffee - with Partners at Beach Hotel, Worthing

All Talks and Meetings will be 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 and on the appropriate reply slips.

Coffee mornings commence at 10.30 a.m., except at The Beach, which is from 10.45 a.m

Membership

Resignations B F Slater, G S H Jarrett, J A H Paffett
 Passed away: P M Harvey

Website for the RCEA

Thanks to a major effort by Peter Gibson (Member), we now have as a trial a website which can be developed for the Association. The first draft of our website is available to view at www.members.aol.com/rceasx and we would welcome any suggestions for its content or style and for any material that should be added to enhance its usefulness.

Brief Detail – Talks, Outings and other activities

Visit:

GSK plc, East Worthing (Beechams), 2.20 pm for 2.30 pm Wednesday 13th April 2005.

A visit has been arranged to the GSK pharmaceutical production unit at their factory at East Worthing.

Our Group is limited to 20 places and names must be given to GSK no later than 4th April so Application Forms must be returned to Richard Norton by 31st March.

The arrangement is that we will meet at the Thomas Beecham Sports and Social Club at the north end of Dominion Way (not the main factory) at 2.20 for a start at 2.30. We are told that there is plenty of parking at the Club.

The visit will commence with a talk on automation in the pharmaceutical industry by Shaun Swadling, a Senior Engineering Manager, followed by a visit to the new Solvent Recovery Plant Control Room, after which we return to the Club for questions and tea. The visit is expected to end at 4.30.

GSK have provided us with location maps and one will be posted to each successful applicant.

Because of the hazardous nature of the plant, there are a number of restrictions:

1. Members with Asthma or a Penicillin allergy will not be able to go on the factory part of the visit.
2. Matches, cigarette lighters, mobile phones and cameras are not allowed.
3. Members must be able to negotiate stairs and “sensible” shoes with rubber heels must be worn.

Outing:

Brighton Railway Station, 1.30 pm Sunday 5th June 2005

An 'in depth' tour of the historic Brighton Rail Station. The tour will explore the hidden depths of the station and will take about an hour and a half to complete. We have only been allocated 20 places for this very popular tour and therefore the places will have to be allocated on a first come basis. The cost of the tour will be £5.00 per person.

There will be stairs to negotiate during this visit.

The group should meet at the front of the Station, next to the taxi rank just before 1.30 pm.

A reply slip is attached to the end of this newsletter.

Outing:

Wakehurst Place, Ardingly, West Sussex, approximately 5 miles north of Haywards Heath. on the B 2028. 2.30 pm Wednesday 15th June 2005.

An outing to these extensive gardens of over 180 acres with many lakes and ponds, surrounded by an important collection of exotic trees, plants and shrubs. A beautiful and varied garden, which offers inspiration of colour throughout the seasons. Home of the Millennium Seed Bank project plus woodland, wetland and ornamental gardens. All this will be visited with a guided tour of about 1 1/4 hour.

We meet at the entrance area to Wakehurst Place at 2.00 pm.

There is a licensed Restaurant, which serves coffees, snacks, lunches and teas.

Cost: £6.00 including guided tour, or £2.00 for National Trust Members who must present their valid membership card. All wishing to join in this very interesting outing should complete the reply slip at the end of this newsletter and return by 25th May 2005.

Outing:

Croquet and Afternoon Tea at the Rother Valley Croquet Club, Duncton, Nr. Petworth, 2.00 pm Wednesday 13th July 2005

The Croquet Club is in a beautiful setting with magnificent views over the Downs on the A285 Chichester to Petworth Road north of Duncton Village on the East side of the road. No previous experience is required and all equipment is provided.

Please wear flat heeled shoes.

Spectators are welcome and some seats are provided but please bring a folding chair if available.

The cost is £6 per person which includes a delicious home made afternoon tea served in the Pavillion at approximately 4.30 pm. A further session of croquet will be arranged after tea for those wishing to stay later.

Please indicate on the reply slip if you wish to play, there is a 16 player limit.

A reply slip is attached to the end of this newsletter.

REPORTS

Talk

**Tuesday 11 January 2005 2-30pm Field Place, Durrington, Worthing.
Safety of Naval Explosives.**

This talk was given by Randy Keir, Member, who spent a long career with the MOD, associated with many aspects naval weapons management, and became the RN Chief Environment and Safety Officer in the Defence Procurement Agency.

Initially the terms ‘munitions’ and ‘explosives’ were defined in the context of the talk.

The history of naval explosives safety, was then summarised, from the 14th century, when guns were first used aboard ship. An interesting point was that for some 300 years from the late 16th century, control of naval ordnance was merged into and controlled by the army. Since the early 20th century, control has been with the Admiralty. The first remit emphasised the safety of naval personnel and ships. This developed into the current position where the safety policies of the armed services comply, at the least, with current UK and EU legislation.

Naval munitions were then discussed. A theoretical munition was shown to illustrate its sub-assemblies; warhead, propulsion unit, control system, safety, arming, fuse systems etc.. This was then applied to actual munitions, including the Sea Wolf vertical launch missile, the submarine launched Trident missile, the largest in the RN, at 110,000lb and 44ft long, with a range of 4000 miles, the surface or air launched Stingray missile, and the heavier Spearfish anti-ship and submarine missile, submarine launched.

Types of ships were described, from the aspect of storage and use of explosives and the safety environments thus created. The largest ship is HMS Ocean, a helicopter-landing platform, carrying in close proximity 1000 crew and troops, 250 tonnes of munitions, and operating 18 helicopters. For the future, two larger aircraft carriers are approved, as we learnt from the recent RN Presentation. Destroyers, frigates and submarines were similarly described, with some submarines having the added safety consideration of nuclear power. The environments in which RN ships operate were discussed. The natural environment, the sea, with all its variety of conditions, the induced and operational environments aboard, electromagnetic, replenishment, ammunition, fuelling, was included in safety and hazard audits.

Safety assurance commences at the MOD munitions procurement stage, using the CADMID cycle of concept, assessment, development, manufacture, in-service and disposal. From this, an Operating Environment Document and Safety Case are produced for each ship. The Safety Assessment Process requires that the nature and behaviour of explosives used are known. This is achieved from the Explosives Qualification process leading to assessments and trials. The requirements, classification and testing of explosives were described. Further surveillance and inspection is carried out throughout the in-service life of munitions. Significant effort is being applied to research into future munitions, to reduce the risk to ships and crews whilst maintaining their efficiency. Areas of research include insensitive munitions, low vulnerability ammunition propellants, liquid propellant and electromagnetic guns.

The Speaker was given a well-deserved vote of thanks for his long and detailed talk.
(C Harrison)

Visit

Wednesday 19 January 2005, 1-00pm. Heathrow, Terminal 5 site.

Approaching Heathrow on the M25, the Terminal 5 site was easily visible at the western end of Heathrow. We were favoured with clear dry weather for the visit. Car parking had its moments, but following this, the T5 Visitor Centre was itself interesting, with many displays, an adequate refreshment area, and including a Job Centre? Our party was 25 members, ladies and guests, including some not normally able to attend our functions.

The Tour coach was fully equipped with a sound system that enabled us to readily hear our Guide, Mick Pearman, a no-nonsense individual with 25 years BAA experience. Security was evident. We were checked on to the bus, and again when entering and leaving the site itself. Due to the wind direction, planes were taking off frequently from the runway parallel and close to the Northern Perimeter Road and Visitor centre, adding to the atmosphere. Before moving off Mick gave us an introductory talk. No photography was allowed, though we were each presented with a pack of postcard size photographs of the site activity.

A few facts associated with the project indicated its massive scale. Though confined within the boundaries of Heathrow, the area of the Terminal 5 project is of a size similar to Hyde Park. The title is misleading, as the activity will result in considerably more than one terminal. In addition there will be two satellite terminals, T5B and T5C, 41 aircraft stands, including some capable of handling the recently launched 800 seat T380 Airbus, a control tower, a 4000 space multi storey car park, with a new spur road from the M25, 13km of

bored tunnels, including extensions to the Heathrow Express and the Piccadilly Line. Consequential work involved the diversion of two rivers and the perimeter road. Environmental work includes the planting of 20,000 trees and shrubs. Visitors could be excused for thinking that a major airport was being built. Cost will be £4b, all private finance. The site is managed by BAA, the British Airports Authority and when complete, will be run by BA, British Airways.

A summary of the history and future of the project gave an idea of timescales and put our visit in context. Following a four-year public enquiry, planning permission was granted, with 700 conditions. The project was divided into 2 phases. The first phase commenced in 2003 and will take 5 years, with a planned opening date of 30 March 2008. Phase 2 will commence in 2007 and take 3 years. This phase will include the two satellite terminals. At our visit therefore, the first phase was well underway with site preparation and groundwork complete, and the major structures being erected.

Noting the size of this phase overall, its focus is the terminal building T5A. It is 400m long and 165m wide. It will have 6 levels and its rail station beneath. At the visit, its size could be appreciated since all the roof sections were in position except the last. This was ready to be hydraulically raised. This will take 10 hours, to raise the 2500 tonne structure. At the opposite end, glazing had commenced. When our bus moved to present the end view, it was observed that the glazing and building interior would be separate from the exterior of the terminal structure. This vantage point also allowed a view down on to the tunnels running between T5A and T5B. Another set of impressive facts was given here, including one of the passenger luggage being moved at up to 40mph. imagine that.

At the end of a most interesting visit, Mick Pearman was given a well-deserved vote of thanks and, separately, our thanks were sent to Sarah Nock, BAA T5 Community Liaison Manager, who arranged the visit.

(C Harrison)

Visit

Wednesday 2 February 2005 2-30pm, Ceres Power, Crawley, Sussex.

A baker's dozen of members gathered at the compact, modern premises of Ceres Power. We were well attended by Bruce Girvan, Technical Market Manager and Karim El-Koury, Development Engineer. The visit consisted of an extended presentation on fuel cells, and the part played by Ceres Power in this market, followed by a tour.

Fuel cells address the potentially huge market for energy supplies in the range of 1 to 25 kW. The market is diverse which is explained by dividing it commercially into four areas. Remote Power Supplies are for those applications where access to the electricity grid is impractical, such as farms, remote telecommunication stations, such as mobile telephone masts, and buildings. Auxiliary Power Units are for secondary power sources in cars, heavy vehicles, containers and military applications etc. where it is of advantage not to use the main engine or lead acid batteries, for energy supply. Uninterruptible Power Supplies are necessary in healthcare, computing, financial and telecommunication areas, where interruption of power supplies could have serious consequences. The Domestic Heat and Power market offers fuel cells an opportunity to provide energy to homes and offices at lower cost.

In the fuel cell, oxygen ions, from air, react with hydrogen ions, from hydrogen or hydrocarbon gases, under controlled conditions, at elevated temperatures to produce electricity and heat, without combustion and with low emissions, free of carbon dioxide. Electricity produced from a single cell is typically 3 to 5 watts at 0.7 volts. To expand this to useful levels, single fuel cells are 'stacked up' by laser welding into assemblies having the required energy output. The efficiency of the process is high, approx 87%, compared with 25/30% for electricity generated conventionally.

In the fuel cell industry, energy generation is broadly divided into three categories by temperature. At the lower end, operating up to 120 degrees C, are the PEM cells using polymer (plastics) materials and hydrogen only as the fuel. At the higher end, operating at approx 1000 degrees C are the solid oxide fuel cells using ceramics. Ceres Power has chosen to develop an intermediate temperature range, at approx.

550 degrees C. This allows the use of commercially available non-brittle materials, such as stainless steels, with thin ceramic coatings, and a range of gases for fuel. The Company, formed 3 years ago, developed from ideas generated at Imperial College, London, and maintains close contact with the academic world. It is staffed by some 30 graduates drawn worldwide. It is financed mainly by and sells to major fuel suppliers and utilities.

Following the presentation, there was a tour of the test, development and assembly facilities, including ceramic powder grading, electrophoretic deposition, screen printing, drying and firing. A compact disk was handed to members. This is available to any other member on request. Further information is on the website www.cerespower.com

As this visit was heavily oversubscribed, it is intended to repeat it next season.

(C Harrison)

Talk

**Littlehampton Harbour, Colin Hitchcock, Harbour Master, Littlehampton, 2-30pm
Tuesday 8 February 2005, Field Place, Worthing.**

A full Chichester Room gathered to hear this talk, which consisted of an account of Colin Hitchcock's career to date, including his duties at Littlehampton Harbour.

Joining the Royal Navy in 1979, Colin carried out engineering tasks on Sea King and Lynx helicopters, and saw service in the Falkland Isles. Commission as a Seaman Officer in 1982 brought duties in Hong Kong and HMS Illustrious as Navigating Officer. Leaving the Service in 1990, he took a position with Vosper Thornycroft, handling ships trials in Portsmouth and Southampton waters, and in the Solent. This period involved re-training to obtain Merchant Navy qualifications, and contact with foreign navies, who were many of Vosper Thornycroft customers. This included the Navy of the Sultan of Muscat and Oman, leading to trials in those Middle Eastern waters.

Colin entered the service of the Sultan as Second in Command of the Royal Yacht, an 18000 tonne vessel, luxuriously appointed. The next position was as the Sultan's Keeper of Harbours and Jetties. This included command of the royal Dhow, a 60 metre, lateen rigged vessel with 40 crew. Photographs were displayed to the meeting of these two impressive vessels. For family reasons, Colin returned to the UK some four years ago to become Harbour Master at Littlehampton.

Between the harbours of Shoreham and Portsmouth and at the mouth of River Arun, is Littlehampton Harbour. It has been in use since Roman times and in early days was known as Arundel Harbour. Since the time of Henry VIII, it has been a Trust Port, now governed by a Harbour Board of 11 members. At its busiest period, it unloaded 1200 ships per year and photographs were seen of these busy days. Until recently the main cargo was sea-dredged aggregates for breezeblocks and road stone. This activity has declined. The Marina handles yachts, and this leisure activity is being promoted. Effort and finance are being applied to bring the harbour to a good state of repair.

The Harbour Master, with a staff of eight, acts as 'policeman' to ensure all vessels using the harbour comply with regulations. There are security matters in prohibiting the illegal import of substances and persons. The Harbour Master also acts as Pilot, bringing in ships to the river Arun, which is the fastest flowing in the country.

Following the interval, members asked many questions and the meeting was brought to a close with a well-deserved vote of thanks proposed by Randy Keir.

(C Harrison)

Outing

Skittles and Buffet Lunch at the The Old Bull Inn, Henfield, Wednesday, 2nd March 2005

Twenty-one members and guests enjoyed a lively three games of skittles interspersed with a buffet lunch. Even the 'amateurs' could shine and some produced very creditable scores for their teams. The buffet provided was very filling and more than could be eaten by the energetic group.

Members thought that similar social functions should be arranged in future.
(Watch this space.)

The excess food did not go to waste, the Pub Staff packed the excess into suitable containers and some of the Staff and Patients of the Sussex Rehabilitation Unit at Shoreham Hospital were more than happy to have an afternoon picnic.

REPLYSLIP:

To:- Richard Norton
106 Wallace Avenue, Worthing BN11 5QA

I/we wish to join the visit to GSK East Worthing on Wednesday 13th April 2005 at 2.20 pm.

Full name:.....(Block capitals)

Address:

.....
.....

Phone Number:.....

Number of Persons:.....

Applications by 31st March 2005.

To: B. Buckroyd,
6 Fosters Close, East Preston, BN16 2TL Tel: 01903 784926

Please reserve.....places for me to visit Brighton Railway Station, 1.30 pm Sunday 5th June 2005

I enclose my cheque for £.....(£5 per person) payable to R.C.E.A.

NAME(Block capitals)

Address:

.....
.....

Phone No.....

Applications by 1st May 2005

(Separate cheque please)

Intentionally Blank

**To: Hermann Rummeli,
3 Woodbridge Park, East Preston, West Sussex BN16 1NL**

**I/we wish to join the outing to Wakehurst Place on Wednesday 15th June 2005
at 2.00 pm.**

Full name:.....(Block capitals)

Address:

.....
.....

Phone Number:.....

Number of Persons:..... . Nat Trust Member:.....

Applications by 25th May 2005.

**I enclose a cheque made payable to RCEA for £.....for the above mentioned
persons. (£6.00 per person, or £2.00 with valid NT membership card)**

(Separate cheque please)

To: Ken Lane

17 Fox Lea, Findon, Worthing BN14 0XB, 01903 873956

**I/we wish to join the outing to Duncton Croquet Club, 2.00 pm Wednesday 13th July
2005**

Full name:.....(Block capitals)

Address:

.....
.....

Phone Number:.....Number of Persons

Guest names.....Number to play.....

**I enclose a cheque made payable to RCEA for £..... (£6.00 per person which
includes tea.)**

Applications by 1st July 2005.

(Separate cheque please)
