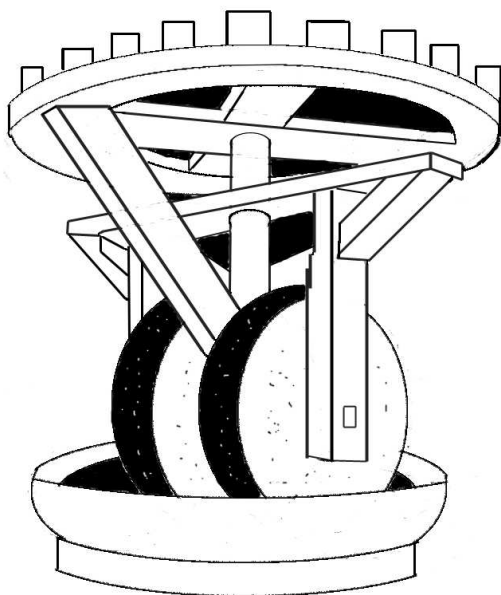


Touchpaper



The Newsletter of the Royal Gunpowder
Mills Friends Association

June 2010

Contents

- 1 Editor's news
- 2 Chairman's Chat...
- 3 Letters to Touchpaper
- 4 Les Tucker's Canal
Miscellany
- 10 AGM and Social Day
- 12 Westcott Reunion
- 14 Mathematical posers
- 15 Obituaries
- 16 Contacts

Editor's news

Welcome to my final editorial for Touchpaper. I shall be stepping down from the post of editor after this issue. As yet I do not know who will be taking over from me as editor, but I am sure that he or she will make a fine job of it and probably a better job than I did.

This year's season at the Mills has got off to a disappointing start, with some very dodgy weather on the event weekends. Both the Hawker Hurricane and the Spitfire flight on the VE day weekend had to be cancelled because of inclement weather.

But now that the weather seems to be improving, we are looking forward to some very successful events and I look forward to seeing some of you there at future events.

So I would just like to say goodbye and thank you all for supporting the Friends and please continue to do so.

Malcolm Bergh

Chairman's Chat...

Welcome to the Summer issue

The season has started quite well although the weather has not been too helpful. On the VE Day Celebration weekend both the Hurricane and Spitfire flights had to be cancelled. In spite of this visitors have generally enjoyed themselves.

The replica gunpowder mill in L157 has been a considerable attraction, particularly for children, who have enjoyed pushing the button to start the mill going.

We are currently working on restoring the 18 inch gauge cordite truck which was on the concrete slab (near where BWD used to be). When we tried to move it the wooden part fell off, so we have had to take most of the top to pieces.

The Rocket and Space weekend will be on 10 - 11 July

and so we are also working on exhibits for that.

Improvements have been made to the Wildlife Tower, previously known as the Temperature Recorders' Tower. Recordings of birdsong can now be heard there and there are more pictures of wildlife.

Although the cafe is currently being refurbished food and drinks are available from at least one kiosk nearby.

A plan is currently being drawn up to improve the facilities on site, particularly to make it more family friendly. This is likely to take 3 years or so to complete but watch this space for further news.

Letters to Touchpaper

Inspired or irritated? Social or technical memories? Whatever it is, we want to hear about it, so write or email—our address is inside the back cover.

Colleagues who were at Waltham Abbey during the latter part of the 1970's will recall that our Director was Frank Panton; he was instrumental in forming PERME by amalgamating ERDE and the Rocket Propulsion Establishment (RPE) at Westcott and also the formation of the Rocket Motor Executive, headed by Harold Williams.

I recently attended a Mess Dinner at Shrivenham, at which Frank was the guest of honour. I am delighted to report that Frank is in good health, and he gave a fascinating speech to the assembled gathering. The theme of his talk was the political machinations that took place in the 1950's and 1960's, when he was out in the Embassy in Washington negotiating the exchange of nuclear technology with the United States. These were the pivotal arrangements which cemented the "Special Relationship" or "1958 Agreement" between the UK and the USA on nuclear matters.

I attach a photograph of him at the dinner. Frank was also something of a "mentor" to me; he sent me out to the Defence Research and Development Staff in the Embassy in 1978 and found me a good job when I returned in 1981, taking a fatherly interest in my career thereafter. After the Shrivenham dinner

Ian Wallace (now, as I have previously reported, the Principal of the college) and I had a good chat with Frank, reminiscing about his days at Waltham Abbey, which he remembered very fondly. He admired the innovative thinking that was a hallmark of "the University of Essex", rather different, he said, from other establishments that he had worked with.

He also said how much he had enjoyed coming back to the Abbey for the Royal Opening of the Powder Mills a few years ago; on that occasion he returned to the WARGM collection the plaque that had marked the visit of the Duke of Gloucester to PERME in 1978, which we had presented to him on his retirement.

Geoff Hooper

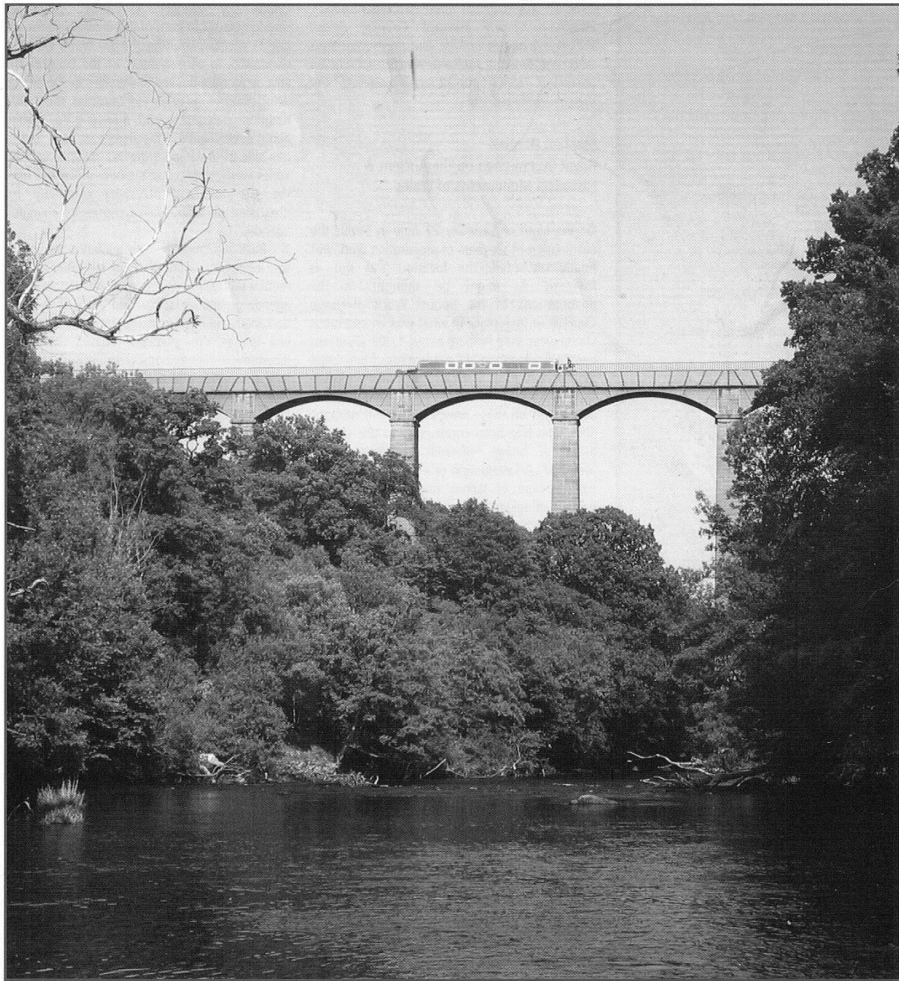


INDUSTRIAL ARCHAEOLOGY NEWS

150
AUTUMN
2009

THE BULLETIN OF THE ASSOCIATION FOR INDUSTRIAL ARCHAEOLOGY

FREE TO MEMBERS OF AIA



Pontcysyllte is new World Heritage Site • Fe09 Conference at Coalbrookdale • Longdendale Water Heritage at Risk • Stretham engine • Leeds towers • regional news • publications

Aqueducts, Pigs, The Devil and Congreve

The Mills recently received the award of a Red Wheel plaque from The Transport Trust reflecting their status as a rare survivor of an internal industrial canal and rail system - Touchpaper December 2009 P.8.

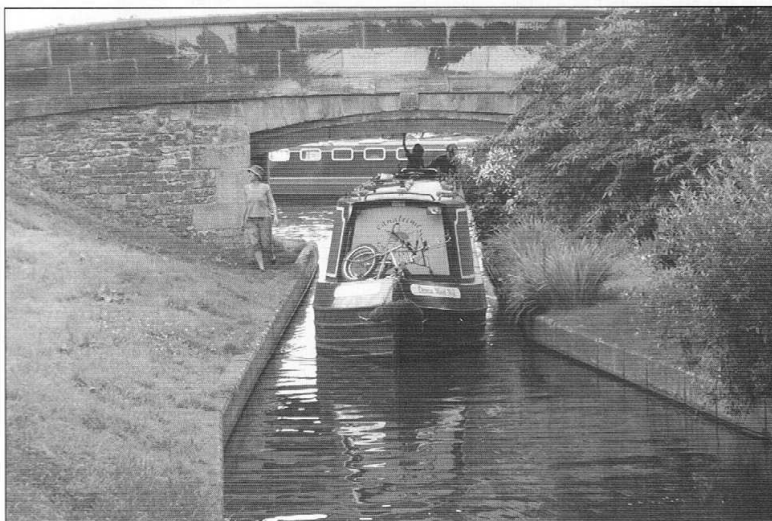
Aqueducts

The wording on the plaque includes

' Home to 3 of the UK's 26 cast iron aqueducts '

The Romans built some of the first aqueducts – masonry troughs on arches, to carry water supplies to Rome, followed by other examples in the provinces of the empire. The survivors are fine examples, visually and technically, of Roman civil engineering. Much later in the 18th. century in the era of the Industrial Revolution in Britain, when the canals became the main transport artery for industrial raw materials and finished goods, the problem of how to cross valleys and rivers etc. came to the fore and water carrying aqueducts were again built, but this time for canal transport instead of domestic water supply.

Along with cotton textiles cast iron was the iconic product of the Industrial Revolution. The Victorians became infatuated with it and cast a huge range of products, appropriate and inappropriate, from vital machinery to church pews, domestic dust gatherers etc. Engineers were intensely interested in its possibilities and



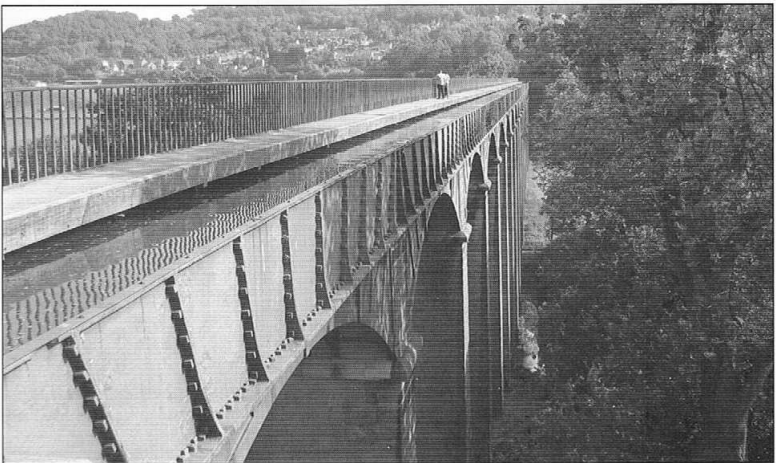
Early iron bridge at Trevor Basin

Photo: Crown Copyright RCAHMW

the possibility of using cast iron to fabricate canal aqueducts instead of masonry was mooted – particular advantages were the ability to create higher sides and structural weight saving. Although narrowly preceded by a short structure in Derby, the 1795 design of Thomas Telford, the great builder of roads, bridges, churches and canals, at Longdon on Tern on the Shrewsbury / Shropshire Union Canal is the first major example of a cast iron canal aqueduct in Britain. The aqueduct had originally been masonry but when it was washed away by floods in construction, and following the death of the original engineer Josiah Clowes, Telford was called in to suggest a solution. He seized the opportunity to propose cast iron and such was his reputation that the authorities accepted what was then still a very untried material.

There was an element of risk taking in 18th. century civil engineering and there is little doubt that Telford was using Longdon as a test bed for the much larger proposed aqueduct crossing the River Dee at Pontcysyllte on the Llangollen (formerly Ellesmere) Canal near Wrexham. This was huge project and it is to the credit of the authorities and Telford's vision that they took the courageous decision to back him and approve cast iron for Pontcysyllte.

Telford was not a wild risk taker. Before building a trial section of cast iron flanged plates bolted together, with joints of lead and Welsh flannel, was filled with water and left. After six months not a drop had leaked.



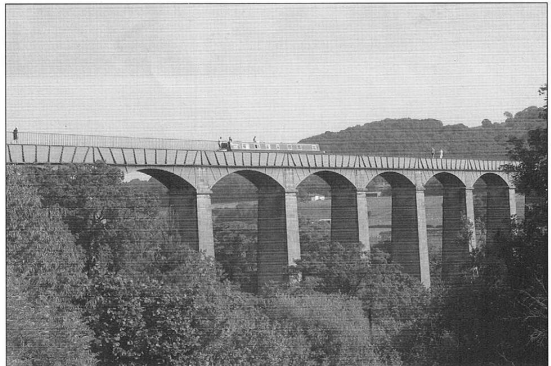
The iron trough of the Pontcysyllte Aqueduct

Photo: AIA

The Pontcysyllte Aqueduct, completed in 1805, stretching 1000ft. and 126ft. high stands to this day, the tallest cast iron aqueduct in the world, still striking even in the face of the massive projects of succeeding centuries. An eleven mile stretch of the Llangollen Canal including Pontcysyllte and the Chirk Aqueducts(Chirk spans the Ceiriog valley, it is also of cast iron but sunk into a masonry trough) represents the finest of late 18th. century creative civil engineering. In 2007, the 250th. anniversary of Telford's birth, it was justifiably declared a World Heritage site. The bid for World Heritage status was distinguished by the fact that no one on the judging body had the faintest idea how to pronounce the name of the location. Another feature was the belief that the design was partly influenced by romantic considerations of the attractive landscape qualities of the Vale of Llangollen. The cult of the Romantic and the Picturesque was at its peak. Telford was known to number among his circle of friends the Scottish bard Robbie Burns and Robert Southey and it is documented that at Chirk the design was altered in accordance with the wishes of Richard Myddleton, the owner of Chirk castle, who was concerned that the original design would spoil his Romantic view of the river valley. Telford was County Surveyor for Shropshire and is commemorated by the renaming of the town of Dawley after him.

The Three that got away

In the 1970's a luminary of the Railway and Canal Historical Society undertook an exhaustive survey of the UK's cast iron canal aqueducts and his study produced the total of 23. This number duly became the received wisdom of the canal history community. Unfortunately what he didn't know and had no way of knowing was that lurking deep within the secretive glades of the Royal Gunpowder Mills were three more – which is why the number on the Red Wheel reads 26 and not 23.

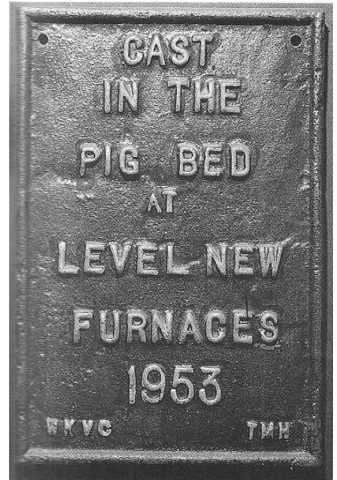


The Pontcysyllte Aqueduct crosses the Dee

Photo: AIA

Pigs

Although the term Industrial Revolution tends to conjure up images of the cotton mills in fact the 'Cradle of the Industrial Revolution' could be taken as the now improbably rural area of East Shropshire. Prior to the 18th. century this area had become an important producer of iron goods, based on the coal and iron of the East Shropshire coalfield, also the vital limestone for flux, using the River Severn as outward transport artery for products, moving to the Midlands on a circuitous route via the Staffordshire and Worcestershire Canal. One of the main dynamics of the Revolution was not a sudden new activity but rather an increasing rate of expansion of existing activity based on technological advance in iron making achieved in the area – e.g. Abraham Darby in Coalbrookdale (The Iron Bridge) smelting with coke instead of charcoal and ' Iron Mad ' John Wilkinson. A large part of Shropshire production and outward trade was what was termed pig iron, which was the basic iron re smelted by foundries to produce cast iron and forges / rolling / slitting mills to



This picture shows the casting of pig iron in a traditional pig bed at Lifford Hill Furnace in Shropshire. I have included it simply because such a sight (it was most impressive) will never be seen again. Pig iron is still made, but it is all machine cast now.

produce wrought iron. The term pig arose from a fancied resemblance of the shaped melted iron in sand beds to a row of piglets lying alongside a sleeping sow and there are one or two pub signs in rural Shropshire depicting a sow and pigs which in fact more than likely refer to a long disappeared local blast furnace.

Wappenshall Junction, The Devil and Congreve

As industrial activity increased the East Shropshire coalfield and its associated activities expanded northward and the ironmasters encountered considerable difficulty in transporting their raw materials. A solution was sought in a network of canals. To overcome the hilly terrain what were termed inclined planes were built and to accommodate these trains of tub boats were used, each holding about 3 tons. The planes worked by gravity,

sometimes assisted by steam, basically a loaded tub pulling an empty up as it moved down.

A well preserved surviving inclined plane is the Hay plane on the Shropshire Canal at Blists Hill in the Ironbridge Gorge industrial heritage complex.

There was an increasing need to move iron etc. east out to the Black Country in the West Midlands and a link between the tub boat canals and the main narrow boat canals was finally achieved when the Newport Branch of the Birmingham and Liverpool Junction Canal was built in 1835 linking it with the Shrewsbury Canal and the tub boat Trench Branch, which was the main carrier for the iron producing industrial villages and townships. The linking point at the Shrewsbury Canal / Trench Branch end of the Newport Branch was at Wappenshall and goods had to be transhipped here from tub boats to narrow boats.

Wappenshall Junction warehouse records have survived and provide a valuable record of the patterns of trade. One particular feature is that as well as the expected industrial goods the canals also carried a huge variety of what were termed 'shop goods' – domestic items for sale in shops as for the first time people could contemplate buying beyond the bare necessities for survival. The items recorded at Wappenshall include 30 different types of food, including fruit, 7 types of drink, a range of drapery, ironmongers goods, building material, garden tools, furniture including a sofa for the Rev. Bird of Preston, farm implements and seeds.

Included in the grocery goods were the new safety matches. Reflecting fire and the link of fire with the Devil these were termed Lucifers by the manufacturer – an Act governing the making, keeping and carriage of gunpowder forbade the presence of 'Lucifer matches' at loading or unloading.

However one entry refers to Congreves. This must have been a colloquialism as the clerk has deemed it necessary to add an explanation, entering in brackets friction matches. This is a revealing measure of how far into the public consciousness Congreve and his rockets with their flaring had entered.

The old industries have largely disappeared from Shropshire. One survival is Glynwed at Telford, previously Allied Ironfounders, making Aga and Rayburn stoves.

A literary note :- The poet W H Auden had a keen eye for the industrial landscape. In one poem he says 'where is Telford whose bridged canals are still a Shropshire glory.'

AGM AND SOCIAL DAY MAY 7 2010

Thank you to all members who managed to join on this occasion. Numbers were up on last year with 58 people booking of whom sadly 6 people were unable to make it on the day.

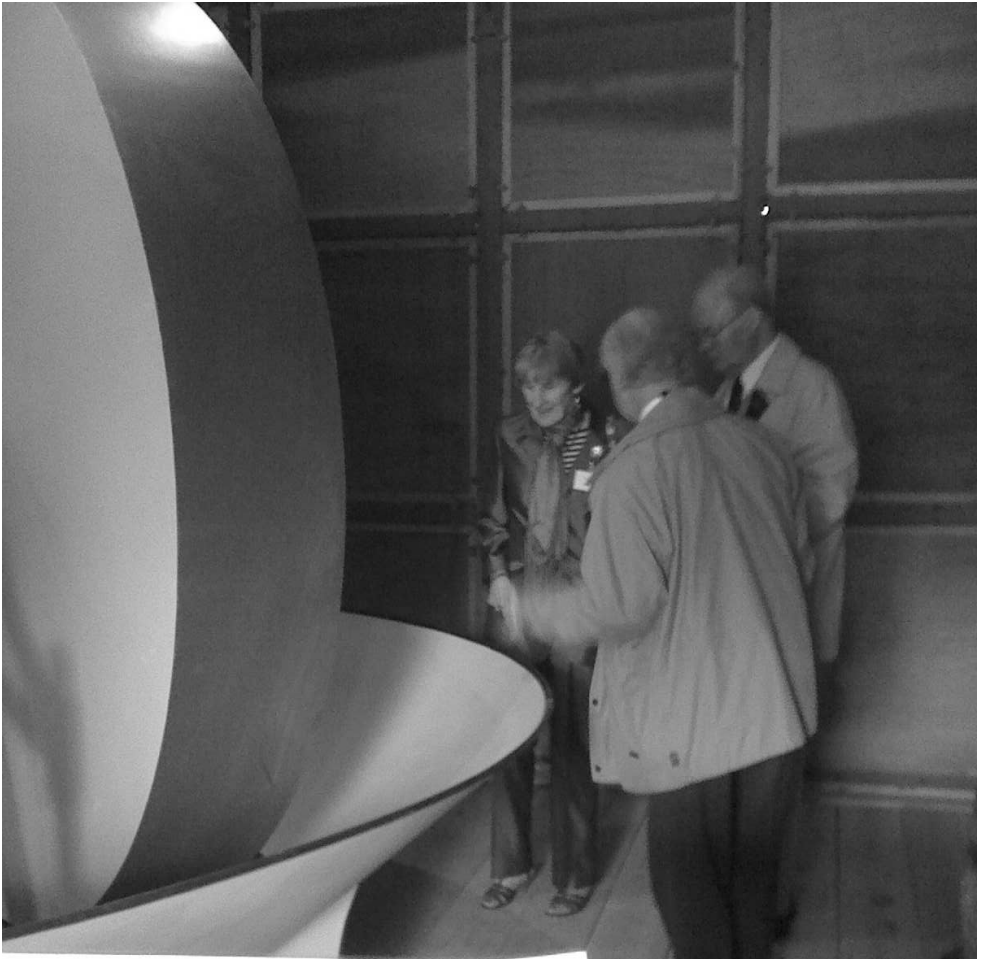
It was a rather chilly day but we were very cosy in the Saltpetre House. Our usual meeting place, the Cafe, was still in the throes of refurbishment and therefore unavailable this year.

A number of people forgot to return their name badges on leaving and I would ask anyone who is coming to the Mills, please bring back your badge.

We hope you enjoyed the Social Day and hope it will be even better next year.

DAPHNE CLEMENTS





Group C Gunpowder Mills

This full size replica mill is similar to the one working in this bay c 1890. The mill incorporated about 50 pounds of gunpowder every 4 hours.

This mill was designed and constructed by Dr. Alan S. ... using reference material from the Royal Gunpowder Mills ... with assistance from other members of ...

Saturday April 17th was a bright sunny day as Dave Sims drove us to Westcott for their annual get-together in their social club.

The Westcott Reunion

We didn't expect to see too many familiar faces, but we had only just parked the car when Ivor Quinton arrived and we soon recalled that we had first met on a smoke trial at Kirkcudbright in the year dot.

Once inside we soon got chatting to Ewart White, Ed Andrews, Gordon Williams and others whose names had temporarily escaped our memories. Some of the ex-Waltham escapees were there, including Keith Ledbury, who has logged a record number of 17 house moves. Ian and Sheila Tunstall told us that they have given up golf (Anno Domini) and by May 2010 Ian will have clocked up 21 years of retirement !

John Harlow, Mark and Liz Perman have all promised to come to the Rocket Weekend on July 10th and 11th. The Permans were accompanied by their two labradors who 'hoovered up' any food that ended up on the floor.

To help funds, there was a raffle which made some £90. Not many choices were left when Dave drew a winning ticket and he chose an ornamental candle (as all the booze had long gone).

Next year is the 65th anniversary of the start of Westcott and the April reunion will be a sit-down meal by popular demand. Let's hope we can muster a bigger number from Waltham for that celebration.

B. C. Howard



Westcott reunion April 2010

Mathematical posers

Answers to last issue's posers

1. There is not really an answer to this one. Suffice it to say a half plus a third plus a ninth add up $17/18$. So you need to add one horse to make up the 18 so you can select 17.

2. The straight answer to this is that both infinities are the same size. If you can set up a one to one correspondence between the two sets of numbers then they have equal infinite numbers in each i.e. 1..1 2..4 3..9 4..16 etc. If you have series that includes all the real (decimal) numbers, you can still make a one to one correspondence and have the same size infinite series. But if you include the so-called irrational numbers, pi, e, sqrt 2 etc you get a larger infinity (denoted C). This gave rise to whole new branch of maths called transfinite numbers. There is, in fact, a whole infinity of infinities, but nobody knows whether C is the second in the series or whether there is another in between. So if you want to make a name for yourself in mathematics, just prove it one way or another.

3. The snooker ball problem. Congratulations to Peter Hart who told me an answer to this at the reunion. The answer I worked out, which is almost certainly not the only answer, is as follows:-

- Take 8 of the balls and put 4 on each side of the balance
- If they balance then the faulty ball is one of the other 4
- Take 3 of these balls and weigh them against 3 of the 8 good balls. If these balance, then the last ball is faulty and you weigh it against 1 good ball to find out if it is lighter or heavier. If the 3 did not balance then you now know whether the faulty one is lighter or heavier.
- Take 2 of these and put 1 on each side. If they do not balance then the faulty one is either the light or heavy one, as you found in the last step. If they do balance then the 3rd ball is the faulty one and you already know if it is lighter or heavier.
- Now going back to the first step. If the 8 balls do not balance, then you have 4 heavy balls, 4 light balls and 4 good balls.
- Put 2 light balls and 1 heavy ball on each side. If they balance, then take the remaining 2 heavy balls and put one on each side. The heavier of these 2 is the faulty ball. If they do not balance then the faulty ball is either on of 2 light balls from the side that goes up or the heavy ball from the side that goes down.
- Put 1 light ball on each side. If they balance then the heavy ball is faulty. If the do not balance then the ball on the side that goes up is faulty and it is lighter.

Simples ! As the meerkat says on the TV advert.

Malcolm Bergh

Obituaries

Richard Pace

27/12/1925 - 24/02/2010

Richard Pace died on the 24th February 2010 at the age of 84. Richard was one of a number of staff who were transferred from Woolwich to Waltham Abbey in the 1950's. He worked in the Infra – Red Spectroscopy laboratory for Dr. L. J. Bellamy and later for Dr. R. L. Williams. He then worked in the Materials laboratory for Dr. B. Hollingsworth and completed his service in the I. S. R. G. laboratory for Dr. Campbell.

He was a keen tennis player and his main hobby was stamp collecting, an interest he maintained right to the end. When he retired he took to the game of golf and both he and his wife Pauline were members of Theydon Bois Golf Club in Essex. They were also members of Royal Cromer Golf Club in Norfolk. They had a cottage in the nearby village of Everstrand and Pauline was captain of the ladies section of Theydon Bois Golf Club when she died in June 1990.

Richard was stricken with Parkinson's Disease, but he bore this affliction resolutely without complaint and played golf right into his late seventies.

John McDougall.

John Williams

I first met John when I started work at ERDE in August 1954. He was working in the Main Lab (L122) on gas chromatography and wet chemistry with Ossie Blay, Dilys Jones, Jean Squire and my future wife Beryl Jest. At lunch times John and I often joined others to play table tennis in the Hoppit Hall. I soon discovered that we were fellow philatelists and John had a large world wide stamp collection. He had made a special study of the stamps of Great Britain and was very knowledgeable.

He was always very friendly and ready to share his extensive knowledge with all who showed an interest and I learned a lot from him. He enjoyed cycling to work from his home in Palmers Green. I too, lived in Palmers Green but not being of an energetic nature came by bus or later in my mother's car.

John had a very outgoing personality and keen interest in young people, which led him to become a leader in the Hertfordshire scout movement, often camping at Lochearnhead in Scotland. John and Enid lived most of their married life in Broxbourne and were closely associated with their local church where they became enthusiastic and competent campanologists. They travelled widely in the UK and abroad to others' bells and improve their skills. In later life they both enjoyed playing bowls.

They had 3 children, Michael, Mary and Angela and moved from Broxbourne to their retirement home in Ross-on-Wye. John had been diagnosed with chronic leukaemia some years ago. He sadly died

15

in hospital on 15th February. The funeral took place locally on 3rd March.

Gordon Bromberger

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PLEASE NOTE: Deadline date for submissions to the next issue is 15th August 2010.

