



# Upminster u3a Newsletter

"Learn, Laugh, Live"



April 2024

We meet at  
The New Windmill Hall, Upminster, RM14 2QH  
on the 3rd Tuesday of each month.

## ***News & Notices***

London Region Events click [here](#)

## ***Useful Links***

Upminster u3a website click [here](#)

Upminster u3a Committee  
Contact details click [here](#)

For future news, articles, and feedback,  
please email  
Barbara Smith, Newsletter Editor  
[uu3abarbara489@btinternet.com](mailto:uu3abarbara489@btinternet.com)

Newsletter entries must be received by Barbara by the  
**1st of each month.** Thank you.

The Editor reserves the right to amend or omit  
content.

## ***For your Diary***



Our next meeting will be on  
Tuesday 16 April '24, doors open at 1pm

## ***Inside this Newsletter***

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## Future Guest Speakers at Monthly Meetings

16 April	<ol style="list-style-type: none"> <li>1. Andrew Baker, <b>talking about British politics.</b> Andrew was a teacher/headmaster (40 years plus) / best-selling author on contemporary British politics / published author on his time as a headmaster / highly acclaimed cruise ship lecturer.</li> <li>2. Nicola McGhee, <b>Havering Association for People with Disabilities,</b> providers of a range of services for people with disabilities and their carers to improve their quality of life and promote their independence.</li> </ol>
21 May	<ol style="list-style-type: none"> <li>1. Stephanie Disch, <b>talking about the Dog Trust.</b></li> <li>2. TBA.</li> </ol>
18 June	<ol style="list-style-type: none"> <li>1. Gary Jones, author and Enrichment speaker, Emergency Nursing. <b>How things have changed. The history and developments in Emergency Care.</b></li> <li>2. TBA.</li> </ol>
16 July	<ol style="list-style-type: none"> <li>1. Mary Smith - <b>A Schoolgirl's War.</b> Mary was a secondary school teacher in Kent.</li> <li>2. TBA.</li> </ol>

## View from the Chair

After another hectic year full of visits, talks, walks and many other diverse activities (apologies for not mentioning them all) we are approaching another year-end to the u3a calendar.

We are a vibrant u3a group which exists because of the solid work of the group leaders and everyone who gives of their time to help the smooth running of our community.



As you all will have received a letter concerning the various jobs which make a u3a 'tick', I hope you will seriously consider what help you can offer to your u3a to allow it to run smoothly, and not rely on the few. We are all in this group for each other and, therefore, if you can spare any time in any capacity it will be gratefully received. Thank you to those who have already replied.

As the warmer and lighter days are now with us I hope you all are reaping the benefits.

*Susan Mayes*



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## ***Membership Information***

In March, despite being so close to our year end, we welcomed another two new members – Barry and Sylvia Farleigh.

Unfortunately, in March we were informed of the death of another member, so the total number of current paid-up members at the end of our membership year was 636.

198 members attended our March meeting where coincidentally\*\* our speaker discussed the DNA evidence proving that the remains found in Leicester were those of Richard III.

Membership renewals have been coming in thick and fast since we announced the new renewal fee and by the end of March almost 70% had already renewed. The members who have not yet renewed have until the end of May to do so before they are considered lapsed and are no longer able to attend our activities.

\*\* See Coach Trips 1, page 7.

*Pamela Freer*

## ***Notices and Information***

### **Important advice for everyone with ONE PC.**

The hard drive in one of my laptops suddenly became corrupted and the computer would not boot (start). I discovered that the main drive is encrypted and, in order to correct it, I needed a 48-digit key.

I fortunately have another working laptop, so I was able to go to my Microsoft Account to find the key for the laptop which was not working. Most of you don't have more than one PC so, while your computer is working, you should check to see if it is encrypted and, if it is, make a note of the key. If your main drive is encrypted, this would have been done by the people who built your computer, but manufacturers don't tell us what they have done. (My two Dells are both encrypted, but a friend's newer larger Dell in America is not encrypted). Microsoft, however, expect the people with encrypted drives to have a paper copy of the 48-digit key stored somewhere safe.

Here are brief instructions for discovering if your drive is encrypted and for finding and saving the key. If you don't understand any of the steps, Google them. That is what I have to do almost every time. If you still have problems, come to Practical IT with your laptop.

Continued...



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The technology for encryption is called BITLOCKER. [BitLocker overview - Windows Security | Microsoft Learn.](#)

The key for your computer will be stored in your Microsoft account under Devices.

I open my Microsoft account with my email address and a 4-digit pin code, but you might have to open yours with a passcode, or your fingerprint or with facial recognition. Once in My account I look for Devices and, then under my laptop, I click "More Details". I then see a box labelled BitLocker. This gives me access to all my keys. I assume that if you don't have any encrypted devices that is where you will be given that news.

If you find any keys, copy and paste the key information into a document or an email that you can print. If you haven't got a printer, email the keys to someone you trust who can print them for you. Store the printout somewhere safe and hope you never have to use it.

*Natalie Kehr.*

\*\*\*\*\*

## **Social – ABBA – 30 May**

1. If you were unable to get to the March monthly meeting to get your ticket, you're in luck as, at the time of writing, there are a few left. However, even these few are going, so, if you would like to join the fun, contact **Chris Slade on [chrisslade1@sky.com](mailto:chrisslade1@sky.com) or 07906 433559** before it's too late. Tickets are £12.00, and the party will be from 6.30 - 9.00 p.m.
2. **(IMPORTANT NOTICE)** There have been a number of requests to reserve a table at this event. Each of fifteen tables will have ten places, and we will be happy to reserve full or part ones. You will appreciate that, if you reserve part of a table, you will be sharing with other members, and making new friends. Contact **Chris Slade [chrisslade1@sky.com](mailto:chrisslade1@sky.com) or 07906 433559** with the names of the people with whom you will be sharing.



*Social Committee.*

## **Monthly Quiz**

Of all of April's thirty days, the one that everyone surely knows is the first, April Fools' Day. Although the day has been observed across the world for centuries, its true origins are unknown, and, effectively, unknowable.

One proposition is that the modern custom at least originated in France, when Charles IX decreed that the new year would no longer begin at Easter, but on 1 January. Those who clung to the old ways were the "April Fools". Others have suggested that the timing of the day may be related to the vernal equinox, a time when people are "fooled" by sudden changes in the weather.

Continued...



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Now for the quiz questions.....



1. Tradition has it that which birds arriving late March/early April, are said to signal the start of Spring?
2. Which event made British news headlines on the 2nd of April, 1982?
3. What came into effect in Britain on the 1 April, 1973?
4. The first British built Concorde made its maiden flight from Filton in April of which year?
5. Which computer accessory, released by Xerox in April 1981, was later taken up by Steve Jobs for Apple?
6. What now commonplace food first went on sale in a shop in Holborn on 10 April 1633?
7. His birth is most commonly celebrated on 23 April, and this is also the day on which he is believed to have died. Who was he?
8. Who, on 3 April 1721, became the first Prime Minister of Britain?
9. On 14 April in which year did the UK's first cordless phone go on sale? (A year either way).
10. In a famous April Fools' Day TV prank from 1957, the BBC broadcast a film showing Swiss farmers picking freshly-grown what?

*Chris Slade*

## **Groups Update**

### **Darts**

We are looking at the possibility of starting a Darts Group at the Cranham Community Centre, where we are arranging to have a second board installed. Before we take things forward, we need to ascertain the level of interest for such a Group, but it is likely that the room hire per session of probably two hours will be about £3.50 per person, and it will be necessary to bring your own darts.



### **Knit & Natter**



Although last month's item about restarting Pins, Needles & Hooks, Group 2, did not elicit any response, another member has offered to start up a Knit and Natter Group. The meetings will be Mondays monthly at the member's home between Hornchurch and Rainham, and parking is available. If there is sufficient interest to get the Group started, the final details will then be sorted out.

For both the above, please contact me at [chrislade1@sky.com](mailto:chrislade1@sky.com) or **07906 433559** in the first instance.

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## Coffee Morning



Though April Showers may come your way, let's hope you don't get too wet when they bring you to Roomes Cafe on Tuesday 9 April and Tuesday 23 April at 11am for coffee and a chat.



*Angela McDonald*

## Cinema Group

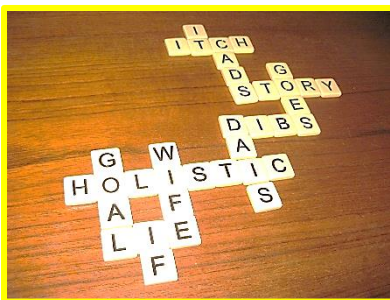
A large group of us went to see the film - Wicked Little Letters - at Vue, Romford. We made a change of venue to eat and a number of people joined me - on people's request, we went to Frankie & Benny's.

The film was so, so funny! Lovely to see such a funny film and hear laughter around us. A great array of actors - Olivia Coleman, Jessie Buckley and Anjana Vasani; how they kept their faces straight and played this true story only they know. A cheeky film with humour and a dark story to tell, the true story made to fit modern day. If anybody was expecting a Miss Marple type film, they might have been shocked. To enjoy the film, you have to look beyond the stereotypes of all people being portrayed and the language used.



*Annette Gaskin*

## Bananagrams



We welcomed 3 new members to the Banagrams group this month and they were soon playing like pros. Some of us enjoyed a light lunch, at the venue, before we started and I am pleased to report that the coffee machine is working again.

We meet from 2pm - 4pm on the 4th Friday of each month at the Windmill Pub. The next 3 dates for your diary are: 26th April, 24th May and 28th June. The game is easy to play and you don't have to be good at spelling, just good at having fun. Please contact me if you'd like to join us; everyone is welcome. **07962 213793** or [pashton290@gmail.com](mailto:pashton290@gmail.com).

*Pauline Ashton*



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## Coach Trips (2)

### 1. A Long Weekend in Leicester

March marked another milestone for our u3a: we went on our first 3-day coach trip, instead of just going out for one day. We had selected Leicester for our base, but visited Melton Mowbray on our way to Leicester on day 1 and Boughton on our way home on day 3, so the weekend was a bit 'full on'.

After a good journey from Upminster, we arrived in Melton Mowbray in time for a leisurely lunch before we split into 2 groups for a walking tour of the town. The lunch was more leisurely than planned because a very strong icy wind meant that most of the stalls in the famous market were not set up and walking outside was decidedly unpleasant. It was interesting to learn that not only was Melton Mowbray famous for its pork pies but was also famous for making Stilton cheese and for its history as a royal hunting ground. Unfortunately, the Pork Pie shop was under renovation to include a tea room and a larger shop. Some of us were still able to purchase pies. We were shown the Market cross and some of the original wall and St. Mary's Church, which is the second largest church in England, even larger than Leicester Cathedral. A royal connection was the Anne of Cleves public house, which was part of her divorce settlement from Henry VIII, although it was never proved that she visited there. After a thoroughly entertaining tour, we made our way to the warm and comfortable Holiday Inn in Leicester for our 2-night stay.



Melton pork pie shop



Richard III's original burial place

On Sunday morning we all went together to the Richard III visitor centre, where we had an excellent introductory talk focusing on the discovery of Richard's body and reinterment in Leicester cathedral. We then had an opportunity to explore the visitor centre and learn more about the background to Richard's death and subsequent burial in Greyfriars Priory. We were also able to see the site of the burial in the priory (the grave was still open and covered by a glass floor inside the museum) and his tomb in the Cathedral. In the afternoon we had time to explore Leicester at leisure, including the medieval guildhall, castle, Newarke Houses museum and old town which is now pedestrianised and is very well maintained. The icy wind had dropped so walking round was much more pleasant than the previous day.

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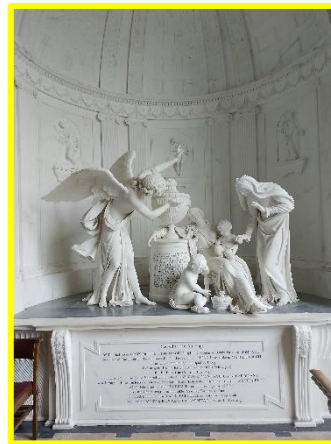
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On Monday, the disappointment of returning home was mitigated by the visit to Boughton House. Many of us had not previously been aware of the property, though most people have probably seen it as it is featured in many films, the latest of which was Napoleon. This extraordinary property is the Northamptonshire home of the Duke of Buccleuch. He is hardly ever there, as his main home is in Scotland, but he happened to be there when we visited. We had a guided tour of the house and were astounded at being shown one room after another filled with treasures such as cartoons for tapestries by Raphael, Van Dyck portraits, stunning tapestries woven in the 1630s and previously owned by Charles I, Roman statues and a set of Sevres porcelain previously owned by Louis XIV. After the tour, we were given a very good lunch before being taken in our own coach on a guided tour of some of the picturesque villages owned by the Estate. The highlight of this tour was the visit to St Edmund's Church in the village of Warkton. This was built in 1751 to accommodate four monuments to the last three generations of the Montague family. To say they were surprising would be an understatement.



Lunch in a former stable at Boughton



Warkton church memorial

*Article written by Pamela Freer, with input from Jill Coombes and Brian Makepeace.*

## 2. Coach trip to Royal Gunpowder Mills, Waltham Abbey

This amazing site has been top secret and out of bounds for many years, while used for top secret research into rockets after the manufacture of gunpowder had stopped. Now, the many buildings are deteriorating fast and money is only available to conserve the listed buildings, so the rest are in various states of decay. We were taken on a tractor trailer round the 170-acre site as well as being shown a short film on the history of the site and being told about rockets and guns by the enthusiastic volunteers who look after those aspects of the museum collection. While we were having lunch it started to rain, so only a handful of enthusiasts ventured a ride on the small railway that has been restored to run along part of the original boundary security road.



Watermill beside original gunpowder press



Some of the wildlife now on the site

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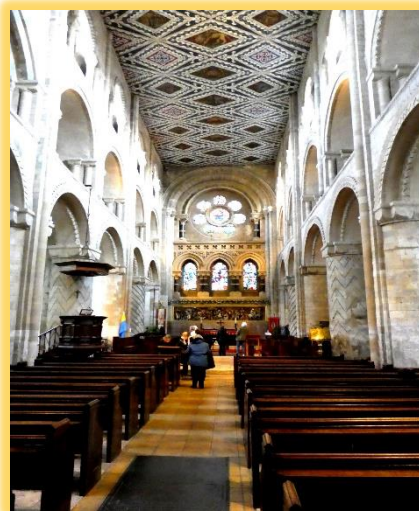
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**Our trailer**

When the visit was over, we drove the short distance to the Waltham Abbey town centre so we could look at the Abbey itself and the Abbey Gardens with their 14<sup>th</sup> century remains of the original abbey. The Abbey church is a small remnant of the original church and is now called the Church of the Holy Cross and St Lawrence. The Holy Cross in the name refers to a famous cross which was brought from Somerset to an earlier church which stood on the site and became a focus of pilgrimage throughout the Middle Ages. It is rather unprepossessing, famed mainly for its Edward Burne-Jones stained-glass windows and its painted ceiling, because most of the grander building was demolished when Waltham became the last of the English Abbeys to be dissolved by Henry VIII in 1540.



Members who ventured further in to the town said it was now very disappointing with closed shops and a run-down appearance.

*Pamela Freer*



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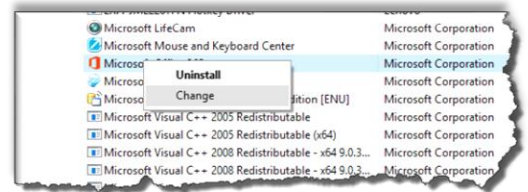
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## Practical IT

### Check before you buy



Quite a lot of the last month was spent sorting out the problems of a new member who had been sold some IT which did not do what it was expected to do. It would have been much better if she had checked by talking with to us before spending more money than was necessary.



The PC users cleared rubbish out of our machines, and also stopped unnecessary applications running every time we start our computers. People practised password protecting, both MS Word documents and documents written using the free Libre Office suite. Kindle and phone users were also helped.

The Practical IT group does not have a waiting list, The only restriction is that each week I only have space for the first 6 people who reply to that week's email invitation.

*Natalie Kehr*

## Short Walks (1)

### Pages Wood & Harold Park Wood.



Starting off from Harold Park Wood car park and passing between the tennis courts and cricket pitch, we were soon in Pages Wood. This is the largest site in Thames Chase, with over 10,000 trees.

We followed the cinder paths up, but mainly down, long slopes to the far end of Pages Wood before returning along the Woodland Nature Trail ([Woodland Sculpture Trail: Pages Wood - Simon O'Rourke \(treecarving.co.uk\)](#) back to the car park. Most of us went to The Hub in Harold Wood afterwards for refreshments.

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Pages Wood gets its name from Pages Farm, with Pages a dwelling built in 1663 (The Story of Upminster book 3, p. 24). The farm had many owners, including the Holden family (St. Laurence church rectors for over 200 years) and Emmanuel College, Cambridge until 1950. Then Mr. E. A. Padfield bought it, continuing dairy farming. At some stage it became Pages Wood, as it is now known.



*Russ Barnett*

## Short Walks (2)

We started our walk at Kensington High Street, crossing the road to the church of St Mary Abbot which has the tallest spire of any parish church in London. We entered a different world. It was so peaceful and quiet. We continued uphill past elegant houses and flats, the homes of many of the capital's wealthiest inhabitants.



Our next stop was Holland Park, which occupies the former grounds of Holland House, largely destroyed during the Blitz. One of the highlights of the park is the Kyoto Garden which opened in 1991 as a gift from the city of Kyoto. The garden is a traditional Japanese garden with a tiered waterfall and pond full of Koi carp.



Our refreshment stop was the cafe in the park, where the eagle-eyed amongst us spotted Jeremy Clarkson having a quiet cup of coffee. On leaving the park, we stopped to look at Tower House built in 1877 and now occupied by Jimmy Page of Led Zeppelin. Next door is the 47-room house owned by Robbie Williams and worth well over 60 million pounds.

We crossed the high street and walked to Edward's Square, built at the start of the 19th century. An Act of Parliament in 1819 regulated every function within the square, including the requirement that residents sweep outside their homes before 9am or face a fine of five shillings. The whole area is full of beautiful homes, atmospheric pubs and cafes.

*Helen Stewart*



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## STEMM

See figs referenced below on pages 16 and 17.

Nick Morris from Fischer Electrics FutureHeat (<https://fischerfutureheat.com/>) enlightened us on the future of **Space Heating & Hot Water Systems Zero Net Carbon Emissions** reinforcing that the company's research and development drive is to move to electrical, away from gas, as stipulated by the government to cut emissions to zero by 2050 (compared to 1990 levels). Yet, within days, I woke up to hear on the news that the Energy Secretary says that the government is committed to building new gas power stations to avert 'the genuine prospect of blackouts'. This declaration is driven by energy security considerations. Interesting!

Nick took us back to basics: what are the main causes of climate change? Besides greenhouse gas emissions, he explained the influence of solar activity and the natural cycles in the earth's climate over the past 800 000 years. The drivers for change (away from a dependency on gas) are legislation (2008 Climate Change Act) and government targets. After 2025, all new builds will have alternatives to gas boilers, with a ban on new gas (replacement) boilers after 2035 (it might move to 2040). **Fig 1** evidences the usage of gas in the UK.

What energy source alternatives are available? Here I quote only three sources: nuclear energy generation is planned to treble by 2050 to 24GW; offshore wind increasing from a current 11GW to 50GW by 2030; solar capacity is planned to increase from 14GW to 70GW by 2030. In 2020 we were reliant on Russia for a third of our diesel requirements, 10% of the crude oil and 5% LNG.

The STEMM group wanted to learn how the alternative space and water heating systems operate, their efficacy and **how** they work. The first hurdle about home-generated solar generation is the storage of the energy. A solar inverter is the component in a *solar panel* system, which changes the direct current (DC) electricity captured by the *solar panels*, into alternating current (AC). What happens to excess energy? It can be stored or potentially sold back to the National Grid. Generating electricity at home seems to present a potential quagmire of restrictive paperwork, depending on the generating capacity of the system installed.

The Fischer Electric's 'headline' system, Aquafficient Hot Water, comprises 'super compact heat batteries' that release the stored heat on demand via Phase Change Material (PCM). (**Fig 2**) The batteries work with solar, wind and microgrid electricity, storing 4 to 10x more energy than conventional materials. Fischer estimates

that these batteries are built for 40 000 cycles or approx. 50 years. Their ErP rating is A+. This is all encouraging news as many people are concerned that longevity and efficacy of batteries can present a barrier. (**Fig 3**)

Fischer FutureHeat also produce space heating heat source pumps. **Figs 4 and 5** provide a synoptic overview on why one might invest and how they work, much clearer than I could put into words.

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Fitting air source heat pumps is another future-friendly and compliant approach. (Fig 6) Their coefficient of performance (CoP) averages 2.5: when air temperature is minus 10°C CoP is 2.16, 3.15 at 7°C and 4.71 at 30°C. The government will give homeowners a grant of £7500 for a house that has a valid Energy Performance Certificate (EPC) with no outstanding recommendations for loft or cavity wall insulation. In mid-March 2024 the requirements about insulation changed with the hope that uptake will enable the government to meet its target of 600 000 systems by the end of this parliament.

One could opt for electric boilers (heat only or combi) or plug-in Novarads made in Germany and Spain.

The future of making decisions about heating in our homes needs considered, thorough, informed, information-gathering, starting now.

Our thanks to Nick and Fischer Electrics.

*Lyn Haynes*

## POETRY APPRECIATION

We met shortly before Easter and discussed the works of Philip Larkin, in particular *The Whitsun Weddings* and *Solar*. Although Larkin turned down the office of Britain's Poet Laureate following the death of John Betjeman in 1984 - it ended up with Ted Hughes - Larkin had already inherited Betjeman's cultural place in Britain and was one of the country's most popular poets. It is said his cynicism was softened only by his scepticism, which only rarely admitted any expression of new possibility, as in his late poem *The Trees*. His subject matter was varied, and we explored and discussed *Solar*, referring to *Sunny Prestatyn* and *This be the Verse*. Walter de la Mare's *Silver* and *The Listeners* were also discussed. *Silver* evoked wonderful visions of the countryside and nature whilst *The Listeners* contained a heavy spiritual content : again a poet using diverse subjects.

Both meets sparked much chat not only with Larkin and de la Mare, but with the Guest poems as listed below.

We meet again in May, when springtime should have graced us!

The Guest Poems were : *The Snake* by D H Lawrence (Group One); and Two short poems by Bertolt Brecht, from the *Buckow Elegies* (1953) (Group Two)

*Michelle Blythe*



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## Modern London Group

On Thursday 9th May. the Group will be visiting **The Francis Crick Institute.**

Occupying a whole block behind the British Library, this building houses over 1500 scientists working in the biological fields. When it opened, I attended a talk by the architects, so this is the building I know most about. It is designed to maximise the interactions between scientists working in different fields. It is surrounded on 2 sides by houses, and the architects have also ensured that The Crick benefits the local community.

Everyone is welcome to join us. If you would like to do so, please email [natalie@kehr.co.uk](mailto:natalie@kehr.co.uk)/07759 734428.

*Natalie Kehr*

## Places of Interest Group: Visit to Household Cavalry and Guards Museums



In early March, we ventured to Horse Guards Parade to watch the Changing of the Guard before visiting the Household Cavalry and Guards Museums. We were blessed with early Spring sunshine after a run of cold rainy days, so it was no hardship to stand overlooking the trees of St James' Park watching the horses.

I had been expecting a quick 5-minute guard change, but we were treated to a full ceremony involving 17 horses, flags and a bugler. This was, we were told, because the King was in residence at Buckingham Palace (which he hardly ever is). The 'Old Guard' assembled and were then joined on the opposite side of the parade ground by the 'New Guard'. The leaders of each platoon then stepped forward to confer. In historic times this 'conference' would be so the outgoing guard could report on any incidents that the incoming guard needed to be aware of, but now this is done by text message, so who knows what they were actually talking about.

Both museums are rather small so we had to split into two sub-groups, one group starting at each museum then swapping over. The timings were quite tight, and the longer ceremony threw them out, but the museum staff were very understanding. Unfortunately, some people felt they had not had enough time at the Household Cavalry Museum and I hardly had time to look round the Guards Museum before I had to go and find the second group in the Guards Chapel.

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The Household Cavalry Museum had an excellent audio guide, which really brought the exhibits to life and we could also peer into the stables to see what was happening with the horses when they were 'off duty'. In comparison, I thought the Guards Museum was rather dull. My father was a Coldstream Guard and I had been looking forward to learning more about his life in service, but there was very little. Apparently the archives are all elsewhere.

After the visit quite a lot of us went to the café overlooking the lake in the park for a light lunch before making our way back home. The south facing flower beds in the park were looking very colourful already.

*Pamela Freer*

## Quiz Answers

1. Cuckoos.
2. Argentina invaded the Falkland Islands.
3. VAT.
4. 1969.
5. The mouse.
6. Bananas
7. Shakespeare, 1564 and 1616.
8. Robert Walpole.  
1983. It retailed for the equivalent of about £1,305 in today's money, and could operate up to a distance of 600 feet from its base.
10. Spaghetti.

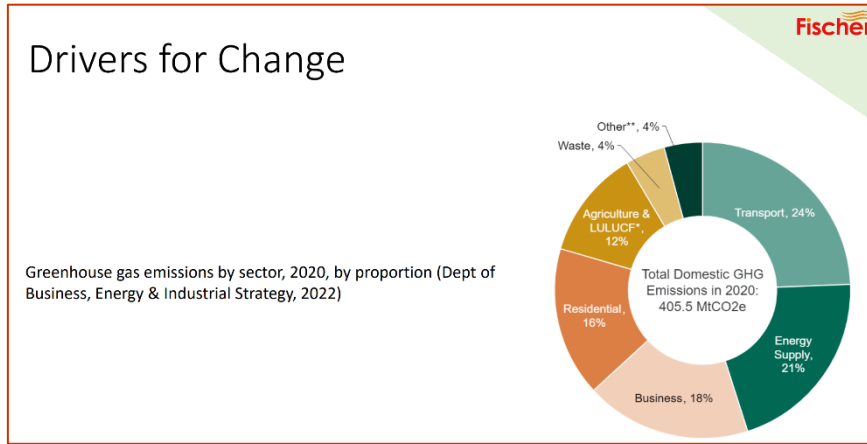
*Chris Slade*





## STEMM figures (see pages 12 & 13)

Fig 1



### Aquafficient – How it Works

Fig 2

- Space saving – up to 4 x smaller the hot water cylinder it replaces.
- Hot water for free – stores surplus energy from Solar PV that would otherwise lose back to the grid
- Low heat lost from only 0.48 kWh a day.
- Fast & Easy to install
- No mandatory annual maintenance.
- 5-year warranty.

MyEddie      Tempering Valve

### Aquafficient Features & Benefits

Fig 3



- Contains the **only** PCM in the world to achieve GRADE A certification from ZAE Bayern RAL PCM, making it the most efficient PCM in the world.
- 5-year warranty.
- Life span of 40,000 cycles, or approximately 50 years.
- Half the height of a standard water cylinder, on average.
- Manufactured with vacuum insulation panels for superior heat retention.
- Fit & Forget, Zero maintenance required in respect of the unit.
- No water storage – no risk of legionella.
- Daily heat loss from as low as 0.48Wh, compared to cylinders and other alternatives losing 2.5kWh – 3.5kWh per day.
- Natural, salt based PCM – no toxic components. The sodium acetate in the PCM is also used in salt and vinegar potato chips.
- Stackable & modular – 2+ units can be combined for larger outputs.
- Compatible with Solar PV systems and as Heat Interchange Unit via Heat Pump
- Aquafficient 3 & 6 only require 13 Amp Plug, Aquafficient 9 & 12 require fused spur.





Fig 4


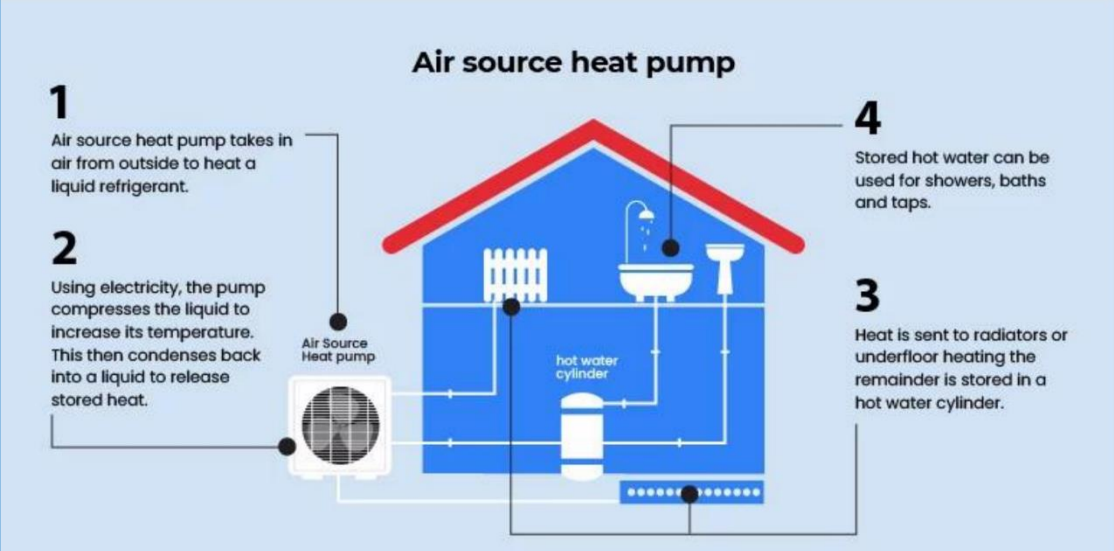
### Why a heat pump and not a boiler?

- Electric Boiler 1 kW of energy in, 1 kW of energy out.
- Air Source Heat Pump 1 kW of energy in, 3.5 kW of energy out.
- Air Source Heat Pump provides heating 24/7/365, we only require heating for 180 to 200 days of the year.
- Most householders switch their heat only boilers off for the summer.

Fig 5

### How Air Source Heat Pumps Work

**1** Air source heat pump takes in air from outside to heat a liquid refrigerant.

**2** Using electricity, the pump compresses the liquid to increase its temperature. This then condenses back into a liquid to release stored heat.

**3** Heat is sent to radiators or underfloor heating the remainder is stored in a hot water cylinder.

**4** Stored hot water can be used for showers, baths and taps.

Fig 6

### Air Source Heat Pump – Retro-Fit

#### Heat Pumps

Radiators that are matched to a heat pump need to be large enough to put out enough heat at the temperatures of up to about 40-55°C at which heat pumps are most efficient.

#### Radiators

Existing Radiators need to be checked that they are correct size and will provide the required ambient temperature, they may be oversized, but if undersized will require replacing.

#### Pipes

Clients may also need to increase the size of their existing wet radiators and/or pipes – something the customer may not want to do. 22mm or 28mm pipes are ok, Microbore – NO!

