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Remembering and Understanding our Engineering History: What to see whilst Travelling

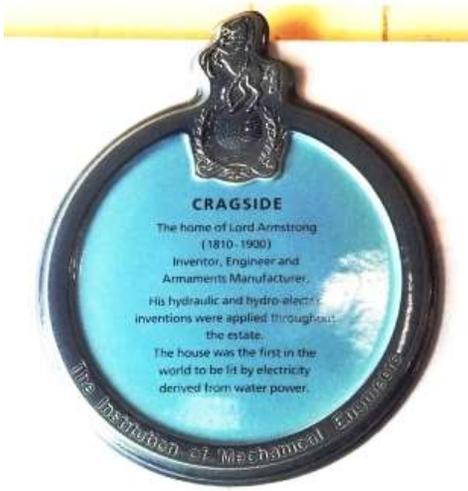
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The IEEE History Milestone plaques are well known, and often IEEE members (and others) like to visit their locations, and may have the opportunity to then also see what remains of the invention or innovation which they recognise and/or to gain a better understanding of the context of the achievement which they document.

With the transfer of the Global History Network (GHN) website data into the Engineering and Technology History Wiki (ETHW), the Historic Landmarks of the American Society of Mechanical Engineers (ASME) and the American Society of Civil Engineers (ASCE) have been brought within the same framework and so information about their locations and details has become easily available.

However, there are still many historical plaque and marker schemes which are outside this framework, initiated and controlled by other organisations, and a purpose of this paper is to give some examples of ones which may be found in the United Kingdom.

The Institution of Mechanical Engineers (IMechE) has a scheme of Engineering Heritage Awards (EHA). Their Heritage Committee review and decide on the validity of each application. A total of about 100 awards have been made. This was previously known as the Engineering Heritage Hallmark Scheme (EHHS), the first being awarded in 1984. Two example plaques are shown in Figs. 1 and 2.

	
<p>Fig. 1. Cragside: first house in the world to be lit by hydroelectricity generation (in Northumberland, North Eastern England)</p>	<p>Fig. 2. The Royal Arsenal at Woolwich, London. Many years of innovation in armaments from 1671 onwards.</p>

There is an excellent IMechE booklet which describes all their Heritage Awards (up to 2012), with good photos for each one [1]. All except five are within the United Kingdom

The Royal Aeronautical Society (RAeS) also has historical award plaques, their first one in 2008. Fig. 3 shows one of these.

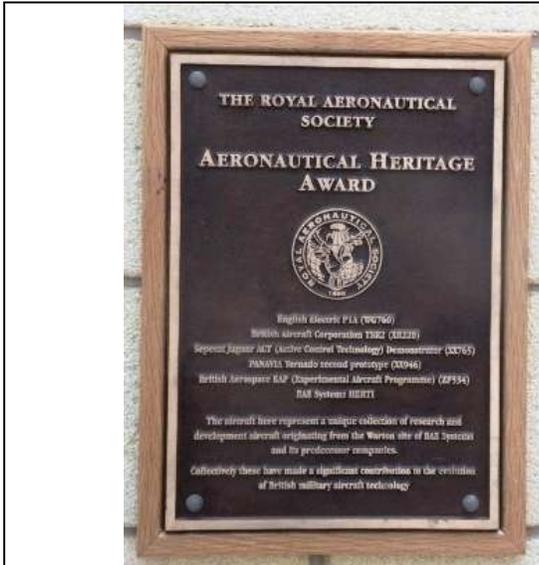


Fig. 3 Plaque at entrance to RAF Museum at Cosford.



Fig. 4 Blue Plaque at Alexandra Palace, North London



Fig. 5 Plaque about to be erected in 2013 on a house in Highbury, London



Fig. 6 One of a number of plaques on an external wall of King's College London, Strand campus

Visitors to London, England are likely to be aware of the Blue Plaque scheme, which places these on buildings associated with notable people and events. These cover all suitable subjects of which some lie within the field of interest of IEEE and IET. Fig. 4 shows the one at Alexandra Palace which recognises the start of regular public TV broadcasting.

The Blue Plaques were, successively, the responsibility of the Royal Society of Arts (RSA), the London County Council (LCC), then the Greater London Council (GLC), and are now administered by English Heritage.

Because of the widespread recognition of the Blue Plaque scheme, various other organisations have chosen to use similar round plaques to recognise 'local people and events' of historical significance. Fig. 5 shows a plaque commemorating the house where Sir Francis Ronalds lived, a rather-forgotten pioneer of electrical telegraphy, and Fig. 6 shows one of several plaques to well-known and famous professors of King's College London, which are mounted on an outside wall of a building in the Strand campus.

The IEEE Plaque for James Clerk Maxwell's discovery of the equations named after him is on an internal wall of the same building.

With so many different organisations involved, it is inevitable that the policies and procedures for the nomination and approval of plaques vary widely, and the motivations of those involved may differ. For example, a member of the Highbury View Tenants Association told me that they liked to have a plaque on the wall of their house because it increased the financial value of their property. A stated policy of the RAeS scheme is to not duplicate achievements for which some other organisation has provided a plaque.



Fig. 7 On wall of IET Savoy Place building

Fig. 7 shows a different style of recognition, in the form of a carved stone inscription, on the wall of the Savoy Place building in London now occupied by the Institution of Engineering and Technology (IET) formerly called the Institution of Electrical Engineers (IEE). Fig. 8 is yet another style, though in Siberia and not in the United Kingdom : a steam engine restored and labelled, as a war memorial to the contribution of Novosibirsk to victory in World War Two (known in Russia as Великая Отчественная война (*Velikaya Otéchestvennaya voyná*), the great patriotic war).



Fig. 8 Restored steam engine in Novosibirsk
Recognition of Novosibirsk's contribution to victory in the 1939-1945 great patriotic war

Yet another style of historic recognition is the memorial to pioneering radar work done during World War Two at Worth Matravers, Dorset shown in Figs. 9 and 10.

Figs. 11 and 12 show a blue plaque which records the location at a railway bridge across Grove Road, Mile End, East London, of the first 'flying bomb' of World War Two to land in London.

It might be questioned whether this memorial to the V1 (“Vegetungswaffe Eins”) should be included in a description of engineering heritage achievements. It is estimated that 3531 fell on England, killing 6184 people and injuring 17,981, of whom most were civilians. Yet it cannot be denied that the flying bomb incorporated many innovative engineering concepts [2].



Fig. 9 Radar memorial at Worth Matravers

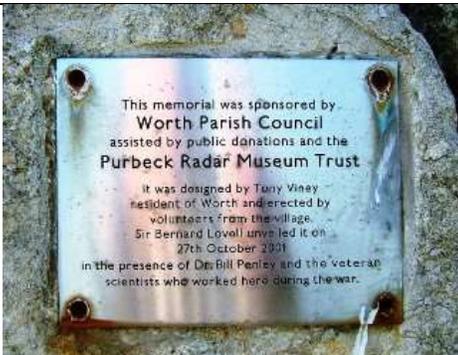


Fig. 10 Explanatory Plaque



Fig. 11 Railway Bridge in Grove Road, London



Fig. 12 Blue Plaque of English Heritage

Combinations of plaques in the same location can sometimes be significant. For example, the IEEE History Milestone plaque recently unveiled to commemorate the 1931 stereo sound recording and reproduction inventions of Alan Dower Blumlein [3] takes its place alongside a plaque which commemorates Sir Edward Elgar, at the entrance to Abbey Road Studios (Figs. 13 and 14). A particular significance of this pairing is that Blumlein made a stereo recording of the London Philharmonic Orchestra in 1934, while it was conducted by Sir Edward Elgar.



Fig. 13 Entrance to Abbey Road Studios



Fig. 14 Edward Elgar Plaque at Abbey Road Studios

The IEEE History Milestone Plaque scheme is for achievements which took place 25 or more years ago, and is intended as recognition of the achievement or invention rather than the person(s) responsible. In a few cases, there is a duplicate plaque in another location (for example the plaque for Maxwell's Equations is in King's College London and there is a duplicate at his Scottish home at Glenlair).



Fig 15. Sir Thomas Beecham's home near Abbey Road Studios



Fig. 16 Milestone for Holography at Imperial College

It is intended that the IEEE plaques should always be in locations where they can be visited by interested members of the public (in some cases, only by prior arrangement), and as far as possible should be located at the place where the achievement or invention took place.

A map indicating the locations of all IEEE plaques is provided at the ETHW website [4], which also includes the 'Landmarks' of the ASME and ASCE (only a few of which are outside USA).



Fig. 17 Road name sign reminding passers-by of the Royal Arsenal, and its many technology innovations



Fig. 18 Plaque mounted on restored steam locomotive "Bitterne", LNER No. 4464

There are many other plaques to be found around London, and some of the ones with particular relevance to the subject scope of IEEE and IET are shown in Figs. 19 to 24. Fig. 25 illustrates the substantial delay between the use of gas for street lighting and the change to use of electricity.

The Savoy Theatre plaque is of particular interest because of its proximity to the location which was to become the 'home' of the Institution of Electrical Engineers (now renamed as the Institution of Engineering and Technology). It also indicates that the claims made on such plaques can be the subject of disagreement. The claim that the Savoy Theatre is the first public building in the world to be lit by electricity is disputed. It is the first in England, but inclusion of the word 'throughout' is crucial. The caption does not unambiguously

state that the electrical lighting was from 1881, only that the building was opened in 1881, although it did have the electrical lighting (by Swan incandescent lamps) from its opening, but some gas lamps were used for the stage lighting until December in that year.

The “Lit & Phil Library” in Westgate Road, Newcastle upon Tyne, is claimed to have the first public room lit by electric light (20 October 1880), but since the lighting did not cover the entire building, the Savoy Theatre claim still appears to stand. In June 1881, Swan lamps were used in Lamb’s Temperance Hotel in Dundee, and Queen Street Station in Glasgow, preceding the Savoy Hotel use [7]. Arc Lamps had been used prior to all this, for example at the Langham Hotel in Portland Place London in 1879 [8]

The plaque for the first bank cash machine itself has an interesting history. The first plaque was made of metal, erected in 1992 to mark the 25th anniversary of the machine installation in Enfield on 7th June 1967. It is said that at the opening ceremony, reminiscent of the 18th Century Maelzel chess-playing machine, a man was hidden inside the machine, ready to push out some bank notes in the case that the automatic dispenser failed! The original plaque was stolen in February 2010, and assumed to have been melted down for its scrap value. The new replacement (Fig. 20) was installed in August 2010 [5] and is made of a resin, and so not at risk of removal by metal-thieves. This illustrates a new requirement for such plaques: installing them in a location where they are not easily stolen or destroyed, while still making them available to be seen by those members of the public with a serious interest in them. It may be that the original, stolen, plaque was rectangular in shape, because as shown in the photo, there are indications of fixing holes and other remains of some previous object attached to the wall at this point.

		
<p>Fig. 19 First public building lit by electricity (using Swan’s tungsten filament lamps)</p>	<p>Fig. 20 First bank cash machine, Church Street, Enfield</p>	<p>Fig. 21 Barclays Bank branch in Enfield</p>
		
<p>Fig. 22 Home of Ada, Countess of Lovelace, No. 12 St. James Square, London</p>	<p>Fig. 23 At No.22 Frith Street, London (on wall of Coffee shop)</p>	<p>Fig. 24 Bar-Italia Coffee shop at No.22 Frith Street)</p>



Fig. 25 First street lighting by coal gas, in Pall Mall, London



Fig. 26 Restored Mallard locomotive, York, subject of the Fig. 18 plaque

Ada, Countess of Lovelace, born as Augusta Ada Byron, is regarded as the world's first computer programmer, because of her assistance with Charles Babbage's Analytical Engine and her contributions to the ideas of an algorithm. Her exceptional achievements and extraordinary skills in the framework of early 19th century Upper-class Society are an interesting area of study in themselves, and hint at what she might have achieved in a modern context of greater freedom and better medical treatment. The blue plaque is on the house which was her home when she married Lord King.

The plaque for Jeremy Bentham (Fig. 27) does not mark an engineering invention, of course. However, although he probably took no part in it, he is considered responsible for the foundation of University College London in 1826, the first university establishment in England which did not have a theology faculty. This laid the foundation for the later formation of the University of London, which became possible only after the founding of King's College London in 1929, specifically giving priority to the training of personnel for the Church of England, and the two together could collectively be given a Royal Charter in 1836 without the risk of Royalty being seen to support what has been nicknamed "that Godless Institution". Undoubtedly the later development of the federal University of London, including Imperial College and many others, can be said to have had a huge impact on scientific and engineering education and research in UK.

The remains of the body of Jeremy Bentham may be seen by visitors to University College, although his head is not on display and is kept in the College Vaults.



Fig. 27 Plaque for Jeremy Bentham near St. James Park Underground Station, London

Fig. 28 shows a plaque on Marconi House, alongside the BBC Bush House complex at the Aldwych, Strand, London. Bush House used to include the premises for the BBC World Service. It was designed as a trade centre in the 1920s and was used by the BBC until 2012.

Marconi House has been internally completely reconstructed, the externally visible part being just a shell. It started out as a restaurant and was acquired by the Marconi Wireless and Telegraph Co. Ltd. in 1912 as its main office.



Fig. 28 Plaque near entrance to Marconi House



Fig. 29 The present entrance to Marconi House

Broadcasts of the “London Broadcasting Station” 2LO began from 11th May 1922. The building was used from 14th November 1922 by the newly formed British Broadcasting Company, which took over the 2LO designation and used the building as their studio. Soon after they moved their studios to Savoy Place as indicated in Fig. 7. After a recent extensive renovation of Savoy Hill House (where the BBC offices and studios had been), there is no longer anything to see there remaining from that time. 2LO was the second broadcasting station to regularly broadcast in Britain, the first being 2MT in Chelmsford. Later, the English Electric Company acquired and used Marconi House for a while.

The 2LO transmitter has been restored and can currently be seen on display in the Science Museum at South Kensington. Fig. 30 shows it while it was in storage before it was put on display.



Fig. 30 Restored 2LO Transmitter

Concluding remarks:

An interest in Historical matters is not always widespread amongst engineers and particularly not among young and early-career engineers. However, engineering is often said to be about 'inventing the future' and clearly not knowing enough about past methods and achievements can be a severe handicap in trying to successfully invent and develop new ideas. The various history award plaques are therefore of importance in setting achievements in a proper context and reminding people of important developments and so their promotion needs to be strongly recommended. Fortunately many engineering organisations have schemes to provide the needed recognition of such historical matters. Even with no involvement of engineering organisations, there are many 'reminders' to be seen of our historical heritage, of course (Figs. 17 and 18).

Acknowledgements:

This is an extended version of a report in the IEEE History Newsletter [6].

With the exception of Fig. 13, all photos were taken by the author. Fig. 13 was taken by Alan Blumlein, grandson of Alan Dower Blumlein, the subject of the Milestone, and is used with his agreement.

References:

- [1] IMechE Engineering Heritage Awards, 3rd Edition, 2012 *available from* http://www.imeche.org/docs/default-source/engineering-heritage-awards/IMechE_Heritage_Brochure_3rd_Edition.pdf?sfvrsn=12
- [2] Dieter Hölksen 'V-missiles of the Third Reich, the V1 and V2', Monogram Aviation Publications, 1994, Mass. USA (ISBN 10: 0914 144421 and ISBN 13: 9780914144427).
- [3] A.C. Davies, 'Stereo Sound Recording and Reproduction - Remembering the History', IEEE Signal Processing Magazine, Sept 2015, Vol 32, no 5, pp 14-16 (DOI: [10.1109/MSP.2015.2440191](https://doi.org/10.1109/MSP.2015.2440191))
- [4] <http://ethw.org/Map>
- [5] Enfield Independent, 'Cash machine plaque unveiled in Enfield Town', 12 August 2010
- [6] A.C. Davies, 'Our Technical History: things to see while travelling', IEEE History Newsletter, November 2015, pp 8-9
- [7] P. Hickman-Robertson, letter to Editor, The Daily Telegraph, 16 January 2016, page 23
- [8] John Hart 'The National CV of Britain', The National CV Group, Tadley, Hampshire, 2012