

BARNES WALLIS FOUNDATION

CHARITY NUMBER 1157723



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Cover Photo: *Sub Lt Barnes Wallis RNVR & HMNA9* by Gary Saunt.

Editorial

Welcome to the Barnes Wallis Foundation Newsletter for 2016/17.

The past year has been an exciting one in the development of the Barnes Wallis Foundation. As well as consolidating the programme of activities we had already planned, we have been working with The Dock Museum, Barrow-in-Furness to stage an exhibition there this autumn. We have just learnt that our joint application for a Heritage Lottery Fund award has been successful; further details are given later in this newsletter.

Our annual public meeting at Howden School will be held on Thursday 29th June 2017 starting at 7pm. We are delighted that former trustee, Professor Richard Morris will give a talk entitled '**Wallis at Home**'. In addition, Sir Barnes' daughter, Dr Mary Stopes-Roe will give a short talk on '**Mathematics with Love**' related to the correspondence between her parents during their courtship.

Chris Henderson
Editor & Trustee

Articles for Publication

Contributions of articles and photographs for the Newsletter will be most welcome. Ideally they should be sent by email in Word format for articles and a common image format such as JPEG (.jpg) for photographs. However, typed articles and original photographs can be accepted and will be scanned and returned to the sender as soon as possible. Please email articles to *info@barneswallisfoundation.org*.

The views expressed by contributors of articles do not necessarily reflect the views of the Barnes Wallis Foundation.

Barnes Wallis Foundation Chairman's Report - 2015/16

This has been a fruitful year of consolidation for the Trustees that has seen the continuation of a number of initiatives put in place during 2015.

The Foundation welcomes three new trustees. Rowland White and Paul Beaver were appointed in November 2015. Both have a strong commitment and proven track record in encouraging and stimulating an interest in aviation and engineering to a new generation. Dr Iain Murray, a published authority on the engineering achievements of Sir Barnes, was appointed in March 2016. Their involvement in business, aviation and publishing ventures together with entrepreneurial skills will strengthen the Foundation's connection in these areas. The addition of these trustees further increases opportunities for broadening the Foundation's reach and extension into new areas.

The tradition of an Annual Public Meeting, held in Howden, was established by the former BWMT and continued with a talk given this June by John Anderson, Chairman of the Nevil Shute Norway Foundation. This explored the connections between Sir Barnes and the author, who worked with Sir Barnes on the design of the airship R-100 at Howden. In addition trustees have continued to give presentations on Sir Barnes' life and work throughout the country to various groups varying from branches of the Royal Aeronautical Society, local Rotary groups and squadrons of the Air Training Corps.



The **Spirit of Goole** on display at the Howden Open Evening in June 2016

The Foundation is pleased to report that during this period the "Spirit of Goole" project to build an aircraft, undertaken by students of Goole High School, came to fruition and initial flights made during the summer of 2016. The Foundation

has been instrumental in funding a propeller and other essential components enabling the successful culmination of this project. It is now planned to use the aircraft in a continuation programme to enable the students to qualify at minimum cost for a Private Pilot's Licence (PPL). This project has strong affinity with the Foundation's objects, being aviation and engineering based, through education and learning. It is inspirational and character building, and provides opportunities that otherwise would not exist, or would be unaffordable, to young people. Already a number of students have benefited from their involvement with this project and are now undertaking engineering courses in further education.

The Foundation's other major project involves Barnes Wallis Academy, at Coningsby, Lincolnshire, one of 36 Academies in the East Midlands and North-East England run by the David Ross Education Trust (DRET). The Foundation is contributing funding to a project to send three students a year (for the period 2016-2018) for a week at an educational aerospace / engineering "Space Camp" in Huntsville, Alabama, USA. This year a Foundation Trustee joined the selection panel, comprising teaching staff and other sponsors' representatives, to select a participating student from an Academy-wide competitive process.



The Space Camp selection process gave the students an opportunity to fly the Typhoon simulator at RAF Coningsby

The Foundation continues to maintain its existing contact with Howden School and judges its annual Technology Projects. This year Trustees participated in the awarding of prizes at Beverley Grammar School Speech Day and are currently seeking to develop this relationship.

The Foundation's archival material is now in store at the Brooklands Museum. This year a volunteer team, under the supervision and guidance of Brooklands'

staff, has started the long and detailed task of cataloguing and conserving this collection. A number of items from this collection have already been used by Brooklands to supplement their new displays in the recently refurbished Stratosphere Chamber (designed by Sir Barnes as a bespoke research facility) and it is hoped that the Museum will be able to utilise further items as work on the collection progresses. Re-design of the Brooklands' exhibition space as part of the Museum's extensive development programme will also take this potential into account.

Several significant items have been added to the collection. A desk used by Sir Barnes during his time at Brooklands has been accepted as a donation. This has now been moved to Surrey and in due course will be placed on display in Sir Barnes' former office. Two models of Sir Barnes Wallis' Swallow aerodynes, made by a member of Sir Barnes' design team, have also been donated and will be used in future exhibitions.

Work continues in partnership with the Dock Museum, Barrow-in-Furness towards an exhibition commemorating the life and work of Sir Barnes scheduled for September 2017. Sir Barnes conducted his early airship work in Barrow during the First World War and the exhibition is intended to re-establish his connection with the town. The exhibition may subsequently be loaned to other venues.

The Trustees are now working to raise awareness of the Foundation and a revised website format has been completed. The Foundation is currently in the process of appointing a new web manager to take over this work from the development team and seek opportunities to exploit its full potential*. In addition Trustees are exploring new networking opportunities with organisations such as the Royal Aeronautical Society, which have complementary objectives and with whom the Trust may work on individual projects. These discussions are already bearing fruit.

The Foundation continues to seek to maximise its resources and generate cost-effective returns on monies allocated by contributing to larger, joint projects meeting the Foundation's education and engineering objectives. To this end the Trustees are actively networking to identify potential projects. Consideration is also being given to ways in which the relationships established with the three projects mentioned above may be continued.

Dr Robert Owen

1 November 2016

* Dr Iain Murray has now taken over the management of the Barnes Wallis Foundation website.



LOTTERY FUNDED

The Dock Museum and the Barnes Wallis Foundation win Heritage Lottery Fund support

The Dock Museum and the Barnes Wallis Foundation have received £16,000 from the Heritage Lottery Fund (HLF) for an exciting project, creating an exhibition “One Man, Many Ideas” to go on display at the Dock Museum from September 9th to the 22nd November this year. The project focuses on the huge range of work of the British engineering genius Sir Barnes Wallis: from the start of his working life at Barrow working on airships, hypersonic passenger aircraft to the legendary bouncing bomb. The exhibition will look at Barnes’s work, his life and how his work is still relevant today.

The grant will pay for creation of the exhibition, an exciting education programme, family fun weekend, film night and much more. We’re especially looking forward to the arrival of a flight simulator in the exhibition so that visitors can get a feel for flying an airship and also a Wellington bomber aircraft (used extensively during the Second World War and with important elements also designed by Barnes Wallis).

The Dock Museum is in Barrow-in-Furness (Cumbria) and collects and displays objects relating to the history of the area. The Barnes Wallis Foundation is an educational charity and the two organisations are working in partnership on this exciting project, “One man, many ideas”.

Commenting on the award, Sabine Skae, the project spokesperson said: “We are thrilled to have received the support of the Heritage Lottery Fund and are proud to be showcasing the engineering genius of Barnes Wallis here in Barrow. He started his career in Barrow on airships and the tradition of engineering innovation continues today with enormously complex submarines built just across the road from the museum at Devonshire Dock Hall (BAe Systems).”

About The Dock Museum



The Dock Museum takes its name from the impressive nineteenth century dry dock that it's built into. The beautiful sandstone walls and scale of the dock are impressive features in their own right.

We have a large and varied museum looking at the history of Furness from the end of the Ice Age right up to the present day. We look at the fascinating story of the impact of the Viking, the remarkable growth of the town in the Victorian period and recreate a claustrophobic Anderson shelter in our Second World War gallery. Shipbuilding has been a major industry in Barrow for more than one hundred years and our superb ship models and displays look at this innovative and changing area. The Dock Museum is funded by Barrow Borough Council.

See www.dockmuseum.org.uk

Sabine Skae
Collections and Exhibitions Manager
The Dock Museum

Barnes Wallis at Barrow

Many things in this world happen by chance and Barnes Wallis' introduction to the world of aviation is just one such example. His working career started in shipbuilding as he worked at Samuel White's on the Isle of Wight where he finished his apprenticeship with that company.

In 1908, the Admiralty proposed that the Royal Navy should build a large rigid airship to test its usefulness. They had experience on non-rigid airships and now wanted to explore the potential of rigid – which could be built much larger. The task fell to Vickers at Barrow in Furness. A junior draughtsman at Vickers at the time, H B Pratt, had doubts about the design of this airship HMNAI (His Majesty's Naval Airship 1), which was nicknamed "Mayfly". Following the first launch of the HMNAI and its return to the construction shed to add an extra lift section, Pratt did some calculations, completely unofficially, and thought that the airship was too heavy and would break her back at the first squall of wind. He was ignored by the Vickers management. On 22 September 1911, she was ready to be launched again, but on being pulled out of her shed at Barrow, she was caught by a squall and broke her back. She never flew. Pratt had been proved correct.

The following year many people could see that war was likely in the near future, and Vickers was keen to ensure it would be able to respond to any resulting increase in demand for its products, so asked many of its staff to make a five-year commitment to the company. Pratt did not want to do this, and no doubt was a bit sore at having his forecast of doom ignored, so he left Vickers and moved to Samuel Whites & Co, who were shipbuilders, on the Isle of Wight. There he found himself working alongside Barnes Wallis. The two became great friends and shared many pastimes.

By 1913 war seemed almost inevitable and so the Admiralty renewed their interest in acquiring rigid airships. The basic ability and usefulness of such machines had been proven by the Zeppelin Company in Germany. Despite the setbacks of the "Mayfly" there was no other company in this country that had any experience of designing and building rigid airships, so the task fell to Vickers again. But by this time its design team had become dispersed. Somebody remembered that bright young draughtsman who had foreseen the shortcomings of "Mayfly". So Pratt was invited to move back to Vickers as Chief Draughtsman – Airships. As Pratt left Samuel Whites, Barnes Wallis asked him to bear him in mind if he was looking for staff. And so, on 1 September 1913 Barnes Wallis started working for Vickers as Chief Assistant to Pratt. Initially they worked in London.



Hartley Blyth Pratt

Many years later Barnes Wallis wrote of this time *“I have never worked with such joy and enthusiasm in my whole life either before or since. We knocked off at 8 or 9pm Mon to Sat and at 4pm. on Sunday after a 9am. start every day. Twice a week we used to get some relaxation by going up in the late evening to Stempel’s Fencing Academy”*.

The first rigid airship that was a result of Barnes Wallis and Pratt working together was airship No.9. This was basically a copy of a Zeppelin design. Progress was not easy as the Admiralty blew hot and cold, so there were lengthy delays and airship No.9 did not make its first flight until 16 November 1916. But Barnes Wallis was very keen on airships and had taken the first steps on his long association with Vickers and with aviation.

Barnes Wallis and Pratt continued to work on airships at Barrow and were responsible for designing a slightly

bigger version of No.9; this was the 23 class. Later there was the R80 which was led by Wallis. After the R80, the government again lost interest in airships and the design team was disbanded. Wallis left Vickers with an annual retainer of £1500, but Pratt remained at Barrow working in other areas. Pratt wrote a book ‘Commercial Airships’ in 1920 in which he acknowledges the help of Barnes Wallis. Later Pratt wanted to get back into aviation and was eventually successful in this and was appointed General Manager of Vickers Supermarine in their Eastleigh, Southampton, works. Overwhelmed by his responsibilities, he took his own life in 1940.

The later achievements of Barnes Wallis are well known. But it all started with H B Pratt working alongside him at Samuel White’s shipyard. Chance is a strange thing. Serendipity.

Peter Rix

Ken Deacon: Trustee of the Barnes Wallis Trust and Foundation.

Ken Deacon retired as a trustee of Barnes Wallis Foundation in June last year. He joined Howden Civic Society in 1997 and became their nominee to serve on the Barnes Wallis Memorial Trust in 2003. When the Trust became a Charitable Incorporated Organisation in July 2014, Ken was appointed a trustee of the Foundation in his own right.

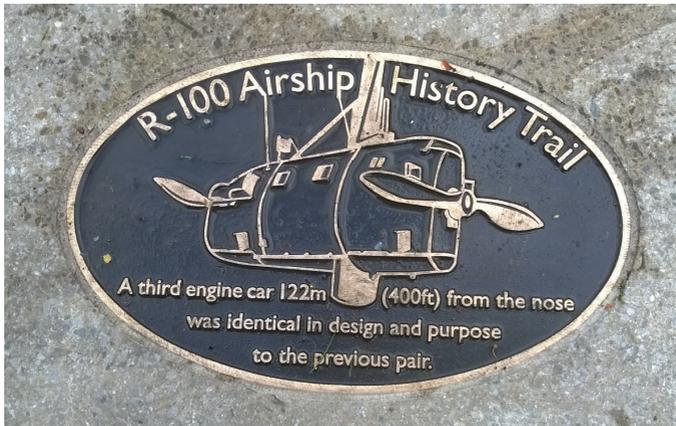


Ken Deacon (right) being presented with a limited edition print by trustees Dr Mary Stopes-Roe and Gerry Carroll to mark his retirement as a trustee

Ken moved to Howden in 1996, after a lifetime spent in the aviation industry. He was in the RAF for 22 years, after which he spent six years with an airline before working at British Aerospace in Bristol, where he worked with the design team of the A330/340 aircraft. His last job was that of a senior safety analyst at British Aerospace, Brough, in the East Riding of Yorkshire.

Ken and his wife Anne joined the local History Class where he learned of the part airships had played in Howden's history. His interest was such that he researched the subject, interviewing people who had actually worked on the Barnes Wallis designed R100. This research led to two books, one on the R100 and the other on the 1921 disaster when the R38/ZR2 airship crashed into the River Humber near Hull's Victoria Pier.

Ken's love of airships has resulted in his making a major contribution to the Barnes Wallis Memorial Trust. He managed to have Airship Interpretation Boards placed in the Golf Club at Spaldington, near Howden where the R100 was built. In 2009 Ken led the project at Howden School where the pupils formed the outline of the R100 in the school playing field. The aerial photographs were amazing. On a similar theme, Ken promoted the idea of an airship trail in Howden in order that the public could see and understand the size of the mighty R100. The Civic Society was successful in obtaining a grant of some £32,000 and the work began. A line of 24 bronze plaques is set in the paving stones in the Market place starting at the top end and finishing in the Ashes Playing Field. The plaques mark the length of the R100 and depict her in flight with five plaques showing close-ups of the important details of the airship.



Such is Ken's knowledge that he has often appeared on BBC Look North and Radio Humberside becoming the unofficial airship historian for the East Riding of Yorkshire.

Ken's considerable contribution to the Barnes Wallis Foundation, formerly the Barnes Wallis Memorial Trust, has been ongoing; over the years he has given talks to local groups and some further afield; he has supported other trustees in the setting up and stewarding of exhibitions in Beverley and Goole and his support at the Howden Annual Public Meetings has been invaluable.

In wishing Ken well for the future, the BWF Trustees say a huge thank you to him for helping to promote the works of Sir Barnes Wallis and keeping alive his memory to be an inspiration to future generations.

Helen Varey
November 2016

The R100 flight to Canada as reported in the New York Times

The R100 left Cardington for Montreal on Tuesday 29th July 1930. The front page of the New York Times for that same date had an article headed “*R100 Starts Transatlantic Flight; Due to Reach Montreal Thursday*”. The sub heading is “*Crowd Cheers Huge Airship Leaving Cardington with 41 Aboard – Enough Fuel and Food Taken for Five Days - Radio Will Keep in Touch With Both Sides.*” They didn’t go in for punchy headlines!

The departure was at 10.45pm New York time, on the day before – Monday 28th July. The front-page article starts; “*The world’s greatest and fastest airship, the R100, is speeding to Canada on its maiden flight across the Atlantic.*” It continues in a similar euphoric vein. Describing the departure, the paper says, “*Shortly before 3 o’clock hundreds of motorists parked alongside the airdrome heard a splutter from the airship’s hull and, looking upward where the huge bulk swung motionless with its twinkling riding lights, saw one engine after another belch fire as they warmed up*” and later, “*As the R100 cast loose from its mooring mast a cold, strong wind was blowing. Everything went smoothly however and the ship soared rapidly and headed off for Liverpool and the Irish Sea. A crowd that had eagerly watched the preparations for hours gave loud cheers to the departing giant. The start was business-like and uneventful. The engines were set running soon after 3 a.m. and roared loudly as the starting time approached. It was announced that the airship would cross the English Coast at Liverpool and then head northward towards the Hebridean Islands, off the west coast of Scotland, in order to avoid a depression north of Ireland.*”

As well as featuring in this centre front page article the story is continued inside with a number of articles. They include a comparison of the R100 and the Graf Zeppelin. The R100 had larger gas capacity, was fatter but shorter than the Graf Zeppelin. There is an error in this comparison in that the length of the R100 is given as 709ft. This is roughly correct as built but by the time of the flight to Canada the tail had been shortened and the overall length was about 695ft. One of the articles summarises the history and experience of the officers on board. Designated as Captain was Squadron Leader R S Booth who had been awarded a Bar to his Air Force Cross for bringing the R33 back safely after that airship had broken away from the mooring mast at Pulham. Navigating Officer was Squadron Leader E L Johnston who was the navigator on the first Imperial Airways flight to India. Captain G F Meager, who had commanded airships during the Great War, was First Officer. Second Officer was Flying Officer M H Steff who is described as an expert in kite balloons. Supernumerary Officer was Squadron Leader A H Wann who had been in command of the airship



R38 when that airship broke up and crashed into the River Humber. Mr M A Giblett of the airship division of the meteorological office was meteorological officer. All the crew members are also listed as are some people who are described as passengers. But these were all there as duty called rather than as passengers for pleasure. They were Wing Commander R B Colmore, Director of Airship Development; Major G H Scott, Assistant Director of Airship Development; Sir Dennistoun Burney and Mr N S Norway – the manufacturers of the airship – The Airship Guarantee Company; Mr F M McWade, Air Ministry inspector and

Lieutenant Commander R St J Prentice described as being from the aircraft carrier *Courage* but actually his ship was *HMS Courageous*.

One of the articles goes into some detail about the preparations that had been made for this flight compared with the trans-Atlantic flights of the R34 in 1919. It details the radio communications that would be possible and the use of radio to get up to date meteorological information and to report progress. The paper reported that bad weather was forecast for some of the flight.

They went well prepared. The flight was expected to take less than three days but food for five days was carried. This was three days' ordinary rations, reserve rations for one day and emergency rations for a further day. It was reported that there were 30 tons of gasoline on board.

Mindful of the fact that when the R34 made its crossing in 1919 a stowaway managed to sneak on board the *New York Times* explains some of the security measures taken to prevent a repeat of this.

Interestingly in these more detailed articles on page 3 of the paper the place where the R100 was built is described as "Hamden" on a couple of occasions. Perhaps it is a little surprising that the paper gave so much space to reporting this event. Clearly it was recognised as being a significant event in the development of aviation.

Peter Rix

An Inspirational Genius

For boys growing up during the Second World War there was an over-abundance of War heroes to admire. Cobham had its very own local hero. He was the inventor and designer, Sir Barnes Wallis. He worked at Vickers in Weybridge (later British Aircraft Corporation) and was Chief of Aeronautical Research and Development from 1945 to 1971. He joined Vickers in 1913 building the R100 Airship which flew to Canada and back in 1930. Also during the war two of his designs the Wellington Bomber, and the iconic 'Dambuster' Bouncing bomb made him a figure of legend and film.

For one Cobham boy, Barnes Wallis provided a lifetime of inspiration. Tony Lawton, my father, realised his boyhood ambition to work for the inventor genius. His parents were in service at Leigh Hill Farm and his father served in the RAF so knowledge of aircraft was already present. Tony attended Cedar Road School in the 1930s, displaying a flair for electronics, making and selling radio sets for pocket money. In 1941 aged 13, he went to Kingston Technical College (now University) and 2 years later joined Vickers on an engineering apprenticeship. Each day he cycled from Cobham to the old A3 Portsmouth Road, which ran past the White Lion Hotel on to Brooklands, where Vickers had placed their aircraft works ahead of the war, eating into the motor racing track.

In 1948 aged 21, Tony joined Barnes Wallis' Research Team as an electronics engineer. He was assigned specialist work designing radio controlled systems for full scale swing wing aircraft under Barnes Wallis's tutelage.

At this time, the old clubhouse for Brooklands racetrack served as the office for Wallis and his team, affording plenty of light for the design technicians with their desks, pens, and side rules as they explored the problems of supersonic aircraft and worked out designs influencing a new generation of planes — such as the Harrier Jump Jet and the TSR2. Lunch times brought with it a customary half-pint of beer for all the designers from the clubhouse bar.

Tony worked on several projects including the Wild Goose, a military aircraft, and the Swallow, an advanced passenger plane. Barnes Wallis brought the design team down to Predannack in Cornwall, regarded by my father as 'the best place to fly swing wing radio controlled aircraft of a very unconventional design without damaging property or people.' A 6ft supersonic model of the Swallow attained speeds of up to Mach 2.5 showing that Wallis's ideas of tailless aircraft were a reality. However, the project was cancelled in 1957, killing off his vision



Tony Lawton at Predannack (1954) courtesy of Ita Lawton

of an airliner flying non-stop from Europe to Australia in a return journey time of 10 hours.

Remnants of those days are still visible at Brooklands today. There is a shell of a TSR2 close to the aircraft hangar opposite the old clubhouse and the Stratosphere chamber built in 1945 to test aircraft parts at high altitude is housed in the shed next door.

Barnes Wallis was knighted in 1968 and my father wrote to congratulate him, describing himself as one of Wallis's 'privileged group of 'children''. Several more exchanges of correspondence between them follow in the 1970s. Barnes Wallis was made a Fellow of the Royal Aeronautical Society in 1945, an honour my father attained in 1971. Sir Barnes Wallis died on the 30th October 1979. My father went on to head design teams at Fairey Aviation and EMI electronics and became President of the British Interplanetary Society, following on from his interest in Astronomy. He sadly died in 1995.

In his memoirs, my father says that 'Sir Barnes Wallis was always full of encouragement. He always believed that virtually anything within the limits of physical laws could be done'. From this I always took my father's assertions that anything is possible if you put your mind to it.

Ita Lawton

(article provided by Dr Mary Stopes-Roe)

Barnes Wallis Foundation

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