GENIUS BROTHER OF NEWPORT GROCER

A little about Robert Hooke 1635 – 1703

Return to Contents

It is only possible in this short essay to give the briefest indication of the significance and the immense contribution made to the science of his day Robert Hooke. Richard Waller, the man who shortly after Hooke's death edited some of his works that were published posthumously by he Royal Society in 1705, wrote:

"His power of forecasting discovery was extraordinary, and he was the greatest mechanic of his age"

Today many historians of science would still want to agree but perhaps wishing to change '*mechanic*' to '*scientist*' - a word Robert Hooke would not have recognised - and '*of his age*' to '*of all time*'. He was born 18th July 1635 at Freshwater, then the most westerly parish of the Isle of Wight, where his father, John, was the minister. Robert Hooke's childhood and early adult life were through the very disruptive, disturbing and troublesome times around the Civil War, the execution of Charles I, the Cromwellian period and the Restoration.

In 1648 the Revd John Hooke, very much a Royalist, died leaving money to his son Robert enabling him to make his way to London. There it is thought likely that he may have been apprenticed to the painter Peter Lely. But fortunately Richard Busby, the Master of Westminster School, was keen to help bright scholars of royalist sympathisers and so Robert Hooke was able to receive an extremely good formal education allowing him to proceed to Christchurch, Oxford.

How often Robert Hooke returned to the Island is not actually known but in his posthumously published work on fossils, with its controversial theories far ahead of their time, are many illustrations of those which are common to the Island. He would have been able to pick them up on or near the beach at Freshwater Gate which he would have known well as a child. Certainly throughout his life, diaries and other documents confirm he was in regular correspondence with, and supporting financially, his brother and family then living in Newport.

With plagues raging through London together with the then turbulent times had forced many of the best 'royalist' scientific brains in the country to gather in and around the university and city of Oxford. After meeting the young Robert Hooke, Dr Wilkins and Sir

William Petty, who were working at Durdans the seat of the Earl of Berkeley near Epsom, employed him as a philosophical assistant. The Honourable Robert Boyle was also greatly impressed by Robert Hooke's skills in designing experiments and constructing apparatus. He became his assistant in 1660 and was responsible for building the pumps, not an easy task in those days, which were necessary for Boyle to test experimentally the inverse volume-pressure relationship known by his name in Britain still today. The experience working for Boyle and the influential contacts he had cultivated resulted some two years later in the young Robert Hooke being in the prime position to be appointed the first Curator of Experiments at the Royal Society of London. It was the only paid post and established to serve the needs of its noble and gentlemen members.

Perhaps the best known pieces of Robert Hooke's work are his law for springs stating that the extension is proportional to the tension on the spring and his publication in *Micrographia* published in 1665 of drawings of a flea and other items seen though his new microscope. The range and scope of discoveries and inventions are nearly endless and far to long to include in this essay. Listed are just a few:

Among those which early engaged his attention were:

- the nature of the air.. in respiration and combustion
- specific weights
- the laws of falling bodies
- the improvement of land-carriages and diving bells
- methods of telegraphy
- relationship of barometrical readings to changes in weather
- vibrations of a pendulum two hundred feet long attached to the steeple of Old St Paul's
- inventing a machine for cutting teeth of watch-wheels
- fixing the thermometrical zero at freezing point of water
- in July 1664 he ascertained the number of vibrations corresponding to musical notes.

The latter he explained on 8 Aug 1666 to Pepys who wrote in his diary:

"*Thought his discourse in general mighty fine but his pretension to tell how many strokes a fly makes with her wings a little too much refined*"

- the 'fantastical colours' of thin plates, with a
- first notice of the 'black spot' in soap-bubbles,
- a theory of light, as very short transverse vibrative motion.
- the real nature of combustion was pointed out in detail, eleven years before Mayow's discovery

Robert Hooke also read a discourse on gravity which contained the idea of measuring its force by the swinging of a pendulum showed experimentally that the centre of gravity of the earth and moon described an ellipse round the sun. The Royal Society was presented with the first screw-divided quadrant, an anemometer and a 'weather-clock'.

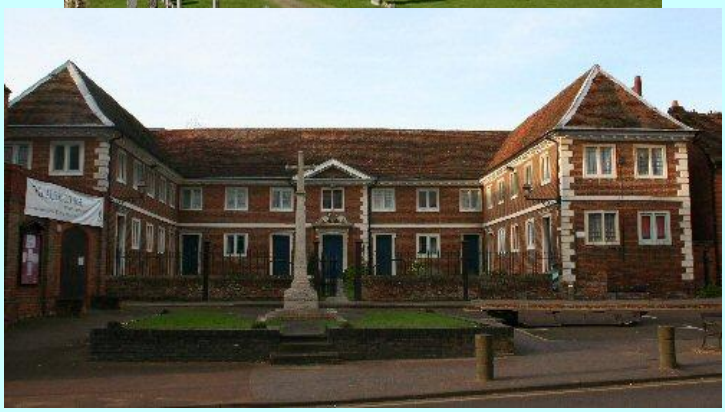
By far not the least of his interests was in the escape mechanism of watches and clock and the use of the circular pendulum. This like so many of his projects led him into litigation. Had he published in his lifetime his discourse on earthquake there would have been even more – it was published posthumously.

In the same year as his book *Micrographia* was published, 1665, he was appointed Professor of Geometry at Gresham's College in Bishopsgate where he lived and worked for the rest of his life.

The Great Fire of London presented Robert Hooke with a great opportunity to increase his income for he became Surveyor to the city while Sir Christopher Wren became the King's Surveyor. He worked on designing the Monument, using the centre of the column as a static telescope, the Royal Greenwich Observatory and it is thought that Wren used his

mathematical skill in the dome of St Paul's Cathedral. It is difficult to find a complete list of building he designed for much of his work has got intertwined with that of Wren. It is however certain that he did design among other buildings the new Bethlehem Hospital, Montaque House, the College of Physicians. How many Wren churches have a Robert Hooke input just is not now know. Other buildings include perhaps part of Burlington House in Piccadilly, Ramsbury Manor Wilts, Bishop Seth Ward Almshouses in Bunbtingford Herts, the Dr Bushy's :Library at Westminster School, the Haberdasker Ask Hospital. Some of his churches outside London include the one at Lowther in Cumberland, another at Willen Bucks. Ragley Hall at Alcester Warwick is also a Hooke design. He is thought to be the instigator of the sash windows.

Below to the left is the Church of St Michael at Lowther in Buckinghamshire and to the right the front of the Bishop Seth Ward Almshouses built at Buntingford in Hertfordshire.



To the left is a view of the west end of the church of St Mary Magdalene which is in the village of Willen near to the new town of Milton Keynes in Buckinghamshire. It was paid for by Dr Richard Busby, the master of Westminster School. Robert Hooke kept in touch with his old headmaster throughout his life. It is not in its original condition for in the 19th century an apse was added to the nave, and the cupola was removed from the tower. Hooke's original intention was for a simple nave and a decorative tower and to some extent this has been reversed.

Also seen below is a photograph of Ragley Hall, Alcester, Warwick. The portico was added later to the Hooke front. This provides an excellent example of Robert Hooke's work as an architect. A job title he would not have understood as he would not the words scientist

or physicist – still to be introduced – for he saw himself as a natural philosopher.

On the left is a view of the Monument to the Great Fire of London of 1666. Richard Waller his earliest biographer described its designer in later life as being:

"In person but despicable, being crooked and low in stature, and as he grew older more and more deformed. He was always very pale and lean, and latterly nothing bur skin and bone, with a meagre aspect, his eyes grey and full, with a sharp ingenious look whilst younger. He wore his own hair of a dark brown colour, very long, and hanging neglected over his face uncut and lank, which about three years before his death he cut off, and wore a periwig. He went stooping and very fast, having but a light body to carry, and a great deal of spirits and activity, especially in his youth. He was of an active, restless, indefatigable genius, even almost to the last, and always slept little to his death, oftenest continuing his studies all night, and taking a short nap in the day. His temper was melancholy, mistrustful, and jealous, which more increased upon him with his years. He led a collegiate, almost monastic life, latterly rendered sordid by penury, and was in his way religious, though his mind was wrapped by congenital infirmities of body and temper."

This was the man who could design buildings as great as those illustrated above, be master of all the then known sciences, have ideas that have led us into the present day. He was *"a restless genius*" not only of his own time but of history. Sadly often forgotten and neglected by the Island on which he grew up.

Sadly also there is no surviving portrait. Newton, it was rumoured by some burnt the one held by the Royal Society and that in a stained class window in the church where he was buried has also been lost.

Today there are a number of modern biographers who seem to be are very anti-Newton and pro-Hooke or visa versa. What the true relationship was between them we will never know. Certainly there was great friction and misunderstandings over what today is called '*intellectual copyright*'. Both were without doubt extremely strong minded and had grown up through a difficult religious and social period which discouraged trust. Each had quite a modest background and upbringing. They fought to achieve and maintain prominence in the new London scientific society. Both were bachelors and had a niece who acted as housekeeper, not unusual for their day, which gave rise to gossip. The author, educated at the same school as Isaac Newton, the King's School at Grantham, and now living where Robert Hooke spent his younger years, keeps out of these controversies for he respects equally the genius of both. Perhaps this is added to by being perhaps the only person who whilst an Anglican Reader has taken services and preached in both Colsterworth and Freshwater parish churches – where each was respectively baptised!

He is described by two people. Firstly his friend John Aubrey, on Hooke in middle life:

> *'He is but of midling stature, something crooked, pale faced, and his face but little below, but his head is lardge, his eie full and popping, and not quick; a grey eie. He haz a delicate head of haire, browne, and of an excellent moist curle. He is and ever was temperate and moderate in dyet, etc.'*

Richard Waller knew the elderly Hooke, embittered by his controversies with Christiaan Huyghens and his feeling that he had been cheated by Newton:

> *'As to his person he was but despicable, being very crooked, tho' I have heard from himself, and others, that he was strait till about 16 Years of Age when he first grew awry, by frequent practicing, with a Turn-Lath . . . He was always very pale and lean, and laterly nothing but Skin and Bone, with a meagre aspect, his eyes grey and full, with a sharp ingenious Look whilst younger; his nose but thin, of a moderate height and length; his mouth meanly wise, and upper lip thin; his chin sharp, and Forehead large; his Head of a middle size. He wore his own hair of a dark Brown colour, very long and hanging neglected over his Face uncut and lank....'*

This is not a flattering description; even Aubrey's is hardly complimentary.

The Grocer

John Hooke, the elder brother of Robert, is the grocer referred to in the title. Although mayor of Newport on two occasions he was continually very short of money and frequently requested, and was usually given help, from his genius relative in London. Grace, his daughter, who for many years looked after Robert as housekeeper, seems later to have had an affair with the then Island Governor and it may well have been this that prompted the suicide of her father John in 1678. She was herself to die in 1687, after which Robert Hooke's own health deteriorated rapidly. He was to die at Gresham's College on 3rd March 1703.

Return to Contents

Bibliography and Other References