GEORGE GREEN AND HIS MILL

There is nothing very remarkable about Green's Windmill in Nottingham. It is typical of hundreds, perhaps thousands, of windmills that were once a common sight in this country. Built at the beginning of the 19th century, it was worked for over six decades producing flour for bakeries and animal feed for the many horses in the town. Then, faced with increasing competition from the larger and more efficient steam powered roller mills, it was abandoned and allowed to fall into ruin.

And yet, on 2nd December 1986 Green's Mill ground grain to flour for the first time in over 120 years. It had been restored as a memorial to George Green who, unlike his windmill, was very remarkable indeed. As well as being a hard working miller, Green was one of the greatest scientists of the 19th century. He had a passion for mathematics from a very early age. He investigated the behaviour of electricity and magnetism, light and sound, wave motion and other natural phenomena. To do so he devised a whole new way of doing mathematics which is now used by scientists and engineers the world over. Indeed Green's Theorem and Green's functions, as they are called, are now put to work in almost all branches of the physical sciences.

So, although this is a history of the windmill it is bound up with the story of George Green, the miller-mathematician.

MR GREEN, THE BAKER

The story starts at the end of the 18th century with George Green's father, a prosperous Nottingham baker. He had been apprenticed to a baker at the age of fifteen. Later, having married his master's daughter, he set up his own bakery. Nottingham at that time was a pleasant town, noted for its fine houses and gardens and wide tree-lined streets. Yet in the ensuing fifty years it was to become one of the worst industrial slums in the world. As a result Nottingham, like the rest of the country, was not without economic and political unrest which occasionally erupted into rioting.

In 1800 the Napoleonic wars prevented the import of grain. This and a poor harvest at home caused a shortage of grain. As a result the price of corn, and hence bread, went up. The people of Nottingham, unable to afford bread, rioted.

"August - Notwithstanding that the last day of this month was a Sunday, it was marked as the commencement of a serious riot. A great increase in the price of provisions, more especially of bread, had roused the vindictive spirit of the poorer classes to an almost ungovernable pitch. They began late in the evening, by breaking the windows of a baker in Millstone Lane, and in the morning proceeded, with an increase of numbers and renewed impetuosity, to treat others of the same trade in the same unwelcome manner. Granaries were broken into at the canal wharfs, and it was really distressing to see with what famine-impelled eagerness many a mother bore away corn in her apron to feed her offspring." (Nottingham Date Book)

The baker referred to in this account of the Corn Riots may well have been Mr Green himself. He also had a granary on the canal wharf and so he may have suffered further losses there. Certainly his bakery was attacked by the mob who broke all his windows

and he had to appeal to the Mayor for protection. Mr Green's son George, at the age of eight years, was sent to school at Mr Goodacre's Academy. Perhaps it was here that he first showed an inclination for mathematics for we know that it was his passion all his life and from an early age. However, George had to leave the school after only fourteen months of schooling to help his father in the bakery.

BUILDING THE WINDMILL

In 1807, when George was fourteen years old, his father decided to invest his money in building his own windmill. There were perhaps twenty windmills in and around Nottingham, particularly on the higher ground to the East and North of the town. Most, if not all of these, were wooden post mills, some with brick bases or 'round houses'.

Mr Green bought a plot of land in Sneinton, then a village about a mile outside of the town. High on a ridge overlooking the valley of the River Trent, it was a very suitable site for a windmill, being open to the prevailing winds.

Mr Green's mill, which still bears his name, was one of the earliest brick tower windmills in the county. It was probably the largest and most up-to-date windmill in Nottingham with many devices to help the miller carry out his work efficiently and safely. Mr Green must have spent a considerable amount of money on it for the tower was well built in local red brick with attention being paid to the construction of the cap and internal machinery.

The mill had the ogee or onion shaped cap typical of the East Midlands and Lincolnshire windmills. An eight blade fantail at the back of the cap turned the cap around on top of the tower to keep the sails facing into the wind. Two of the sails, the 'common sails', had canvas cloths which could be spread upon the wooden framework of the sails to catch the wind. The other pair were 'spring' sails with canvas shutters which were held closed by a large spring when the mill was at work.

Inside the five-storey mill there were three pairs of millstones; two French 'burr' stones for grinding wheat to fine flour and a pair of Derbyshire gritstone or 'greys' for crushing animal feed. Built onto the side of the mill was a single storey brick cottage. Here lived William Smith the mill foreman, employed by Mr Green to do the milling and maintain the mill. Around the other three sides of the cobbled millyard were granaries, stables and a hay loft.

THE FAMILY PROSPERS

In 1817 Mr Green built a fine house next to the mill and moved there with his wife Sarah and son George who was then 24 years old. (His other child Ann had married the previous year.) Mr Green still had an interest in the bakery but the mill became his main business. The family prospered and he was able to buy plots of land in Nottingham on which to build houses which he then rented out. The land around the mill, still known as Green's Gardens, was let to people from Nottingham who wanted to have small plots of land to cultivate or use as gardens.

Although we know that the mill was successful, almost nothing is known of its day to day business. One insight into the daily life of Mr Green and his son George came to light in 1995 when a bundle of dirty, screwed up papers was found behind a partition wall in Mill House, once the Green family home. They are pages from a daily account

book for the mill dating from the late 1820s. The entries in the accounts list the mill's customers and the quantities of the various sorts of flour supplied to them. One of the most frequent names amongst the customers is that of Mr Innocent. It is very likely that this is Thomas Innocent who had been apprenticed to Mr Green when he had owned a bakery in Nottingham prior to building his windmill.

One small fragment is rather unusual and points to George Green's passion in life: mathematics. Upon it, in Green's own hand, is some arithmetic - perhaps calculating quantities of grain or sums of money. On the reverse is a quotation in Latin from Pliny. Since his childhood Green had shown an outstanding natural talent for mathematics. Despite having very little formal schooling he was far in advance of his contemporaries in applying mathematics to investigations into natural phenomena such as electricity and magnetism.

In 1828 at the age of thirty five he published his first - and greatest - scientific work entitled An Essay on the Application of Mathematical Analysis to the Theories of Electricity and Magnetism. His ambition was to become a student at a university and to that end he had to study Latin and Greek. Perhaps in this fragment of a mill account book we see that Green had, as he later wrote, 'devoted almost exclusively to books the few leisure hours I have been able to snatch from the tedious and uninstructive details of common business'. Alas, the Essay failed to establish George's name in the scientific world. Few people could have understood its significance and it was, after all, published privately in a small provincial town.

However, one visitor to the mill that year who had some understanding of science was Sir Richard Phillips, a somewhat eccentric publisher, traveller and former mathematics teacher. He met Green and although he totally failed to understand his mathematical achievements he did give us the only description of his mill from that time.

"If I learnt little from Green about his ideal philosophy, I ascertained some facts relative to the economy of a wind-mill. His sails have a radius of twelve yards and they revolve twenty five times a minute, or more than a mile at the extremities. This great velocity carries round the stones , which are sixteen feet in circumference, 162 times in a minute, and they grind a load of ten sacks of wheat in two or three hours. The sails are placed at an angle in the shaft, and then in union are placed exactly in the wind's point, but the quantity of cloth is varied inversely as the force of the wind. I went through this fine mill, and really felt terrified at the centrifugal force of such heavy masses as the stones, the peripheries of which were carried round with a determined velocity of forty miles an hour. Of course, none but particular kinds of stone will bear such a momentum, and the smallest fracture or inequality occasions them to separate with destructive consequences."

One wonders if George Green is perhaps having a little fun at Sir Richard's expense with such graphic descriptions of the potentially destructive forces in the mill! Disappointed with the response to his Essay, George put aside his mathematics and turned his attentions to the family business - and his growing family. Green was by this time the father of the two children of Jane Smith, the daughter of William Smith the mill foreman. Although they never married they were to have another five children. Old Mr Green died the following year, leaving George seven houses in Nottingham, the mill and most of the property in Sneinton:

'This is the last will and testament of me George Green the elder of Sneinton in the County of Nottingham . . . I bequeath all that my brick wind corn mill with the granaries, Millers house stable outbuildings . . . all the machinery . . . belonging to the said mill And all my right and interest in the stock in trade carts horses bags and other articles and utensils used in such business along with my son And also all that my Close lying in Sneinton aforesaid called the Mill Close . . . Also all those my two other Closes . . . with the newly erected Messuage or Tenement and Outbuildings lately erected thereon and the Garden walled round Kitchen garden and Millers Garden . . . now in the occupation of myself and William Smith (my miller)'
(extract from the will of Green Snr.)

George Green was now a fairly wealthy man and he was able to let the mill and resume his mathematical studies. Yet life was not without its dangers and excitements. In 1831 during the Reform Bill riots an angry mob surged through Sneinton on their way to set fire to Nottingham Castle. As they passed they attacked the mill; George defended his property by firing his musket at the crowd whilst his seven year old daughter Jane reloaded for him!

In 1833 George let the mill and the family house and became an undergraduate of Caius College, Cambridge. He gained his degree in mathematics and later became a Fellow of his college, continuing his research and publishing more scientific papers. However, his health failed him and he returned to Nottingham where he died nearly a year later on 31st May 1841. He was buried in the churchyard of St. Stephen's, close by his windmill. He was forty seven years old.

THE MILL STILL TURNS

George Green left the property in Nottingham to Jane Smith, the mother of his children. The mill, Mill House and the land about them he divided amongst the children. The mill with the outbuildings and the foreman's cottage (then being let to a Mr Fletcher), Green left to his younger son John. Mill House, then tenanted by a Mr Wheatcroft, he left to the youngest daughter, Clara. Three years later an advertisement appeared in the Nottingham Mercury (18th October 1844)

'To be let and may be entered upon in November next. That excellent Smock windmill situate at Snenton, Near Nottingham (built by the late Mr Green) with granaries, stabling for eight horses, hay chamber, miller's house and tenement adjoining, spacious garden, large yard etc. now in the occupancy of Mr Fletcher.'

It is not known what the response was to the advertisement but by 1851 old William Smith, who had been the Green's miller, was no longer working the mill. Aged 86 years he was living in a house in Nottingham owned by his daughter Jane. The mill was still producing flour and animal feed; a painting of a view of Nottingham dated 1857 shows the mill with its sails still on. The cap turning gear is still operational for the sails are facing towards the north: when the mill finally came to rest the sails were facing west. A photograph taken around 1860 shows the mill at work whilst the 1861 census states that one William Oakland was working the mill. Oakland had previously been miller at one of the thirteen windmills on the Forest Road in Nottingham.

THE MILL ABANDONED

Yet Green's Mill was to work for only another year or so before falling into disuse. It is likely that, as with so many other windmills in the country, it was becoming uneconomic to work the mill in the face of competition from large steam powered factory mills. Following a dispute with the owners over repairs to the mill, William Oakland left Green's Mill and became miller at a post mill further up Windmill Lane. The 1871 census records that Oakland's Mill (as that mill became known) was still at work, the last windmill to do so in Nottingham. On 1st April 1881 an advertisement in the Stamford Mercury read 'Post Windmill to let, situate at Sneinton, Notts. Apply to W Oakland, Windmill Hill, Sneinton.' It is not known whether anyone took over the mill. William Oakland died in 1887 at the age of 73 and is buried in the cemetery on the Forest Road in Nottingham close to the site of the windmill he once worked there. His gravestone has a windmill carved upon it.

Another painting of a view of Nottingham, this dated 1868, shows Green's Mill without its sails. Once the mill had ceased working the sails would no longer have had the care and maintenance which had been given to them during over half a century of milling. They might become rotten and be blown off by the wind. With the foreman's cottage still occupied and the mill outbuildings tenanted this would be most dangerous. It is likely that the sails were deliberately removed. After that the story is one of further neglect and ruin. Sometime after 1900 the huge oak fantail frame fell from the back of the cap and crashed through the roof of the foreman's cottage, destroying - it is said - a grand piano. The damage was so severe that the roof was beyond repair and the end room of the cottage was demolished.

The boards covering the cap began to fall off as the nails rusted, exposing the frame beneath. The wooden gallery on the first floor level had long since rotted away. However, an empty mill is not without its uses and it seems that it was used a dovecote or pigeon loft for a while.

A REVIVAL OF FORTUNE

In 1919 Clara Green, owner of the mill and the youngest and last surviving child of George Green, died at the age of seventy nine. She died intestate and the property was acquired by the Crown. Mill House was sold to Mr Peter Bates, a retired victualler, but as it still had a tenant he built for himself Mill Bungalow further down Belvoir Hill. The mill was bought by a local solicitor, Oliver Hind. By this time Green's reputation as a mathematician was growing and some articles, of varying accuracy in regard to Green's biographical details, began to appear in the local newspapers. One concluded (in 1921) that 'It is to be hoped that some budding Nottingham mathematician will make it at least a part of his life's work to compile a worthy account of George Green's life and achievements'. Another said that a full memoir of George Green 'if worthily written would form a classic in milling literature and be a source of pride to every miller in the British Empire'. No suggestions were made regarding the fate of the mill itself.

Another visitor to the mill was not the only one (albeit with some inaccuracies of detail) to remark on how well the mill had been built:

'The timbers forming the domed roof are beautifully shaped and fitted with the greatest care, but owing to exposure, and lack of paint they were going rapidly to decay. The decayed portions have now been replaced and the dome will be

covered externally with sheet copper in such a manner as to preserve it from further damage. The timbers used within the mill - consisting of oak, elm, deal, sweet chestnut, and willow, according to the purpose for which they are used, are for the most part sound, excepting where the weather has been allowed to play havoc with them. Some of the internal machinery remains in situ although not now in working order owing to the removal of the sails &c. I am told that many of the "gadgetts" show the ingenuity of the mind of the mathematician who installed them.

There were two pairs of millstones - the nether millstones appear to be of fine granite. It is not intended to repair, or to remove the internal machinery at present, but simply to protect from further damage the carcase of this interesting remnant of this bygone time. Later on, when the estate is developed, the old tower may be made to serve a useful purpose again but for the moment it is interesting to know that this, the last, or, at least, one of the very latest of the Nottingham windmills to continue in work, is to be allowed to stand to remind us of its former purpose and associations.'

The same writer in The Miller (5th May 1924) added that

'in the lower storey are two cylindrical flour dressing machines, one of these being, I have suggested, for wheat flour and the other for barley and other kinds of grain flour . . . there is a screen cylinder, evidently for cleaning corn in the upper part of the mill, but this, I should imagine, was a later erection. There is no covering stage to the corn bins at the top of the mill so, evidently, the sacks of corn would have to be carried from the hoist to be emptied therein.' Interestingly, it has been considered that 'the physical processes going on in the old Sneinton windmill such as hoisting sacks of corn, &c. influenced Green's trend of thought and made it an ideal nursery for his mechanical and mathematical genius'.

This seems rather fanciful for it is difficult to see any connection between the workings of a mill and Green's mathematics. Besides, Green himself referred to 'the tedious and uninstructive details of common business' and it is said he found milling 'irksome'. Clearly he regarded the mill as a means of making his livelihood and not as a source of mathematical inspiration.

In 1923 Oliver Hind had the cap of the mill covered with copper sheet to make it weatherproof. A plaque was attached to the mill: HERE LIVED AND LABOURED GEORGE GREEN MATHEMATICIAN B.1793 D.1841 Hind then let the mill to H Gell and Co, manufacturers of furniture polish. Gell's used the ground floor as a workshop and first floor for storage, the upper floors having the mill machinery still in place and the windows bricked up. Gell's built corrugated iron sheds onto each side of the mill; that on the east side (where the end of the mill foreman's cottage once adjoined the mill) was an office. The shed on the other side of the mill was used as a garage.

A REVIVAL OF REPUTATION

There was renewed local interest in Green in 1928, the centenary of the 'most important intellectual event in the history of Nottingham' as one writer called the publication of Green's Essay on electricity and magnetism. Green's reputation as a

mathematician was growing and the extent of his genius became more fully recognised. Two years later the British Association for the Advancement of Science met in Nottingham. Members visited Green's grave but were dismayed at its neglected state. At their behest, the City of Nottingham had the grave slab renovated.

Inquiries into Green's life had been made on a number of occasions since his death. But no-one had compiled a biography until 1945 when H G Green, a mathematician at Nottingham University (and no relation of George Green), made extensive inquiries into Green's life. His findings were published in a limited edition in New York.

A visitor to the mill in 1945 described the internal machinery of the mill:

'The mill is a sail-less red brick tower with six floors, being approximately 26 feet outside diameter at the base, where the walls are two feet thick, tapering to about 13ft diameter at the curb. It has an ogee cap which was originally wood covered, but when this got in a bad state the fantail supports were sawn off, and the whole cap covered in copper sheet, which has now assumed the familiar pale green hue. The stage, which is now missing, was about fifteen feet from the ground and the door which opened on to it has been bricked in, as have one or two of the windows also.

No light is admitted to the top two floors and the interior inspection of these was carried out with the aid of an electric torch under rather difficult conditions, as these floors are rotten. The metal windshaft remains complete with canister: the shaft appears to be square and tapers towards the rear. The brakewheel is a wooden clasp-arm type, with wooden rim and iron segment teeth evidently replacing the originals. The wallower is of solid wood and built up of four quadrants; the teeth appear to be wooden, and the diameter is about 3ft 6in. The upright shaft is made of two parts, the upper being wooden, octagonal and 15 inches across the flats, while the lower is iron, circular, 6 inches diameter. The coupling between the two consists of an octagonal iron sleeve 2ft across the flats, 13 inches deep and 1¼ inches thick, situated just above the third floor level; the iron part of the shaft is short and is carried in a bearing mounted on a wooden beam 12 inches by 15 inches and some ten feet long, which stands on the second floor; mounted on this part of the shaft just below the third floor level is the great spur wheel.

The great spur wheel is an all-iron gear with eight vertically flat arms; it is a single casting 7 feet in diameter, with 84 teeth. The rim is 6 inches deep, and at some time a small section with five or six teeth has evidently been broken off and later repaired by means of a special casting that fits between the two arms and holds the broken portion in place. The stones were over-driven, there being originally three pairs; two bedstones only remain, both burrs, 4ft 4ins and 4ft 10in diameter respectively. The third pair, which were doubtless peaks, are completely removed, and were probably purchased for use in some other mill".

DISASTER STRIKES

It seems that during H Gell and Co's occupancy the wooden meal floor (the first floor) was used to store their products. The present concrete floor was almost certainly put in after the dramatic events of the 10th July 1947. On that day, still being used for the

manufacture of furniture polish, the mill caught fire. With such inflammable materials stored in the mill, with wooden floors and joists and with the tower of the mill acting as a chimney the fire rapidly took hold in the brisk east wind.

The Fire Brigade did what they could to contain the flames but to no avail. The copper cap melted and collapsed and the machinery and remaining millstones crashed down through the mill. Only the brick tower remained, some of the sturdier floor beams still spanning the tower, blackened and charred. The mill was abandoned, though Oliver Hind did have the doors and windows bricked up and a flat concrete roof put on the tower. These, by keeping out the weather, helped the mill survive the ensuing three decades until restoration began. The mill foreman's cottage became derelict and the outbuildings around the millyard were reduced to heaps of bricks and debris, covered with brambles. The mill was a forlorn and neglected sight.

RENEWED INTEREST IN THE MILL

Little attention was paid to the mill for a quarter of a century. The commemorative plaque on the mill was stolen in 1969. Not until 1973 was there a suggestion that the windmill might be put to some better use. The Thoroton Society, a local history and antiquarian society, drew attention to a planning application to develop Green's Gardens. The Society suggested that the mill 'could provide a focal point of great architectural and historical interest. [It] could be adapted with some extensions to make living accommodation.'

In 1974 there was a rumour that the redevelopment of the area might lead to the demolition of the mill. Professor Lawrie Challis of the University of Nottingham Physics Department and some of his colleagues protested to the City of Nottingham that this relic of such a great man ought not be allowed to be swept away. The City Planning Department responded positively and so began a long cooperation between the academic world, the City and the local community. Professor Challis formed the George Green Memorial Fund with the intention of raising funds to buy the derelict mill and present it to the City of Nottingham. Donations came from scientific societies, in this country and abroad, as well as personal donations. The George Green Memorial Fund set itself the target of £3,000 to acquire the mill and millyard plus another £20,000 towards restoration.

The mill was officially handed over to the City Council in November 1979. The City Council, as part of a major scheme to improve the area, determined to create a public park out of Green's Gardens with the mill as the dominant feature. Sneinton Environmental Society and the Civic Society were very supportive, giving good advice as well as donations. There were even contributions from the proceeds of jumble sales and school fairs held by local school children. Further interest was raised that year by an exhibition on Green's life and achievements at Nottingham Castle Museum. This encouraged further research into Green's life, inquiries which are continuing to this day.

RESTORATION BEGINS

Restoration began using young people employed by the Manpower Services Commission. The brickwork was repointed (somewhat indifferently), the concrete cap removed along with the remains of the original floor beams. As enthusiasm for the project grew, help came from many quarters. The doors and windows, for example,

were made at a government Skill Centre whilst a brakewheel and the frame and ribs of the cap were constructed by students in the Carpentry and Joinery Department of Basford Hall College of Further Education. Many local firms donated materials or supplied services or equipment at generously reduced rates.

With new floors and stairs in place Open Weekends were arranged where, for a 20p donation to the funds, visitors could tour the mill, see a slide show on its history and buy souvenirs and an information pack on windmills. A landmark in the restoration came in December 1981 when the cap was lifted by crane onto the top of the tower. Millstones are no longer quarried and the French 'burr' stones and some bits of machinery had to be salvaged from the derelict windmill at Brant Broughton in Lincolnshire. A set of Derbyshire stones appeared mysteriously one night, an anonymous donation! Accommodating machinery salvaged from elsewhere meant that the new floors in the mill did not always match the levels of the original floors. However, the restoration came to a temporary halt in 1983 following the departure of the MSC scheme supervisor.

COMPLETING THE PROJECT

The original plans for the restoration of the mill had included a small exhibition on the ground floor, to tell the story of George Green and his mill and to demonstrate the significance of his mathematical genius. The City Council, realising the enormous educational and tourism potential of the project, decided that it should be part of the City's Museum Service. Plans were drawn up to replace the millyard buildings (which had fallen into complete ruin and had been cleared away) with new buildings in a style and in materials sympathetic to the 175 year old windmill.

In 1984 a derelict cottage adjacent to the site was restored as accommodation for the newly-appointed Mill Custodian. At the beginning of 1985 your author, Denny Plowman, was appointed to the Green's Mill project as a Museums Education Officer. A couple of months after that David Bent became probably the only full-time local authority windmiller in the country at that time! The project picked up momentum again as the restoration was now in the hands of professional millwrights, R Thompson and Son of Alford, Lincs.

Getting the mill into full working order was to be a much longer process than had been anticipated and many problems were to be encountered. Much of the restoration work undertaken by the MSC team had not been up to the standard required for a working windmill and had to be replaced. The beams supporting the floors and the floor boards themselves, put in when the restoration started in 1980, were of old timber reclaimed from a derelict chapel. Alas, by 1985 some of the beams had developed some rot where they were in contact with the damp brickwork of the tower and the floorboards were badly fitted with gaps which would have allowed dirt to fall through and contaminate the flour. These were replaced with new timbers. The windshaft was inadequate and had to be replaced with a much stronger one in cast iron. This caused a considerable delay when the firm engaged to make the casting promptly went bankrupt and another had to be found.

Meanwhile, at their workshop in Lincolnshire, the millwrights pressed on with a new fantail frame, sprattle beam and brakewheel and with the construction of the fantail gearing and the wallower. The four cast iron segments of the great spur wheel and a section of the upright shaft were taken away to be machined up to ensure they fitted

together properly and to put in the keyways to fit the parts together. Work was also under way on the construction of the sail stocks and the sails themselves. Further delays arose from the great difficulties encountered in finding pitch pine of suitable quality and length for the sail whips. The mill has been restored with the same types of sail and fantail as it had in the 19th century, the same internal arrangement of machinery and using the same materials and techniques.

However, the mill has not been restored exactly as it was in the 19th century. This was not possible as we have only brief descriptions of the interior of the mill - and those were made when it had been disused for over eighty years and much of the machinery was derelict. Rather, the mill has had its working life extended into the present century. Thus, although the mill once had three pairs of millstones, it now has only two. This allows more space for groups of visitors to gather on the stone floor and see the millstones at work. It also allowed the sack hoist chain to be positioned so that it could pass between the cast iron girders supporting the concrete meal floor. Similarly, to make the mill safe for its many visitors it has broader stairs than are typical in windmills, electric lighting, wire guards to the machinery and fire alarms. Nevertheless, it is a working windmill, currently producing stoneground wholemeal flour and oatmeal.

On 6th July 1985 the Green's Mill Centre was opened by Sir Sam Edwards FRS, Cavendish Professor of Physics at Cambridge University. At the same time the windmill was officially opened by Professor Lawrie Challis, Chairman of the George Green Memorial Fund. This was a little premature as the windshaft and one pair of sails were in the millyard, the other pair of sails had yet to be delivered, the fantail and much of the internal machinery had not been installed and several of the floors had been removed, pending replacement with new timbers.

By March 1986 the new fantail staging and windshaft had been hoisted into place in the cap. Meanwhile work was progressing on the sack hoist traps, on setting up the windshaft bearings, levelling the curb on the top of the mill brickwork, securing the stone nuts to the quants and assembling the brakewheel on the windshaft. By June the cap had been made watertight and repainted and the fantail gearing installed.

On the 17th day of that month the sails were hoisted into place by a crane and three days later were turned for the first time. There was still much to be done inside the mill. The governor (which controls the gap between the millstones) was put in place, as were the bins and the stone furniture which feed the grain down to the millstones. The stones themselves were dressed - their cutting surfaces levelled and the furrows resharpened - and balanced to ensure that they ran true. On 2nd December 1986 the millwrights spread the canvas cloths upon the common sails, closed the shutters of the spring sails and released the brake. The sails turned and for the first time since the 1860s flour was produced at Green's Mill.

THE NEXT TWELVE YEARS

In the twelve years since Green's Mill and Centre opened in 1985 it has had well over half a million visitors. The mill continues to turn and it is now a familiar feature of the Nottingham skyline, just as it was in Green's day. George Green reputation has grown considerably in that time, too. His mathematics has become increasingly important in the physical sciences and engineering. It has proved to be a most powerful tool for

people engaged in such diverse fields as sub-atomic particle physics, the design of bridges, chaos theory and the new mathematics of fractal geometry.

In 1993, the Bicentenary of his birth, George Green was honoured by the dedication of a memorial plaque in Westminster Abbey. Next to the grave of Sir Isaac Newton and the memorials to three other great 19th century scientists, Michael Faraday, William Thomson (Lord Kelvin) and James Clerk-Maxwell, it simply reads 'George Green, Mathematician & Physicist, 1793 - 1841'. Carved in the top corner of the plaque is a windmill.

Lodged with the Mills Archive by Green's Mill Sneinton, Nottingham July 2003