

HISTORY

Prehistory

As soon as man discovered that he could produce food from grass-like plants he required a method of breaking down the hard seeds. The first examples of pestle and mortar date from about 10,000 BC. However, these may have been used for pounding roots or other hard material before they were used for grain. The first tool specifically used for grinding grain into flour was the saddle stone. The grain was placed on a slab of stone, shaped like a saddle, and ground using another stone in the shape of a rolling pin. There is a 5,000 year old mortar and a saddle stone from Mexico, known as a metate (pronounced matata) that can be used in the Museum.

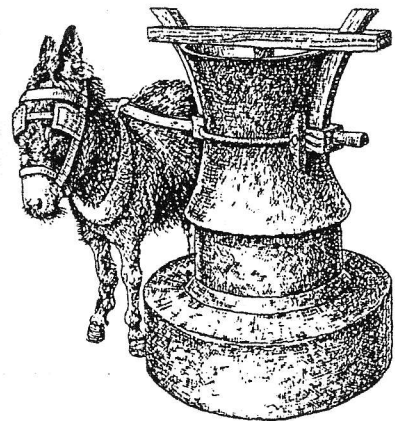
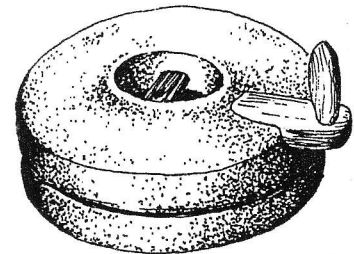
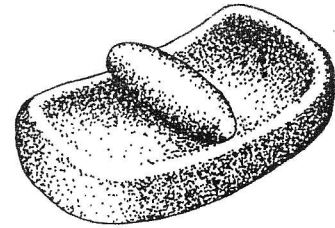
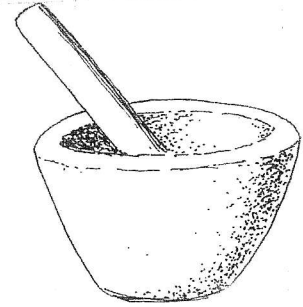
About 700BC the hand quern was invented. It consisted of two circular flat stones and the key to the invention was that one stone was supported on a central pivot above the other in such a way that a gap of about 0.25mm was maintained between them. Grain was fed into a hole in the centre of the upper or runner stone and was crushed between the stones. This method of grinding corn is still in use in many parts of the world. There are pieces of Romano-British hand querns on display in the Museum and a reconstruction of a hand quern can be used by the children to grind wheat.

The Greeks and Romans

Both the Greeks and Romans used animal powered versions of the quern as well as hand querns. In this form the runner stone developed into an hourglass shape, resting on a conical bed stone. The upper part of the runner stone formed a hopper into which the grain was poured and the meal came out onto a small platform around the bed stone. A donkey was harnessed to a wooden frame attached to the runner stone and the stone was turned by the donkey walking around it in a circle. There is a good example in the Museum of London. The Romans also introduced the water-mill for grinding corn in the 3rd century BC and this enabled larger millstones to be used.

The Medieval Period

Water-mills did not come into general use in Britain until the 7th or 8th century AD. By the time of Domesday Book, in the 11th century, there were 5624 water-mills in England, an average of one mill for every 50 households but there were no windmills. The earliest windmills appeared in the Middle East in the 8th century but there were none in England until the later part of the 12th century and even then they were only built where there were no suitable streams for water-mills.



A millstone driven by a donkey. The mill had a lower stone, which served as a pivot, and an upper or runner stone that revolved and ground the grain. This impression is of mill found at Pompeii, adjacent to the bakery.

The earliest windmills built in England were post mills in which a small timber building was supported on a central post that acted as a pivot so that the sails could be turned to face the wind. *The development of the design of windmills is described under Design and Technology on pages 9-20.*

Until the 18th century corn milling was a service rather than an industry and was controlled by the Lord of the Manor under the customary law of Mill Soke. The mill was built at the cost of the Lord of the Manor in return for which his tenants were obliged to bring their corn to be ground by the Lord's miller. The miller took $\frac{1}{16}$ part of the grain as his payment for the service he provided. This was known as **toll milling**. It was the growth in population and the concentration of people in towns that led to corn milling becoming an industry with the miller buying corn in bulk and selling the flour as a finished product. This was, known as **merchant milling**. Now money changed hands. The small post mills, with one or at the most two pairs of stones, were not large enough to cope with the demand and much larger **Tower Mills** were built using brick or stone to house more machinery and to provide storage space for the grain and flour. Where brick was not readily available the towers were built of timber. These were usually octagonal in plan and covered with tarred or white painted boarding. They were known as **Smock Mills** because they were said to resemble a farmer's smock. By 1750 the system of Mill Soke was disappearing and in 1796 an Act of Parliament made cash payment for milling services compulsory.

Developments and Inventions

During the 18th and early 19th century millwrights and engineers produced many innovations. In the Museum are models showing the developments that occurred during this period. For example the **fantail**, invented by Edmund Lee in 1745, which allowed mills to be turned automatically into the wind; the improved sails, which came to be known as **common sails**, invented by John Smeaton in 1759 and the **shuttered sails** invented by the Scottish engineer Andrew Meikle in 1772. Smeaton was also responsible for encouraging a

much greater use of cast iron in machinery and construction. Experiments were made in designing many different types of windmill, such as **hollow post mills**, **horizontal mills** and **annular sailed mills**. Examples of these are also shown in the Windmill Museum and more details are given in the notes on Design and Technology. Water-mills and windmills were replaced in the 19th century by machinery powered by steam engines and gas engines.

These engines were first used to drive conventional millstones but later **roller mills** were introduced in which the grain passed through pairs of iron rollers which turned at different speeds producing a shearing as well as a crushing action. A large mill powered by a Boulton and Watt steam engine was built in London by John Rennie in 1785 but it burnt down in 1791. The earliest successful roller mill was built in Switzerland in 1834 and the first roller mill in England was built^r at Liverpool in 1870. The use of roller milling was linked to the importing of varieties of wheat with harder grain. This resulted from the repeal of the Corn Laws following the Irish potato famine of 1845, coupled with an over production of grain in North America.

By 1850 traditional wind and water mills had reached a high state of development with many operations automated and considerable use being made of cast iron. The concept of fully automated grain and flour handling was introduced from America and by 1850 England had a comprehensive rail network, which enabled producers to distribute flour quickly to all parts of the country. It is important to note that the demand for flour had increased considerably between 1750 and 1850 with a rise in population from 6.3 million to 16.9 million.

By the end of the 19th century, large steam powered roller mills were being built adjacent to the ports where grain could be unloaded direct from ship to silo. The traditional mills could not compete with these new mills, particularly in urban areas. Mills did survive in rural areas, supplying animal feed as well as flour, but by the First World War traditional flour milling had all but ceased. The last smock mill was built at St. Margaret's Bay, Kent in 1928.

Very few windmills now remain in working order (the nearest one is at Outwood near Redhill in Surrey). However, wind power continues to be used for other purposes. The 18th century invention of the annular sail was only used on a few corn mills but in the 19th century it was developed for use on small wind pumps. Although the generation of electricity by means of wind power is now a reality and modern aero-generators are much more efficient than traditional windmills, the irregularity and unreliability of the wind as a source of power remains a problem.

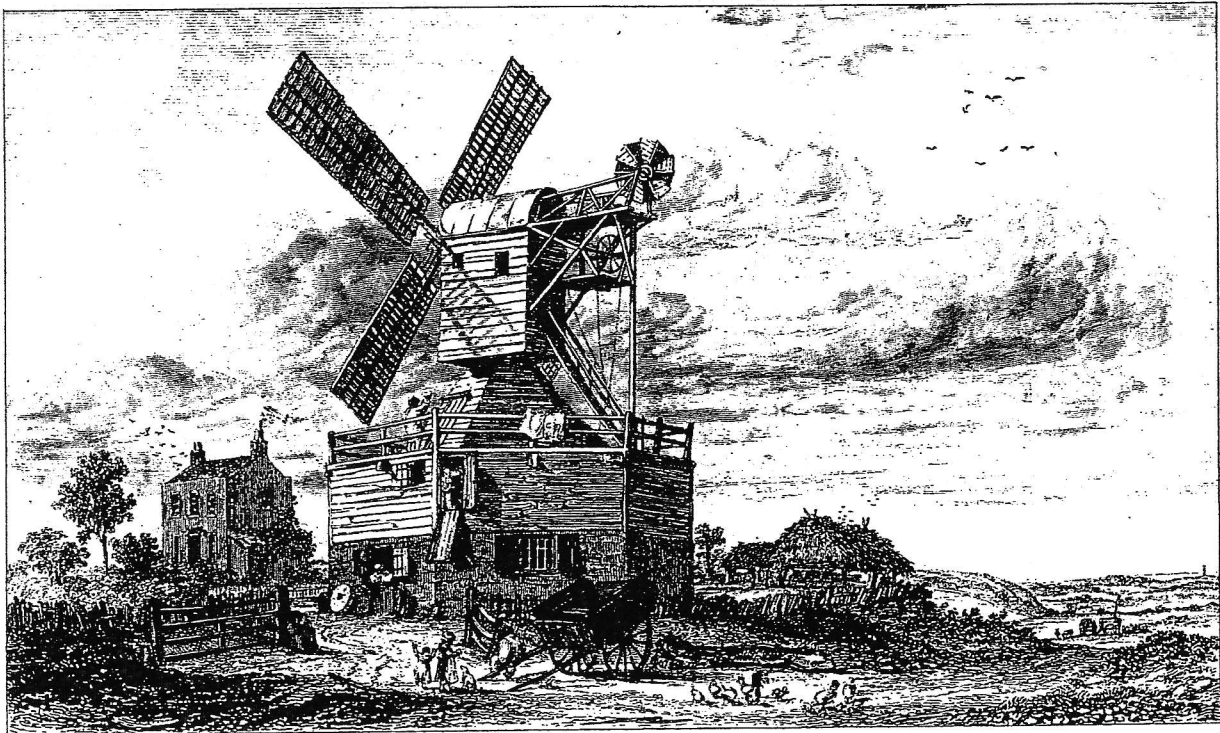
The Miller in Victorian Society

In the mid 19th century the rural community had three levels of society. The top level comprised the **local gentry**, who probably owned most if not all the land in the village. The bottom level comprised the **labourers** who had no special skills and would take whatever work they could lay their hands on. As the industrial revolution gained momentum they often moved to the expanding towns to find work in the factories. In between these two groups were the **artisans** who had particular skills they could perform for payment. Most

villages would have a blacksmith, a wheelwright, shoemaker etc. and in many cases a miller. The artisans were of some consequence in the village. They had their own hard earned money, could buy better clothes and might even employ servants. They were in a position to save money and thus accumulate capital. More importantly they were the people with technical know-how who could develop new ideas. As a result many of the major industrial concerns that evolved during the Victorian period depended on the skills of the artisan.

The Victorian Room

After Wimbledon windmill ceased working in 1864 it was converted into dwellings to house six families and one room has been retained within the Museum. It has been fitted out with furniture, artifacts and costume dating from 1870. This can provide a useful reference for a way of life, e.g. an open fire, used for both heating and cooking, oil lamps used for lighting and individual artifacts such as a carpet beater, early sewing machine, flat irons etc. A recorded commentary in this room describes the way of living at that time.



The Mill on Wimbledon Common in 1825

George Cooke fac'

LOCAL HISTORY

Historical Sources

Suggested sources are Manor Court Rolls, Census Returns (from 1851), 1st Edition Ordnance survey Maps and Title Deeds. The best places to find material on local history are the Libraries, the Local Studies Centre at Morden and the Local History Museum of the Wimbledon Society at 22 Ridgway, Wimbledon (open on Saturday and Sunday afternoons from 14.30 to 17.00). The books 'A Georgian Village - Wimbledon 1724-1765' and 'Wimbledon 200 Years Ago', both by Richard Milward give a good idea of life in the area although they cover the period prior to the construction of the windmill. Relevant maps of Wimbledon are the Rocque map of 1746, Faden's map of 1800 and the Ordnance Survey of 1865 (these maps are obtainable from the Wimbledon Society's Museum or Borough Libraries). The book 'Wimbledon, a Surrey Village in Maps', which shows the relevant sections of these, is available at the Windmill Museum and from the Wimbledon Society's Museum

The windmill was built on the high open ground of Wimbledon Common in 1817 for the benefit of the local residents. At that time there were cornfields in Merton and along the Portsmouth Road and Wimbledon was still a rural village of about 300 houses.

Early History of Wimbledon

The village of Wimbledon, which grew up on the south side of the Common, was situated on a high plateau between the rivers Wandle and Beverley Brook, and had commanding views over the surrounding countryside. The soil on the plateau is gravel overlying clay and this ensured a good water supply with many springs. The gravel was not very good for farming and became 'The Waste' of the manor. The first signs of a settlement are indicated by Caesar's Camp, which had nothing to do with Julius Caesar but was an Iron Age fortification built about 500 BC. Although there is believed to have been a small settlement in the region of the present High Street between the 6th and 10th centuries, there is little evidence of a village

before 1230 AD. At that time Wimbledon formed part of the Manor of Mortlake (Mortelage) that was owned by the Archbishop of Canterbury. By the middle of the 15th century the village is well documented. Records of rents etc. from the 13th to 15th centuries are held at Lambeth Palace and Manor Court Rolls dating from 1461 are held at the British Museum. Copies of selected Court Rolls were printed in 1866 and are available at the Wimbledon Society's Museum.

Wimbledon in the 18th and 19th Centuries

Until the early part of the 18th century, Wimbledon was isolated from London by the River Thames. Although there was a ferry at Putney there were no bridges between London Bridge and Kingston. In 1729 the first Putney Bridge was built and Wimbledon village became an attractive country retreat within easy reach of the Cities of London and Westminster. Wimbledon attracted many wealthy merchants and politicians, amounting to approximately one fifth of its population. Their servants represented another large proportion and their wealth attracted many tradesmen and craftsmen (see 'A Georgian Village' by Richard Milward). The main part of Wimbledon village was the High Street, between The Dog and Fox and the Rose and Crown (both coaching inns) and extended along Church Road and along South Side and Westside of the Common. Although the railway was built in 1838, Wimbledon below the hill was not developed to any extent until the 1880s when a piped water supply became available. It should be understood that although Wimbledon Common was open to everyone, the rights to graze cattle and sheep and to gather firewood and building timber were restricted to 'commoners' whose rights were granted by the Lord of the Manor. Such rights were not given to 'the common people' of Wimbledon. The details are explained in 'A History of Wimbledon and Putney Commons', edited by Norman Plastow and published by Wimbledon & Putney Commons Conservators.

Lords of the Manor

The Spencer family were Lords of the Manor from the middle of the 18th c. and their Manor House stood in Arthur Road, Wimbledon. In 1864 the fifth Earl Spencer proposed the enclosure of Wimbledon Common and the sale of Putney Heath. There was opposition to his proposals so he bought properties on and around the Common in order to extinguish their Commons' rights. These properties included the Windmill, which was then closed as a working mill and converted into dwellings.

Early Mills

There was a water-mill on Beverley Brook near Warren Farm but no trace of this remains although the area is still called Mill Corner. It is believed to have been a fulling mill rather than a corn mill. The earliest record of a corn mill in the area relates to a post mill, built by Edward Hall in 1613, which stood on Putney Heath. On a map of 1626 it is shown to have been near Tibbett's Corner and at that time the Manor Court Rolls record that it was owned by a Mr. Everton. At the end of the 17th century John Aubrey remarked that the mill had been removed from the Common to a site on the bank of the Thames near the Watney's distillery at York Road, Wandsworth. It stood there until the latter part of the 18th century.

The Present Windmill

In 1799 an application was made to the Manor Court "to enclose a piece of land of Wimbledon Common for the purpose of erecting a windmill thereon". The application was made by Mr. John Watney. The Watney family, whose house 'Rushmere' still stands on South Side, Wimbledon Common, had provided millers for the Wandsworth, Wimbledon and Mitcham areas since the 1730s. Their principal mills, driven by steam and water power, were the Middle and Upper Mills on the Wandle at Wandsworth. These mills had thirty-one pairs of stones and were described by Brayley as "The most considerable near London", providing flour for fifty thousand people. It seems strange, therefore, that John Watney should have applied to build a small windmill, which could hardly have been a useful addition to his enterprise at Wandsworth. However, he was a very wealthy man and a

philanthropist. It is believed that he intended the mill as a gift to local residents so that they could grind their own corn, even though this would be in competition with his own mills. The reason that he proposed a windmill rather than a water mill was that at that time the River Wandle was the most heavily industrialized river in Europe and there was simply no room for another water-mill.

The mill proposed by John Watney was never built. He was asked by the Manor Court to provide proper plans for the mill but by his death in 1814 he had failed to do so. However, two years later a new application was made to the Court by Charles March, a carpenter living in Roehampton. Extracts from the Court Rolls relating to this are as follows:

13 February 1816 - The Deputy Stewards presented the Petition of Charles March of Roehampton, carpenter, praying for a grant of a small plot of ground for the erection of a Mill.

1 March 1817 - We have met this day for the purpose of fixing upon and determining the part of the Common to be granted to the said Charles March; and which has been this day staked out in our presence.

24 May 1817 - Charles March to have the said piece of ground for ninety-nine years; at the annual rental of two shillings. But upon this Special Condition that Charles March shall erect and maintain a public Corn Mill, for the advantage and convenience of the neighbourhood.

At this time the population of Wimbledon was approximately 2,000.

Charles March was not a millwright and this may account for the peculiar mill that he built. It was a hollow post mill, a very unusual type for this country.

The moving cap, which carried the sails, was mounted on a post inside a tower on top of a two-storey building. The post was hollowed out to take an iron shaft that ran the full height of the mill. This worked the machinery on the ground floor, which drove two pairs of millstones at first floor level. It is believed that Charles March copied the design from a mill

standing in Southwark, near the site of the old Globe Theatre. Originally, only the ground floor of the mill was of brick, the first floor being timber framed with a boarded finish (see pages 14 and 23). There is a sectional model in the Museum depicting the windmill in its working days. It is not known if Charles March ever worked the mill himself but the first recorded miller was Thomas Hunt Dann who also held the office of constable. The Commons had been a popular site for duels in the 17th and 18th centuries and in 1840 Thomas Dann had to arrest Lord Cardigan for fighting a duel on the Common. By 1855 the miller was Mr. A. Halloway, who also held the office of constable. The last miller, in the 1860s, was John Marsh of Kingston who also had a corn merchant's shop in Wimbledon High Street.

In 1864 when Earl Spencer presented his proposals for enclosing Wimbledon Common and selling Putney Heath as building land, the Commons were very neglected and the proposal was at first welcomed by local people. However, a Committee of the House of Commons had been appointed to look into the condition of Commons and open spaces around London and this opposed Earl Spencer's plan. Mr. Henry Peek M.P., who lived at Wimbledon House on Parkside, helped to form the Wimbledon Common Committee "to preserve the whole of Wimbledon Common and Putney Heath unenclosed".

In 1870 Earl Spencer agreed to hand over the Commons to the local residents in return for a perpetual annuity. This was embodied in the Wimbledon and Putney Commons Act of 1871. Details of these events are recorded in the book 'A History of Wimbledon and Putney Commons' edited by Norman Plastow and available at the Museum, the Clerk and Ranger's office and the Wimbledon Society Museum of Local History.

During the time of this dispute, Earl Spencer had bought up most of the properties that had Commons rights so as to extinguish them and reduce the opposition to his plan. The millers at that time, the Marsh family of Kingston, agreed to sell but insisted on removing the main driving shaft so that the mill could not be

used in competition with other mills that they held in Kingston. The mill building was used by the National Rifle Association in connection with the ranges they had on the Commons before they moved to Bisley and was then converted into living accommodation.

The main building of the windmill was divided to take six families. There were eight rooms on each floor, which accounts for the sixteen windows and sixteen chimneys of this building. The timber walls of the first floor were replaced by brickwork but the main timbers were left in situ. By 1890 the building was so damaged by dry rot that it was to be demolished but local residents raised £400 for its restoration. This is claimed to be the first example of industrial archaeology, i.e. the restoration of an industrial building. The work was carried out in 1893 by a famous millwright, John Saunderson of Lincolnshire. The roof of the roundhouse was renewed, the central post was taken out, the angle of the tower increased and the height of the cap reduced.

Baden-Powell is said to have written part of his book 'Scouting for Boys' while staying in the Mill House in 1908.

In 1952 further repairs were carried out and again local residents raised most of the money, amounting to over £500. In 1975 major repairs became necessary due to a further outbreak of dry rot. This time the cost was £25,000, of which £20,000 was raised by local residents. The Windmill Museum, run entirely by volunteers, was set up after this restoration.

In 1991 the Wimbledon Windmill Museum became a separate charity and in 1998 an application was made for a Heritage Lottery grant to improve the mill and its museum. A grant of £98,000 enabled the windmill sails to be restored and new displays and exhibits to be provided in the museum.

Information Centre

In 2002 an Information Centre was opened by the Commons Conservators adjacent to their office near the windmill. It is open, free of charge, on most days of the year and contains displays and information on the geology, natural history and general history of Wimbledon and Putney Commons.

GEOGRAPHY

Skills, Mapping

Mill sites usually occupy a discrete area containing access roads, different shapes of building and boundary fences. In the case of Wimbledon Windmill it is sited on a gravel plateau 52m (170ft) above sea level. The ground falls away to the west. The plateau, comprising Wimbledon Common and Putney Heath, was formed by erosion caused by rivers on four sides; the Thames to the north, Beverley Brook to the west, the Wandle to the east and the River Mole to the south. In prehistoric times the River Mole, which now enters the Thames at Kingston, used to flow through South Wimbledon.

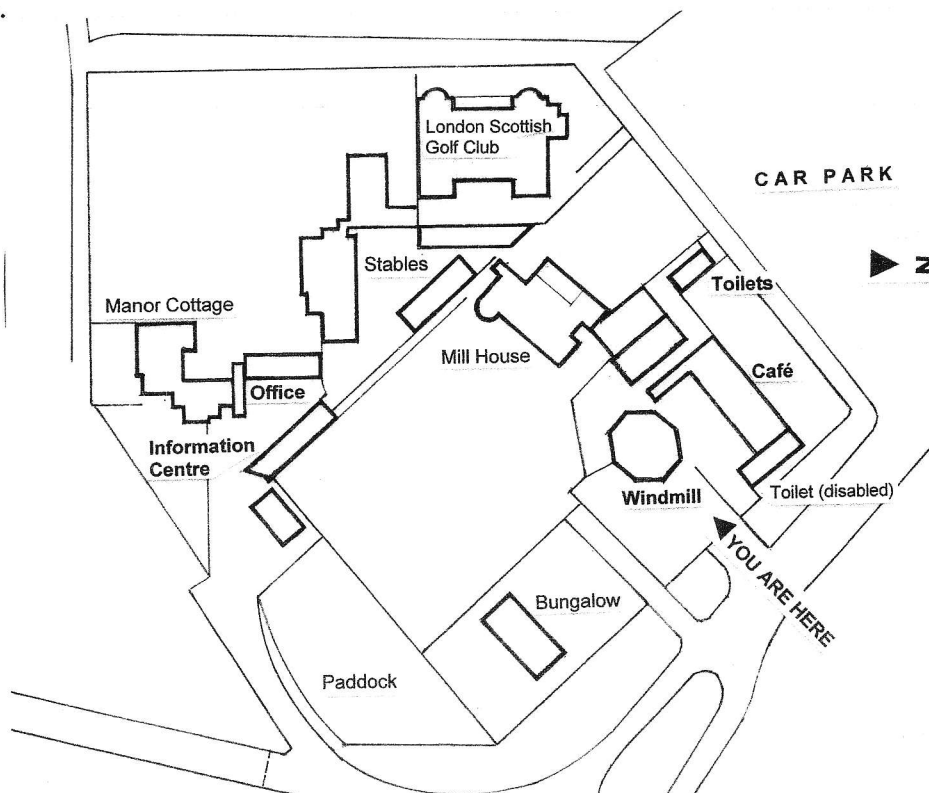
Thematic Studies

Waterpower has many advantages over wind power. Therefore, windmills were not built from choice but from the necessity to produce flour in areas where there were no suitable streams. This is why there are more windmills in the East and South of England where the land is flatter and there are fewer fast flowing streams. Windmills need strong and steady winds to drive them. They may be located on a high piece of ground and be visible from a considerable distance but not necessarily so.

Steep rises in the ground can produce turbulence in the wind. The best sites are those where the wind can blow freely so an open plain is ideal. Access to the wind is vital, thus windmills would not be built among trees or buildings of any great height.

Wimbledon windmill stands on heath land with a poor gravel soil, which does not support forest trees. When it was built in 1817 there were far fewer trees on the Common. Those that surround it now were planted after it ceased working in 1864 and are mostly Scots Pines, which are not native to the area. The nearby woodland is on lower ground where the soil is clay. The surrounding buildings, some of which are contemporary with the mill, are of no more than two storeys. However, some windmills were built in urban areas and those mills would be much taller.

Determining the height of this building by sight lines and measurement is difficult because of its shape. However, the height of the brick building can be estimated by counting brick courses (each course is 75mm or 3") The boarding on the tower is 150mm or 6" with an overlap of 25mm or 1".



The Growth of the Community

The area, now known as Wimbledon, had little to recommend it as a place for settlement. It was not on a river or a highway and appears to have been isolated from other communities in the area. In fact it was ignored by successive invaders and settlers until the Middle Ages. Settlement, when it occurred, was around the gravel plateau of Wimbledon Common. The soil here is poor and not suited to farming while the slopes of the hill would originally have been densely wooded. However, two advantages of the site were that the gravel soil allowed rain to permeate to the clay below where it formed an underground reservoir producing springs on the slopes of the hill and the high ground provided a defensible position.

Apart from traces left by Neolithic hunters the earliest signs of human occupation are a number of Bronze Age barrows to the north and Caesar's Camp, an early Iron Age hill fort, on the southern slopes. The first evidence of a permanent settlement dates from the 10th century and there is little evidence of a village before 1230 AD. The lower and more productive clay soil to the south and east was farmed and the Common became the waste of the village. It is unlikely that the population exceeded 200 until the reign of Henry VIII. When Thomas Cecil, first Earl of Exeter, built his manor house at Wimbledon in 1588 it had a great impact upon the village. More large houses followed, such as Eagle House built in 1613, and there was a great demand for servants and gardeners in the locality. Wimbledon became a fashionable country retreat and London investors bought up land to form large estates. A windmill was built on Putney Heath in 1613 to serve the local community and industries grew up in water mills along the River Wandle.

The building of the first Putney Bridge in 1729 made Wimbledon more accessible from Westminster and many wealthy merchants and senior politicians came to live in Wimbledon. In 1750 the population was about 500 and by 1800 it had risen to over 1,000. Although servants represented a large proportion of this number there were also

many artisans in the form of tradesmen and craftsmen. At this time two large flour mills had been built in the vicinity. Martin (Merton) Flour Mill, built by James Perry with 7 pairs of millstones, produced enough flour for 11,000 people while John Watney's Upper and Middle Mills in Wandsworth had 31 pairs of stones and produced flour for 50,000 people. Wimbledon Windmill, built in 1817, was not a commercial venture but was built for local residents who wished to have their own wheat ground rather than buy factory produced flour. The Mill House, built for the miller a year later, is immediately behind the mill and has been enlarged over the years. It is now privately owned but can be seen from the mill.

When the railway came to Wimbledon in 1838 it did not at first have a great impact and in 1840 the population was still under 2,000. However, by 1850 it had risen to 4,500 and from then on growth was rapid with the development of New Wimbledon (east of Haydons Road) and South Wimbledon. At first the houses in these areas had no water supply and they had to be served by water carts but following the construction of a water main through South Wimbledon by the Lambeth Water Company, many new houses were built. In 1864, when the Windmill stopped working, the population was approximately 5,000 and by 1871 when the Wimbledon and Putney Commons Act placed the Commons under the control of the Conservators it had risen to 9,000. In 1881 it was 15,900 and in 1891 it was 25,700. Three years later Wimbledon became an Urban District Council. In 1901 the population had reached 41,600 and in 1905 Wimbledon became a Borough. By 1911 the population was approximately 55,000 and it has risen only slightly since then. Wimbledon became part of the London Borough of Merton in 1965.

Relevant maps of Wimbledon are the Rocque map of 1746, Faden's map of 1800 and the first series Ordnance Survey maps of 1865, all of which are available from the Wimbledon Society's Museum, 22 Ridgway, Wimbledon or the Local Studies Centre in Morden. A display in the Wimbledon Society's Museum contains a map showing land uses in the 18th century.

ART

To some extent the subject is self-explanatory; windmills and their settings are interesting subjects for the artist. The Wimbledon windmill is a very unusual structure involving many complex shapes so that an accurate and technically correct representation is difficult to achieve. Many of the watercolours and prints in the collection of the Wimbledon Society's Museum of Local History testify to this problem. However, technical correctness is not necessarily what art is about and windmills have such a strong and unusual character that capturing this on paper or in model form can be very satisfying.

It is not only the exterior of the building with its octagonal and conical shapes, brick and timber textures and the lattice of its sails that may capture the imagination; the interior of the tower has a very distinctive character of its own. Looking up in semi-darkness into this truncated cone, with its giant timber beams, to the machinery at the top is an unusual experience. The fact that none of the walls is at

right angles to the floor can be disorientating and its height can produce feelings of vertigo (as one child put it "It's too deep"). Most children refer to it as "the attic" but it has been referred to as "the terror tower" and "a well wicked place". Capturing these impressions on paper presents a challenge.

The many working models of windmills in the Museum show details of the buildings to a scale that can more readily be appreciated and these may themselves be the subject for drawings or three-dimensional representations. The Museum also houses pieces of machinery, equipment and tools that are not encountered in everyday life and may stir the imagination or provide an exercise in sketching unusual three dimensional shapes.

The Museum has a changing display of drawings and paintings by children who have visited the windmill and model kits are available in the Museum shop for making post mills, smock mills and models of Wimbledon Windmill.

