

Working on site

Once the group has arrived on site, start with an introduction to the mill, staff and facilities.

Begin with an orientation exercise. Divide the party into pairs. Provide the pupils with a very small strip of post-it note. Ask them to draw their partner on the post-it note. Once this is complete the pupils give each other their sketches and they place the sketch of themselves on the map or plan.

During the visit ask the pupils to move their picture on the plan as they walk around the site.

Another activity is to divide the group into pairs and give them photographs of different parts of the site. They have to find the place illustrated in their picture and return to the group.

Roles on site

This pack provides a number of site activities and suggestions for work. It may be appropriate to divide the party into groups. Each group could have a particular role. By dividing the party into groups they can work in specialist teams, with specific objectives and the requirement to feedback to their class when they return to school.

The groups could be:

- Video producers
- Oral historians
- Surveyors
- Reporters
- Photographers
- Artists
- Archivists

Each group could collect their evidence, draw their conclusions about what they have found and all be involved in observing, discovering and hypothesising.

Question prompts on site

Look at where the windmill is situated

Can you explain why the windmill was built on this site?

What is the situation of the windmill?

What is the area around the windmill like?

How easy is it to get to the site and are there good transport connections ?

Are the roads the same as they used to be or have they changed?

Buildings on the site

What buildings and remains of buildings can you see on the site?

Are there any other buildings, new or old, on the site?

Can you work out what the other buildings would have been used for?

Do you think there are any buildings missing?

Is there any evidence of where the miller lived?

The windmill

Is the windmill complete is any machinery missing?

What machinery can you find on the site?

What materials have been used to construct the windmill?

Why do you think these materials were chosen?

Has the windmill been altered over time?

Are some parts of different dates?

Which are parts of the building is earlier, which later?

Changing use

Has the use of the windmill changed?

How were materials or products moved from one process to the next?

Where was the grain and the flour stored?

Who were the people who worked here?

How many people do you think must have worked at the windmill?

Where might did these people live and how did they get to work?

Is there any evidence of who used to work here?

Inside the windmill

Windmills are cramped and it is important that pupils look where they are going so try to avoid spending too much time using a worksheet inside the mill.

It is here that you may require the help of an expert!

Investigative Questions

Once on site there are several broad questions that can be investigated. A line of enquiry helps define what you do with the children. It provides a starting point and a clear outcome for any activities - the answer to the questions. Key questions might include:

- Why was the windmill built on this site?
- How long has it been here?
- Why has it lasted so long and not been taken down?
- How big is the windmill?
- What other buildings were around the windmill?
- What are the working areas inside the windmill?
- What type of windmill is this one, and what other types of windmill are there?
- How was the mill built?
- How is it possible to put the sails on a windmill this big if you do not have a modern crane?
- What was life like for a miller in the past?
- How has the windmill changed over time?
- What did the windmill produce?
- Who did the windmill supply?
- What is the layout of the windmill and the surrounding buildings?
- Should we preserve windmills?

Working in cramped conditions

Windmills are cramped and not suited to large groups in one place at any one time. It is always worth organising your visit so that the class, or classes, are divided into smaller groups. These groups can then be set time limited tasks as part of a circuit of activities. On such occasions it is best to avoid detailed recording and to have tasks that are limited in their scope but significant for building the understanding by pupils of the windmill, its use and its development.

Paired work is effective, allowing pupils to concentrate on a small aspect of the building and then report back to a larger group. The reporting back is especially important because it forces children to reform, verbalise and explain what they have observed and concluded.

Letting the local guide know how you intend to use the site is vital. Avoid the forty minute technical explanation and history of the site in favour of pupils having a brief succinct introduction and then questions and activities that get them to seek answers.

They can report back to both the group and the guide who can be used to help clarify what they have seen and concluded and answer some of the technical questions.

Short questions might be:

- Finding out about the millstones.

How many millstones are there?

What sort of stones are used as millstones, can you describe them accurately in words and drawings?

- Finding out about the sails.

How many sails are there?

What are they made of? Finish the incomplete drawing of the sails and describe them.

Why are they shaped this way and what do you think the shutters for?

A simple model of generic questions might include:

- What is.....?
- What does it look like?
- How big is it?
- What materials is it made from?
- How do you think it worked?
- What part of the milling process does it belong to?

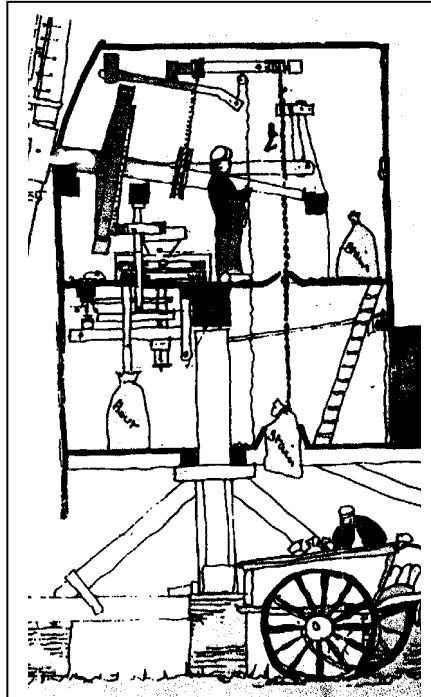
Asking Questions: Starter Activity

Provide the pupils with two images for the mill you will be visiting. Use the following questions to encourage their curiosity about the mill, where it is and how it works.

Starter Activity



Chillenden Windmill



Chillenden Windmill

Working in pairs take either the photograph or the line drawing. Look at it carefully.

1. What is the name of the mill?
2. Do you know where it is?
3. What does the windmill need to work?
4. How many people do you think worked at the windmill?
5. What jobs do you think people did at the windmill?
6. What other questions would you like to ask.

What happened to Chillenden Mill on the night of 26th November?

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A Grade II listed windmill has been badly damaged by high winds which have battered the South East of England.

BBC News Wednesday, 26 November, 2003

The windmill at Chillenden near Canterbury was blown over in the storms of Wednesday morning.

The mill, which was built in 1868, had recently undergone extensive restoration work.

A post mill built on stilts, it is believed to be one of just five of its kind in the UK and worked until 1949, when one of its sweeps was damaged in a gale.

Restoration work carried out after Kent County Council assumed control for the mill was completed as recently as last year.

Margaret Holyer, who is a volunteer at the windmill, said: "The middle strut is broken, it must have been pushed over and broken and so it's gone over to the left as I was looking at it.

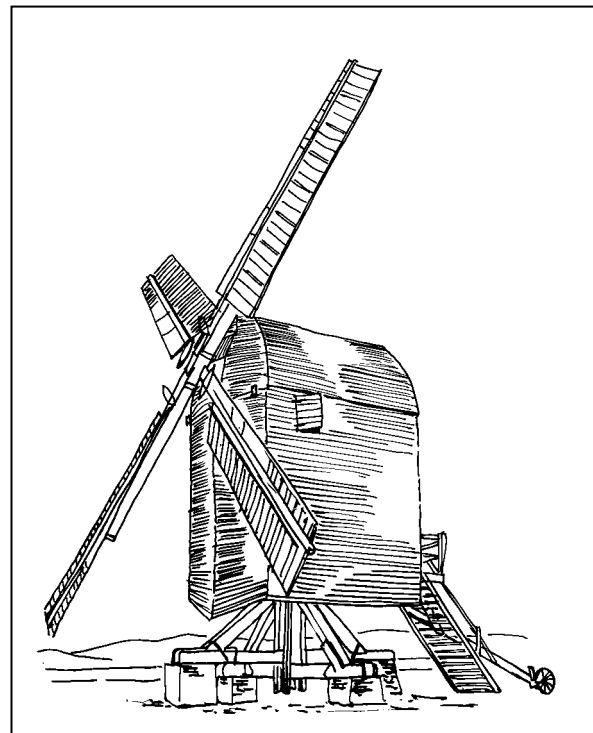
"It's done an awful lot of damage.

"I can usually see it from my gate but I went out to see it and it just wasn't there."

Elsewhere in Kent, a fallen tree landed on a taxi on Canterbury Road in Folkestone but the driver escaped serious injury.

Other roads in the county were blocked by fallen trees and rail services were delayed after trees were blown onto the lines at Gravesend and Godstone.

The torrential rain led to the Met Office issuing a severe weather warning affecting Kent and Sussex and flood warnings for some areas on the south coast of Kent.



Destroyed windmill dismantled **A Grade II listed windmill that was flattened by high winds has been dismantled by cranes in preparation for restoration work.**

The windmill at Chillenden near Canterbury, Kent, was blown over and destroyed during a storm on 26 November.

The mill, which was built in 1868, had been restored before the storm.



The windmill at Chillenden was flattened by storms

The same contractors who repaired it have been called in to take it apart.

It will take the IJP workers a week to dismantle the mill as each part has to be labelled in case it is decided to rebuild it in the future.

The post mill was believed to be one of just five of its kind in the UK.

It will be stored in a container in Reading for at least three months while Kent County Council, the mill's owner, decides its fate.

“ The timber is quite wet at the moment so we will dry it out while it is in the container to prevent possible rot setting in ”

Peter Cobley, conservation officer

The council's Heritage conservation officer Peter Cobley, said: "We will store it safely away and decide what to do next.

"The timber is quite wet at the moment so we will dry it out while it is in the container to stop any rot setting in.

"Each part will be clearly identifiable so we have the option to rebuild it in the future."

BBC News Monday, 15 December, 2003, 12:25 GMT

http://news.bbc.co.uk/2/hi/uk_news/england/kent/3320755.stm

Power plan for old mills



Professor Clayton wants to see Cadges Mill generating power

Derelict windmills in Norfolk could soon be used to generate electricity. Environmental experts say it would mean more green power - and a new lease of life for some impressive old buildings.

The county is home to giant wind turbines and a wind farm at West Somerton.

Now plans are on the drawing board to combine new technology with a more traditional style.

Cadges Mill on the River Yare is one of 15 around Halvergate Marshes which need restoration.

The mill, which stopped working more than 60 years ago, could be in for a new lease of life - transformed into the country's first windmill to generate electricity.



New technology and old side by side

Environmental expert Professor Keith Clayton favours converting the mills to produce power.

"What I look for to is the 15 mills all turning on Halvergate, all producing electricity, sustainable energy from the wind - excellent for the future."

The idea is still in its infancy and the cost of such a project or how much power the mills could produce has not yet been established.

Michael Knights, of Norfolk County Council, has been converted to the idea. "I must admit I was a little sceptical, but I while on holiday in Sweden I visited the island of Gotland where I saw windmills producing electricity and if we can do so here that would be good for Norfolk."

BBC News Friday, 10 January, 2003, 18:33 GMT

http://news.bbc.co.uk/2/hi/uk_news/england/2647257.stm

To conserve, or not to conserve? That is the expensive question!

The whole issue of heritage conservation is fascinating because it raises real debates about the importance of our built environment. Pupils should all debate these issues because it will be their generation that will have to fund the future of the building they are visiting. As part of a school study visit they might consider:

- The importance of the windmill to the local community and nationally
- Does the windmill occupy any special place in the landscape?
- Is the windmill a valuable educational resource, what have they learnt since their visit?
- Does the windmill still contribute to jobs in the area through tourism?

There are arguments against the amount of money and time put into the preservation of windmills

- The money spent could be used for people in real need
- The building is not of great importance
- The windmill is an ugly industrial feature in the landscape

Activity:

Set up a balloon debate. Divide the class into eight groups. One group will be the judges, the other groups must all adopt a different windmill. In the debate they will argue why their windmill will not be the one to be closed and demolished.

The judges decide at the end of the debate which windmill should be sacrificed.

Should we preserve the mills. KS3&4 activity

This text is suitable for upper KS3 and GCSE pupils who are investigating the question of preservation and conservation. The account includes issues and financial details that are real areas of debate for Kent County Council and the professionals responsible for the maintenance of the windmills.

- *What are the main issues?*
- *Is it important to recognise the short term and the long term issues?*
- *What are the solutions?*
- *What do you think are the three most important solutions for ensuring the long term survival of the mills as a public resource.*
- *Do you think the cost of maintaining the mills is justified?*

'After a career as an architect and town planner in various local authorities, in 1990 I became Kent County Council's Conservation Architect. Amongst other roles, I am now responsible for advice on the care and repair of the sixty or so listed buildings in County ownership. Of these, eight are windmills, three being Grade 1, three Grade II* and two Grade II. It was in 1998 that I entered this world of sprattle beams, cant posts, damsels, sheers, cogs and breast beams, when I was asked, on behalf of the Planning Department, to take over care of the windmills in the Council's ownership.

On taking over, I visited the windmills. All were suffering from varying degrees of structural and/or maintenance problems, as might be expected with structures which are really sensitive machines first and historic buildings second. Indeed mills work for a living and have a limited life expectancy. In 1933, William Coles Finch, in his book, *Watermills and Windmills*, quotes the life expectancy of a post mill at 200 years and a smock as 100 years - but this assumes the continuous care of an on-site miller. Mills nowadays do not have this luxury and repairs can be piecemeal and fail to address longer-term issues. We cannot therefore treat them as other listed buildings and in fact working mills may require more invasive change than in (for want of a better phrase), the normal listed building. I surveyed each mill and assessed the costs involved for repair and restoration at something under £1 million. Because of the costs involved, it was agreed that a Lottery Bid application should be submitted. The special needs of windmills were recognised in the submission and this approach also fitted the HLF criteria of funding high quality work. Overall the work consisted of sensitive repair to the mill structures and work to improve the potential for tourism and for educational purposes.

Another important issue related to the seven volunteer groups who look after the mills for the County Council on a day to day basis and open them to the public. They perform an excellent service and it is obviously necessary to maintain their interest and morale, something which is less easy to do if the mills are not in good shape. There is also a further problem since the numbers of volunteers are dwindling and the existing members are ageing. (I'm sure they would not object to me stating the obvious). Without new blood, there is a danger that the mills will not be able to open as at present. This seems to be a difficulty not unique to Kent - maybe a national effort is needed to resolve the problem.

The Heritage Lottery bid was for £523,000 with matching funding from KCC and others of £120,000. Included in the bid was a commitment to spend money promoting the windmills for tourist and educational purposes. This included improving facilities for volunteers where possible. The bid was submitted in June 1998. Approval of a grant of £400,000 for work on seven of the eight windmills was given in September 1999. As well as repair work to the mills themselves, the grant covers the production of measured drawings, volunteer training, site work, interpretation, school education packs, leaflets, disabled facilities where practical and professional fees. Of these longer-term items, volunteer training has taken on a wider dimension than originally envisaged due to health and safety issues.

Work on Herne, Drapers mill at Margate and Chillenden mill was begun as a first phase. The inevitable lead time before work started was a little frustrating for everyone, particularly the volunteer groups who realised they would have to close the mills during repairs and could lose volunteers as a result. The repairs at Drapers and later at Chillenden illustrated the hidden extras (and additional costs) likely in buildings of this type and caused a halt to some work. At Chillenden we concentrated initially on making the mill body watertight and structurally sound for the winter. Because of the cost increases at Chillenden and Drapers mills, however, a further grant application was made to the Heritage Lottery Fund. This was a much more straightforward process since it involved topping up an existing approved grant. As a result the total grant was increased by £326,000 to a total of £726,000. A condition of this increase was a commitment from KCC to implement a 10-year programme of planned maintenance involving an estimated annual expenditure of approximately £35,000. There was recognition here that funding capital repairs without considering the costs of longer-term care can easily be a wasted resource. After agreeing with the HLF, we were able to initiate repair work on the remaining mills and complete the work on Chillenden windmill.'

Peter Cobley, Conservation Architect.

Making a buck !

One real life problem that faces all historic monuments is:

'how can they make enough money to be maintained and kept open to the public?'

On returning from a visit to a windmill the class might like to look at the windmill, not in its historic context but in terms of its economic potential. A task could be to design a method of making enough money to help keep the windmill open and in good condition.

- What merchandise could be made for sale?
- Could the windmill be used for other purposes?
- Should the building be converted to make it more profitable, should the use of the building be changed?

The class may want to concentrate on the first item and design a range of items for the shop.

Drawing on site.

The Windmill

Resources

HB pencil, graphite pencil, charcoal, fine line pen, sketchbook and paper.

This **activity** could form part of the scheme of work for pupils in KS2.

Split the class into three groups with each group drawing in a separate locality on site. The class should be encouraged to express their response to the windmill and the site.

The **learning intentions** should include details and the use of perspective in drawing. Pupils could work in pairs to evaluate their own and their partners work. Tone proportion and form should be applied to the drawings. Pupils need to be able to place the mill in context, in particular the way the mill was constructed and the nature of the materials that were used.

Activities

The focus might be the windmill or the surrounding buildings. A discussion of the task should introduce the activity. Pupils could begin with closely observed drawing of the windmill with attention paid to the details such as sweeps, the cap, windows etc. In the drawings pupils should be encouraged to include the visual elements of tone, pattern and line.

Cross curricular links

Science, technology, history, geography.

Follow-up

An exhibition of work could be arranged to stimulate discussion about what went well, those things that were difficult and some of the questions that arose about the detail that was observed.

The drawings from observation will have highlighted the pupils awareness of the site and extended their interest in the building, its history, technology and conservation.

Assessment

The activity can be used to assess:

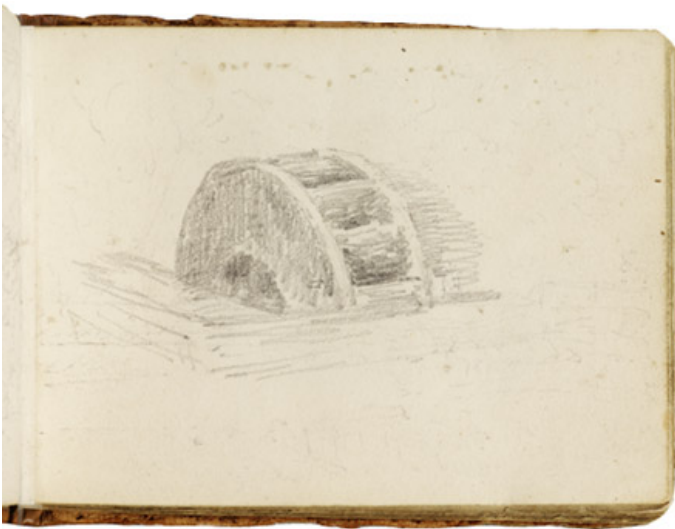
- Observational skills
- Recording detail
- The use of line, tone and pattern
- Awareness of shape
- Proportion
- Composition
- The understanding of being safe on site
- The nature of economic activity on the site in the past

Using a Sketchbook

Recording a wide range of features, both internally and external can be very time consuming. There may be a temptation to draw scenes that are complex and time consuming. On site encourage the pupils to make exploratory drawings that can be used to produce a finished drawing at a later date. By using the pictures, photographs and drawings in this pack pupils can combine these with their own notes and sketches.

Developing the use of a sketchbook is an essential skill and it is worth either investing in small book or making one from folded plain paper. Recording details and the position of features will help pupils acquire a sense of the structure and form of the building.

There is fascinating gallery of images from the sketchbook of John Constable on the Victoria and Albert Museum web site. It is worth choosing some of those that record features of a watermill to illustrate the work of an artist. By choosing carefully you can avoid showing too many of the sketches that are exceptional and likely to put the children off !



Pages from the sketchbook of John Constable. From the Victoria and Albert Museum web site



Looking at Windmills ART

Before visiting the windmill ask pupils to bring into class pictures of old buildings. Ask them to present the buildings according to their purpose. Discuss the different features of the buildings, the door, windows, shapes and building materials. Then introduce some old pictures of the windmill you are about to visit. This will prepare pupils for their observational work on site.

The exterior of the windmill

The exterior of the windmill is dominated by the sweeps. The building is functional but it is made of several different elements, geometric shapes and materials. Discuss why the shapes and the design are functional rather than decorative. Ask if there are any decorative features that can be seen on the exterior of the building.

Doors and staircases

Access to the windmill and movement around the interior of the building is often difficult. Explore what messages the functional design of the building conveys about the building.

In the cramped spaces within the windmill the shapes of the timber, the form and the texture of the wood can be recorded, including the interplay of light and shadow.

Doors often vary in size and shape. The panels, latches and catches also tell the observer about the functional nature of the building.

Unusual features

Windmills contain a wealth of unusual features. Outside the sweeps identify the power and function of the building. Inside there are numerous features that provide evidence for the construction and working of the mill.

Music and the mills

Windmills and weather can be used as a stimulus for pupils to explore the ways in which sounds can be used expressively.

The QCA Music scheme of work - Unit 7 suggests ways in which weather can be used as a stimulus to explore timbre, tempo and dynamics. The ideas below are taken from this scheme.

Introduction

Children can be asked to read poetry, sing songs and listen to pieces of music which describe windmills and different types of weather.

How windmills and weather can be described by sounds

Pupils can think about the noises made by a working windmill and the different types of weather which make sounds, e.g. thunder, heavy rain, hail, gales. They can also consider the sounds which describe how they might be feeling, for example, working in the mill.

How sounds can be changed

Explore different ways of saying these words to create an effect, e.g. rain getting heavier: for example saying words quicker or slower, louder or quieter.

Instruments and weather

Pupils can use different instruments or materials to make the sounds described by their weather words, e.g. drum rolls could be used for thunder, whilst gentle tapping could be used for rainfall. These can be combined with words to describe a chosen type of weather or the noise of the windmill working.

Making a weather composition

Pupils can think about the sequence of production in a mill and put together a composition of words and sounds using instruments to describe the process. They should think about a structure to the piece, and what instruments, sounds and tempos work best. Different groups can work on different sequences, then play these back to the rest of the class.

ICT and Windmills

There are several ways that ICT can be used to assist the work on site.

- Digital cameras are an ideal way of recording details cheaply. Several pictures can be taken, only some may be printed. An archive of images can be kept for future visits on the shared network.
- Powerpoint presentations are an ideal way of getting children to present a concise measured argument. For example they could be asked to provide a brief guide for a windmill.
- The compilation of a small database can reveal patterns that help understand the development and the decline of milling.
- Producing a six panel gatefold pamphlet is an ideal way of focussing children on writing an account of their visit.
- Consider a presentation of the work to parents after or during school time.
- Producing a newsletter about the visit is another way of communications with parents.

ICT Activity Planner
 Year Group: 6
 Resources: Computers, web browser,
 favourites, internet connection.

ICT TASK
 Internet research
 into windmills

Context

Pupils have visited a local windmill and are researching more information about the history of the mill. They have some experience of internet research.

Task Description

Pupils decide which aspect or mill they are going to research. They have a key question to investigate with several 'smaller' questions to help them structure their answer.

Learning Intentions

| Knowledge and Understanding | ICT: Skills, Knowledge and Understanding | ICT Level | | |
|---|--|-----------|-----|-----|
| | | KS1 | KS2 | KS3 |
| Pupils use a wide range of information. They use skimming and scanning strategies to | Use the internet for research purposes. Move from site to site using appropriate software. | w/1 | 2/3 | 4/5 |
| Demonstrate factual knowledge and understanding of some of the main events, people and | Able to use keywords within a search engine to find information. | 1/2 | 3/4 | 5/6 |
| Ask and find answers to questions about the past from various sources of information. Begin to select and combine | Use ICT to combine different forms of information. Copy, paste or modify text and images from different sources into a | 2/3 | 4/5 | 6/7 |
| POS related to task : Local History | ICT POS related to task: 1a, 2b, 2c | | | |

Teaching Approach

Brief introduction. Key question with a research pathway - several supporting questions. Group work with pupils reporting back their findings. Emphasis on the reliability of the websites.

Links with other curriculum areas

The most important links are those with literacy. Speaking, listening in the group work and writing and reading in their research and presentation of the findings.

Forms of Assessment

Teacher Observation. Peer/Self Assessment. Teacher/Child Discussion.

PUPIL Research Groups

Group 1

Produce a summary of the history of windmills.

History of wind energy

http://www.globalwinds.com/windenergy_history.shtml

History of wind power

<http://telosnet.com/wind/early.html>

History of Windmills

<http://www.millarchive.com/4schools/history.aspx>

History of windmills

<http://www.windmillworld.com/windmills/history.htm>

Group 2

Produce a time line of the major changes in the design of windmills

A windmills time line USA

http://www.newton.mec.edu/Brown/TE/HOT/TIMELINES/WIND/wind_timeline.html

Group 3

Collect images of as many different types of windmill and put them into a Powerpoint presentation.

For the types of windmill

<http://www.building-history.pwp.blueyonder.co.uk/Buildings/Mills.htm>

<http://servercc.oakton.edu/~wittman/mills/mills.htm>

<http://www.spoom.org/>

Group 4

Find out what happened at Chillenden windmill.

<http://news.bbc.co.uk/1/hi/england/kent/3240320.stm>

<http://news.bbc.co.uk/1/hi/england/kent/3320755.stm>

<http://news.bbc.co.uk/1/hi/england/kent/3585157.stm>

<http://news.bbc.co.uk/1/hi/england/kent/4577153.stm>

Group 5

Produce a Powerpoint presentation of windmills from at least ten countries.

Long list of windmill websites, including international listings

http://www.solarnavigator.net/windmill_links.htm

Windmills from around the world - some links

<http://www.windmillworld.com/>

Group 6

Why are people sometimes opposed to wind farms?

Go to the BBC web site <http://news.bbc.co.uk/>

And research using the key words 'wind farms'

Oral History

There are no people still alive who worked the windmills when they were a commercial concern. There are however, many people who are able to work the windmills and who maintain the buildings and the machinery. It is worth taking the opportunity to briefly interview these people during the visit.

Much of the practical information about how to run and work the windmill has not been written down so the practical experience of people can be very enlightening. It does help the children to understand these very complex buildings.

Pupils do need to do some preparation before the visit. They need some knowledge of the windmill, the history and the technology of the building and the site. Armed with this knowledge and some carefully prepared questions they will be able to find out much more about milling and the windmill. It is as well to take with you a glossary and be prepared to translate the technical vocabulary that might be used by any interviewee, guides or displays.

For excellent advice refer to the **Oral History Society** web site. The advice section is especially useful.

What is oral history?

<http://www.ohs.org.uk/advice/>

Key Oral History Organisations

- Oral History Society (UK) <http://www.oralhistory.org.uk>
- Oral History Association (US) <http://omega.dickinson.edu/organizations/oha/>
- Canadian Oral History Association <http://www.ncf.carleton.ca/oral-history/>
- International Oral History Association <http://www.ioha.fgv.br/>
- H-Oralhist is a network for scholars and professionals active in studies related to oral history <http://www.h-net.msu.edu/~oralhist/>

Oral History Handbooks and Bibliographies

- Finnegan, Ruth, *Oral Traditions and the Verbal Arts: A Guide to Research Practices*, London, Routledge, 1992.
- Perks, Robert, *Oral History: An Annotated Bibliography*, London, British Library National Sound Archive, 1990.
- Perks, Robert, *Oral History: Talking About the Past*, London, Historical Association, second edition 1995.
- Ritchie, Don, *Doing Oral History*, New York, Twayne, 1995.
- Seldon, Anthony and Pappworth, Joanna, *By Word of Mouth: Elite Oral History*, London, Methuen, 1983.
- Thompson, Paul, *The Voice of the Past: Oral History*, Oxford: Oxford University Press, third edition, 2000.
- Trask, David and Pomeroy, Robert, *The Craft of Public History: An Annotated Select Bibliography*, Westport, Greenwood, 1983.
- Perks, Robert & Thomson, Al (eds), *The Oral History Reader*, London, Routledge 1998.

History of Chillenden Mill - Grade II* listed

Chillenden village has had a windmill for many centuries. The one that stands today was built in 1868, one of the last windmills to be built in Kent and certainly the last of its type (an open-trestle post mill). Post mills were the earliest form of windmill. It probably replaced a previous mill, although this may not have stood in exactly the same spot, and perhaps re-used material from its predecessor, since a seventeenth century date was found inscribed on a timber.

Although it is not known exactly where the earlier mill stood, several ancient maps, including one of 1695, have a mill marked in the area. Directories of the nineteenth century, listing local trades people, reveal the names of several millers who worked earlier mills. Between 1866 and 1878 the miller of Chillenden was recorded as John Brice Gibbens, who may therefore have worked both the earlier mill and the one we see today.

One wonders what Mr Gibbens made of the reason behind the new mill's location. Local legend has it that the mill was built on this spot at the behest of a lady of the D'Aeth family, the local gentry, who had recently returned from Holland and wished to be able to see a windmill from Knowlton Court, the family home. Certainly the mill is visible at the end of the tree-lined avenue leading from the family seat. Whether the mill was built by Dutch or English millwrights is unknown, but, whatever the truth of the legend, there is definitely a strong Dutch influence on the architectural style of some Chillenden houses and within surrounding villages.

The mill, in common with most, was owned by the local estate, in this case that of the D'Aeths, and leased to a miller. By 1882 Hayward & Cage, 'millers and farmers' were working the mill, followed by William Hopper Bean between 1887 and his death in 1909. After William's death, his wife Eliza carried on milling for two years before giving up the tenancy. By 1911 Fredrick Neves was the miller. He was buried in Chillenden churchyard after his death in 1920 aged sixty nine, and was joined by his wife Mary two years later on her death. The last years of their lives must have been sorrowful; the church contains a plaque in memory of their son who perished in 1918 in the First World War at the Battle of Amiens, aged only twenty eight.

Albert Henry Laker took over in 1920, and worked the mill for twenty six years. The lease between Albert and the Speed family, who now owned Knowlton Court, agreed an annual rent for Millers Farm and its thirty eight acres, including the windmill, of £60. Albert and wife Nell lived in Millers Farm, which still stands, opposite Chillenden village hall.

Albert had never seen inside a mill before taking the lease, but he soon mastered the work. He was known for his kindness, darning holes in sacks belonging to farmers who had sent corn for grinding. Perhaps some took advantage of his generous spirit, as the number of damaged sacks he received gradually increased! He offered a home to his twelve year-old nephew Norman William Laker, one of a family of eight split up after the death of their mother. Albert and Nell were childless, and treated Norman as their son.

During Albert's tenure, the mill was twice put up for sale by the Speeds, in 1926 and in 1930. A prospectus was drawn up in 1930 by Brigadier Speed, a major in HM Lifeguards, for an auction in Canterbury, but as far as is known, the sale did not go ahead.

Maintenance of the mill was on-going throughout its working life, the hand-crafted work often being a lengthy process. The millwright from Hole & Son, responsible for the manufacture and fitting of a middling (sail stock) and two new sweeps, actually lodged with Albert and Nell for eighteen months during 1927 and 1928. The crosstrees were repaired prior to this in 1926, and subsequently had more work done in 1934 when large channel irons were fitted to withstand

forecast gales. Albert knew how to 'dress' the two pairs of millstones himself, and passed his skill on to Norman.

Norman Laker eventually became the last miller of Chillenden, starting work at fourteen with Albert and continuing after Albert's retirement due to poor health in 1946. Norman married Win, a blacksmith's daughter, in 1942. Their daughter Christine recalls childhood visits to the mill; *I would totter across the field with my father's tea in a little enamelled pot with a cup upturned on top, my mother's words ringing in my ears - "mind the sweeps!" I remember being inside with Dad whilst he was working, smelling the grain, hearing the sounds and feeling the movement of the mill.'*

This movement was enough to give Win motion sickness if she was inside the mill when it was grinding. To slow the sweeps down when grinding had finished, Norman would leap and catch one as it sailed past, going up with it, then dropping to the ground, repeating this several times.

Norman also took over Albert's coal business run from Millers Farm, bagging up bulk loads for local sale from a small lorry. Christine recalls her father, working half the week with flour and the other half with coal, as *'always either black or white'*.

In 1949 the mill was badly damaged in a gale and became 'headsick', leaning forward with one sweep touching the ground. Subsequently it stood silent for many years, gradually deteriorating. The stairs became blocked with debris created by nesting jackdaws, woodworm attacked interior fittings and exterior wood rotted. After windpower was no longer possible, Norman carried on grinding with a hammer mill for some years in the shed at the back of the mill, before working as a coal merchant full time. Until 1984 he was Custodian of the mill, showing visitors around. The last miller died on 14th November 1997.

The Society for the Protection of Ancient Buildings began investigating the possibility of repairing the mill in 1950, and by 1955 local people had raised enough money to weatherproof it, but not for full repair. In 1958, Kent County Council bought the mill, the first of eight that they now own and maintain. Subsequent restoration unfortunately saw some of the original milling equipment removed - stone tuns and hoppers, a flour dresser, many of the meal chutes and the maize kibbler. The adjoining barn was also demolished; Chillenden's acquisition was primarily as a landscape feature, rather than a workable mill.

By 1983 the mill was in a critical condition. Major structural work over a 6-month period was undertaken, which involved lifting the mill and removing the crosstrees for repair. In 1984 the sweeps were removed and repaired by millwrights Hole & Son, the very same company that had stayed with Albert many years before, during 1926/7.

A successful Heritage Lottery Fund bid by Kent County Council enabled major work during 2001/2 to repair fully and restore the outward appearance of the mill. The maximum amount of material was reused, although more was replaced than would normally be acceptable, due to its exposed position and relatively light construction. Work also included the replacement of the original sweeps and stocks with new ones.

Disaster struck, however, in November 2003. High, gusty winds rocked the mill and it collapsed. It was effectively rebuilt off-site and to a sounder condition than the original build. This approach, of prefabricated construction, was probably the original method of construction. It was to be a further two years before the damage was made good, but eventually, on 13th September 2005, Chillenden Mill was once again opened to the public.

Today, the mill volunteers regularly welcome visitors throughout the summer months.

Acknowledgements are due to: John F. George *'Chillenden Windmill'* Christine Dawkins (miller's daughter). The Chillenden Mill Committee.

History of the Union Mill, Cranbrook - Grade I listed

Reputed to be the finest smock mill in the country, Union Mill is one of only two Grade 1-listed windmills in Kent. The village already had two mills when it was built; both are long-since gone. Union Mill is now the only survivor.

Construction was initiated in 1814 by Mary Dobell, who owned the land on which the mill stands. She employed James Humphrey, a noted local millwright who had already constructed at least 3 other mills in Kent, and the total cost was around £1500. Mary's son, Henry, was installed as the miller.

Since the land was surrounded by buildings, a three-storey base was built to lift the sails above the turbulence caused by their roofs. Topped by another four storeys, the mill is consequently over 22 metres high, the tallest smock mill in England. The brick base is tarred and has a reefing stage at third-floor level.

On completion, Humphrey's son supposedly stood on top of the mill and blew a bugle when it began to turn; 'free drink was provided for all, and there was great hilarity in celebrating the event'!

Economic depression, and the disbanding of much of the nation's military forces who had previously required large supplies of flour during the Napoleonic Wars, led to Dobell's bankruptcy in 1819. Five of his creditors acquired the mill between them, forming the Union of Creditors and working the mill to recover the debt. The mill has been known as Union Mill ever since.

In 1832, the Union sold the mill to brothers John and George Russell, millers from Waldron, near Heathfield in Sussex. By 1840 they were facing competition from more efficient mills, so they replaced the canvas sails with Cubitt's patent shuttered sails, the wooden cog wheels and gearing with ironwork, and the manual endless-chain mechanism, used to turn the cap, with a fantail.

A ten-horsepower Middleton steam engine was installed in 1863 to drive three pairs of millstones on the first floor of the mill during becalmed periods. Gradually, this engine superseded the sails, and by 1870 the mill was no longer wind-driven. During the 1880s the old wooden wide reefing stage was rotting and was replaced by the narrower iron structure you see today.

The Russell family ran the mill until it finally ceased working. John's son, Ebenezer, took over from his father in 1875, and was followed by his son, Hugh. Hugh's elder brother, Caleb, who was already milling at Mersham Watermill near Ashford, reluctantly inherited the mill in 1902, when Hugh emigrated to Australia. Caleb's son, John, took over the mill in 1918 on his father's death. Over the next few years John restored wind power by spreading canvas over the sail frames and fitting a new fantail, admitting that the wind never earned him any profit, but wishing for sentiment's sake to restore the mill. The day-to-day work of grinding, however, was done by a suction-gas engine, which replaced the steam engine in 1919.

John's niece, Helen Wilson, lived in Mill House as a child. She recalled lying snug in bed, listening to the canvas flapping on the sweeps. Buildings surrounding the mill in those days included a grain mixing shed, a wagon shed, a forge, and stables containing cart horses. Helen also remembers the large open water tank, whose contents were used to cool the gas engine, but which was also used as a pool by local children. The numerous frogs inside, however, did not appeal to Helen as swimming companions. The only remaining building to stand of the original

John Russell's background as a submarine engineer before working the mill was to prove invaluable, as he was able to carry out most of the work himself. Recognition of his dedication to the preservation of Union Mill was made in 1935, with the presentation of the first ever Windmill Certificate by the Society for the Protection of Ancient Buildings (SPAB). In 1949, Union Mill became the first windmill to be Listed.

By 1951 John Russell's health was failing and he took a partner, Mr Lewis, who restructured the business to try and make it more competitive. Machinery was removed from the first and second floors and an electric roller mill installed. The mill concentrated on producing animal feeds. Most of the buildings in the outside yard were demolished, and a shed was built to take the mixing machinery. The new venture did not prove successful, however, and the business eventually relied on selling bought-in feed products.

In 1958, Kent County Council, aided by the SPAB, started repairs, on the day that John Russell, the last miller, died. A friend of John Russell, the Dutch millwright Chris Bremer, was employed; a pair of his clogs still

hang beside the shop. Work stopped when it was realised that further funds were required, but after acquisition of the mill by the County Council in 1960, was finally completed. It included renewal of the sweeps, weatherboarding of the cap and much of the smock, renewal and splicing of several posts and repair of the curb.

The mill was returned to its nineteenth century appearance, although the sails were of Dutch, rather than the original English, style. KCC rented out the mill as a store and distribution centre for animal feeds for the next twenty years; all the remaining machinery in the base was removed.

In 1982 local residents decided to open the windmill to the public and formed the Cranbrook Windmill Association in 1983. Flour was once again ground by wind power in 1985, and by 1987 this was on sale to visitors.

In 1994, on a mid-summer evening, thunder, lightning and torrential rain accompanied a rapid change in wind direction, resulting in the fantail blowing off, knocking slats out of the sweeps on its way to the ground. By the autumn, scaffolding was up and repairs were done, with a complete new fantail fitted. Whilst the scaffolding was in place the mill was also repainted.

More recent extensive work, funded by a Heritage Lottery grant, included the removal and complete rebuilding of the mill cap, repairing the structural frame, reboarding the smock and minimising the effect of damp in the brick base. The volunteer group has taken advantage of this by making use of the previously unused basement as a public area. A highly visible alteration was the replacement of the Dutch style sweeps with sweeps in the Kentish style, proven by historic photographs to have been previously fitted.

When the wind blows, the volunteers who staff the mill set the sweeps to turn and flour is ground. Cranbrook is one of only a very few mills in the country to use wind power alone. Today the mill is regularly open to the public, and several thousand visitors are welcomed each year.

Acknowledgements are due to:

The Cranbrook Windmill Association.

A Guide to Union Windmill, Cranbrook, Kent by Wynn Tremenheere.

A Lighthearted Look at Windmills & Cranbrook in Particular by Mary Tremenheere.

History of Drapers Mill, Margate - Grade II listed

Now standing as a solitary landmark, surrounded by housing and the laughter of children in the nearby school playground, Drapers Mill was once just one of a line of mills that graced the high point above Margate.

A map of Thanet made in 1719 shows a post mill in the area, and three more mills were built between 1845 and 1872. The only survivor of these last three is Drapers Mill, known as 'The Old Mill' since it was the first of the trio to be constructed in 1845. The other two were a tower mill, known as the 'Pumper', and a smock mill, known as 'Little Drapers'. The Pumper, a large five-sweep mill that pumped water, was built between 1858 and 1872. Rebuilt in 1878 after a severe gale, it ended its days in 1894 after the cap and sweeps were destroyed by tailwinding. 'Little Drapers' arrived in 1869 after being moved from nearby Barham; dismantled in 1929, by 1930 only the base remained, to be finally removed in the 1950s.

Drapers Mill was probably built John Holman of Canterbury, a well-known millwright. Octagonal in shape, it has a brick base and black-tarred weatherboarding and cap. Unlike many other mills, Drapers is lucky to have an original outbuilding still standing; the bakehouse, which once worked in cooperation with the mill, is now used as a workshop for the mill volunteers labours.

The first known miller was John Banks, listed as such in a Directory of 1847, and still in occupation in 1866. He was followed by F & E Darby in the late 1860s and then Thomas Ind from 1870. The latter was a colourful figure who, although born in Gloucestershire, England, had travelled to America and worked in the Baptist Ministry in Iowa, then farmed in Illinois before finally settling at Drapers Mills. Thomas Ind died in 1899, and in 1902 the mill and other properties associated with it were bought by the Michael Yoakley Trust, a local charity founded by one of the first Quakers at the start of the eighteenth century. It appears that the name of Ind carried on in business, since the three-year lease after the sale bears this name. An advertisement in the local newspaper proclaims them as 'Bakers, Confectioners and Family Millers'. By 1905, however, Thomas Robert Laidlaw was the miller.

The mill worked by wind with steam auxiliary power until 1916. By 1925 the Margate Bakery Company owned the mill and during their tenure, in 1927, the sweeps and the fantail were removed as they were deemed unsafe. A 20hp gas engine subsequently powered the mill until the mid- 1930s, when it ceased to grind altogether. After this, the mill was used for storage by a company known as Longbottom Pantony, who distributed animal feed, coal and corn, and by Lythgoe's, a similar concern. Drapers Mill's final commercial use was in the late 1950s as a 'tuck' shop. Local people, many of whom went to the adjacent Draper's Mills Primary School, remember visiting Miss Hart, the proprietor, for a bag of sweets.

Once abandoned, the structure began to deteriorate until little of its former glory remained. The Isle of Thanet Gazette referred to the mill as 'that ugly wooden construction on the Dane Valley skyline. It is hardly a thing of beauty'.

In 1965 Draper's Mill Trust was set up to restore the mill, initiated by Mr Towes, headmaster at the Primary School. He and colleagues worked to raise £2,500 towards restoration. An annual 'Windmill Fair' was held in the school grounds to raise money.

Kent County Council acquired the mill in 1968, averting the intended demolition. Restoration continued over the next few years, involving renewal of much of the weatherboarding, the entire fan stage, and the addition of two new pairs of sweeps.

The first floor stage had been intended for Barham Downs Mill, also undergoing restoration, but this mill burnt down in 1970, so Drapers became the beneficiary instead. By 1972 two sweeps were in place, and another pair were added in 1974. Work was finally completed in 1975 and once again Drapers Mill turned to grind corn.

Much of the original machinery remains, including three pairs of millstones, two of Derbyshire Peak and one of French Burr. Since the initial restoration, other work has included removal of the cap in 1994 to repair the kerb. Recent Heritage Lottery-funded work included removing the cap for structural repair and reboarding, repairs and reboarding to the smock and rebuilding the sweeps. A 20hp gas engine, similar to the vanished original, has been donated by the Museum of London. Extra shafting and gearing are in place, to enable the engine to turn the millstones and machinery when restored with funding from a European 'Interreg' project. This project has also twinned Drapers Mill with the Moulin Tellier (Tellier Mill) in the village of Bussus-Bussuel in the Somme valley, France. A small museum of eighteenth and nineteenth century milling artefacts has been created, together with displays of larger farm machinery.

Acknowledgements are due to:

David Keep

The Draper's Windmill Trust at Margate

History of Herne Mill - Grade I listed

Herne Mill was probably built in 1789, an early specimen of a smock mill and the oldest of the six mills of this type that Kent County Council own and maintain. This date can still be seen incised into one of the cant posts. A sequence of mills had stood in the area since the early fifteenth century; transcripts of accounts written in Latin in 1405 by the Treasurer of Christ Church, Canterbury, show repairs, including a new sail, to a mill at Herne, and ancient maps of the sixteenth and seventeenth centuries depict mills in Herne. The existing mill itself replaced an earlier post mill that had once stood on, or near, the present site. It is octagonal, tarred and weatherboarded and originally stood on low brick base.

The original miller was Job Lawrance, the first of a family line that worked the mill for ninety years. Job died in 1795, and was referred to as being *'upwards of 40 years miller at Herne'* so he milled elsewhere within the area before coming to the present mill. His entitlement to vote in the Parliamentary elections of 1790 indicate that he was a freeholder, owning the mill, rather than renting it as shown by tax returns relating to the previous mill.

Job was succeeded by his 32-year old nephew, John, and wife Sarah, whose sons Job, John and Edward followed in their father's footsteps after his death in 1840. During their tenure, the whole wooden structure was bodily raised and two stories of brickwork were built up underneath. This rise of over five metres enabled the mill to soar above surrounding trees which had grown high enough to shield it from the wind. The two new stories became the present ground and meal floors. Initials carved into the brickwork of the new base on either side of the entrance are likely to be those responsible for the building. On the left, 'EL 1856' and 'WM' appear, and to the right, IL 1856 and JL 1856. 'JL' has three possible 'Lawrance' candidates; Job, 1799-1868, who would have been 57 at the time, his brother, John, 1810-1876 (46), or his son, also John, 1820-1894 (36). 'EL' was Edward, and 'WM' was the Lawrance's nephew, William Minter. It is easy to imagine the men admiring their finished handiwork, and proudly making their mark.

A tale of tragic death within the mill has not been proven, but one of the Lawrance family is said to have hung himself there. It may be significant that Edward is not named on the family gravestone in Herne churchyard. In 1876 the last surviving Lawrance brother, John, died. He left the mill to his sister-in-law, Edward's widow. Three years later, she sold the mill to Thomas Wootton, who, with his brother John, had been a miller at Chislet before taking over Herne.

Three generations of Woottons were to work the mill over the next ninety nine years.

In 1904 the Woottons installed a steam engine, housed in a shed southwest of the mill, to provide more power when the wind was low. The hurricane of 1987 destroyed this engine shed; the building standing today is a replica. The steam engine was supplanted in 1925, by a 'Mogul' tractor engine in another shed.

Frank Wootton, son of Thomas, was the miller by the autumn of 1931, when the cap stuck. The broken wooden worm was replaced by a cast iron one and new wooden cogs were fitted to the curb. Although these repairs were carried out, the mill did not run by wind for several years afterwards as the money could not be found to replace two missing sweeps.

Frank contacted the Society for the Protection of Ancient Buildings (SPAB) and a report was drawn up. The expert in charge, Rex Wailes, gave the mill two sweeps, which had originated on a mill in Norfolk. An estimate for work was obtained and a fund raising appeal was begun by SPAB with the support of local organisations and societies.

An extensive repair programme was undertaken in 1936 by Thomas B Hunt, a millwright from Cambridgeshire. The other two sweeps unexpectedly needed renewing too, so Mr Hunt made those. The cost was borne by SPAB, the Duchess of Kent (Princess Marie Louise) and by Trinity House, to whom the mill was of value as a navigational landmark. As far back as 1844, The Thames Estuary Southern Part chart depicted the mill with a bearing line of 350 degrees emitting from it, indicating a conspicuous feature to bring ships safely into Herne Bay. In 1932 the legend '(conspic)' was added to the mill and this continued on charts until 1992.

The mill last worked by wind in 1952; following this, milling was done by Clive and Edwin Wootton, sons of Frank and grandsons of Thomas, for a few more years by an electric flail mill within the base. After the mill ceased grinding, the Herne Society undertook various schemes to preserve it, including replacing cladding and straightening the tower. The cap was rebuilt in 1971 by millwright Vincent Pargeter, following an appeal to raise funds instigated by the Society. In full working order, the cap and associated machinery weigh about thirteen tons.

Clive Wootton sold the mill in 1980, but the new owner's plans for its incorporation into a garden centre did not materialise. Kent County Council subsequently bought the mill in 1984. It was in need of immediate restoration, having succumbed to wet rot and insect damage. The structure of the smock was rebuilt and a new pair of sweeps added. The mill officially opened to the public in July 1986, operated by the Friends of Herne Mill on behalf of the County Council. Further work was done in the early 90s, to repair the cap frame and the kerb, and to erect a second steel stock and a set of sweeps. In 1991 the mill stones once again ground under windpower for the first time in nearly forty years.

In 1996 the stocks and sweeps were removed, as the cap was not turning properly after a gale. Closed to the public, the mill was identified as in danger. Emergency repair work was part-funded by English Heritage, and included removing the cap and renewing a large part of the curb-ring, replacing the steel stocks with new, and lighter, laminated timber versions, and tarring and repainting the exterior. Herne Mill eventually reopened to the public in June 1999. Soon after this, the Parish Council part-funded conversion of the engine house, rebuilt after the 1987 hurricane, to become an office and meeting room for the Parish Council and Friends of Herne Mill. This is now named 'The Wootton Room', in honour of the millers in occupation for so long. Herne Mill is now, more than ever, a central feature of the local community.

Acknowledgements are due to:

The Friends of Herne Mill.

A History of Milling in the Herne Bay Area by Harold Gough

Andrew Colvin, Queen Elizabeth II High School, Isle of Man, for research into use of the mill in navigation.

History of Meopham Mill - Grade II* listed

Meopham Mill was built in the early nineteenth century by a family well-known for milling in Kent, the Killicks. Many previous mills had stood within the parish of Meopham, the earliest reference to their existence being in 1240, when 'Robert the miller's' premises stood in the west of the parish. It is likely that the present mill was built soon after 1819, as James Killick bought the land on which it stands in that year for £125. Some sources state that James was helped in the construction by three of his sons, the eldest of whom, born in 1792, was named after his father. Mr Killick did not live long to enjoy his new acquisition as he died in 1823, aged fifty six. Perhaps he foresaw his fate, as in his will, made only months before, he declared himself 'weak in body but of perfect mind and memory'. It appears that after his death, his wife Sukey (the name being a pet form of Susan, well-known in rhyme for taking the kettle off, but less common elsewhere!), carried on as the owner of the mill, with son James as the miller. The mill was supposedly built as an exemplar to show off to potential customers; the Killicks were millwrights as well as millers. James's brothers, Thomas and John, milled at Broom Hill, Strood, in another unusually-shaped hexagonal mill like Meopham, now long since dismantled. Stories have been told that Meopham Mill was constructed from the timbers of an old battleship dismantled at Chatham Dockyard; whilst incorrect, they perhaps have a kernel of truth. Some of the mill's large posts contain holes of similar appearance to those drilled into timber destined for use for shipbuilding. The holes enabled the wood to soak up brine more effectively whilst floating in dock, allowing expansion and seasoning of the wood. Those sections with holes were trimmed before use in the boatyard and sold off. Certainly the mill timbers do not appear originally intended for mill-building, and the holes do not correspond to any machinery fixings. From their mill at Strood, the Killicks would have had easy access to dockyard timbers from the River Medway.

Upon his mother's death in 1836, James raised a mortgage to pay his ten brothers and sisters for their share of the mill, enabling him to become sole owner. The property, which included the land, Mill House, outbuildings, carts and probably a horse, was valued at £963.15s. Od.

During James Killick's proprietorship, Meopham supposedly acquired a ghost, that of Bob Bennett, a worker at the mill. Bob's initials can still be seen where he carved them in the mill timbers in 1845. Bob hanged himself in a nearby barn, but returned to haunt his workplace until, the

locals say, his ghost was laid to rest when the barn where he met his end was bombed, and flattened, during World War Two.

James appears as 'miller' in various directories down to 1874 and was joined in partnership with his son Thomas, and Richard Killick, perhaps a brother, in 1882. James' will of 1888 left the mill and the rest of his estate to Thomas; he died at Meopham aged ninety seven, in December 1889 and is buried with his wife, Harriet, in Meopham churchyard. Thomas continued milling, but like his grandfather, died quite early, at the age of fifty three, in April 1891. He and wife Matilda had no children to carry on the Killick milling line at Meopham, and she sold the mill four months later for £830.

The new owner of the mill was John Norton, also from a long-standing milling family. His father, David, had worked the mill at Farningham until his death in 1870, and his brother Tanner milled at West Kingsdown (probably the same mill, moved from Farningham - also in this guide). By 1895, John had been joined in business by his nephew William, Tanner's son.

Their trading name, J & W Norton, remained until the business finally closed. They were also joined by Leslie, William's son, born in 1895, when he left school.

William wished to marry in 1894 and John, already living in Mill House, offered him some of the mill land to build his own house if he could raise the necessary money. William built what is now Orchard House and his new wife, Clara, ran a sweet shop on the road frontage, and also tea rooms.

John Norton died in 1908, William inheriting his entire estate. According to various mortgage documents and judgements against him, William's financial situation seems to have been somewhat precarious into the early 1920s. Photographs of the period show the mill incapable of grinding, lacking two sweeps due to storm damage, the other two beyond repair, and the business was reduced to selling goods only. Around 1923, however, a 15hp paraffin-petrol engine was installed in a shed by the mill to turn the stones, which included a new set added to the previous pairs. Animal feeds were produced, the last flour having been ground in 1914. William Norton dressed his own stones, and was proud of his skill (see glossary for stone dressing). Later in the 1920s, a storm blew up which threatened to topple the mill. William and two of his sons, Leslie and David, spent all night wrestling with the fan/brake wheel which had broken away from its gear and was wildly whirling, sending out sparks and rocking the cap. Their triumph was catalogued in the local press as 'Gallant All-night Battle to Save a Windmill'.

Leslie and David both worked in the mill, the latter taking charge of the business before the Second World War and living in Orchard House, whilst his ageing father remained in Mill House. Leslie's younger son Christopher also helped in the late 50s and early 60s. William Norton had died in 1951 and Leslie, as his heir, carried on running the mill until his own demise in 1967. Leslie realised that help was needed to maintain the mill, and he sold the mill and engine house to Kent County Council with the agreement that they would undertake restoration work and lease the mill back to him. In 1959, a 999 year lease at a peppercorn rent was agreed, and the mill subsequently underwent extensive restoration at a cost of over £4000, by millwrights E. Hole & Son, of Sussex. This included renewal of the sweeps and fantail in skeletal form, the cap, all weatherboarding of the smock, inter-floor ladders and flooring and the staging at second floor level. Unfortunately, the lack of a working fantail meant that the cap remained stationary, leaving it constantly buffeted by the elements from the same prevailing direction. The sweeps were found to have dry rot in 1978, so were replaced the following year when new, hollow, steel stocks were fitted.

Meopham Parish Council acquired the lease of the mill and the freehold of the surrounding land from the executors of Leslie Norton's estate. Meopham Windmill Trust was formed and did much clearance of undergrowth, demolishing of tumble-down sheds and extracting of spare machinery parts from jumbles built up over the operating years of the mill.

Most of the interior machinery of this mill is still intact, including an electric motor installed in 1946, superseding the previous engine. Two millstones from here were supposedly placed in the forecourt of the Bank of England by Sir Herbert Baker, the architect of the Bank, who lived near the mill.

Recent Heritage Lottery-funded work has seen the cap removed and the frame repaired, including the total replacement of the failed breast beam in the cap. Rebuilding the sweeps and replacing the reefing stage walkway was also done.

Acknowledgements are due to:

The Meopham Mill Trust

The Killicks and The Nortons, Millers in Meopham by James Carley.

History of Stelling Minnis - Grade II listed

At least five windmills are known to have stood in the parish of Stelling Minnis at various times; the earliest known was recorded on a map of 1736. Davison's Mill, as the present mill is known, is an octagonal smock mill built on a low brick base, standing upon a mound that has supported at least two previous mills. Evidence for their existence was proven in an archaeological excavation which uncovered the foundations of two post mills, including the mill that was dismantled to make way for the present one, built in 1866.

Thomas Richard Holman, millwright of Canterbury, constructed the mill for the first miller, George Goble. Mr Goble worked it until his death in 1878, when it was taken over by Henry W. Davison, whose father ran Hawkinge Mill. The Davison family were to work Stelling Minnis mill until the autumn of 1970, an incredible 92-year tenure, also working the nearby Brambleton post mill from 1878 to 1881. They lived in the large mill house (known as Gordon House) at the top of Mill Lane. One of the outbuildings here housed a bakery, making bread from flour ground at the mill.

When Henry Davison retired, a small, low window was supposedly created in the west wall of a downstairs room of Gordon House, enabling him to sit in his armchair and view 'happenings' at the mill. After Henry's death in 1940, his son Alec carried on as miller, living at Gordon House with his sister Dorothy, who kept the mill accounts in neat handwriting. Alec was to be the last traditional miller in Kent.

Obviously a much respected man, the oldest residents of the village remembered Alec:

'He was the last person I knew to use those lovely old words like "scuppit" (a corn scoop), and "bodge" (a quantity of corn of no specific measure). He was a miller and a farmer in the old style and until just a few years before his death, he delivered sacks of corn around the parish by horse and cart'. Donald Dougall

Villagers also recall Alec fast asleep atop his cart in the lane, being pulled safely home by his horse after milling non-stop, for, if the wind was right, the mill ground constantly, day and night. When this happened in its heyday, as many as three horse and carts were used for deliveries, including for the daily run to the railway station at Lyminge to pick up supplies.

Alec was helped at the mill by Sam Harris, a great character, who was a stalwart member of the Methodist Church and a local preacher. Sam was able to 'dress' the millstones, but foolhardy enough to crawl through the brake wheel whilst the mill was operating if he wanted to get to the front of it - a very dangerous habit! He once climbed to the top of the working mill at midnight when bored and had seen *'a wonderful comet'*.

On the second floor of the mill, on the cant and supporting posts, are personal records, made in pencil by a stone dresser, of visits made to the mill in June, July and September 1881, in July 1895 and in January 1899. The inscriptions finish *'signed T.Crittles, - stonedresser.'* These faint marks reveal the same man returning to the mill over a period of 18 years to rework the stones; as elderly resident Harold Pilcher remarked, life was *but continuous* ', in a *'close and tranquil community'*.

In 1923, a Rushton & Hornsby engine was installed by Holman Bros, the same firm that had built the mill over fifty years before. The sweeps had to be shortened so that they cleared the small brick building outside the mill which housed the engine. The engine was perhaps the only means of power shortly after this, since a photograph of 1930 shows the mill in poor condition, particularly the sweeps and stage. The engine was not in operation by the end of the mill's working life, and during its final years the mill was driven by just one pair of sweeps when the wind permitted.

The mill was restored in 1935 in memory of Randal MacDonal Laurie (died 1927), by his sister Hilda Laurie, who donated £550 for the work. A wooden plaque displayed on the first floor of the mill records her gift. The family's main residence was in Canterbury, but they had a summer house near the mill, which they obviously regarded with much affection. Again, Holman Bros did the work. The weatherboarding was renewed, as was the cap and stage. Four new stocks and sweeps replaced the old ones, and the mill was powered by the wind once more, the engine only being used when the wind was insufficient. The Windmill Section of the Society for the Protection of Ancient Buildings presented a certificate as 'A record of the Society's appreciation of zeal in the maintenance of these beautiful structures'.

By 1940, when Alec Davison took over, the timber supporting the mill on its brick base was rotten, so it was completely replaced. Regular soaking with creosote and paraffin preserved it and ensured that rodents would not chew the wood. A decade later, one pair of the sweeps fitted in 1935 had deteriorated, and they were eventually blown down in a gale in May 1951. For the rest of its working life, until 1970, the mill ran on only one pair of sweeps. The engine had failed in 1960 and was never repaired.

Kent County Council acquired the mill in 1970 after Alec Davison's death. Extensive restoration was carried out by millwrights Vincent Pargeter and Philip Lennard. They renewed much of the weatherboarding, completely re-built the stage and added a new porch. A new cap frame and cap was built and in 1975 the existing two sweeps were renewed and another two added. Once again, Stelling Minnis had a full complement of sweeps. Mills need constant attention, however, and by 1987 a pair of steel stocks replaced one of the wooden pairs that had rotted.

Heritage Lottery Funding provided the money for more recent necessary work, which was more extensive than expected. The cap was removed, its frame strengthened and failed timber replaced. The smock frame, in particular the cant posts, also had to be extensively replaced and strengthened. At the same time the stocks were replaced, so that all were once again wood, and the complete mill was reboarded. The floor was relaid, and it was then that the discovery of the foundations of previous mills, mentioned above, was made. Also uncovered were two halfpenny coins of 1862 showing a youthful Queen Victoria, which had been deliberately placed under a support pillar; they were replaced and a modern ten-penny piece of the year 2000 was added for posterity. A bottle marked 'Lung Tonic' also emerged, evidence of the dusty conditions in which millers toiled.

A small museum opened in 2000, displaying artefacts related to the mill and milling.

Acknowledgements are due to: Stelling Minnis Parish Council *Stelling Minnis Mill* by Sylvia McKean.

History of Stocks Mill, Wittersham - Grade II* listed.

Stocks Mill is one of two post mills which Kent County Council own, the other being at Chillenden, in the east of the county. Very few surviving mills are of this early type, as many were demolished when they were superseded by the more efficient and sturdier smock mill.

There is no definite record of when Stocks Mill was built, but dates carved inside, and public records, provide some clues. On the massive centre post is carved 'R.V. 1781, R.A. 1785, I.E. 1790 and E.G. 1797'; an assumption has been made that the earliest date is that of construction. It has been argued, however, that it stood elsewhere prior to its present location. Old maps provide evidence for the historic location of mills around Wittersham; although a post mill standing to the north of the village is shown on maps from 1736, no mill is depicted on the present site on the county map of 1769. Neither does it appear in either of the antiquarian Hasted's publications, *History & Survey of Kent* in 1778 and *Topographical Survey of Kent* in 1801. Not until 1821 is a post mill shown at the present site, on Greenwood's county map. Perhaps the mill *had* been built some forty years before this date, and had been moved from another location at some time during these years. Alternatively, as was then common, parts from another mill may have been recycled in its construction, including timber carved with dates. There is evidence of an extension to the mill at the rear, which may have taken place if, and when, the mill was moved. This modification was perhaps to create extra space for a sieving machine, used for grading flour. Renovation and improvement to take advantage of developing technology was undertaken regularly in most mills.

The mill takes its name from the surrounding area, called The Stocks' on mid-nineteenth century maps, with Stocks Farm next door. The village stocks were supposedly sited here in the days when punishment for minor offences could be very public. The name may derive, however, from the Old English word 'stoc', meaning an outlying dependency of a village.

The first miller of Stocks Mill was Thomas Venus, an unusual surname; it is possible that the 'R.V.' carved in 1781 may be a relative of his. Several families owned and worked the mill; other millers leased it from an owner, as was often the case during the eighteenth and nineteenth centuries. The owner during Thomas Venus's tenancy, for example, was Henry Watson. By 1792 Mr Willson was in residence; a copy of his fire insurance policy from an entry in the books of the Royal Exchange

Assurance Company details the premiums he paid on the mill, mill house and his personal property. The mill was insured for £250, and '*the utensils and trade therein*' for £50, a substantial sum, reflecting the profitability of the business.

Numerous millers are recorded in census returns and other documents over the next century, some of whom also worked the other post mill known to have existed in the centre of Wittersham until its demolition in 1922. Richard Parton, a widower with many children, was working both mills in 1838. A grave in Wittersham churchyard may be that of his wife; Mary Parton, 'wife of Richard', is named, who died in 1838 aged thirty seven, leaving ten children. Milling often ran in families and it is likely that the Partons who milled at nearby Woodchurch were relations. Unfortunately, Woodchurch miller John Parton was supposedly beheaded by one of his revolving sweeps around the middle of the century.

Towards the end of the nineteenth century, competition from factory-produced flour led to a decline in demand for the mill's flour and milling ceased.

By 1890, the actor Norman Forbes-Robertson owned the mill and the mill house. He wished to see the mill working but could not find a miller to operate it, despite offering a nominal, or even free, rent. The machinery was removed and lattice windows put in, and by 1933, the ground floor was being used as a garden shed and the first floor as a store for fruit and other produce. Forbes-Robertson's young son had previously used this first floor as his den and the room had been made comfortable and snug with lath and plaster to block up the recesses. Unfortunately the movement inherent in the structure of a post mill meant that the plaster did not last very long!

By the 1930s, the artist Rudolph H. Sauter, nephew of the author John Galsworthy, owned the mill and used it as a studio. He drew the mill, showing its dilapidated state. Mr Sauter, however, cared for the mill, and initiated repairs. A photograph of 1939 shows the structure and sweeps in good order, although the balcony he added was certainly not a part of the original design! Prior to restoration, owls had been using the third floor, always dark due to lack of windows. Admiral Sir Edward Parry was in residence at the Mill House in 1958 when new sweeps were made and fitted by local inhabitant Mr H Payne, after consultation between Sir Edward and the Society for the Preservation of Ancient Buildings. One of the sweep middlings broke in a storm in 1968; this and one pair of sweeps was renewed by millwright Derek Ogden, financed by a fundraising appeal and the Kent County Council. Mr Ogden returned to the mill every year to turn the sweeps through ninety degrees to relieve the strain on them that immobility brought. In 1979 the owners of Mill House gave the mill to Kent County Council, who carried out an extensive renovation programme to restore the mill to its original appearance. The Friends of Stocks Mill was formed by local residents in 1981.

Over the last few years, funding from the Heritage Lottery has enabled replacement of the sweeps and a stock, rebuilding the roundhouse brick walling, relaying the timber hollow floor, repairing the external steps and repainting the outside in lead paint.

During the summer months, the Friends of Stocks Mill regularly welcome visitors to the oldest of Kent County Council's windmills.

Acknowledgements are due to:

The Friends of Stocks Mill at Wittersham

Owners, Occupiers and Millers from 1781 by Kenneth F. Ascott

History of West Kingsdown Mill - Grade II listed

West Kingsdown mill is first shown on a map of 1805 at the other end of the village, to the north west of its present site. It lay just within the parish of Farningham, near Chimham's Farm (now West Kingsdown Farm).

The Farningham tithe award schedule of 1840 states that the mill, yard and garden was owned by William and Thomas Kipping, but the miller was George Whiteing. George was married to Sarah and had three children. The mill then passed into Walter Whiteing's hands, probably a relative, before David Norton, a watermill owner from Tovil, bought the lease of the mill from him in 1859. The freehold of the mill, and the property associated with it, was owned by William Campbell from 1842, and the particulars are described in the sale catalogue of the Kingsdown estate in 1869.

David Norton was the miller during a period in which the mill was leased 'for a period of three lives', literally meaning three successive holders of the lease, rather than a fixed term of years. At the time of the sale, two 'lives' had been completed and the third, John Foster, who was '67 years or thereabouts' was in place. David paid an annual rent to John of two shillings and five quarters of wheat, or its equivalent, which was settled at twelve pounds. David died in 1870 and his sons John and Tanner continued to work the mill until John Foster died in 1879 and the lease therefore ran out. The terms of the lease stated that upon its expiry, the Norton's had the right to remove the mill unless the landowner wanted to buy it. They very soon dismantled and moved the mill to its present site, where the land was owned by Tanner. He was already working a post mill there, which he had purchased in 1870.

Tanner's ten year-old daughter, Minnie Laura, laid the engraved foundation stone at the new mill site in April of 1880. The lettering is now worn and faint, but it is still possible to make out the wording at the base of the mill. Tanner was left with a family of six children to raise when Minnie's mother Mary died in 1885. The cost of dismantling, moving and re-erecting the mill was £800; not a cheap option given that the modern equivalent is approaching £50,000, but less than building from scratch. George Paine was the local engineer contracted to do the work. The post mill and the newly-moved smock mill were worked together, and Tanner renamed his hive of industry 'Speedwell Mills'. The mills were obviously essential to the local community, for in 1887 a steam engine was installed for use when the wind did not provide enough power.

In May 1909 a steam driven traction engine, a road roller, was allowed to park overnight in the yard. As the boiler was being lit the next morning a spark set fire to straw in the yard, which in turn ignited the post mill. The ancient timbers burnt rapidly and it was entirely destroyed. The millstones survived the blaze and were incorporated into the floor of the yard; today one still survives, propped against the smock mill by Minnie Laura's foundation stone.

Tanner died in 1912, aged seventy, and was buried in the local churchyard. His eldest son, William, became the owner of the-mill, but being already in partnership at nearby Meopham Mill, he leased West Kingsdown mill to his younger brother, Frank Norton. Frank eventually bought it in 1918. Unfortunately, the economic depression following the First World War obliged him to sell up two years later. The new owner was Arthur Cook of Brands Hatch, whose son ran the mill until shortly before his father sold it in 1929. The mill was never to work again.

The beginning of a slow decline began on Christmas Day 1929 when the end of one of the sweeps broke off in a gale. The fantail was blown down the following year. The new owner, Dan Hankin, was from Chimhams Farm, where the mill had started its life. Mr Hankin ended his life living in Mill House with his two daughters, using the land as a smallholding. Constance and Eleanor Hankin sold the property in 1947, four years after his death. The mill fell further into disrepair, and the new owner, Mr Chambers, a nurseryman from Hextable, had plans for removing its superstructure and using the brick base as a foundation for water tanks. Before this happened, however, the property once more changed hands, in 1957, acquired by the Heaton family, who still live and farm there today.

Mr Heaton subsequently conveyed the mill to Kent County Council in 1958, who leased it back to him for 999 years. The mill now stands silent. The timber staging which once existed at first floor level is no longer there and most of the original machinery has been removed except for the millstones.

Restoration of the exterior by Kent County Council was completed in 1960 and included replacement weatherboarding to the whole smock. Since then, the Parish Council have funded replacement of the fantail blades. The cap has also been removed for repair and reboarding, and the smock weatherboarding tarred. The sweeps have been removed but the steel stocks remain in place.

The mill is on private land and can be visited by arrangement with the owners, Mr and Mrs Heaton.

Acknowledgements are due to:

Mr and Mrs M. Heaton

West Kingsdown. The Story of Three Villages in Kent by Zena Damping

| Weather Records for Week Beginning... | | | | | | |
|---------------------------------------|-----|-----|-----|-----|-----|-----|
| | Mon | Tue | Wed | Thu | Fri | Sat |
| 24-hour rainfall total | | | | | | |
| Dry-bulb temperature | | | | | | |
| Wet-bulb temperature | | | | | | |
| Humidity | | | | | | |
| Wind speed | | | | | | |
| Wind direction | | | | | | |
| Pressure | | | | | | |
| Amount of cloud | | | | | | |
| Readings taken ata.m. / p.m. | | | | | | |

All about mill-stones

The main function of the water-driven corn mill is performed at the mill-stones. To do their work, the stones must be of a suitable material and have their working surfaces prepared to deal with the type of grain being ground. The stone spindle had to be connected to drive the upper or 'runner' stone, and it was necessary to maintain the correct gap between the working surfaces of the two stones. In addition, provision had to be made to feed the grain to the stones and take away the meal produced.

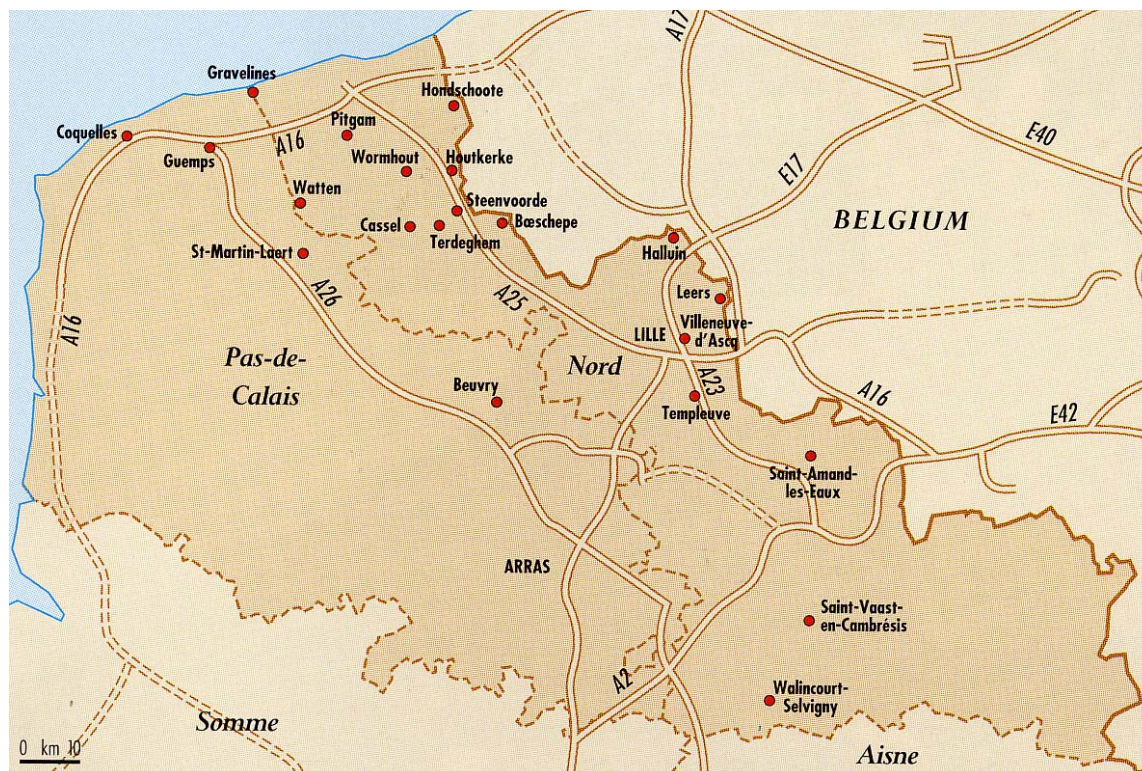
Mill-stones have been made of a variety of substances, and in earlier times from local stone if any was available.

Later more suitable stones were adopted in areas remote from the quarries. These included:

- 1 Quartz stones. The best of these, having a roseate hue, are the French stones, found in the vicinity of La-Ferté-sous-Jouare and Epemon. Because of the peculiar formation of French Burr it was difficult to get a whole stone of uniform quality throughout, and it was usual to build the mill-stone of selected pieces cemented together with plaster of Paris and bound around the circumference with iron hoops. The stone was then smoothed off with cement on the back and the working face was dressed. These stones were particularly suitable for finer grinding, and in the later days of horizontal stone grinding nearly all flour was produced on such stones.
- 2 Sandstones. Derbyshire Peak Stone is one example of sandstone. The stone was hewn in one piece out of a solid block. These sandstones were much softer and less durable than mill-stones of French Burr but produced a meal of particularly soft and pleasant texture and were used mainly for grinding barley and oats.
- 3 Stones of volcanic origin. The best known of these were quarried in the Andernach and Koblenz areas of Germany and brought down the Rhine for shipment to this country, where they were known as 'Dutch blue stones'. These were preferable to the Peak stones but were themselves displaced by the French Burr stones during the nineteenth century.
- 4 Artificial or composite stones. These were made by reducing French Burr or emery to particles of 0.3 cm or less in diameter and embedding them in a strong cement. Mixtures of other particles have been used to give a finished stone of a particular hardness to suit the purpose for which it was intended. Besides this control of properties, composite stones had the advantages of being free from the soft spots that sometimes occur in natural stones, and of being self-sharpening owing to the multitude of cutting edges presented by the embedded particles.

These artificial stones were usually made by pouring the liquid composition onto a cast-iron backing plate, provided with undercut grooves to hold the solidified composition securely in place. This backing plate simplified the mounting of the stone on the driving spindle, and enabled it to be removed and replaced more easily than with natural stones. It also stiffened the stone so that it could be used until the composition was almost entirely worn away.

Windmills in the Nord Pas-de-Calais and the Somme



Today there are about twenty windmills in Nord Pas-de-Calais and the Somme that can be visited. At the end of the last century there were probably about 2,000 working windmills in the region. The greatest number are found in Flanders.

Special events

In France the third Sunday in June is 'National Windmills Open Day' with special events at most windmills.

Further information

ARAM/Nord : Pas-de-Calais

(Regional Friends of Windmills Association) rue Albert-Samain 59650 Villeneuve-d'Ascq Tel: 20.05.49.34

Bethune region

Beuvry

Beuvry windmill

Calais region

Coquelles

Coquelle windmill

Guemate

Pont de Guemste windmill

Tel: 21.82.13.64

Cambrai region

Saint-Vaast-en-Cambresis

Oil windmill

Tel: 20.05.49.34

Dunkirk region

Roeschepe

Ondankmeulen windmill

Tel: 28.42.50.24

Cassel

Cassel windmill

Tel: 28.42.43.22

Gravelines

Lebriez windmill

Tel: 28.65.21.28

Hondschoote

Nordmeulen windmill

Tel: 28.62.53.00

Houtkerque

Hofland windmill

Tel: 28.40.90.79

Pitgam

Den Leeuw windmill

Tel: 28.62.10.90

Steenvoorde

Noordmeulen and Drievenmeulen windmills

Tel: 28.49.77.77

Terdeghem

Steen windmill

Tel: 28.48.16.10

Watten

De Ia Montagne windmill

Tel: 21.88.26.04

Wormhout

Deschodt windmill

Tel: 28.62.81.23

Lille region

Helium

Hollebeke windmill

Tel: 20.23.89.72

Leers

Moulin Blanc

Tel: 20.75.32.06

Templeuve

Vertain windmill

Tel: 20.59.31.33

Villeneuve-d'Ascq

Oil and flour windmills

Tel: 20.05.49.34

Other windmills undergoing restoration are:

Saint-Amand-Es-Eaux

Le Blanc windmill

Tel: 27.27.85.00

Achicourt

Hacart windmill

Walincourt-Selvigny

Brunet windmill

Tel: 27.82.70.37

Further Reading

The history of windmills

- Beedell, S. Windmills. Publisher, David & Charles 1975.
- Batten, M. I. English Windmills Vol 1, Kent, Surrey and Sussex 1930.
- Brown, R. J. Windmills of England. Publisher, Hale 1976.
- Coles Finch. Watermills and Windmills. Publisher, Daniel & Co 1933.
- Freeze, S. Windmills and Millwrighting. Publisher, David & Charles 1974.
- deLittle, R. The Windmill. Publisher, John Baker 1972.
- Reynolds, J. Windmills and Watermills. Publisher, Hugh Evelyn 1974.
- Shillingford. A.E.P. Vanishing Windmills. Publisher, Cave 1979.
- Turpin B & J. Windmills in Kent. Windmill Publications 1979.
- **Vince. J. Discovering Windmills. Publisher, Shire 1993.***
- Vince. J. Windmills & How They Work. Publisher, Sorbus 1993.
- Wailes. R. Windmills in England. Publisher, C Skilton. 1948.
- Wailes, R. Windmills and Watermills. Publisher, Ward Stock 1979.
- Wailes R. The English Windmill. Publisher, Routledge, & Kegan Paul Ltd 1954.
- **Watts. M. Water and Wind Power. Publisher, Shire 2000.***
- West, J. The Windmills of Kent. Publisher, Charles Skilton 1973.

* In print and reasonably priced

Windmills £5.99

Martin Watts

late Spring 2006

ISBN 0 7478 0653 5 (Shire Album 456) 64 pp, 83 colour and 10 b/w ills.

Windmills have been in existence for over eight hundred years and, although only a fraction of those that once ground corn, pumped water and provided power for industry and -agriculture now survive, they are still a distinctive and often -dramatic presence in the British landscape. Among the most -important features of these survivors are the -variations in -design that have come about through their different -origins, the use of local materials in their construction, and the -influence of millwrights and millers - those who built and worked them - in different parts of the country. -Understanding these variations is vital for the protection and maintenance of windmills, the continued survival of which allows a fascinating insight into the historic use of renewable energy, the development of engineering, and the processing of grain for flour and bread, as well as other -essential products.

Since 1988 Martin Watts has worked as a traditional millwright and consultant, his work covering many aspects of the repair, maintenance, conservation and interpretation of historic mills and their machinery.

Water and Wind Power

Martin Watts £8.99

ISBN 0 7478 0418 4, 136 pages, 102 ills

Shire Publications

Watermills and windmills were the first engines. From Roman times water power was used to grind grain and raise water, and later to serve a great number of trades and industries that were vital to the social and economic development of Britain. Wind power was first introduced in

the middle ages. This book is concerned not only with technology but also with some of the personalities who were involved. Historically there was a tremendous variety of water and wind powered machinery and, although much has been lost, there are still many examples that provide a fascinating picture of this aspect of Britain's industrial past.

Martin Watts specialises in recording and repairing traditional water and wind powered machinery and also undertaking historical research.

Windmills and Watermills (Photographic Memories)

Anthony Bryan, Francis Frith

ISBN 1859376193, 128 pages

The Frith Book Company Ltd, 2004

Featuring around 150 detailed photographs from the Frith archive, this collection provides a comprehensive look at the wind and water mills of England. It includes extended captions to pictures, a full introduction and a voucher for a free mounted print.

Fiction

James and The Giant Peach by Roald Dahl

Ride the wind with James and his cast of insect friends as they journey across the ocean on a magical giant peach. How do wind currents and weather patterns effect their voyage? What else do they encounter?

Night of The Twisters by I. Ruckman

Brave the storm with the cast of this exciting novel as they take refuge in the basement as tornadoes rage above.

The Wind in The Willows by Kenneth Grahame

Follow along as Badger, Ratty, Mole, and Toad of Toad Hall meet the adventures of life on the banks of the river where the wind blows gently through the willows.

The Wizard of Oz by L. Frank Baum

Who can forget the images of Dorothy's home being swept away by the twister? The wind transports her to a magical land.

A Wrinkle in Time by Madeleine L'Engle

Prepare to be transported on a whirlwind adventure across time.

The Windy Day by Pat Huttchins

Mirandy and Brother Wind by Patricia C. McKissack

Gilberto and the Wind by Marie Hall Etts

The story is of a young boy who befriends the wind, and together they have a lot of fun. But like true friends, they have their ups and downs, but in the end their friendship survives.

Websites

This list features web sites about windmills, wind power and the weather. The list was compiled in April 2006, when all the links were live!

Categories listed here include:

1. Web sites featuring windmills and concerned with their preservation in Britain
2. History of Windmills
3. Wind and the weather web sites
4. Kent Windmills
5. Sussex Windmills
6. Surrey Windmills
7. Essex Windmills
8. London Windmills
9. European Windmills
10. American Windmills
11. Windmills of the world
12. Wind Energy

1. Web sites featuring windmills and concerned with their preservation in Britain

Long list of windmill websites, including international listings

http://www.solarnavigator.net/windmill_links.htm

A site devoted to all forms of Wind and Water powered machinery in the U.K.

<http://www.ukmills.com/index.htm>

English Windmills

<http://servercc.oakton.edu/~wittman/mills/mills.htm>

Society for the Preservation of Old Mills

<http://www.spoom.org/>

Mill Scenes

<http://www.millscenes.pwp.blueyonder.co.uk/>

UKMills.com

A site devoted to all forms of Wind and Water powered machinery in the U.K.

<http://www.ukmills.com/index.htm>

Mills Archive Trust

An educational charity registered in the UK. The Web site and initial catalogue have been developed with financial assistance from the Heritage Lottery Fund. There is an extensive photographic archive that can be searched providing a very fine collection of images of windmills in Kent.

<http://www.millarchive.com/>

2. History of Windmills

<http://www.millarchive.com/4schools/history.aspx>

history of windmills

<http://www.windmillworld.com/windmills/history.htm>

Review of Historical and Modern Utilization of Wind Power
Danish web site in English

<http://www.risoe.dk/rispubl/VEA/dannemand.htm>

Technologies and Their Societies: Historical Perspectives
Professor Michael S. Mahoney

<http://www.princeton.edu/~hos/h398/398extsyl.htm>

Researching the history of mills

<http://www.building-history.pwp.blueyonder.co.uk/Buildings/Mills.htm>

Botham bakery guide to bread, from seed to sandwich

<http://www.botham.co.uk/seed/first.htm>

The story behind a loaf of bread
Old and new methods of milling

<http://www.botham.co.uk/bread/mill1.htm>

Encarta free online encyclopedia

http://encarta.msn.com/artcenter_/browse.html

William Cubitt (1785-1861) inventor of patent windmill sails and of the prison treadwheel

<http://www.peter-quita.demon.co.uk/cubitt.htm>

Engines of our ingenuity.

<http://www.uh.edu/admin/engines/epi29.htm>

Searchable image and text database of England's 370,000 Listed Buildings

<http://www.imagesofengland.org.uk/>

3. Wind and the weather web sites

Met Office UK

<http://www.met-office.gov.uk/>

Free weather pack from the Met Office

http://www.met-office.gov.uk/education/resources/interactive_kit.html

BBC weather

<http://www.bbc.co.uk/weather/bbcweather/index.shtml>

Climate of SE England

<http://www.roehampton.ac.uk/weather/climlse.asp>

US national hurricane Centre
<http://www.nhc.noaa.gov/index.shtml>

Met Office UK on hurricanes
<http://www.met-office.gov.uk/education/secondary/students/hurricanes.html>

Mount Washington Observatory
<http://www.mountwashington.org/>

Wind Energy Resource Information
<http://rredc.nrel.gov/wind/>

US Department of Energy Office of Energy Efficiency and Renewable Energy can now be found at
<http://www.eere.energy.gov/>.

Two student research projects
The Effect of Various Wind Speeds and Blade Factors on Energy Output
<http://www.selah.k12.wa.us/SOAR/SciProj2000/AshleighB.html#ExDe>

The Effects Of Blade Size And Shape On The Electrical Output Of A Generator
<http://www.selah.k12.wa.us/SOAR/SciProj2000/MikeE.html>

4. Kent Windmills

Chillenden windmill on the BBC web site
<http://news.bbc.co.uk/1/hi/england/kent/3240320.stm>
<http://news.bbc.co.uk/1/hi/england/kent/3320755.stm>
<http://news.bbc.co.uk/1/hi/england/kent/3585157.stm>
<http://news.bbc.co.uk/1/hi/england/kent/4577153.stm>

5. Sussex Windmills

<http://www.sussexmillsgroup.org.uk/Wind.htm>

6. Surrey Windmills

<http://www.nina.gemineans.co.uk/life/interest/windmills/windmills.html>

7. Essex Windmills

<http://www.windmillworld.com/uk/essex.htm>

8. London Windmills

<http://www.windmillworld.com/uk/london.htm>

9. European Windmills

Nord Pas-de-Calais and Flanders

Like Kent and other cereal-growing regions of the UK, Nord Pas-de-Calais and Flanders once had thousands of traditional mills.

<http://www.theotherside.co.uk/tm-heritage/background/mills.htm>

Mills Museum Villeneuve d'Ascq - near Lille

<http://www.theotherside.co.uk/tm-heritage/visit/visit-villeneuve-mills.htm>

Casteel Meulen, Cassel

<http://www.theotherside.co.uk/tm-heritage/visit/visit-cassel-mill.htm>

Estaminet "De Vierpot" & Ondank Meulen, Boeschepe

<http://www.theotherside.co.uk/tm-heritage/visit/visit-boeschepe-estam.htm>

Hondschoote South east of Dunkirk

<http://www.theotherside.co.uk/tm-heritage/towns/hondschoote.htm>

Other parts of Europe

Danish wind industry association

<http://www.windpower.org/en/core.htm>

Danish windmill at Love

<http://users.cybercity.dk/~ccc24645/mill1.htm>

Windmills of the Netherlands

<http://members.tripod.com/~KATSPANJE/windmills.html>

Mill scenes from Holland

<http://www.millscenes.pwp.blueyonder.co.uk/netherlands/>

Mills in Eastern Germany

<http://www.muehlen-archiv.de/Muehlen-english.htm>

Windmills on Mykonos, Greece

http://historylink101.net/greece1/pic_windmills-mykonos.htm

Spanish windmills

<http://servercc.oakton.edu/~wittman/mills/spmills.htm>

10. American Windmills

A windmills time line USA

http://www.newton.mec.edu/Brown/TE/HOT/TIMELINES/WIND/wind_timeline.html

Windmills in Texas

<http://www.texancultures.utsa.edu/hiddenhistory/Pages4/windmillsintexas.htm>

American windmills

<http://www.windmillersgazette.com/books.html>

Building a large wooden windmill

<http://web.ukonline.co.uk/stanley.lawson/wind3.htm>

Model windmill

http://www.michigan.gov/documents/mhc_windmill_pattern_43331_7.pdf

Windmills in the USA

<http://www.windmillersgazette.com/history.html>

Wind energy in California

<http://www.webschool.org.uk/webworld/windcal.htm>

11. Windmills of the world

Windmills from around the world - some links

<http://www.windmillworld.com/>

12. Wind Energy

History of wind energy

http://www.globalwinds.com/windenergy_history.shtml

Understanding wind energy

<http://sln.fi.edu/tfi/units/energy/windguide.html>

Wind power

<http://solstice.crest.org/renewables/re-kiosk/wind/index.shtml>

History of wind power

Very good web site that covers the development of wind power and current issues of debate.

<http://telosnet.com/wind/early.html>

BP Carbon calculator

<http://www.bp.com/sectiongenericarticle.do?categoryId=9005334&contentId=7009881>

upper KS2 and beyond