

# SUFFOLK MILLS GROUP

## Newsletter Number 18

DECEMBER 1980

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By the time you read this Christmas will be upon us once again and another year will have passed all too quickly. 1980 has been very successful as far as S.M.G. is concerned. The highlight was the start of the restoration of Thelnetham tower mill, but I'm sure many Members will also recall the public meeting on old Suffolk windmills in February, the opening of the East Bridge windpump at Abbot's Hall museum, the A.G.M. day at Bardwell, Stanton and Thelnetham, and the recent visit to the working Pakenham watermill. Of course this was only part of our activity, as perusal of the recent Newsletters will show. There is plenty to look forward to next year, the first stop being our public meeting in Ipswich Town Hall on February 21st. (see inside for details). In the meantime may I on behalf of the Committee wish you all a very merry Christmas and a happy New Year.

P.S. After all that Christmas cheer, when you've read the Newsletter and done the crossword, how about writing something for the next issue?

Mark Barnard

## **POWER FROM THE WIND Part 1** DAVID PEARCE and PETER DOLMAN THE PERFORMANCE OF TRADITIONAL WINDMILL SAILS AND A BRIEF SUMMARY OF THEIR DESIGN AS APPLIED TO SUFFOLK

### Introduction

In this article (the second part of which will appear in the following Newsletter) the authors aim to delve into some of the little understood facets of traditional windmill sail design and performance. In the first part David Pearce will explain the theory and calculate the performance characteristics for sails. In the second part Peter Dolman will describe the usual sail designs to be found in Suffolk, with exploration of the oddities occasionally found (such as air brakes). We hope this article will stimulate discussion and lead to a greater general understanding of why windmill sails were built as they were.

### Part 1. Theory and Calculations

The question of how much power windmills produced is a fascinating one, and this article is intended to provide answers, obtained from the particular viewpoint of modern aerodynamics calculations. I hasten to add that only the results of such calculations will be presented here; the reader will not be expected to delve into the more arcane areas of aerodynamic theory. The predictions will be discussed in the light of traditional Suffolk practice, with special reference to the following mills: Thelnetham (for which the dimensions of the working sails are known in full), the large tower mill at Buxhall and the small post mill at Drinkstone.

The power produced by a windmill depended on a wide range of factors, the obvious ones being speed of the wind and size of the sails. Other factors are of great importance:

- (i) Air temperature and humidity. These decide the air density (on hot days a foot cube of air is lighter than on cold ones), so that on hot days a mill will run less well in, say, a 20 m.p.h. wind than on a cold day.
- (ii) Inclination of the windshaft. The wind approaches the sails approximately horizontally. From the narrow point of view of producing the most power, the closer the windshaft is to the horizontal the better.
- (iii) Sail twist. This varied widely from mill to mill. At Thelnetham, for example, the twist was quite steep, varying from nearly  $16^{\circ}$  at the sail tip to nearly  $27^{\circ}$  at the heel. As a rule of thumb, mills with sails which are fairly flat on to the wind (such as the drainage mill at Herringfleet, where the sails are rather flatter than the originals) will need to run faster than those with steeper angles in order to work most efficiently. If the mill is designed well the gearing will take account of this. If the sail twist is organised badly, the mill's efficiency will suffer seriously.
- (iv) The operating speed. It is perhaps not generally realised that under given wind conditions, 25 m.p.h. for example, there is one particular sail speed for which the mill will produce most power. If the sail speed strays from this speed, either higher or lower, the power output will drop. Furthermore, when the wind speed changes the most efficient sail speed changes in step with the wind. At Thelnetham, calculations suggest the mill produces most power when the sail tips are travelling at almost twice the wind speed. It may seem strange that windmill sails can accelerate until they are travelling faster than the wind, but it is usually most efficient for them to do so. Indeed many modern mills run very fast, with sail tip speeds six or more times the wind speed. This question of optimum operating speed is bound up closely with the previous topic of sail twist. According to Fairbairn, as quoted by Stanley Freese in 'Windmills and Millwrighting', the best speed to run average-sized millstones is about 120 r.p.m.. If the stones are run at this speed when there is sufficient, or more than sufficient wind it follows that much of the time mills are not running at their most efficient. However, on a good day this did not matter since the sails would produce more power than required, and would require regulation, either by opening the sail shutters or by furling sail cloth.
- (v) Sail thrust. The wind sees a windmill as an obstacle in its path, and a proportion of it will be deflected, so avoiding the sails. Care must be taken to minimise this fraction of wind which is not doing useful work. This generally means not having too many sails, and not designing the mill to run at high speeds. The body or tower will also limit the amount of wind available to the sails.

These, then, are the major factors affecting the aerodynamic performance of

a windmill. A method of calculation of windmill performance has been developed, following standard aerodynamic practice. It can be used to estimate performance both of traditional and modern aerofoiled sails, provided suitable data is fed in. This is not the place to give a full mathematical description of what is a complex calculation, but if any reader would like further detail I am willing to provide it. (The calculations are lengthy, and require either much time or access to a computer. However, it is certainly feasible for anyone with, say, 'O' level maths to calculate the power of a windmill using the principal equations embodied in the method.) The calculation assumes that traditional sails can be approximated by twisted flat planes for aerodynamic purposes. This, of course, is an over-simplification for shuttered sails, but is not thought to lead to serious error, unless the mill is run at very high speed. An error of about 5% is likely.

The method was first applied to Thelnetham mill, a medium sized tower mill which had 67 ft. diameter sails. These were quite wide, at 9 ft. 6 ins.. The working sails survive sufficiently to obtain accurate dimensions and information on the variation of angle of twist. (May I make a plea to other mill restorations that, when dismantling old sails, careful note is taken of these critical sail dimensions. All too often mills have been restored with wrongly proportioned sails, which would not have worked well.) Thelnetham is geared to run rather slowly; with the stones turning at 120 r.p.m. the sail speed is just under 10 r.p.m.. The variation of efficiency (efficiency being defined as the work supplied by the sails divided by the energy in the free wind, flowing through a 'windmill-sized' disc) with wind speed when the sails are turning at 10 r.p.m. is shown in Fig. 1 below. The mill is most efficient in a wind of 12 m.p.h., when about 11½% of the available wind energy is transferred to the windshaft. This quite low figure is fairly typical - 15% is

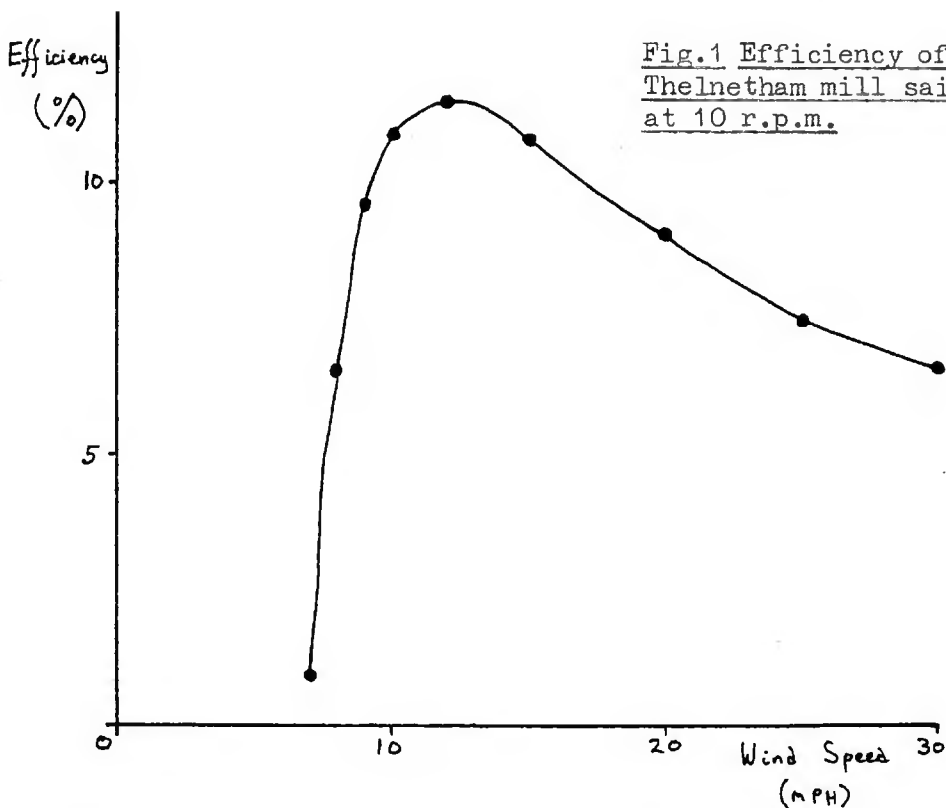


Fig.1 Efficiency of Thelnetham mill sails at 10 r.p.m.

probably the best that can be achieved with a traditional mill sail. Modern aerofoiled sails with their streamlined shapes are considerably more efficient. If a traditional sail is Dekkerised, i.e. given a rounded leading edge, one would expect efficiencies of about 25%. It should be noted that the absolute maximum theoretical efficiency of any windmill is just under 60%.

The wind speed of 12 m.p.h. with the sails



<u>Beaufort Number</u>	<u>Description</u>	<u>Wind speed (m.p.h.)</u>
0	Calm	0 - 1
1	Light Air	2 - 4
2	Light Breeze	5 - 9
3	Gentle Breeze	10 - 14
4	Moderate Breeze	15 - 20
5	Fresh Breeze	21 - 27
6	Strong Breeze	28 - 34
7	Moderate Gale	35 - 41
8	Fresh Gale	42 - 49
9	Strong Gale	50 - 58
10	Whole Gale	59 - 67
11	Storm	68 - 77
12	Hurricane	78+

Above: the 'Beaufort Scale' of wind strength

Left: Thelnetham mill in working order  
 (Photo: Claude Aldridge collection)

turning at 10 r.p.m. corresponds to a 'tip speed ratio' of 2, i.e. the sail tips are travelling twice as fast as the free wind. If the wind speed rises the sail speed can be held down to 10 r.p.m. by giving the stones more work to do, or by bringing more machinery into use. Under these circumstances the efficiency comes down steadily, to about  $6\frac{1}{2}\%$  in a 30 m.p.h. wind. Generally speaking, the mill will be producing more power in the higher winds although it is less efficient; it is merely converting a lower proportion of the available wind energy into useful work.

The power produced by Thelnetham mill, when constrained to turn at 10 r.p.m., is shown in Fig. 2. The power increases rapidly with wind speed, from about 2.5 H.P. (horse power) in a 10 m.p.h. wind to about 40 H.P. in a 30 m.p.h. wind. The power available from the wind goes up with the cube of the wind speed, which leads to very rapid increases in power output as the wind rises. Of course, once a certain wind speed is reached the shutters will begin to open, or it will be necessary to take in some cloth. Depending on how much power is required, shuttered sails may begin to regulate at around 25 m.p.h. (approaching a strong breeze). This article however is concerned with the maximum power obtainable from a given wind speed.

The power required to turn a runner stone is dependent not only on its speed but also on the class of work being undertaken. Fine flour grinding with the stones pinched close together requires much more power than coarse grinding with the stones well apart. 8 H.P. seems to be a reasonable figure for flour grinding, and assuming that about a third of the power produced by the sails is lost in the gearing and bearings, we have a requirement for about 12 H.P. to drive one pair of stones at 120 r.p.m.. (This is clearly an assumption I would like to refine.)

Knowing that 12 H.P. is required to drive a pair of stones successfully, it can be seen from Fig. 2 that the following wind speeds will be needed at

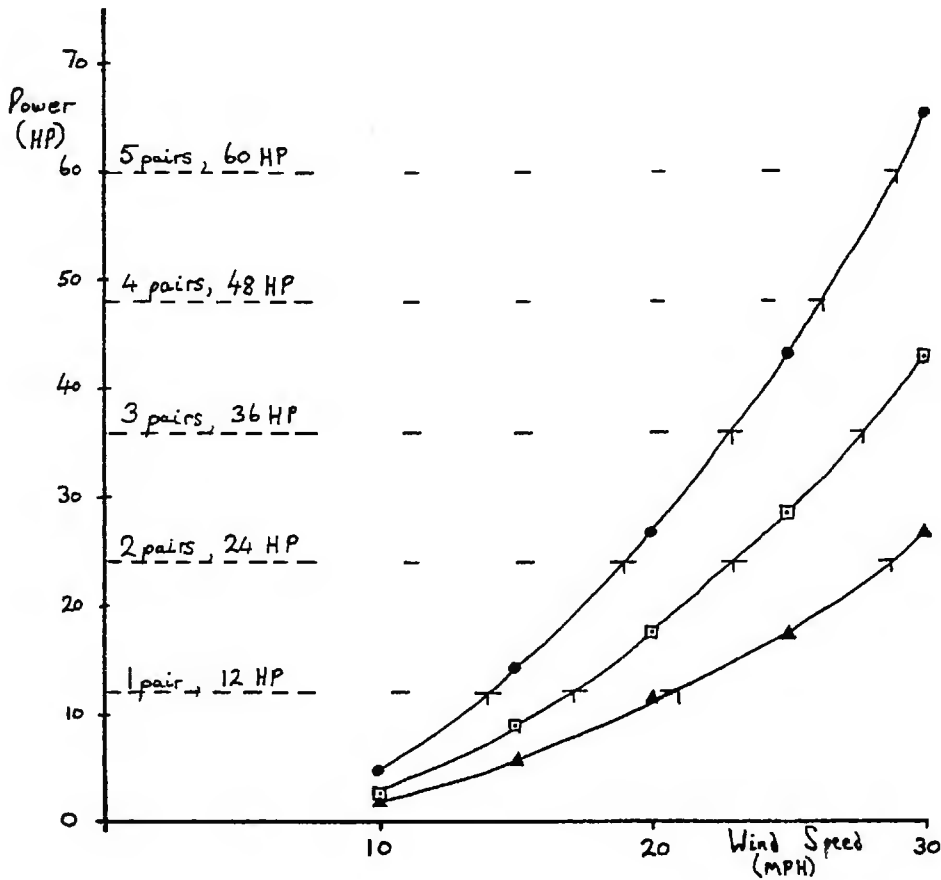


Fig. 2 Power output of windmill sails: Buxhall, Thelnetham and Drinkstone

Key:

- Buxhall Tower Mill: 80 ft sails, with 2ft x 12ft Catchpole shutters; 10 RPM
- Thelnetham Mill: 67 ft sails; 10 RPM
- ▲ Drinkstone Post Mill: 51 ft sails; 18 RPM

Air Temperature 50°F (10°C)

Right: Drinkstone post mill today  
(Photo: Peter Dolman)

Below: Buxhall tower mill in working order  
(Photo: Claude Aldridge collection)



Thelnetham: 17 m.p.h. to drive one pair of stones at 120 r.p.m.; 23 m.p.h. to drive two pairs. Only two pairs of wind-driven stones are fitted at Thelnetham; 28 m.p.h. would have been needed to drive three pairs.

Similar performance calculations were carried out for the large tower mill at Buxhall. The sails are down, and dimensions have had to be estimated. However, I feel that the performance of the mill can be judged quite well. The sails were

approximately 80 ft. diameter, and were again assumed to run at 10 r.p.m.. The angle of twist of the sails was taken to be less than at Theltenham, remembering the greater sail tip speed at Buxhall at 10 r.p.m.. The sail twist was assumed to vary from 10° at the tip to 24° at the heel. Buxhall was fitted with Catchpole's patent air brake, a set of long shutters attached to the leading edge of the sail at the tip. This was connected to the patent sail shutters so as to open and provide additional resistance to motion when the sail speed became too high. However, when the patent sail shutters were closed to provide maximum power, the Catchpole shutters would supply significant extra effort. The Catchpole shutter area was taken to be 2 ft. wide by 12 ft. long. This, and the greater size of the sails, gave a marked increase in output, such that the following wind speeds were required:

- 14 m.p.h. to drive 1 pair of stones at 120 r.p.m.
- 19 m.p.h. to drive 2 pairs
- 23 m.p.h. to drive 3 pairs
- 26½ m.p.h. to drive 4 pairs
- 29 m.p.h. to drive 5 pairs.

Finally, some calculations were carried out for Drinkstone post mill. At present the sails are 51 ft. diameter which is some 6 ft. less than originally. The calculations were done for the sails in their present condition however, which is as the mill last worked. The angle of twist on the spring sails varies from 2½° at the tip to 20° at the heel and on the common sails from 8° to 17° , although the common sails have a pronounced curve to the hemlath which means the mid point of the sail is at a greater angle than 17°. It is probable that the common sail angles would have been a closer match to the spring sail angles originally as the present common sails were made by Wilfred Clover in the 1950's or 1960's and are of rather dubious construction and design! The mill is geared in such a way that 18 r.p.m. is needed to drive the head stones (4 ft. 6 ins. diameter) at 118 r.p.m., and the tail stones (3 ft. diameter) at 152 r.p.m.. Because of the relative shortness of the sails the wind capture is much reduced. In fact for the wind to drive the head stones successfully at 120 r.p.m. a wind speed of 21 m.p.h. is required; 29 m.p.h. is needed to drive both pairs (in practice the tail stones, being smaller, would require less power than the big head stones).

## **WINDMILL**

This acrostic poem was written by Katie Smith, age 9, following a visit to Ramsey mill by her school, the Mayflower Primary School, Dovercourt.

Wind may blow and round the sails go,  
I stand in the fields,  
Now the miller feeds me with wheat, oats, and barley  
Down the shoot comes the corn,  
Men stop to watch and stare,  
I groan and ask for more,  
Little by little I devour the corn,  
Little by little it turns into flour.

# PRIZE CROSSWORD

Compiled by MARK BARNARD

This year we are offering a copy of Leslie Syson's new book 'The Watermills of Britain' as the prize for our Christmas Crossword. This is about the only 'general' book on British watermills currently available, and sells at £7.95.

Nearly all the words in the crossword are connected in some way with mills and milling, and as such can be found in the standard texts on the subject; there are no obscure terms or expressions.

To enter the competition simply fill in the copy of the crossword provided at the end of the Newsletter. The copy below can then be retained for your own reference. Entries should be sent to the Editor (address on p.1) and must arrive by first post on Saturday 21st. February 1981, the day of S.M.G.'s winter public meeting. The winning entry will be drawn by a member of the audience during the meeting.

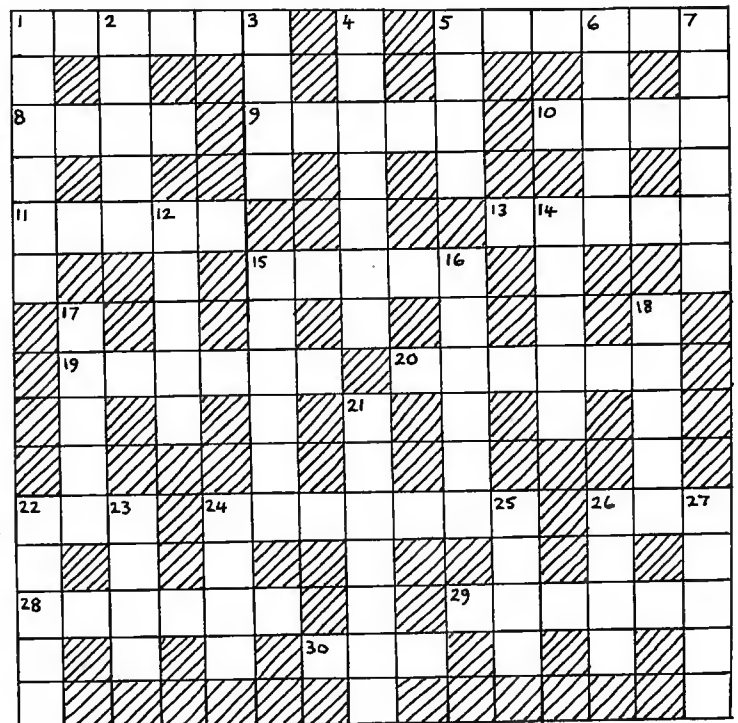
The competition is open to all Members of Suffolk Mills Group (with one obvious exception!) and the winner's name together with the solution will be published in the next Newsletter. Best of luck!

## CLUES ACROSS

1. German millstone (6)
5. Sometimes used to take the nuts out of mesh (6)
8. Body of post mill (4)
9. Essential part of a sack hoist! (5)
10. Mills producing oatmeal would have one (4)
11. Set 'em sieving! (5)
13. --- maps - an essential aid to mill research! (5)
15. Blade of a waterwheel (5)
19. This Suffolk mill has escaped across the border! (6)
20. & 28. The very best for wheat! (6,6)
22. Might power a horse mill? (3)
24. Part of a sail (7)
26. River on which Little Glemham mill stands (3)
28. See 20 across
29. This sail can't be copied! (6)
30. One of many on a gearwheel (3)

## CLUES DOWN

1. Nineteenth century windmill innovator (6)
2. Most Suffolk watermills had at least one (5)
3. Usually the thickest part of the windshaft (4)
4. Suffolk post mill (7)
5. Part of millstone assembly, sometimes used in heraldry (4)
6. Grain for grinding (5)
7. The one that turns! (6)
12. & 14. Do the millers' sons trim up part of the striking gear? (5,5)



14. See 12 down
15. Windmill author (6)
16. Save the bills for me! (6)
17. Clothe the stones? (5)
18. One of two at the bottom of 8 across (5)
21. Dutch sawmill (7)
22. A working mill should certainly be one (5)
23. Feeds the eye! (4)
24. Another part of a sail, or even 23 down! (4)
25. Faces the wind (or should do!) (4)
26. Working Cambridgeshire mill (4)
27. Famous milling writer (5)

## CORRESPONDENCE

The Editor wishes to apologise for a typing error in the letter from Rex Wailes which appeared in the last Newsletter. It should have read: 'But as one who has recorded the interiors of windmills using flash and a wide-angle lens since 1926,' and not 1936 as stated.

Don Paterson has responded to Rex Wailes' letter as follows:

'HERMAPHRODITE MILLS - A REPLY At last many letters to the Editor have stimulated a reply! I regret that Rex Wailes in his recent letter has taken my comments on 'hermaphrodite' mills out of context. I was referring to the philosophy of restoration in respect of local or regional features or styles which are in danger of being lost in the scramble to keep the few remaining mills working or even preserved. My intention was to stress the importance of recording the remains before cannibalisation. How many Jolesfield's, Rye's or Winchelsea's can exist or be repeated whilst S.P.A.B. lives!

Whilst I am sure that the valuable photographs Rex Wailes and others have been taking of interiors have been adequately indexed, many similar valuable collections have been dispersed or even destroyed. I hope the remaining survivors of the age of the working windmill will ensure that the records of their efforts and devotion are eventually deposited in some suitable public archive for the benefit of later generations of less fortunate molinologists.'

## NEW BOOKS Reviewed by PETER DOLMAN

'WILTSHIRE WINDMILLS' by Martin Watts. Published by Wiltshire C.C. Library and Museum Service; 1980. Price £1.75. 48 pp.

This attractive little booklet fills a gap in the windmill bibliography and does so in a very concise and copiously illustrated manner. Martin Watts has taken a lot of trouble over the historical side of the booklet and has researched details not only of existing mills but those no longer remaining, in some cases as far back as the thirteenth century. The book is illustrated both with old pictures and current record photographs. Among the former are rare photographs of a smock mill and post mill, both of very 'rustic' design. Compared to what we are used to in Suffolk, Wiltshire had a real mixture of mills, from crude post mills to a group of 'advanced' tower mills with patent sails, fantails and iron gearing and these are amply covered by the book. There is a longer section on the county's only complete windmill at Wilton, detailing its restoration and interior machinery as well as its earlier history. In all, a very useful book at a very reasonable price.

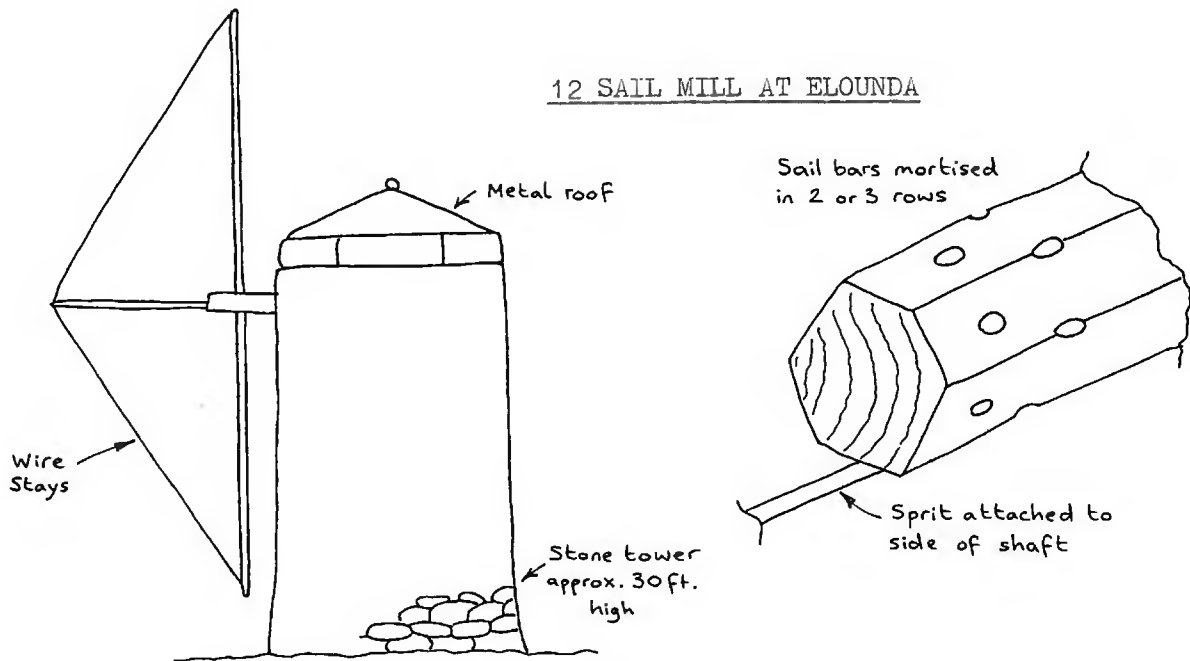
Available from the publisher at Bythesea Road, Trowbridge, Wilts.; allow extra for postage.

## SOME CRETAN MILLS DON PORTER

Last Easter we were fortunate enough to spend a short holiday in Crete. Most of the time was spent in visiting Knossos and other Minoan sites but I couldn't resist the opportunity of making a short trip to the 'Valley of Ten Thousand Windmills'. This is the Lassithi valley, a very isolated flat bowl, surrounded by mountains and high up in the central range. The soil is fertile and plenty of water lies a few feet below ground level even in the hot dry summer season. It is then that the small windmills are used to lift water onto the tiny fields,



## 12 SAIL MILL AT ELOUNDA



many of them no bigger than an English allotment. Even out of season the sight of so many mills is astonishing but it must be fantastic to see them in full sail in high summer.

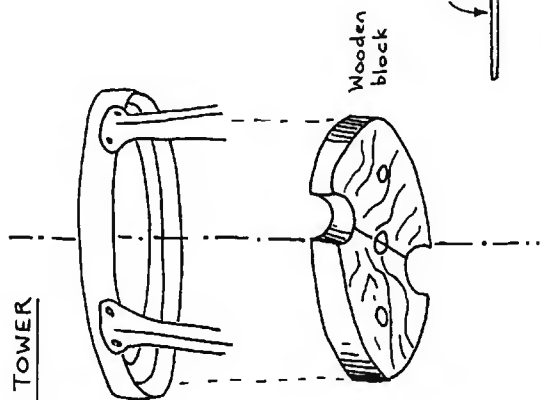
A few rather non-technical notes may be of interest; they may even spawn a few Cretan mills in Suffolk gardens! The design is very simple and gives plenty of scope for local variations.

The Lassithi mills are rigidly mounted on a concrete base above a shallow well. The tower is built of angle iron suitably braced with a circular ring at the top. Within this ring a block rotates carrying the top frame, with a tail at one end and the sails at the other. The windshaft slopes slightly so that the sails clear the tower. It runs in crude wooden bearings with an equally crude crank bearing above the centre of the tower giving a four to six inch rise and fall to the pump rod. The sails are usually eight in number and are furled round the sail bars when reefed; when in full sail they are set very much like a jib on a sailing craft, the bars being supported by wires rigged to a kind of bowsprit, typical of the Mediterranean mills.

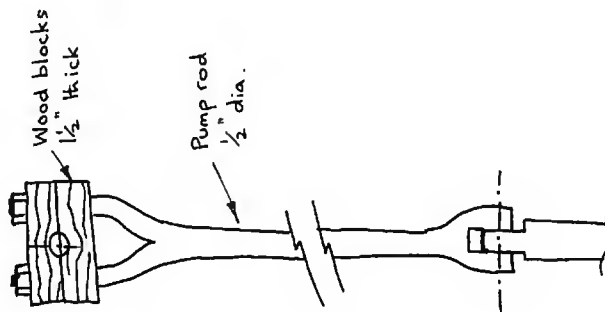
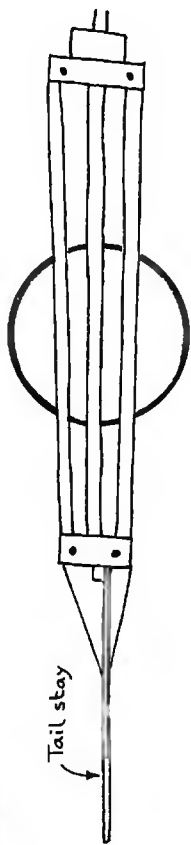
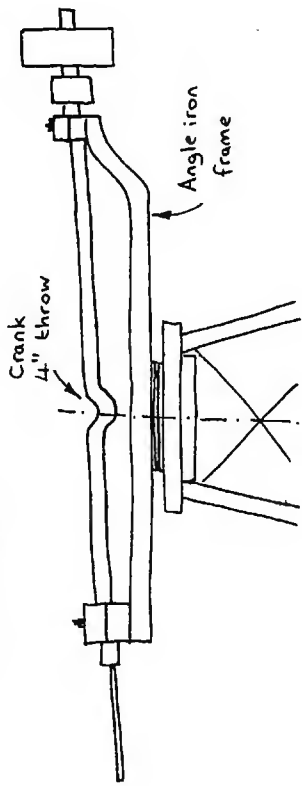
The slight differences in construction suggest that the local smiths and the farmers themselves used their own resources in fashioning and repairing the mills. Wooden bearings liberally soaked in grease are simple and easily replaced. The 'poll end' may be a wooden block or a metal cylinder with six or eight holes suitably spaced. Sometimes the sails are rigged on metal tubes, but the sail bars may be of timber rough sawn or even cut straight from the coppice. The lift pump is about three inches in diameter so that at normal speeds it would raise only a few gallons a minute - enough however to water quite a few rows of growing crops when running 24 hours a day.

Inevitably some of the mills are semi-derelict, although they are not very old. Restoration would be very simple and must be an attractive proposition with

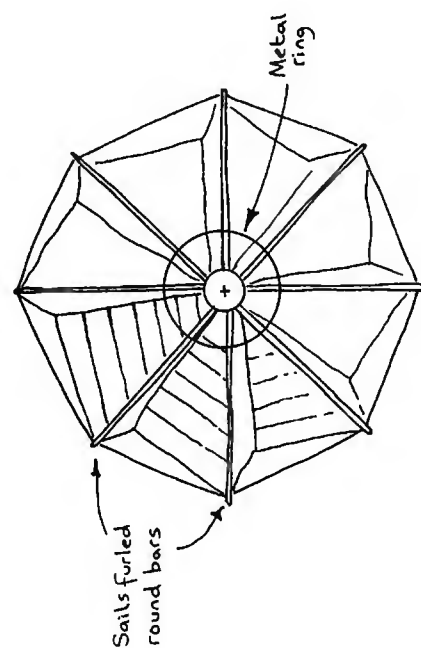
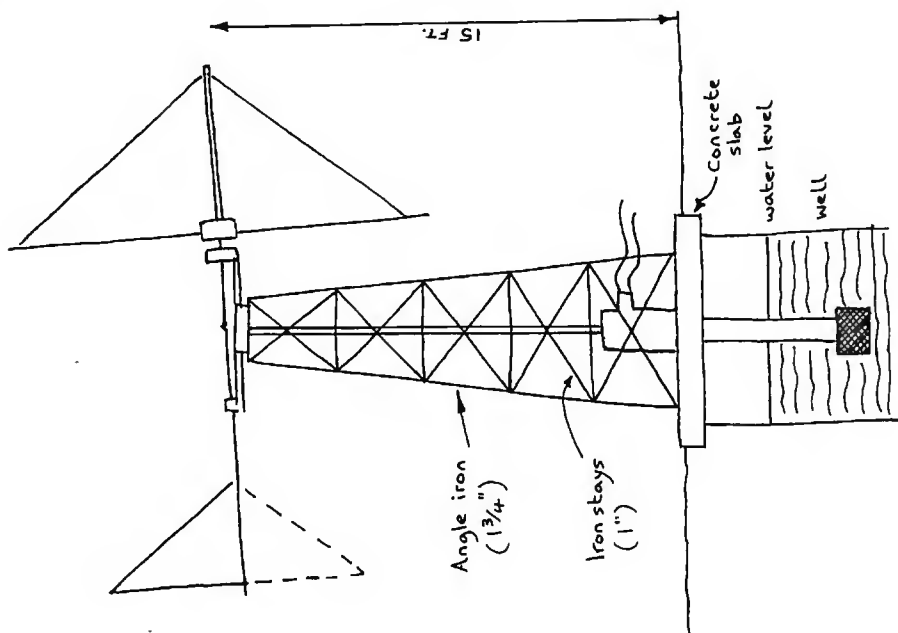
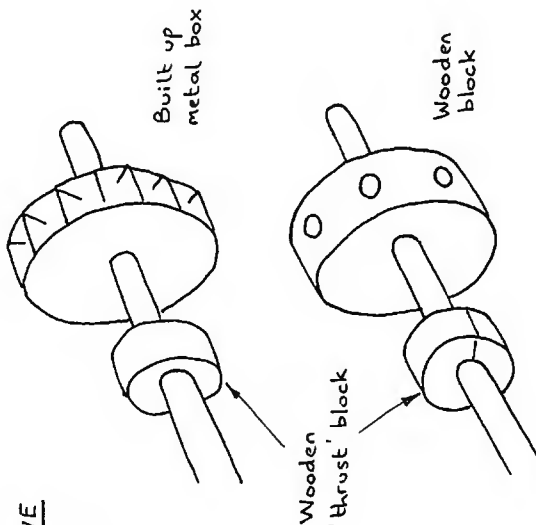
TOP OF TOWER



TOP FRAME



ALTERNATIVE 'POLL ENDS'



increasing fuel costs. Mills of this type are also common on the northern plain in Crete, but here agriculture is competing with tourism and relatively few are working.

Crete also has a number of older mills that were used for grinding cereals. Some of these are very old and are referred to as Venetian mills, which suggests that they may have been built in 1600 or even before. Some of these mills are built on a hillside or in a col where, since they do not have a rotating top, a steady wind at harvest time could be relied upon. These mills have solid stone towers, semi-circular on the windward side but rectangular at the back. The towers have very little taper since the windshaft is horizontal. A well-preserved pair of such mills, probably no more than a hundred or so years old, was built on an isthmus where presumably the wind blows steadily between the mainland and the peninsula. Each mill has twelve sails mounted on bars that are mortised into the hexagonal end of the windshaft. In this case also there are wire stays running to the end of a sprit attached simply to one end of the shaft.

I managed to gain entry to another mill of this type in the centre of the island and found the surviving mechanism to be very simple, as one would expect. The equivalent of the brakewheel simply drives a vertical shaft direct to the stones below. Here again there is no provision for turning the mill, presumably because when it was needed the prevailing wind could be relied upon.

If the time ever comes when S.M.G. runs out of work, migration to Crete deserves serious consideration!

## NEWS

### LITTLE GLEHAM WATERMILL

This small watermill (pictured on the right) which stands on the River Ore has been disused and slowly deteriorating for many years, although it was re-roofed at the end of its working life and the new corrugated iron clad roof has probably saved it. The timber frame is still in good condition and the machinery is intact, including three pairs of millstones and a wood and iron waterwheel.



Following a report that the mill could be in danger of demolition, Suffolk Coastal District Council requested that the Department of the Environment 'spot list' the mill. As a result of this the mill has now been up-graded from Grade III to Grade II which gives it statutory protection.

We are also pleased to say that S.M.G. Member Dennis Thorold is negotiating a lease of the mill and adjacent mill house with the Cobbold Estate and hopes to move

there in the New Year. He plans to repair the mill with the eventual aim of bringing it back to working order.

#### BUTTRUM'S MILL DISMANTLED

The deteriorating condition of Buttrum's Mill, Woodbridge has been a cause for concern for some time now, particularly the state of the cap frame, fantail assembly and sails, although to the passer-by the mill presented as fine a sight as ever. In mid October matters came to a head when part of a sail was blown off and a fortnight later Millwrights International moved in to dismantle the sails, fan and cap over a period of five days, using a large mobile crane and hydraulic inspection cradle. After the final 'lift off' of the windshaft and cap frame on 31st. October, a pre-fabricated wooden roof was lifted onto the tower to keep the weather out (see photographs opposite).

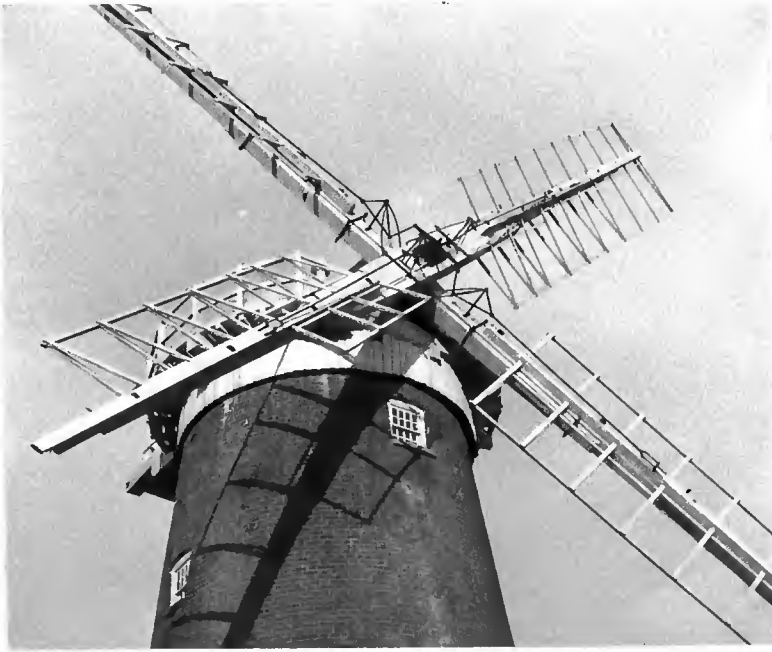
This mill is of course maintained by Suffolk County Council under a long lease. It is likely to remain closed to the public for at least the next twelve months while arrangements are put in hand for its repair. As well as renewal of the cap frame, fantail assembly and sails it is also planned to reinstate the machinery so that the mill will be brought back to working order and will turn to wind for the first time since the 1920's.

#### RECENT S.M.G. EVENTS

Our visit to Ramsey post mill on October 26th. was attended by some 25 Members and friends despite the poor weather. As well as the mill visitors were able to see the considerable research done by owner Mike Organ on the history of the mill and its millers, with copies of old photographs and sale notices. On the first floor of the roundhouse Mike has set up a little Ramsey mill museum. As well as shutters and some fine old stencilled millers' sacks, pieces of the mill which had to be removed are carefully preserved, such as working uplongs, a fly post, the surviving winding gear and old bolts, nails, etc.. So often original pieces such as these are simply thrown away. Members were also able to see the fine plaque presented by Essex County Council for the restoration of the mill. Visitors were regaled with tea and cakes kindly supplied by Mike.

The open afternoon at Pakenham watermill was undoubtedly one of the best events we've had since the Group was founded. Over sixty people turned up to discover the watermill grinding steadily, producing a fine wholemeal flour which was in great demand all afternoon! To add to the occasion, the windmill was also turning in the stiff breeze and driving a pair of stones. During the visit Viv Codd was able to shoot some movie film of the mill which he will be presenting at our public meeting in February.

The social evening in Ipswich on December 5th. was also a success, attracting thirty Members and friends. We had an excellent selection of slides, covering mills in places as diverse as Greece, Malta, Holland, Bedfordshire and Kent as well as Suffolk (Framsden and Thelnetham). Viv Codd kindly came along to show his excellent 10-minute film of the Thelnetham 'lift-off', and the evening was



BUTTRUM'S MILL, WOODBRIDGE

Top Left: view taken in mid October, showing the damaged sail.

Top Right: Millwrights International Ltd. preparing to remove a sail on October 28th.

(Photos. by Martin Whitworth)

Left: the mill as it stands now; the cap roof can be seen on the right.

Below Left: the cap frame on the ground.

Below Right: a close-up of the wet rot in the sheer overlay.

(Photos. by Mark Barnard)

complemented by beer, wines and some delicious food contributed by Mrs Codd, Mrs. Dolman, Mrs. Barnard, Marguerite Wells and Chris Hullcoop. Many thanks to all who helped with this.

#### HOLDING REPAIRS AT SYLEHAM POST MILL

Our work at Syleham did not start until well into October due to commitments at other mills, giving us time to make up eight new ribs to fit between the upper purlin and the roof ridge. Nothing rots faster than exposed worm-eaten wood as the holes allow water to soak right in. Although exposed for only a few years the tops of the buck roof ribs at Syleham had perished leaving little to nail to.

The new ribs, together with ten 15ft. long weatherboards very kindly given by William Browns of Ipswich, pallet timber, nails and tools were all gathered at the mill and we made a start on what turned out to be a very cold, wet and windy day. The weather did not stop the farm work and Ivor Wingfield continued to lift his sugarbeet from the surrounding fields while we worked on the buck roof. By nightfall we were cold and wet and thought we stood a chance of winning the 'masochists of the year' award, but the hole in the roof had been closed! After several more days' work at weekends, thankfully with good weather, all the gaps in the weatherboards were filled, clear anti-ultraviolet polythene was nailed over the window openings and the platform at the top of the steps repaired.

The roundhouse walls between the four brick piers are built from clay lump, the material of many local farm buildings and cottages but very unusual in a mill. It lasts well if protected from the weather, but once exposed to water it quickly breaks down. Large patches of the protecting plaster have come away from the wall so we made a start on patching using cement with



Above: Mark Barnard working on the weatherproofing of the buck windows. (Photo: Chris Hullcoop)

Below: Chris Hullcoop patching up the rendering on the roundhouse. (Photo: Mark Barnard)



a steel mesh support similar to the road elevation of Pakenham watermill. Next Spring when the frosts are past we hope to finish the plaster work and repair the roundhouse roof.

What a pity this fine little mill which was working 30 years ago has deteriorated so much. Just after the last war it was owned by Jack Penton the artist who in July 1947 suffered a frightening tail-winding incident known as the 'Penton experience'! This is recorded in Stanley Freese's book and should be compulsory reading for anyone responsible for a fully shuttered windmill. The keep over the windshaft tail broke, it lifted and the sails hit the roundhouse roof; had the storm not suddenly subsided the windshaft carrying four sails and head and tail wheels would have been blown out of the head. The mill was sold to Miss Jillard who produced good stone-ground flour until the mid 1960's, latterly with the hurst-mounted stones in the roundhouse powered by a Ruston oil engine. I remember calling there some twenty years ago when the mill still turned to wind although the shutters had been removed. I was given a large glass of strong home-brewed cider, after which I was not sure if the mill was post, tower or smock let alone how the stones were driven!

It's difficult to say if the mill has any future, but we are keeping it standing as long as possible in the hope that 'something will turn up'. It often does. (C.H.)

#### PROGRESS AT THELNETHAM

Since the work-in last August some Members have been continuing work at weekends. Most of the bin floor boarding has been completed and re-assembly of the sack-hoist has commenced, with several new parts being necessary. Large areas of brickwork have had to be taken down and rebuilt and investigations have commenced into the condition of the stone floor (not very good!). It will be necessary to take down one of the pairs of stones to allow access to the floor structure. New foundations will be needed under the four vertical 'hurst frame' posts and under the engine-driven stones. These foundations will have to be made well in advance of the work-in next year so that work can progress unhindered on the new ground floor.

Plans for the work-in next year are still somewhat fluid although two separate weeks at the end of July and August are likely. We hope to have the timber for the cap in time so that a start can be made. The stone floor needs to be entirely rebuilt and boarded, a new ground floor is to be laid in concrete, brickwork at the top of the tower needs rebuilding and other areas of the wall need re-pointing. In addition the various iron items, including the windshaft, will be sandblasted and painted with protective paint ready for their eventual installation. There is still a variety of work to be done, then; more news on this and the dates of the work will appear in the next issue of the Newsletter.

#### WINDOW DISPLAY

In late January and February we hope to arrange another window display at William

and Glynn's Bank in the Buttermarket, Ipswich. It will advertise our public meeting in February and show people what we have done during the past year. Window displays are usually taken for granted, but the difficulties soon become apparent when trying to arrange a selection of photographs and objects in a confined space with the occasional colleague from work making faces through the glass!

Our window display earlier this year unfortunately had to be removed at short notice, but this time the display should be on view for a month so wander down and take a look.

## EVENTS

'AN EVENING OF OLD MILL FILMS': SATURDAY FEBRUARY 21st. 1981 at 7.30 p.m. at IPSWICH TOWN HALL

For this winter's S.M.G. public meeting we have decided to 'bring things to life' by showing some mill films. Over the years a surprisingly large amount of film has been shot of mills at work and we will be showing a selection of mostly historic film. We hope to show a selection of archive films from the East Anglian Film Archive, including such gems as exterior and interiors of Peasenhall post mill at work in the 1930's, and also the film 'And Now They Rest' which was made in the 1930's to professional standard and depicts many windmills at work which no longer exist. We will also have Viv Codd's excellent film of the Thelnetham 'lift-off' and of Pakenham watermill. There will probably be time for another film and some slides of recent S.M.G. work, but final details have yet to be completed.

This should prove to be a fascinating and popular evening so please make a note of the date in your diary now! We are lucky in that most of our events are quite well supported but sometimes Members tell us afterwards they had wanted to come along to a particular event but forgot all about it. Please don't expect a 'phone call to remind you - we must rely on you to remember! So let's have a good turnout of Members for our annual public meeting which is our only event until the Spring.

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### New Members since the last Newsletter

JONES, Russell  
34, Fairfield Green, Four Marks, Alton, Hants.  
Tel.: Alton 63528

(Interested in windmills past and present)

McCAULEY, Shirley (Mrs.)  
7, Woodhall Avenue, Whitefield, Manchester  
Tel.: 061-766-5922

SHACKLE, Robert G.S.  
15, Catherine Road, Woodbridge, Suffolk  
Tel.: Woodbridge 4623 (home); Ipswich 642049 (work)

### Change of address:

S. Cracknell - new address is 108, Fountains Road, Ipswich. Tel. Ipswich 684276

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CROSSWORD ENTRY FORM

To enter the Crossword Competition on page 7, please fill in the copy below together with your name and address and return this page to the Editor, Mark Barnard, at 41, Melbourne Road, Ipswich IP4 5PP.

Entries by Saturday 21st. February 1981, please. The draw will be made on that day!

The name of the winner will appear in the next Newsletter, together with the solution.

Name .....

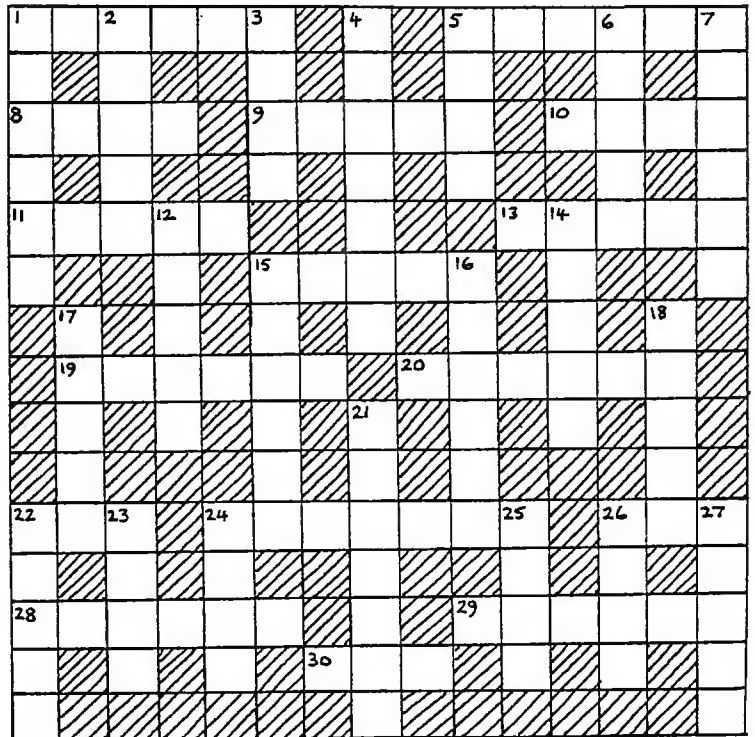
Address .....

.....

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CLUES ACROSS

- 1. German millstone (6)
- 5. Sometimes used to take the nuts out of mesh (6)
- 8. Body of post mill (4)
- 9. Essential part of a sack hoist! (5)
- 10. Mills producing oatmeal would have one (4)
- 11. Set 'em sieving! (5)
- 13. --- maps - an essential aid to mill research! (5)
- 15. Blade of a waterwheel (5)
- 19. This Suffolk mill has escaped across the border! (6)
- 20. & 28. The very best for wheat! (6,6)
- 22. Might power a horse mill? (3)
- 24. Part of a sail (7)
- 26. River on which Little Glemham mill stands (3)
- 28. See 20 across
- 29. This sail can't be copied! (6)
- 30. One of many on a gearwheel (3)



CLUES DOWN

- 1. Nineteenth century windmill innovator (6)
- 2. Most Suffolk watermills had at least one (5)
- 3. Usually the thickest part of the windshaft (4)
- 4. Suffolk post mill (7)
- 5. Part of millstone assembly, sometimes used in heraldry (4)
- 6. Grain for grinding (5)
- 7. The one that turns! (6)
- 12. & 14. Do the millers' sons trim up part of the striking gear? (5,5)

- 14. See 12 down
- 15. Windmill author (6)
- 16. Save the bills for me! (6)
- 17. Cloth the stones? (5)
- 18. One of two at the bottom of 8 across (5)
- 21. Dutch sawmill (7)
- 22. A working mill should certainly be one (5)
- 23. Feeds the eye! (4)
- 24. Another part of a sail, or even 23 down! (4)
- 25. Faces the wind (or should do!) (4)
- 26. Working Cambridgeshire mill (4)
- 27. Famous milling writer (5)