

WATER-POWERED PUMPING ENGINES IN SOUTH-EAST ENGLAND

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Over the past eighteen months I have visited a number of farm and estate water pumps in the counties of Kent, Surrey, West and East Sussex, Essex and eastern Hampshire. The survey was prompted by the accidental discovery of two such pumps.

Many sources contain scant references to them and it is on a collection of these that I have based my research. Now that I have visited most of the pump sites, it has been possible to build up a picture of regional "trends" and distribution.

Surrey

Surrey was the county found to have the largest number of pumping engines. Many large country houses needed one to supply their estates with water. Also there seems to have been a large number of pumping stations along the River Tillingbourne between Guildford and Dorking, and so it can be assumed that the villages along this river were connected to the mains supply quite late. Sadly most of these pumphouses are empty, having been replaced by hydraulic ram pumps in the 1950's.

West and East Sussex

The areas of West Sussex around Petworth and Midhurst seem to have had their own exclusive type of pump. This consists of three barrel pumps each driven by its own separate wooden beam, driven directly from the wheel shaft. The pumps at Coultershaw Bridge, Bignor, and Woolbeeding are of this type. There were no significant trends in East Sussex.

Kent

Again there are no trends in pumping machinery in the county. A number of watermills are known to have pumps fitted, as well as being used for corn grinding.

Essex

This county was not surveyed comprehensively due to its inaccessibility, but two pumps were found at Audley End and Terling. Both were of the open three-throw type.

Hampshire

Again this county was not fully surveyed, but the pumps found were crudely-built iron wheels driving single pumps, except for the three-throw pump at Sherborne St. John.

The pumps can be classified under type as:-

| | | | |
|--------------------|----|-----------|----|
| Single pumps | 11 | Turbine | 6 |
| Three-throw | 5 | Two-throw | 2 |
| Three-through beam | 5 | Unknown | 22 |

The pumps can be classified under condition as:-

| | | | |
|-------------|----|---------------------------|---|
| Complete | 14 | Working or restored | 5 |
| Incomplete | 13 | Traces, or empty building | 6 |
| Not visited | 6 | | |

Notable Examples

Single Pumps

Cobham Park Pump, Cobham, Surrey

TQ115587

Here a fine 3.04 x .963 m breast wheel remains, named "Whitmore and Binyon Wickham Market, Suffolk, 1884". This was the only Whitmore and Binyon wheel found; this is surprising because they were certainly advertised in their catalogues. The pump has been removed, but the crank remains in place.

Upper Slaughter Pump Gloucestershire

Although not in the survey area, this was found accidentally while walking in the Cotswolds, and it represents a fine example. It consists of a crude rusty iron breastshot paddle wheel with 24 arms and paddles. It drove a single plunger (still in good condition) to supply the local manor house with water.

Bourne Hall Pump, Ewell, Surrey

SU606155

The pump is interesting because the waterwheel was made from an industrial pulley wheel, with the paddles simply welded on. The wheel is about 1.8 m diameter, but the pump has been removed. It supplied water to Bourne Hall and an ornamental fountain nearby.

Soberton Pump, Hampshire

SU606155

Here a crude 2.43 m wheel with 12 arms and paddles drove a single pump through a horizontal pumping rod. It is complete, but the wheel has been damaged.

There is another type of one-throw pump which consists of a waterwheel which turns a crank that pushes a beam up and down, operating a pump on the other side of it. They are common in Oxfordshire, for example, but in the survey area, only two pumps could have been of this type. They were:-

West Malling Pump, near Maidstone, Kent

TQ677571

Sadly only the frame of the 1.8 m iron wheel remains, due to vandalism. On the end of the wheel shaft is a pinion which has cogs bevelled inward towards the next cog. This would suggest some sort of a trip gear. Nearby are the remains of a beam.

Ashburnham Place Pump, near Battle, East Sussex

TQ687144

Again this pump has been vandalised, and only the shrouds of the 2.74 x 1.8 m overshot wheel remain, with the crank on the end of the shaft. The pump itself is some 3 m away from the top of the wheel, but there is no transmission gear between it and the wheel, so it is fair to assume that a beam was involved. Close to the wheel is a small derelict circular building with an unusual roof. In the bottom of the pit inside the building there is a confused

mass of beams, perhaps part of the original pumping machinery. The pump delivered to water tanks in another building nearby.

Other important one-throw pumps remain at:-

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| Godalming (Golsey Cottages), Surrey | TQ962415 |
| Albury (moved from Clandon Park), Surrey | TQ038429 |

Three-throw pumps

There are two types of three-throw pumps. The first consists of three pumps driven directly from the wheel shaft. These pumps are either open, or mounted in a rack. The following are examples:-

| | |
|---------------------------------------|----------|
| Buckhurst Park, Withyham, East Sussex | TQ399352 |
|---------------------------------------|----------|

The building is too ruinous and dangerous to show much more than the gear layout, which consists of a 3 m overshot wheel driving a spur gear which turns a pinion on the crankshaft. The three pumps are mounted in a rack. Plans for a restoration in the 1970's did not materialise.

| | |
|--|----------|
| Audley End House Pump, near Saffron Walden Essex | TL524386 |
|--|----------|

A small overshot wheel still works three pumps, which although behind a locked door, can be viewed through a window. The pumps are not mounted in a rack.

Other examples remain at:-

| | |
|---|----------|
| The Vyne, Sherborne St. John, near Basingstoke, Hants | SU636569 |
|---|----------|

Dairy Hill, Terling, Essex (according to "Some Essex Watermills")

The other type of pump uses wooden or metal beams to couple the pumps to the cranks. Examples are:-

| | |
|---|----------|
| Coultershaw Pump, Petworth, West Sussex | SU973194 |
|---|----------|

This fine water pump has been restored to working order by the Sussex I.A. Group. It was installed in 1784 to supply the village and Petworth House. Parts have gradually been replaced over the years, but the basic design remains the same. It is thought to have been based on the London Bridge Pumping Station. The wheel is 3.34 m diameter. See the diagrams for details of the gear.

Nearby at Bignor Park (TQ994154) an all-wooden version of the Petworth pump remained, in very bad condition, but it has been dismantled for conservation.

Although behind a locked door, the pump at Woolbeeding (SU874228) can be seen to be the same as Petworth through holes in the walls.

| | |
|---|----------|
| The Great Bramah Wheel, Painshill, Cobham, Surrey | TQ095599 |
|---|----------|

The magnificent wheel at Painshill Park was installed as an attraction to visitors to the landscape gardens, and to pump water from the River Mole to Painshill House, the lake, and a cascade. It was built in ca 1835 by Bramah & Co, on the site of an animal engine.

The wheel's overall diameter is 10.95 m. It is a single rim undershot

wheel with very ornate castings. It originally drove two sets of three beam pumps, of which one set remains. The wheel will be restored in 1987.

Abinger Hall Pump, Abinger Hammer, Surrey TQ107473

This pump has been well restored over the last twenty-five years, and represents the only private water supply in Surrey. It was installed in 1868 on the site of a previous two-throw pump, although the wheel may be original.

The wheel is breastshot, 3 m in diameter and only 254 mm wide. The arms are fitted in an unusual spiral pattern. The tiny beams are lifted up and down by the cranks to work the pumps.

It lifts water to a small reservoir which supplies water to the converted outbuildings of the now-demolished Abinger Hall.

Two-throw Pumps

Horton Farm Wheel, Chartham, Kent TR115553

This fine farm wheel drove corn-grinding machinery as well as pumps. Sadly the building is very derelict, but inside there is a 5.5 x 1.5 m wide undershot waterwheel with a rim drive. The final drive is by belts.

Valence Pump, Brasted Chart, Kent TQ461536

Here a 4.88 x 1.04 m breastshot wheel turned a pitwheel which engaged with two pinions. Each pinion has a crank which worked a powerful force pump below it. The pump rods are missing but they have been recovered from the bottom of the pit.

Turbine Pumps

Swanbourne Pumping Station, Arundel, West Sussex TQ018077

This fine pumping station was built to supply the town of Arundel with water. The now roofless building was thought to have been built in 1844, but the pumps are from a later period.

A turbine worked two sets of three-throw pumps through gearing. The ends of the shafts are marked "Schauffer of Cologne". Interesting is the presence of Roman numerals on the gearing, which suggests that the plant was assembled in the factory.

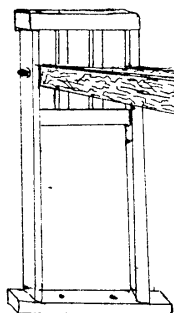
The remains of similar plants were found at:-

Little Strudgate Farm, near Barcombe, East Sussex TQ329324

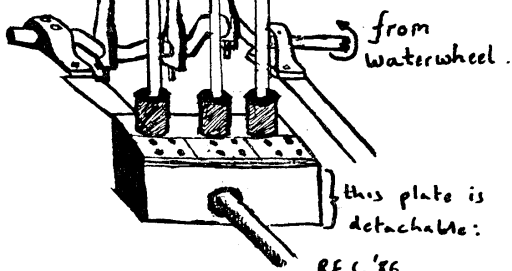
St. Martha's, Chilworth, Surrey TQ038479

DISCUSSION

As the great majority of these plants were built on new sites during a period long after most mill sites were established, besides their different purpose, there was some discussion as to whether they should be classified and indexed separately from watermills. No conclusion was reached.



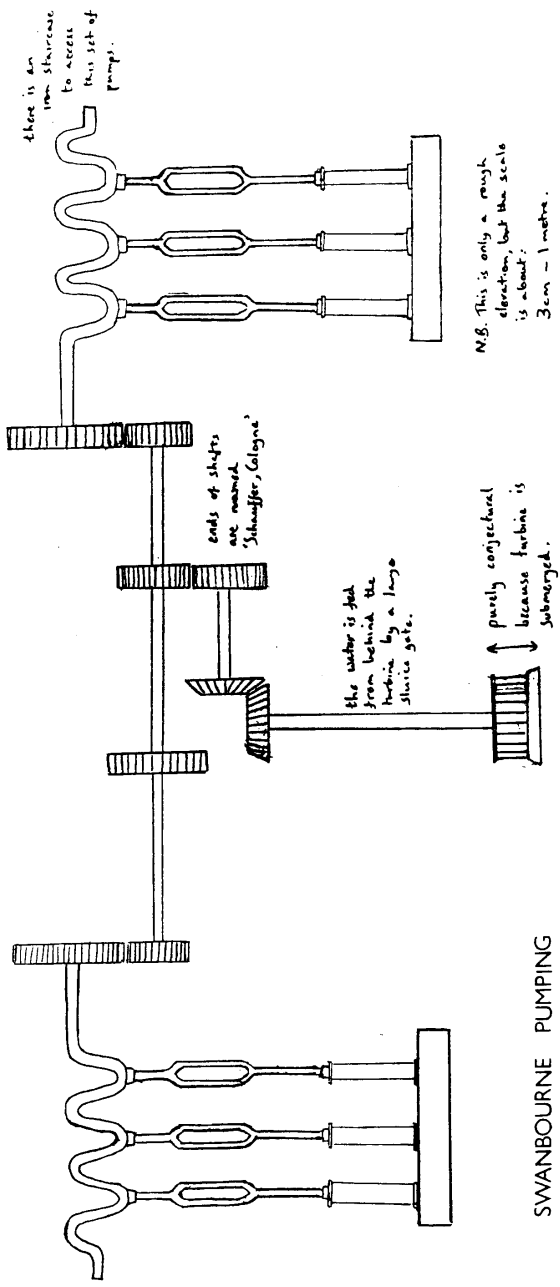
COULTERSHAW
BEAM PUMP,
PETWORTH



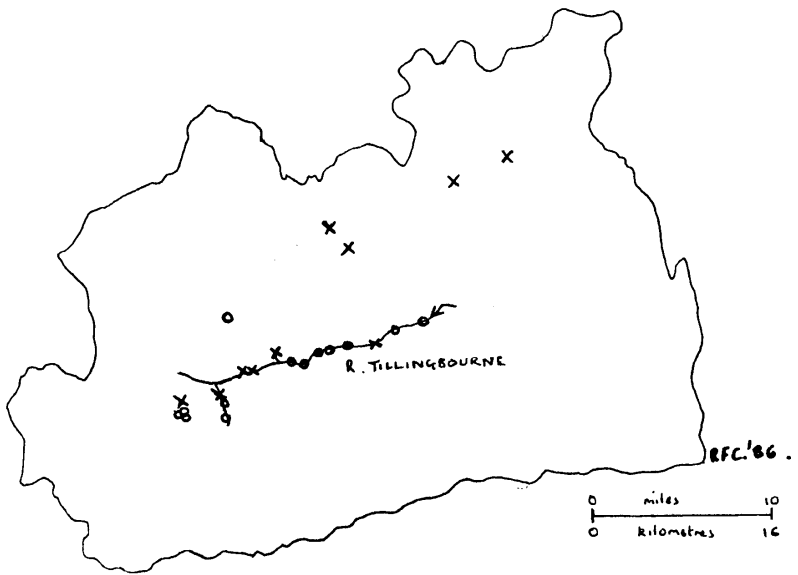
*N.B. This is not
drawn to scale.*

*this plate is
detachable:*

R.F.C. '86.



SWANBOURNE PUMPING
STATION, ARUNDEL. Inst.alled c.1880.



PUMPS IN SURREY

(pre-1974 boundary)

x - denotes complete enough to recognise pump layout.

o - denotes site or empty buildings