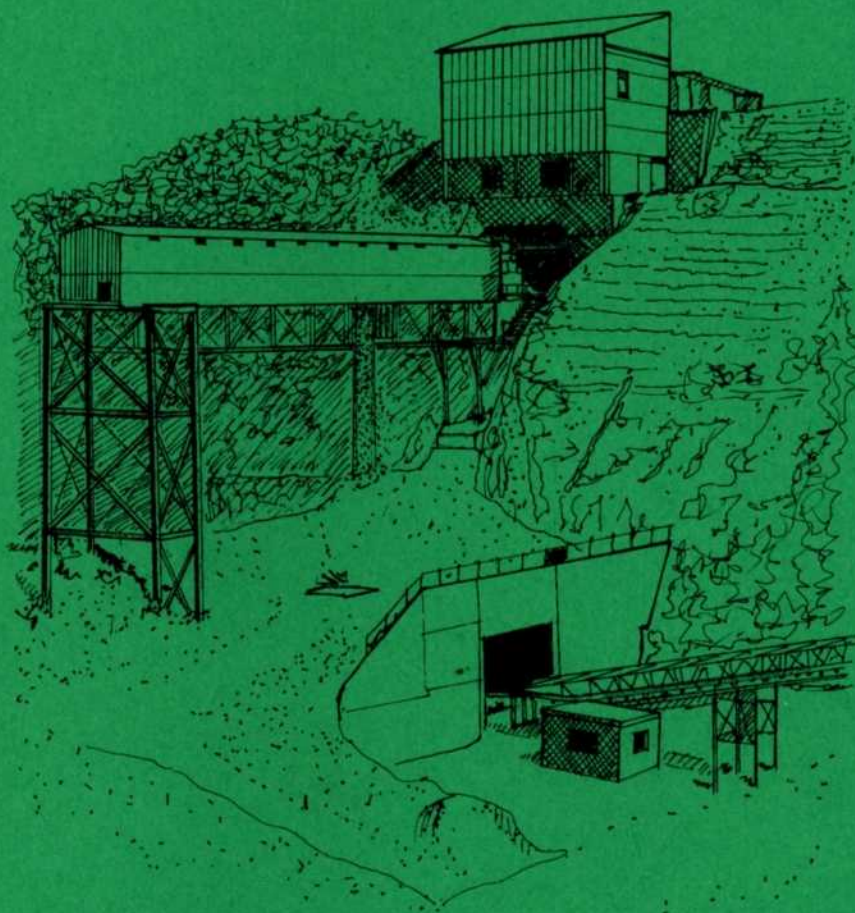


SUSSEX INDUSTRIAL HISTORY



SHOREHAM CEMENT WORKS
CHALK CRUSHING PLANT

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**West Sussex Brewers – Swanbourne Pumphouse –
Hammond Family and Mills – Shoreham Cement Works –
Pullinger's Registered Designs – Balcombe Road Forge**

SUSSEX INDUSTRIAL HISTORY



Journal of the Sussex Industrial Archaeology Society

THIRTY FOUR

2004

Page

THE BREWERS OF WEST SUSSEX

2

Peter Holtham

THE SWANBOURNE LAKE PUMPHOUSE, ARUNDEL

12

Tony Baxter

THE HAMMOND FAMILY CONNECTION WITH SUSSEX MILLS

19

Robin Jones

THE HISTORY OF SHOREHAM CEMENT WORKS

26

Ron Martin

COLIN PULLINGER'S REGISTERED DESIGNS

36

David Drummond

BALCOMBE ROAD FORGE, CRAWLEY

38

Ron Martin

Edited by Dr. Brian Austen, 1 Mercedes Cottages, St. John's Road, Haywards Heath, West Sussex RH16 4EH (Tel. 01444 413845). The Editor would be interested to hear from prospective contributors of articles of any length. Shorter notices can be included in the Society's *Newsletter* which is issued four times a year.

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Membership enquiries to the Hon. Secretary, R.G. Martin, 42 Falmer Avenue, Saltdean, Brighton BN2 8FG (Tel. 01273 271330).

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THE BREWERS OF WEST SUSSEX

Peter Holtham

With the closure of King and Barnes' Horsham brewery in 2000, West Sussex lost its last historic brewery. Below is a comprehensive list of all brewers known to have operated in the county up until World War II. Present day county boundaries have been taken. Sadly there are very few visible remains but where some do exist a mark [VR] has been added to the text.

Since the terms "brewer" and "publican" are often synonymous it is possible that some entries may relate to pubs that did not in fact brew their own beer. Several small independent concerns and brew-pubs have since come (and gone) and these will be the subject of a later article.

SOURCES

The main source of the information has been the county and town trade directories found in the various reference libraries. This has been supplemented by rate books where available. The photographs were taken by the author.

ACKNOWLEDGEMENTS

I am greatly indebted to Pat Saunders for information on Chichester and Arundel and those business that were taken over by Allied Brewery.

EXPLANATIONS of the TEXT

Since directories are not usually available for every year the symbols "-" and "+" have been used to mean "before" and "after" the stated date. "Taken over by" has been abbreviated to "t.o.b." in most cases.

The author would be pleased to provide additional information on any of these entries and to receive further information.

ANGMERING

At 29, High Street:-

-1845/51+ Smith, George, (and baker and miller)

ARDINGLY

At Hapstead:-

-1858+ Comber, Thomas, (and butcher)

ARUNDEL

The Eagle Brewery, Tarrant Street [VR at TQ 170069]



- | | |
|-----------|---|
| 1832 | built replacing an earlier brewery by Puttock, Edward Bowden & Watkins, Robert. |
| 1839/71 | Osborne, William & Duke, William |
| 1872/78 | Harrison, Henry |
| 1878/98 | Lambert, Isaac Cowley & Norris, Edward Thomas |
| 1898/1935 | Lambert & Norris Ltd |
| 1910 | The 81 pubs were taken over by Friary Holroyd & Healys Breweries Ltd |

The Swallow Brewery, Queen Street [some VR at TQ 019069]

- | | |
|-----------|---|
| -1783+ | Picknell, George (post 1774) |
| -1793+ | Puttock, Edward |
| 1803 | Byass |
| 1803/07+ | Messrs.Puttock & Constable |
| -1810/32 | Messrs.Puttock |
| 1832/43+ | Constable, George |
| -1845/89+ | Constable, George S |
| -1900/05 | Constable, George & Sons |
| 1905/21 | Constable, George S Ltd. |
| 1922/54 | Henty & Constable (Brewers) Ltd |
| c1922 | brewing ceased and business was transferred to Chichester |

"The Wheatsheaf" Maltravers Street,

- | | |
|-----------|--------------------------------------|
| -1828/32+ | Leshley, James (maltster) |
| -1839+ | Leshley, James (brewer and maltster) |
| -1851+ | Leshley, James (brewer) |

"The Kings Arms" Tarrant Street

- | | |
|--------|----------------------|
| -1855+ | Hersee, Caroline Mrs |
|--------|----------------------|

BILLINGSHURST

High Street, (next to the "Kings Head")
-1851+ Mitchell, Richard (and John)

BINSTEAD

-1861+ Ellis, Edward (brewer, maltster and farmer), see also at Walberton).

BOGNOR

"Berkeley Arms", 35, West Street,
-1839/55+ Pacy, Thomas
-1865+ Pacy, Henry

"Kings Head", Steyne Street
-1839+ Tomsett, Henry
-1858+ Pacy, Charles

"Anchor", High Street,
-1845/61+ Tomsett, Timothy

"Waterloo Inn", Waterloo Square,
-1855/62+ Pacy, Edward

The Upper Bognor Brewery, Mead Lane,
-1810/-32 Turner & Hardwick
-1832/65+ Turner, Richard & Nathaniel
-1869/79 Turner, Richard Talmy.
1880/81+ Gibbons Brothers.
1882/89+ Gibbons, Charles Percy
Oct.1893 Receiver appointed
Nov. 1893 Creditors' Meeting held.

The Victoria Brewery Inn, Charlwood Street,
-1866/86+ Allen Richard
-23.11.1891 Allen, Mrs Sarah Ann
1891 pub sold to Mitcham Brewery

BOLNEY

-1855+ Cripps, James
-1858+ Peterfield, George
-1866+ Scrase, Daniel

BURGESS HILL

St Johns Brewery, London Road,
-1861/73+ Charman, Thomas
-1877/83 Stroud, Thomas Saunders
1883/90 Pitcher, Charles H.
1890/98+ Stroud, Thomas Saunders

The Bridge Brewery, Fairplace Hill,
-1877+ Hyde, Alfred Benjamin
1882 Sold by Hyde Bros.

CHICHESTER

(Most of this information has been provided by Pat Saunders)

The Eastgate Brewery, The Hornet, [VR at SU 866047]
-1811/11.10.1849 Wooldridge, Stephen sen.
1849/58+ Wooldridge, Stephen jun.(at first assisting mother Martha).
+1858/c1875 Goldring, John & Co.
1879 t.o.b. Gales Ltd of Horndean

also in the Hornet:-

-1839+ Hammond, Elizabeth

The Globe Brewery, South Street, Southgate,
-1846/-51 Purchase, Stephen
-1852/55 Purchase, Thomas
-1869+ Purchase, Thomas
-1873/77+ Purchase, Arthur

The Lion Brewery St Pancras, [VR at SU 869052]
1773+/1818 Florance, Christopher
1818/45 Florance, Edmund
1845/69 Florance, William Adames
1869/82 Walter, Richard & Walter, Robert
Canning
1882 sold to the East Walls Brewery and closed.

At Westhampnett:-

-1784/93+ Legg, John (died 1811)

At the "Swan Inn", Westgate:-

-1861/c76 Mant, William
-1877/80 Tart, William

The South Street, Brewery South Street, [VR at SU 860046]

-1755/+ Coote, Thomas
-1784+ Drew & Frew (maltster in Chapel Street)
c1785 James Drew died?
-1793+ Trew
-1796+ Trew, Thomas & Raper, William (South Street)
-1817 Thomas Trew bankrupt
-1828/31 Gatehouse, George & John Covey
1831/47 Gatehouse, Richard & George
1847/89 Gatehouse, Richard
1889 33 pubs sold to the Westgate Brewery

St Martins Brewery, St Martins Lane, formerly Hog Lane,
-1785+ Fletcher, George & Teresa (St Martins Lane)
-1809+ Combs, George (West Lane)
-1828/32+ Combes, Geo.
-1837/39+ Wares, William (or Warren?)
-1839+ Combes & Co.(leased by Stephen Wooldridge from 1837)
-1841/45 Combs, Henry Knott (died April 1845)

1845/54 (widow Theresa Combs)
 ?1854/61+ Wares, William
 -1865/77+ Triggs, Thomas

At Tower St:-

-1858+ Triggs, Thomas

The Victoria Brewery, St Pancras,

c1744 original brew house built
 -1779 held in trust by William Wooldridge for William Field

-1795/1812 Churcher, Thomas
 1818+ Rhoades, Thomas (listed as having malthouse in St Pancras in 1822)
 c1830 (The Deller family who may not have initially brewed?)
 -1845+ Deller, Richard
 -1849/81+ Deller, William Richard

The Westgate Brewery, Westgate,

1751 Brewery founded (by John Dearling?)
 -1784/1793+ Dearling, John
 -1793/1827 Humphrey, William & Edward
 1827/30 Henty, George.
 1830/55 Henty, George & Robert
 1855/74 Henty, George.
 1874/89 Henty, George & Son
 1889/93 Henty, George & Sons
 1893/1921 Henty, George & Sons Ltd
 1921/55 Henty & Constable (Brewers) Ltd
 1955 pubs shared out between Friary Meux and Tamplins of Brighton

The East Walls Brewery, East Walls,

-1779 built by John Dearling
 -1832 Atkey, James sen.
 1837/8.8.1851 Atkey, James jun.
 8.8.1851/25.11.1865 Atkey, James William exors of Atkey, James jun
 25.11.1865/c80 Atkey, Charles John
 -1881/89 Royds & Marsden
 1889 closed premises auctioned and the 22 pubs bought by Lambert & Norris of Arundel who retained the malthouse in St Pancras.

Eastgate

-1832+ Bigwood, James

Lion Street

-1845+ Boniface, Benjamin

Tower Street,

-1786/1812 Cobden, William brewery & malthouse

At East Street,

-1784/1800+ Dearling, John

Chapel Street

-1828+ Elliot, Obadiah (brewer & maltster Chapel St)
 -1855+ Elliot & Son (maltsters East St)

At 83, West Street:-

-1841+ Meacher, Robert

At George Street:-

-1841/51+ Pannall, George

The Northend Brewery, The "White Horse", Broyle Road,

-1811/-17 Gatehouse, Thomas and John

-1755/75 Ridge, John
 1775/1804 Ridge, William

The "Angel" - "St Paul's Road/Old Broyle Road

1846/58+ Harmsworth, Henry (publican brewer)

Misc.Brewers in North Street,

-1755/75 Ridge, John
 1775/1804 Ridge, William
 -1828/32+ Seymour, George.
 -1839+ Johnson, George
 -1869+ Dixon & Son

COCKING

-1845+ Davies, Thomas (retail brewer & maltster)

CRAWLEY

New Road Brewery, New Road,/1, Post Office Road,

-1873/1907 Ockenden, George & Son

Station Brewer, Springfield Road, [VR at TQ 266363]

-1865/77+ Ockenden, Charles
 -1881/1907 Ockenden, George & Son

"The Brewery Shades", High Street,

-1873/77+ Chantler, George

at New Town, Ifield:-

-1869+ Chantler & Holder
 -1889+ Holder, Henry

and:-

-1875+ Butcher, G.C. location?

CUCKFIELD

The Dolphin Brewery, High Street,

-1839/51 Best, Thomas
 -1855/73+ Best Thomas William
 -1877/94+ Langton, Joseph

1894+/-1898 Golding
 1898 bought by Southdown & East Grinstead
 Breweries Ltd

DUNCTON

The "Cricketers", formerly the "Swan".
 -1867 publican brewer, no details

EASTERGATE

-1845+ Newport, Henry

EAST GRINSTEAD

*The East Grinstead Brewery, 32, North End
 London Road [VR at TQ 376393]*



-1881/92 Coomber, George
 1892 (taken over by Bushell's Black Eagle
 Brewery, Westerham

The Hope Brewery, London Road,
 -1828+ Wood, Thomas
 -1839/44 Burt & Hooker
 1844/55+ Kenward, Edward
 1857/77 Absalom, Charles
 1877/86 Dashwood, John Thomas
 -1889/94 Dashwood, John Thomas & Co.
 1895/1920 bought by Southdown & East
 Grinstead Breweries Ltd
 1920/24.4.1922 Leased to Tamplins Ltd,
 Brighton
 24.4.1922 Sold to Tamplins Ltd, Brighton.
 brewery demolished

The Sussex Brewery, London Road
 -1861+ Jones, William (previously at "Railway
 Hotel")
 -1865+ Wise, Edmond

The "Green Dragon", 7/11, High Street,
 -1794+ Harman, William (brewer)
 -1799+ Harman, William (malt dealer)

EMSWORTH

The Sussex Brewery, Main Road, Hermitage,
 -1869/81+ Miller, Abraham

FELPHAM

At the "Thatched House" (?)
 -1839+ Prior, William & Charles (maltsters)
 -1851/55+ Prior, William (brewer & maltster)

FERNHURST

The Bell (Vale) Brewery, North Ambersham
 -1877+ Kiln & Stampe
 -1881+ Kiln, Walter & Lewis
 -1886/98+ Kiln, Walter

FINDON

-1845+ Marner, Thomas (brewer & maltster)
 -1851+ Peters, John

FISHERSGATE

"Kings Head", Fishersgate Terrace,
 -1851/58+ Collins, Edward (brewer & maltster)
 -1869+ Smithers, Henry (maltsters)

FITTLEWORTH

-1855/58+ Urbin, David

HAYWARDS HEATH

The Haywards Heath Brewery, Mill Green Road,
 -1873+ Power & Blest
 -1877+ Power, Willoughby Hamilton
 -1881+ Verral, Harry Stuart
 -1883/86 Cranshaw, Alfred T
 1886/1888 Sharp & Son
 1888 Burnt down

HENFIELD

The Beehive Brewery, Hewitts, Golden Square
 -1839/51+ Patching, James
 1851+/? Frost, James William

The "White Swan", High Street,
 -1845/55+ Bignell, Stephen
 -1858/61+ Bignell, Miss (Maria?)

The "Bell", High Street.
 -1858+ Parsons, William

Behind Rosemount, Nep Town
 (date?) Rich, James

Early 19th Century Harwood, Nathan

The Mockbridge Brewery, Mockbridge, [VR at TQ 210181]

-1828/45+ Hughes, Henry (maltsters)
-1852+ Hughes, John Alfred (maltster)
-1855/58+ Hughes, John Alfred (brewer & maltster)
-1869+ Bowler, William Thomas (brewer & maltster)
-1873/89+ Bowler, Thomas (brewer)
-1894/1914+ Bowler, Frank (brewer)

The Bull, Mockbridge

-1806 Woolven, Richard

HORSHAM

Allens Brewery, Carfax

-1828/31.12.1834 Allen, William
1.1.1835/25.3.1841 Michell, Henry

The East Street Brewery, 58, now 70 East Street [VR at TQ 176303]

c1800 Founded?
-1869+ Dempster, Joseph
-1873+ Marshall, Charles Frederick
-1877+ Usher, Robins & Co.,
c1878/1906 Barnes, George Hodsoll
1906/ King & Barnes Ltd

also at East Street:-

-1845/55 Stovell, Stephen (1855 at East Parade)
and
-1855/58+ Luxford, George
and
1855/77+ Underhill, Daniel (1873/7 at 1, Denne Road)

The Fountain (& Cock) Brewery, (15), Carfax,

-c1781/1821 Thornton, Richard
1824 (Coppard, Thomas & Dawson, John –trustees)
-1825/39 (Gates, John & Coppard, Thomas –trustees T/A Gates & Co.)
1839+ Rawlinson & Gates
-1845/51+ Gates, Richard & Co.,
24.8.1852 Offered for sale
22.7.1853 Bought by W Holden a wine & spirit merchant.
c1890 King & Son

The North Brewery Brewery, The Bishopric,

-1845/58+ Turner, Richard, (maltsters)
-1862 Satchells
-1862/c70 (Satchell & King)
-1865/1893 King & Son (c1870 Brewing transferred to the Bishopric.
1893/1906 King & Sons Ltd

1906/21.7.2000 King & Barnes Ltd
sold to Hall & Woodhouse Ltd, Dorset

The West Street Brewery, Worthing Road,

-1784/32+ Rawlinson, John
25.3.41/25.10.74 Michell, Henry (I)
25.10.74/1908 Michell, Henry (II)
1908/8.3.1912 (exors of Henry Michell, Michell, Maria(widow); Michell, Guy(son);Dewing, Maurice).
8.3.1912 Taken over by the Rock Brewery, Brighton

The North (Parade) Brewery, North Parade

-1855/58+ Honeywood Drew
-1861+ Satchells
-1861/65+ Satchell & King
(1870 Brewing transferred to the Bishopric.)

The North Street Brewery, North Street,

-1796/1801+ Mr Thornton? Bankrupt 1820
-1858/73+ Thornton, James
-1877+ Thornton, Mrs Elizabeth Caroline

Springfield Road,

-1845+ Parsons, Robert

HURSTPIERPOINT

The Sussex Brewery, Hurst Brewery, The Brewery 23/5, Cuckfield Road, [VR at TQ 280166]



Brewing at the "New Inn" ?

-1839/51+ Smith, Thomas
-1855+ Smith, Thomas (maltster only at final site)
-1858/61+ Smith, Thomas & Son
-1865+ Smith, Philip at Cuckfield Road

-1866+ Smith, & Son
 -1869+ Smith, Thomas & Son
 Smith, Philip
 -1873+ Smith, Philip & Son
 -1877+ King & Taylor
 -1881+ Saltmarsh, George Thomas
 -1883/1911+ Couchman, John Edwin
 1912 t/o by West Street Brewery, Brighton

and
 -1855/58+ King, William

KIRDFORD

"Half Moon" 8, South Street,
 -1877+ Mitchener, Mrs Elizabeth
 -1881 Mitchener, John

LAGNESS

The Lagness Brewery, Pagham
 -1845/81+ Collins, George

LANCING

"Farmers Hotel" 17, South Street, Farmers Lane/ Kings Road,
 -1851+ Dabbs, William

LAVANT

-1810+ Ayling, Thomas
 -1845/61+ Ayling, Thomas

LINDFIELD

The Lindfield Brewery, High Street, [VR at TQ 346254]



1814+/-1820 Stone, Richard Buckley
 July 1820/+ Durrant, William and Wileman, Thomas
 -1828+ Durrant, Wm
 -1839+ Durrant, Wm
 -1845/98+ Durrant, Edward

-1902/c1906 Durrant, Mrs Fanny Sarah
 c1906 brewing ceased
 29.9.1909 pubs sold to Ballards & Co. of Lewes

LITTLEHAMPTON

The Anchor Brewery, High Street,
 c1816/32+ Corfe, James
 -1839+ Constable, G.S.
 -1845+ Constable, George
 -1851/58+ Puttock, George Bowden
 -1861/85 Constable, Thomas (bry rebuilt 1871)
 1885/1896 Constable, George Sefton
 1896/1904 Constable, George Sefton & Sons
 (Archibald Constable).)
 1904/1917 Constable, George Sefton & Sons Ltd
 (Archibald Constable).
 1917 - Beer brewing transferred to the Swallow
 Brewery, Arundel, mineral water
 manufacture retained at Littlehampton.

Also:-
 -1832+ Butt & Son

-1851/58+ Greenfield, George

LODSWORTH

At "George & Dragon, Halfway Bridge,
 -1877+ Smith, George

LOXWOOD

The "Onslow Arms", Guildford Road,
 -1845+ Hawkins, Jesse (brewer & maltster)
 -1858+ Sopp, John
 -1877+ Knowles, Robert

LURGASHALL

"The Noahs Ark" (pub brewery?)
 -1845+ Challen, William (maltster)
 -1858/69+ Cooper, Edward (miller & maltster)
 -1873+ Payne, George (maltster)
 -1881+ Callingham, Sidney

MIDHURST

The Angel Steam Brewery, North Street,
 -1839+ Purchase, Thomas
 -1845+ King, Thomas
 -1858/-75 King, Thomas
 -1875/1902+ Parker, John (died 1896)
 1902/12+ Parker & Co.,
 -1917/21+ Parker & Popplewell
 1923 5 pubs purchased by Gales Ltd of
 Horndean

in West Street:-

-1839/45+ Peat, George Jun.
-1851/1858+ Peat, Mary
-1861/66+ Peat, William
-1873/98+ Lewis, Alfred
-1902/08+ Lewis, Alfred & Son

At the "Red Lion", Lion Street,

-1828+ Hall, James
-1832+ Hall, John

and:-

-1784/94+ Stubbington, William (brewer & maltster)

-1784+ Upperton, Adams (brewer & maltster)
-1794+ Upperton, Adams (brewer)

-1828+ Greenhill, Jos (brewer & maltster)

-1828+ White, John maltster
-1832+ White, John (brewer & maltster)

NYETIMBER

-1861/77+ Collins, Charles
and
-1869/73+ Wingate, Thomas (at the "Lamb"?, Pagham))

PETWORTH

The "Angel", Angel Street,

-1784/98+ Hampton, Thomas (maltster)
-1828+ Wild & Greenfield (maltsters)
Wild, Wm (brewer)
-1832+ Wild & Greenfield (maltsters)
Greenfield, John Osborn (brewer)
-1839+ Greenfield. John Osborn (brewer)

at Golden Square,

-1828+ Challen, Benjamin & Stephen (maltsters)
-1832+ Challen, Benjamin (brewers & maltsters)
-1845/51+ Challen, Benjamin (maltster)

The Stag Brewery, High Street, [VR at SU 977215]



-1845/21.3.1872 Milton, James
21.3.1872 Milton, James died
1872/16.10.1899 Milton, Manning
8.5.1900 sold to Friary Holroyd & Healys
Breweries Ltd

The "Swan" & "Half Moon" Market Place,

-1855+ Dempster, Charles
-1861/73+ Dempster, Charles
-1877/81+ Pyecroft, Thomas

North Street

-1858+ Burgess, James

New Grove Street

-1845/55+ Matthews, William

and:-

-1798+ Puttick, Edward

-1828+ Livesque, John

PLAISTOW

-1858+ Pullen, Henry

POYNINGS

The Poynings Brewery

-1851+ Gumbrell, Samuel
-1855/86+ Cuttress, George Stephen Cave
-1889/1925 Cuttress & Son
4.6.1925/1940 Molesworth's Poynings Brewery Ltd

PULBOROUGH

-1839+ Pink, Thomas (retail brewer)

-1858+ Urben, David (brewer & cooper)

ROGATE

The Sandhill Brewery

-1877+ Seward, George Haw.

RUDGWICK

The "Plough"

-1869/77+ Grinstead, James

SHOREHAM

The Albion Steam Brewery, the High Street,

-1828+ Wileman, Thomas....(location?)
-1832+ Trew, George....(do?)
-1839+ Baker, Henry...(do?)
-1841+ Baker, William.....(do?)

-1851/-55 Bungard, John
 -1855+ Patching, James
 -1869+ Keeping, Alfred
 -1871/73+ Tucker, Benjamin
 -1875+ Keeping, A (?)
 -1877/89+ Albion Brewery
 1889 sold to E Robins of Hove

6, Ropetackle Street,
 -1861/-71 Challen, Henry

15, White Lion Street
 -1841+ Blann, Thomas

and:-
 -1798+ Harrington, Charles
 -1798+ Innote, John

SIDLESHAM

-1851+ Stevens, William
 -1855/66+ Stevens, William & Sons
 -1869/77+ Stevens, George & Walter
 -1881/94+ Stevens, Walter & Herbert

SINGLETON

-1845+ Leamon, Joseph
 -1861+ Leamon, Henry
 -1865/66+ Humphrey, George
 -1881 Humphrey, George ...(at West Dean)

SLINDON

-1828/45+ Willshear, John
 -1855/61+ Willshear, Charles
 -1865/-71 Willshear & Co.,

SLINFOLD

"The Kings Head",
 -1861+ Grinstead, George

SOUTHWICK

The Southwick Brewery,
 c1790/1800 owned by a partnership of
 Newman, James; Gravely, William;
 Rice, John; and Hall, Nathaniel
 1820/6.9.1820 Tamplin, Richard (-when burnt down).

"The Gardeners Arms",
 -1851+ Page, Thomas

and:-
 -1851+ Smith, W. (brewer & maltster)
 -1855+ Smith, W (maltster)

STEYNING

7, Church Street,
 -1839/1851+ Banfield, William (brewer)
 -1881/98+ Banfield, John (brewer & cooper)

Michells Brewery, High Street, [VR at TQ 177110]
 1772/1822 Stoveld, John
 30.9.1822/-52 Michell, Edward
 -1852 Michell, Edward & George
 1852/57 Michell, George & Mark
 1857/61+ Michell, George & Mrs Harriet
 -1865/73+ Michell, Edward & Sons
 -1877/98 Michell, George & Edward.
 1.7.1898 Merged with George Gates' "Three
 Tuns Brewery"

The Three Tuns Brewery, (Gates' Brewery)
High Street,
 -1828/45+ Gates, George
 -1852/95+ Gates, George (junior)
 -1899/1915+ The Steyning Breweries Ltd
 1917 brewing ceased, damaged by fire
 1919 company t.o.b. Rock Brewery of Brighton
 c1928 brewery tower demolished

and:-
 -1779/84+ Peto, Jeremy
 -1798+ Thornton, Richard
 -8.7.1832+ Keeping, John & Co.
 -1832+ Keeping & Jones
 (may have **owned** the Three Tuns Brewery?)

-1851+ Read, William

*

STORRINGTON

"The Eleven Cricketers",
 -1858+ Goodger, George

TANGMERE

-1861/69+ Pacy, Frederick

TILLINGTON

"The Horse Guards"
 -1858+ Chalwin, Charles
 -1877+ Milton, Manning

UPPER BEEDING

The "Bridge Inn", High Street,
 -1852+ Blann, Edward
 -1861/64 Blann, Edward & Ambrose
 1864/77+ Blann, Ambrose

WALBERTON

The Street, [VR at SU 975057]



- 1828+ Ellis, William
- 1832/39+ Edward Ellis & Farnden,
- 1845/69 Ellis, Edward (died 1869)
- 1869/77+ Ellis, Mrs Matilda
- 1881/1922 Ellis, Matilda & Son
- 19.4.1922 Taken over by Rock brewery,
Brighton, brewery and 4 pubs later
purchased by Hoare & Co. London

WALDERTON

- 1855+ Davis, William
- 1858+ Davis, William (maltster only)

WEST ASHLING

- 1851/55+ Coles, David

WEST DEAN

St Martins Brewery

- 1881+ Humphrey, George ... West Dean

WESTBOURNE

Gosden Green,

- 1865/66+ Hatch, Andrew Bone
- 1869+ Hatch, Andrew Bone (maltster only)

WISBOROUGH GREEN

The "Fox & Hounds" Round Street Common,

- 1855+ Hawkins, Jesse (maltster)
- 1858+ Hawkins, Messrs. E & G (maltster &
brewer)
- 1861+ Hawkins, Enoch (maltster)
- 1865/66+ Hawkins, James (brewer & maltster)
- 1869+ Knowles, Robert (brewer only)

WORTHING

The Albion Steam 33, Chapel Street,

- 1850/69 Russell, Thomas
- 1870 Craston, Thomas

The Railway Brewery, North Street,

- 1820/22+ Carter, Charles (sen.)
- 1836/46+ Mitchell, Henry (maltster)
- 1856+ Allen, Alfred (maltster)
- 1861 Allen, Dennett (maltster, at Victoria
Cottage)
- 1862/66 Allen, Dennett (brewer & maltster)

The Ann Street Brewery 17 & 19, Ann Street,

- 1818/24+ Jones, John
- 1828/46+ Carter, William
- 1850/-66 Carter, John

"Old House at Home", Broadwater Street East,

- c1858 Apted, James

The Cannon Brewery, Cooks Row/Chatsworth Road,

- 1822+ Wicks & Knight
- 30.4.1824+ Wicks, Joseph
- 30.12.1824+ Tamplin & Co.
- 25.10.1825+ Osborne?, James
- 5.10.1827+ Tidy, James
- 1836+ Messrs. Mitchell
- 1838/50+ Michell, Henry
- 1855/69+ Feest, James & Miss Ann
- 1873/78 Feest, James
- 1879/94 Baker, James
- 1896/97 Ball, Tprobably only publican(?)
- 1898 Howard, E.J. do.

The Fountain Brewery, 16, Chapel Road,

- 1823 built
- 1823/26 Carter, Charles (I)
- 1827/28+ Carter, William
- 1832/39 Carter, Charles (II)
- 1839/47 Elliot, Edwin trustee of Carter, Charles
(query brewer = Mitchell, James?)
- 1845+ Carter, Mrs Mary Ann
- 1846 May+ Carter, James (but owners = exors of
Chas Carter)
- 1847/63 Carter, James & Richard
- 1863/89 Carter, Richard

The "Jolly Brewers" formerly "Brewers Arms"

- 39, Clifton Road, New Town,
- 1836+ Palmer, William
- 1838/45 Knowles, William
- 1846/56+ Sargent, George
- 1866+ Brown, -
- 1881+ Gravett, Matthew
- 1898/1921+ Gravett, George

The "Brewers Arms"/"Cricketers" Broadwater Street West,

- 1853/55+ Luff, Thomas

35/37, Broadwater Street West

- c1830/49 Thatcher, John

North Street/High Street/Chapel Road,

- 1828+ Michell, Henry (maltster, North Street)

-1832+ Michell, Henry (brewer, High Street)
 -1836+ Messrs. Mitchell (brewery, & malthouse, Cooks Row)
 -1838+ Mitchell (Cannon Brewer & malthouse, Cooks Row)
 -1839+ Michell, Henry (brewer, Chapel Road)
 -1838/46+ Mitchell, Henry (maltster, North Street)
 -1846+ Mitchell, Henry (brewery, Cooks Row)

The Montague Brewery, 46 later 64, Montague Street,

-1846+ Lephard, Edmund
 -1855+ Bartlett, Francis
 -1857/58+ Croucher, Stephen
 -1866+, Searle, Jacob
 1878/84, Searle, Jacob
 1885 Rice, J.H.
 1886+ Searle, Jacob
 -1888 Lee, R
 1889/90 Potton, F
 1891 Lewis, C.S.
 1892/93 "Montague Brewery"
 1894/1902+ Cornford, Thomas

The New Street Brewery, 13, New Street,

-1845/46+ Clark, William
 -1850/56+ Slaughter, James
 -1861+ Broocks, George
 1863/1923+ Pacy, George

Patricks Brewery, Brewery Place,

-1818/9 Patrick, Henry
 1819+ Patrick & Co.
 -20.10.1820/-1824 Tamplin

"The Spaniard Inn", Chapel Street,

-1857+ Bicknell, Maria
 -1862/4+ Bicknell, Maria

The Egremont Brewery, The Tower Brewery, Warwick Road, [VR at TQ 152026]



1835 built
 1835/61 Greenfield, George
 1862/79+ Greenfield, Walter
 1880/1917+ Chapman, Harry
 -1920/23+ Adams, Ernest
 1924 t.o.b. Kemptown Brewery of Brighton

The Warwick Brewery, 25/7, Ann Street, [VR at rear i.e. north TQ 150027]

-1832+ Farmer, John
 -1836/66+ Slaughter, William
 -1869/77 Slaughter, John
 1878 "Ann Street Brewery"
 1879/91 "Warwick Brewery"

The Vine Brewery, 27, High Street, [VR at TQ 132042] West Tarring.

-1881/1906+ Parsons, Henry
 -1908/27+ Parsons & Sons
 1930/4 beer retailer only
 8.8.1937 Parson, Henry died
 1938 brewery and pub offered for sale

5, Richmond Place,

-1858+ Booker, John

7, Chapel Road,

1889/90 Bruford & Co. Ltd

Chapel Street,

-1827/28+ Pledge, Edward
 -1838+ Hampshire, James

High Street,

-1828+ Hampshire & Tee

Marine Place

-1826+ Wicks, James

John Street,

-1832+ Wicks, William
 -1836/39+ Perry, William

North Street,

-1824/27 Penfold, James (T/ A Penfold & Stevens?)
 1828/32+ Belchamber, James

48, Station Street (Road),

-1876+ Moore, L.B.

Steine,

-30.4.1824+ Parsons, George
 -2.1.1826+ Walker, Richard Watt

1 & 2, Brewery Place,

1820/22+ Tamplin & Co.,

THE SWANBOURNE LAKE PUMPHOUSE, ARUNDEL (GR: TQ 018077)

Tony Baxter

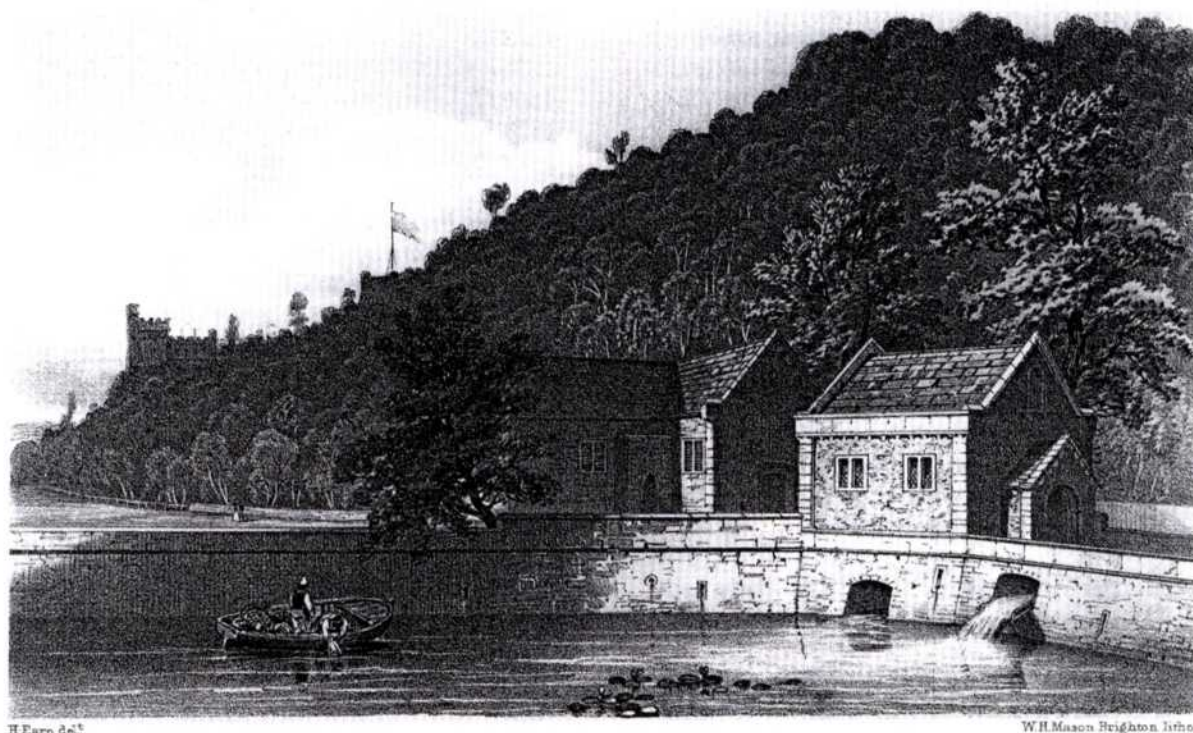


Fig. 1 Pumphouse, 1846. Designed by Robert Abraham for the 13th Duke.
(from Frederick Mason, *Illustrations of Arundel Castle* (Arundel 1846))

A short distance to the north of Arundel Castle lies Swanbourne Lake, created before the Conquest as a mill pond but then in the late 1700s enlarged to become an ornamental lake with a new mill pond built at the southern end of the lake to serve the mill which was painted by Constable in 1837. This was demolished soon after and in its place appeared the pumphouse, the subject of this story. The history of the pumphouse is unbalanced by an almost total lack of precise information about the first 50 years of its existence. It is only from documents dated just before 1900 that anything reliable begins to emerge. Moreover, the pumphouse was not the beginning of water pumping up to Arundel Castle, though again little is known about the earlier arrangements for pumping and storage. Nevertheless what is known will be set out to provide some sort of background to the story of the part played by the existing pumphouse in water provision for the Castle and Town. It is perhaps surprising that the building has survived at all, bearing in mind that the other pumphouses built later to increase the water supply have all disappeared without trace.

The earliest reference to a water supply for the Castle is in a report in *Kingdom's Weekly Post* of 1 January 1644 about the Civil War siege of Arundel Castle by the Parliamentary forces under command of Sir William Waller. He was confident that unless relief came within five days the defenders would be forced to surrender as a result of, amongst other shortages, lack of water because "the pipes are cut, which straightens their water ...". This implies an external source, located perhaps by one of the many springs at Swanbourne where almost all the other later pumps were, and either fed directly to the Castle or via some sort of cistern. There is of course no indication of what sort of pumps were used, nor whether they were wheel or gin driven, nor indeed when they were installed. The Parliamentarians subsequently destroyed the defences of the castle, though the domestic accommodation was retained. Spasmodic attempts were made during the next 150 years to improve this accommodation but not until the Regency days was any substantial rebuilding achieved. This perhaps explains in part the paucity of records of the water supply arrangements during this period.

Nevertheless, by 1705 the pumping arrangements had clearly become inadequate, because "the Lady of the Castle" (name unknown) asked an engineer, Joseph Black, for an estimate for two possible pumping systems. It is significant that in 1701 Thomas, the 8th Duke, succeeded to the title and no doubt in this Estimate we see a new broom at work. A transcript of this document is reproduced at Appendix 1. The first system was for an engine house containing the pump(s) driven by a water wheel through a crankshaft "3½ inches square" delivering the water through a 2 inch lead pipe, up to a cistern and thence to the Castle under gravity. The other system was for a horse gin and engine house under the Castle wall using the same well as the fellmonger. There is no indication whether "my Lady" chose one or both of the systems and certainly there is no trace left of either. It does however seem likely that at least the former was built because in a document dated 1731¹ reference is made to water being supplied from a spring at Swanbourne apparently by way of a cistern in Little Park. An old map of 1855² shows a small cistern some 150 yards to the north-west of the Castle which was abandoned and grassed over in the 1960s; this could well have been the cistern built by Joseph Black.

Nothing more is heard of the Castle's water supply for over 100 years until 1846 when, in place of the old Swanbourne mill buildings a pumphouse designed by Robert Abraham was built, described in the *Illustrated London News* 5 December as being of "flint and stone in the Norman style, with a waterwheel of 10 horsepower..." (Fig. 1). Whether the wheel was overshot or breastshot is not known. Unfortunately there are no documents of the time that set out any details of the pumping equipment. It is not until 1891 when a report by A.F. Phillips³ on the then existing equipment reveals that "the existing pumps are 2 sets of 3 Barrels each 7 inches diameter and 14 inches stroke. The system operates at 10 revolutions per minute so each set should theoretically pump 3,400 gallons per hour (Test gave 2,400 gallons per hour) ...". There is no indication of who originally installed the equipment nor of any maker's name. The purpose of each set of pumps is not mentioned; but unless there has been a radical change since 1846, which seems improbable, then one set pumped drinking water from a spring about 40 feet due west and the other set pumped lake water.

The report also gives details of the water storage arrangements and refers to three tanks (reservoirs or cisterns): the Fire Tank, the Organ Tank and the Castle Tank. It is impossible to pinpoint which tank was where because, apart from the odd naming, almost every other subsequent document calls the tanks by different names e.g. "Small Tank, Large Tank, Upper Tank, Lower Tank, Town Tank", or to decide which

set of pumps fed which tank. Nonetheless the fact remains that there certainly were three tanks then in existence. Apart from the c.1705 one, a new one had been built in 1846, located to the north-east of what is now the Castle cricket ground. This was a handsome building, part sunk in the ground and part above, of red brick with stone dressings. The building is still there though much dilapidated having been taken out of use after World War II. The third tank was situated about 100 yards to the north-west of the second one, shown on the OS 25 in : 1 mile of 1875. This was built in 1873 to implement the Duke's agreement given in 1871 to supply water to Arundel town.⁴ Reference to the 'Organ Tank' is interesting: the Cathedral was finished in 1873 (called the Church of St. Philip Neri until 1965) and the organ bellows were powered by a water engine supplied presumably from this organ tank – as this is the only reference anywhere to such a tank, it is not known to which of the three actual tanks he was referring. Apparently the water supply was also sufficient to power not only the hydraulic lift in the Castle but also the dynamos of the first electricity station, (the Castle was illuminated by electric light in 1877) though these were superseded in the 1890s by steam-powered generators installed by the Brush Electrical Engineering Company of Loughborough.⁵

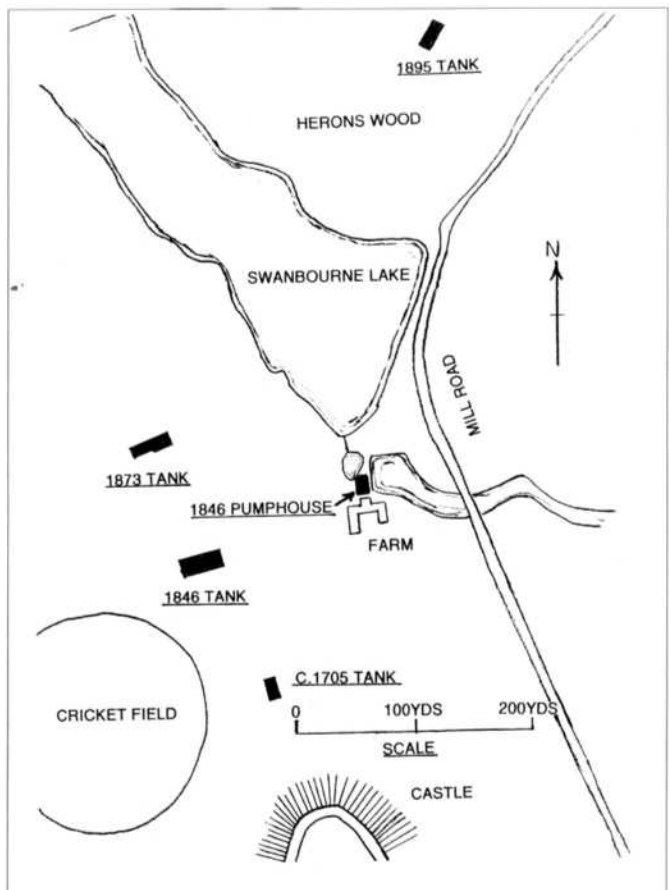


Fig. 2 Swanbourne Lake 1846 Pumphouse and Reservoirs

These arrangements continued until the late 1880s, by which time it must have become clear that the one pumphouse was barely able to cope with the rising demand both from the growing town and from the need for a more comprehensive fire hydrant system operating at a higher pressure. It was for these reasons that the engineer, A.F. Phillips of Westminster, was called in to examine the problem and to make recommendations. This he did in his report referred to above. His solution was to build a second pumphouse, located about 75 yards to the north-west of the first one in a worked-out chalk quarry. The general design and materials matched the existing house, though on a larger scale. It contained two Crossley gas engines (gas supplied from the Arundel Gas Works) each of nominal 12 hp each driving a set of three pumps, which drew their water from a specially sunk borehole. To accommodate this new water supply at the required pressure, a further reservoir was built by Heron's Wood on the high ground north of Swanbourne Lake, some 150 feet above the castle quadrangle (at Fig. 2 is a sketch-map showing the relative locations of the Castle, the pumphouse and the four reservoirs). The opportunity was also taken to renew the Water Mains and increase their carrying capacity. The work was successfully completed by 1895.⁶

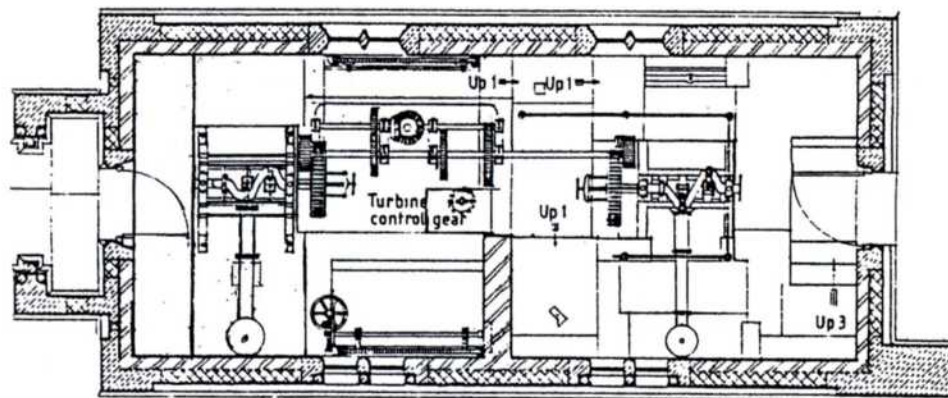
Not long afterwards concern was being felt about the state of the old pumphouse and waterwheel. In a report by the Duke of Norfolk's Agent, Edward Mostyn,⁷ he stated "the existing waterwheel is a very old one and quite inadequate for the work and it is proposed to substitute a turbine which would largely increase the pumping power and necessitate our working the gas engines much less frequently and be a great saving of expense...". His recommendation was accepted and permission⁸ sought from the trustees of the estates for the "erection of a Turbine with all necessary machinery for the supply of water to the mansion house, Arundel Castle, at a cost not exceeding £1,000 ...". It is assumed that the necessary permission was granted, the work put in hand and completed during 1902, because on 8 October 1902 George Sparks, surveyor, reported⁹ that the "... work had been properly executed and that the sum of One thousand pounds is properly payable by the trustees in respect thereof". Sadly no written records can be found of what work was carried out or which firm was employed. The only evidence is what remains. Fortunately, when the abandoned machinery was surveyed by the late John Haselfoot and Alan Allnutt in 1973 a handsome brass plate was found on an A-frame bearing the name "Stothert & Pitt Ltd Engineers Bath". Bearing in mind that the firm did not become a public registered company until 1898, this could imply that the present sets of pumps were new in 1902. On the other hand, as the dimensions of the new and old pumps appear to be the same it is also

possible that the old pumps were merely refurbished. Which raises the intriguing possibility that Stothert & Pitt were responsible for the original installation in 1846. Who knows?

The two drawings (Figs. 3 & 4 by Ron Martin) show respectively the layout of the pumphouse and that of the turbine, pumps and associated gearing. At Appendix 2 is a brief description of its operation. It has never been possible to examine the turbine closely because it has always been submerged. Nonetheless it has been seen by experts and the general consensus of opinion is that it is probably based on a Fourneyron design. It is also reasonable to suppose that it was manufactured by Stothert & Pitt themselves, they having been making turbines since at least 1880. The output from the new arrangements must have been significantly better, for when it was measured some 50 years later each set was still producing about 4,000 gallons per hour – no doubt because powered by a turbine it would have been possible to speed up the operation of the pumps. Although many approaches have been made to the known repositories of the Company's records (it closed in 1989) nothing has been found relating to Swanbourne; it is well known that many records were lost during World War II air raids and as a result of frequent floods.

So in 1902 the old pumphouse started a new lease of life, but then once again a complete silence descends on the area, broken only during the World War II apparently by the military who installed, in the present Southern Water compound, a Blackstone diesel-powered centrifugal pump (output 3,300 gallons per hour) presumably for their own dedicated use. Ten years after the War ended, Penfolds the engineering firm in Arundel, were commissioned to design and instal a new pumping system. This was completed in 1956 and consisted of an electrically-driven Pulsometer centrifugal pump of 50,000 gallons per hour capacity – nearly twice the output of all the other pumps put together! This was installed in a brick-built pumphouse near to the 1895 house. It is only at this time that we discover that in the 1930s the old gas engines in the latter house were replaced by Penfolds with two second-hand Clayton 2-stroke semi-diesel engines of 50 bhp and 25 bhp respectively.

With the advent of the Pulsometer pump the old reciprocating pumps were relegated to a mere standby role and, in the case of the 1846 house, taken out of commission altogether shortly afterwards. This was followed a few years later by the de-commissioning of the 1895 pumphouse and its complete demolition. Then, in April 1966, what was quaintly called "The Duke of Norfolk's Water Undertaking" was sold to Worthing Corporation for £17,200 plus, at valuation, any stocks and fittings. By 1969 they had sunk a new

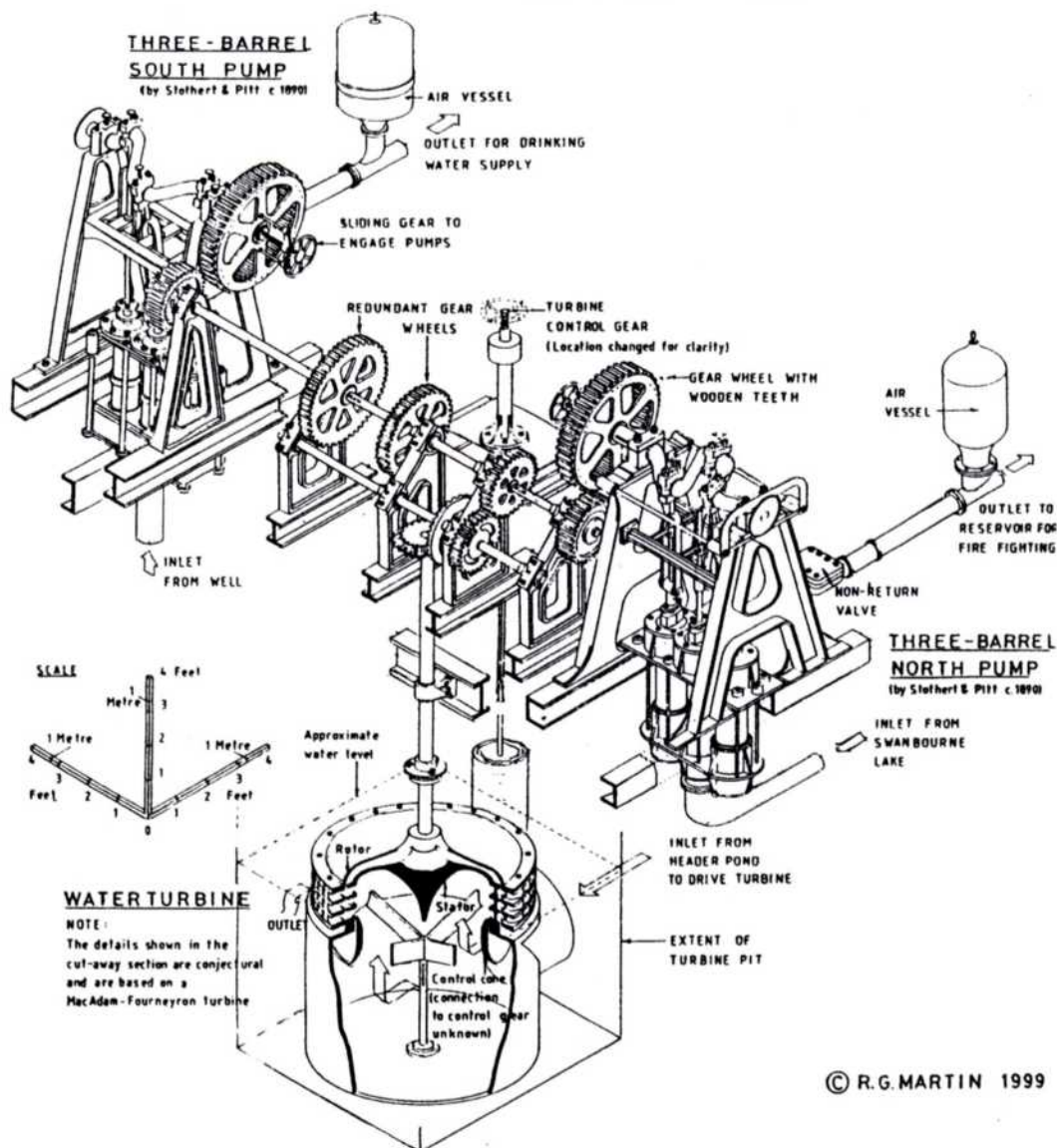


© R.G.MARTIN 1996

SCALE

0 1 2 3 4 M

Fig. 3 Internal Layout of Pumphouse



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Fig. 4 Details of pumping machinery installed 1902 by Stothert & Pitt Ltd.



Fig. 5 Derelict Pumphouse 1997

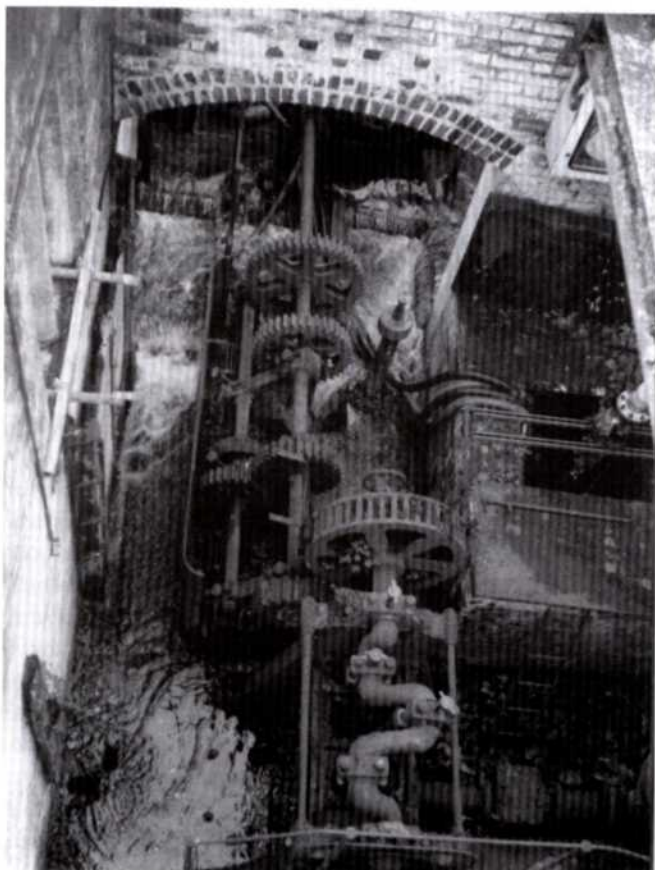


Fig. 6 Derelict Machinery 1997

borehole with a submersible pump and demolished Penfolds' 1956 house and pump. Fortunately the old 1846 pumphouse was never included in the sale to Worthing, otherwise it would have undoubtedly suffered the same fate.

Meanwhile the old pumphouse gradually became derelict. In 1964 or thereabouts its roof collapsed and nature took over. Not until 1973 was it visited by SIAS., when it was cleared of undergrowth and, as mentioned earlier, recorded (Figs. 5 & 6). It was also discovered, however, that at some time before this, either a rogue spring had broken into the tunnel which carried the spring water supply pipe, or the pipe itself had fractured. The resulting flooding of the pump-house has hampered all subsequent work on the machinery. At the time an approach was made to the Estate Manager to re-roof the pumphouse but this was rejected on grounds of insufficient funds. Another 20 years was to elapse before things started moving again. Even then it was not until early in 1998 that the re-roofing and repairs were completed. Agreement was reached with all concerned that the machinery would be conserved, that a viewing platform with information boards would be constructed at the north end and that in due course the pumphouse would be opened to the public as a static exhibition with entry via the old mill pond enclosure – which had become a trout pond open to the public. Grants were accordingly obtained from the West Sussex County Council and "Millennium Awards for All" for both lighting and the viewing platform. Work was completed



Fig. 7 Present exterior

during 2000 (Figs. 7 & 8) and the pumphouse formally opened in June 2001 by the then Earl of Arundel (now Duke of Norfolk) and our President, Air Marshal Sir Frederick Sowrey. So the old pumphouse has had yet another new lease of life and it is to be hoped that one day sufficient funds will become available to control the flooding and to restore the machinery to full working order.

ACKNOWLEDGEMENTS To R.M. Palmer and F. Penfold for their help in preparing this article and to R.M. Palmer and the late J.M.B. Bevan for the early photographs of the pumphouse.

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9. Arundel Castle Archives. MD 1816.



Fig. 8 Present interior looking north showing viewing platform

APPENDIX 1

Transcript of 1705 Estimate for Water Engines at Arundel. (Reference: Arundel Castle MS A339)

An Estimate of the charge for making an Engine to go by Water

ffor the Ground work with the Water wheel and House to contain the same, with the Laborers work, and all the Iron work, and brass work belonging to the Engine, to fill a Two Inch pipe, being Substantiall and well made, for Duration, the Crank being Three Inches and an half square, and all other work proportionable thereto. My Lady finding the Timber, Stone, Mortar and Tiles. £515 : - : -

But if my Lady is Contented with work less substantiall, it may be done for £360 : - : -
And as much gotten as by the other price.

For the Horse work to raise Water from the spring weed by the ffeellmonger under the Castle wall -

ffor building the House, and making the place Convenient, and Engine, Wheels, and all other Materialls belonging, If substantiall and Lasting £365 : - : -
If less substantiall. £256 : - : -
Timber, Stones, Mortar and Tiles being allowed as above.

As to the Price of Lead Pipes, you shall know in few daies, and what will be taken for burning, joyning and laying.

The value of the Cestern must be left till my Lady's pleasure is known, what quantity of Water she would have it contain

(On the reverse) - Feby ye 18th 1705

y^e, Engenere about y^e matter at Arundell in Sussex
The Engenere's name is Joseph Black and y^e workman's Henery Tandy who lives in Barbicon in London

APPENDIX 2

Operation of Present Pump Machinery.

Water from the old mill pond (now the fish pond) entered the Turbine through a submerged duct, the amount of water being controlled by a valve within the turbine operated manually by a handwheel mounted above the gearwheels. The water then passed radially outwards through both the fixed and moving blades so driving the vertical turbine shaft. This in turn, through the system of gears and shafts, drove the crankshafts of the two sets of pumps. Note the two large gears on the end of the crankshafts which had wooden teeth, a common Millwright practice to avoid breaking the cast iron gear wheels in case of jamming.

Each crankshaft drove three vertical piston rods. As each piston rose in turn, it drew water from the inlet pipe up into the barrel through a non-return valve in its base. When the piston - which also had a non-return valve incorporated in it - descended, the water in the barrel beneath the piston passed up through its valve into the upper part of the barrel. On the piston's next up-stroke, the water above was forced into the common delivery pipe through yet another non-return valve which prevented the water being sucked back into the barrel. Finally, the water passed through an air-vessel designed to even out the flow.

The set of pumps nearest to the turbine drew its supply of water from the fishpond and discharged it up to one or other of the reservoirs for general purpose and fire-fighting use.

The other set of pumps drew drinking water from a nearby well spring and delivered it to the special reservoir nearest to the Castle. An elaborate system of inter-linking pipes and valves controlled the supply to the reservoirs; and it was even possible to change over the functions of the two sets of pumps in case of emergency.

THE HAMMOND FAMILY CONNECTION WITH SUSSEX MILLS

Robin Jones

Introduction

Since becoming the Editor of the Sussex Mills Group Newsletter, I have received a wide selection of interesting letters, articles and general information on a variety of mill related topics, which I have published in various issues of the Newsletters. Michael Dillon of Eastbourne, Archivist of the Friends of Windmill Hill Windmill, made a general request for some historical information about the Windmill in the Friends Newsletter No. 5 dated July 2002. This resulted in correspondence from Mrs. Josephine Potten and her son Ray of Hove, and from Miss E. Mary Selina Hammond of St Albans who are members of the Sussex Industrial Archaeology Society, and are also related to Charles Edwin Hammond who on 7 May 1873 took out a patent for a centrifugal governing mechanism to control the speed of the sweeps of a windmill, one example being incorporated in the mill at Windmill Hill (Fig. 7). As this information was too comprehensive for the Newsletter, I have put together the following article from the correspondence received and associated documentation. I have also included some photographs of the mills and other features mentioned. The photographs Fig. 4 to 6 and 8, were kindly provided by the family of Josephine Potten. All other photographs were taken by the author in 2003.

Mrs. Josephine Potten, with assistance from her son Ray, writes:-

My interest in Windmill Hill Windmill stems from my great grandfather Edward Beeny (1801-1872). According to Messrs Richard & Richard McDermott in their 1978 book *The Standing Windmills of East Sussex* Edward "owned and worked the mill from 1830 until his death in 1872". Certainly the Herstmonceux census returns from 1841 to 1871 show him as a miller, (and later as a farmer), living at Windmill Hill House but his youngest two sons, Samuel Milton and Albert Newton, are also shown as millers in the locality in the 1871 census. According to the McDermotts it was Albert who disposed of the mill to my great uncle Charles Edwin Hammond (1841-1903) only one year after his father's death.

As reiterated by the late Martin Brunnarius in his March 1984 submission to *Remolam* (Issue 17) headed "Mills for Sale" Charles Edwin Hammond, together with his brother (my grandfather) Joseph Hammond (1839-1894), had married into the milling business by virtue of a joint marriage ceremony at Herstmonceux

on 17 January 1865, when they wed two of Edward Beeny's daughters, Ann(e) Sarah and Ada Selina respectively. (see Appendix 1 for entry that appeared in the *Sussex Advertiser* dated 25 and 28 January 1865). Family records show that from February 1867, until its dissolution in January 1882, the two brothers were in partnership. They acquired an interest in Clayton Mills in 1867, when the executors of the previous owner James Mitchell announced the sale of their leases by auction (as described in the *Brighton Gazette* dated 8 August 1867, see Appendix 2).

It is unclear as to whether, and if so how, these brothers divided their responsibilities, as owners, working millers and corn dealers, between the two Clayton Mills and Windmill Hill Windmill, following the latter's purchase. Certainly the census returns for 1871 and 1881 show both continuing to live with their respective families in the Clayton and Keymer areas, with those offspring produced in the intervening period being shown as being born in these villages. (The close ties with this area of Sussex of this branch of the Hammond family originated from their father, George Hammond (1782-1862), who farmed at Lodge Farm, Keymer (Fig. 1), which lies approximately half way along the main road between Ditchling and Clayton. On his death George was succeeded as farmer in turn by two of his older sons, firstly William, and then Robert.)



Fig. 1 Lodge Farm, Keymer, farmed by George Hammond, the father of Charles and Joseph Hammond.

Irrespective of whether Charles Edwin or Joseph actually worked the Herstmonceux mill, at some stage a sweep governor, designed and patented by Charles Edwin in 1873, was installed there. This modification, known as "Hammond's patent" is comprehensively described and illustrated, again by Martin Brunnarius, on this occasion in his 1979 book entitled *The Windmills of Sussex*.

There appears to be differences in opinion as to how long Charles Edwin Hammond retained an interest in Windmill Hill. In their book, the McDermotts imply his interest ceased in 1879, when "it was taken over by James Harmer". They also narrow down the introduction of the sweep governor to "some period between 1873 and 1876". On the other hand in *The Windmills of Sussex* Martin Brunnarius stated that "the Hammond brothers took the mill in 1878 and owned it for 14 years. James Harmer actually worked the business from 1878 until 1887; Mr. Hammond was overseer during this time." Both sources agree that Henry Harmer took possession of the mill in 1892, and that he was responsible for the sweeps being removed, and for the installation of steam power. As family records show that the Hammond brothers partnership was dissolved in 1882 I believe only Charles Edwin would have had any interest in the Windmill Hill after this split. Unfortunately I have no information confirming when his interest in the mill ceased, nor any confirmation as to exactly when the sweep governor was installed.

As regards Clayton Mills Charles Edwin Hammond held the copyhold lease there until his death in 1903, at which stage the Hammond family interest in the mills ceased with the sale of the lease by auction to one William Wood. It is also known that during his tenure his patented sweep governor was fitted in the cap of Jack Mill, although again only the date of the patent, 1873, is a clue to when this mechanism was introduced. As is also well recorded in accounts of Clayton Mills, the pulpit in Clayton Church is dedicated to the memory of Charles Edwin (Fig. 2).



Fig. 2 The Pulpit in Clayton Church, where the funeral of Charles Edwin Hammond took place in August 1903. A brass plate on the rear of the pulpit, seen below the flower arrangement, is inscribed with the words 'To the Glory of God and in memory of a good Father and Mother, Charles Edwin Hammond died August 14th 1904, and Ann Sarah Hammond died July 25th 1891'. The date of 1904 is incorrect.



Fig. 3 Spitalford Bridge, Hassocks. Located over a stream in Keymer Road. This bridge east of the United Reformed Church has a stone tablet in the brickwork reading 'This Bridge rebuilt September 1877. William Wood, Surveyor of Clayton. Joseph Hammond, Surveyor of Keymer.'

With regards to his brother Joseph, following the break-up of their partnership, in 1882 he left to take over the brewery in Newick. An advert in 1886 refers to him as a brewer, maltster, and as a corn, cake, seed and coal merchant. Joseph Hammond had left Newick Brewery early in 1891 and is not recorded there in the census of that year. He died at Ashington Mill three years later in 1894. An entry in Kelly's directory, albeit after his death, suggests that he had been working the mill there. (As with Charles Edwin, but on a more modest scale, there is also a legacy of Joseph's time in Mid-Sussex – an engraved stone on Spitalford Bridge, Hassocks (Fig. 3) commemorates his involvement, as surveyor for Keymer, in the rebuilding of the bridge in 1877.)

Deterred by the declining viability of mills, and especially windmills, at the end of the nineteenth century, to my knowledge the only son of either of the Hammond brothers to continue working in milling was my father, Joseph's son Francis Joseph (1873-1952). As a "journeyman" miller Frank, as he was known, did not enjoy the security of tenure familiar to his forebears, but rather had to move from mill to mill to find suitable employment. Just as farm workers lived in "tied" cottages, Frank was dependant on his employers for accommodation. Hence changing employment usually also entailed moving his family and possessions at short notice, another noticeable contrast to his predecessors.

In the late 1930s, when he was working at Fletching Mill, he was interviewed by a Rev. A.A. Evans who was researching his 1939 book *By Weald and Down* (Fig. 4). In this book the Rev. Mr. Evans writes "I went into the mill at Fletching and had a most useful lesson from Hammond the miller in the art and mystery of his craft". He concludes by lamenting the passing of water

and windmills, and the passing “of the real miller, who knows the secrets of the ‘thrift’ and ‘mill bill’ and how to furrow a stone and stitch it” (see Appendix 3).



Fig. 4 Frank Hammond standing in the doorway of Fletching Mill. The other gentleman is possibly the Rev. A.A. Evans who interviewed him in 1938 when preparing his book *By Weald & Down*. See Appendix C.

He also recorded Frank Hammond as saying “come Christmas I shall have been forty-eight years at milling”. I know my father left Fletching Mill for Dean’s Mill, Lindfield (Fig. 5) in 1938, as after a recent change of ownership of the mill, he was not impressed when the new owner announced that when Frank qualified for his state pension at age 65, his wages would be reduced by the amount of his pension! Given that Frank could have been interviewed no later than 1938, he must have started in milling no later than 1890, when he reached 17.

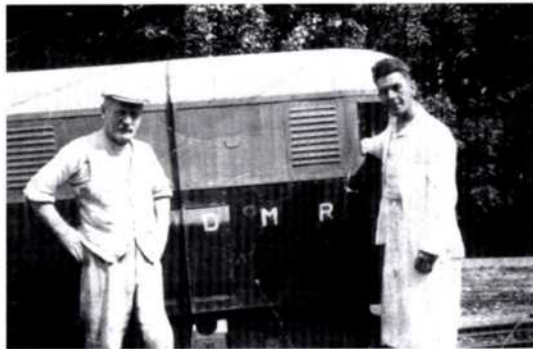


Fig. 5 Frank Hammond, left, with the baker standing in front of the Deans Mill Railway Locomotive in the mid 1940s.

Not recorded in the interview is my father’s claim to have worked in over 30 mills. Of these, to date, I have only been successful in identifying 15 mills. I know he undertook his apprenticeship with the water millers Jenner & Higgs, and during this time I understand he worked at Bridger’s Mill, Haywards Heath. I also know he worked for his uncle Charles Edwin at Clayton Mills, at some time before 1903.

I have recently discovered that in the 1901 census he was living and working as a corn miller in Albury, near Guildford. By the time of his first marriage in 1905 he was milling at Isfield, whilst my half-sisters Doris and Ivy were born when he was at Cockhaise Mill, Lindfield (1906-7). My third half-sister Catherine was born in 1911 when he was working Coltsford Mill, Oxted, whilst at the time of his second marriage (1918), and my birth (1921), he was at Leigh Mill, Godstone.

My earliest memories are in my pre-school years when my father was working at Uckfield Mill, where he was employed primarily as a stone-dresser. Around 1926 he moved to Fletching (Fig. 6) where he settled until his final move in 1938 to Dean’s Mill, where he worked until his retirement. Incidentally this last employment did not come with “tied” accommodation, and hence I recall my parents had to find and rent alternative housing as a matter of urgency when he tendered his notice at Fletching.



Fig. 6 Frank Hammond dressing a millstone at Fletching Mill in either 1933 or 1934.

Whilst unable to provide dates, within the family it is known that at some stage he also worked at Hempstead Mill, Uckfield, Oxted Mill, (as opposed to Coltsford Mill), Abbey Mill, Bishops Waltham and Oldlands Mill.

Miss E. Mary S. Hammond writes:-

I read with interest my cousin Josie Potten's letter her late husband prepared on the history of the Hammond and Beeny families. I am also the granddaughter of Joseph Hammond who once owned the mills with my great uncle Edwin.

My father lost his builders business in 1916. The Lodge Farm at Keymer, where my great uncle Robert Hammond lived was my second home, although I was at school in Bedfordshire. As a molinologist, I have recorded windmills in many counties, including my home county, Sussex. The internet site www.mill.archives are going through my photographs. As a member of Jack & Jill and Windmill Hill societies, I visit when possible. My old photograph of Windmill Hill, also in Brunnarius' book *The Windmills of Sussex*, I understand included Joseph Hammond in the doorway. He and Charles Edwin married E. Beeny's daughters. The brother fell out and grandfather left to become a brewer. He retired to a watermill at Ashington where he died. The Mill House is now a hotel, and I could not find water or any remains of the mill, which I believe was burnt down. The restoration of Windmill Hill is important as I think the only one of its type to be restored is in Suffolk.

I thought you might be interested that a Hammond still existed!! My father was apprenticed to Longleys and his first job was Dartmouth Naval College – The Longleys were related by marriage.

Yours sincerely,
E. Mary S. Hammond

P.S. Alas still in "exile" from the county I love – born at Loxwood.

Appendix 1

This notice appeared in two editions of the *Sussex Advertiser* dated 25 & 28 January 1865

Double Marriage (at Herstmonceux)

On Tuesday last the two Misses Beeny, daughters of the respected parishioner Mr. E. Beeny, Miller, were married to two brothers Messrs. Hammond of Ditchling

– Charles Edwin Hammond to Ann Sarah Beeny and Joseph Hammond to Ada Selina Beeny. The brides being the last two daughters of Edward Beeny Miller Hx. and the bridegrooms, sons of the late Mr. Hammond, farmer of Ditchling.

Appendix 2

This notice appeared in the *Brighton Gazette* dated 8th August 1867.

THIS DAY,
THE CLAYTON MILLS, SUSSEX

To Millers, Corn Merchants and others

MR. KENSETT is instructed by the Executors of the late Mr. James Mitchell, to Sell by Auction, at the King and Queen Inn, Brighton, on Thursday (THIS DAY), August 8th, 1867, at Two for Three o'clock in the afternoon, in one lot, all those TWO EXCELLENT WIND CORN MILLS, Drying Kiln, Store Houses with underground communication, Stable, Cart Lodge, two Cottages with Gardens, and other Buildings, situate on CLAYTON HILL, with possession, comprising a newly-erected brick-built commodious TOWER WIND CORN MILL, having four floors and top stage, with cap, patent fan, and sails, driving three pair of French stones (with space sufficient for the addition of another pair), Flour Dressing Machine (by Walworth and Co. Bradford), Smut Machine as fitted with elevators; the whole built within the last two years in the most substantial manner. This Mill, with cart lodge, a granary, the top floor fitted with seven bins, bottom floor used as a meal room and fodder store, drying kiln, old Round House now used as a store room, and 5 rods of land every way from the centre of the Round House, is held for a term of 99 years from 25th March 1865, at the annual rent of £5.

A subterraneous passage communicates with the New Mill, and leads therefrom to the kiln and Store House and the Old Round House.

Also, a well-constructed POST WIND CORN MILL, removable by the tenant, having two floors in round house, two floors in mill, and store bins fitted at top; has patent fan and sails, driving one pair of French stones, one pair of peak stones, Flour Dressing Machine and Smut Machine with fans and it is conveniently placed near the Tower Mill; and this mill, with one acre of land, whereon are two Cottages, Workshop, and Stable; is held for a term of 21 years from 25th March, 1863 at the annual rent of £5.

The Running Gear in both mills will be included in the purchase. The Implements of Trade are to be taken by the purchaser at a valuation.

Particulars and Conditions may be had of Messrs. Black and Freeman, Solicitors, Ship Street, Brighton; at the Inns in the neighbourhood; or of the Auctioneer, Ditchling, near Hurstpierpoint; and the Property may be viewed at any time.

Appendix 3

An Extract from Rev. A.A. Evans, *By Weald and Down*, (1939).

Chapter Two

Roundabout Fletching

A grey cat sat at the door of the mill, looking out on the world with vast contentment. He was fat and well favoured. I have a respect for cats who earn their living, just as I have for human kind who earn their bread before they eat it. This cat did not eat bread, or not much of it, although in a sense he was in the bread business: he ate mice. The miller tells me that wherever there is flour-meal, there are mice, and in a mill where grain is being ground mice are in abundance; so I learned that Grim was a useful assistant to Hammond, and, for a good reason, was a fat and happy cat.

Fletching Water Mill is at the bottom of a hill below the village. One expects to find a water mill at the bottom of a hill, where the river flows, but I know of water mills in Sussex which are at the tops of hills. There is one, there used to be two, on the hilltop of the remote little hamlet of Little Bognor, a name which has no connection or a distant historical one, with another Bognor miles away on the coast, and which, now that it sprawls so much, deserves to be called Big Bognor.

I went into the mill at Fletching and had a most useful lesson from Hammond the miller in the art and mystery of his craft. When I came out into the sunlight I hardly recognized myself, for instead of being a black-garbed, sedate parson I was floured from head to foot, and looked as grey as a miller should look. Nevertheless, I had gained knowledge. I called at a happy hour, when Hammond was dressing the stones and was free to talk and explain the deep things of his calling. I learned what a 'thrift' is and a 'mill-bill' – singular-looking tools, which through all the centuries have been used in the highly delicate work of 'furrowing' the radiating lines of the great stones, and for 'stitching' the surface.

These mighty stones, when dressed by a miller who knows his job, are balanced to a nicety that I had not dreamed possible. In their horizontal position they rotate at a touch, and so perfectly and evenly that a bit of common thread inserted between hinders the freedom of their motion. Hammond showed the pride in these triturating stones which the maker of a tiny watch might feel in the delicate strength of its wheels.

'How much meal can the stone grind in an hour?' I asked.

'She varies', replied the miller. (Here let me explain that a working mill-stone is 'she'.) 'She averages, I might say, two hundredweight of oatmeal an hour, but

when she is newly dressed, or when there is a flood on the stream, she will go up to as much as four hundredweight and hour.'

'Do you ever grind wheat?'

'Not now,' he replied, 'but in my time; and come Christmas I shall have been forty-eight years at milling. I have ground hundreds and hundreds of sacks of wheat flour, and helped to make the best bread a man could eat. Though I say it, there's no bread which tastes as sweet and builds up bone and muscle as that of English-grown and stone-milled flour. It's one of the lovely things of the world.'

'Then why don't you go on grinding it?'

'For two good reasons. One is that bakers don't care to use it; it doesn't suck up enough water for them. Imported flour is more paying. It may fatten the children, but it doesn't fatten the baker.'

'And what about the other reason?' I asked.

'Oh, it's the womenfolk; they don't like the trouble, or I should say many of them don't. You see, home-milled flour needs more teasing, as we call it, in working it up, or it gets puddingy. But then folks don't take the trouble over these things as the old ones did. They want everything done easily and quickly.'

Now, for myself, I am not able to give any opinion on such weighty matters. I pass on what I heard, amid the rumble and roar of the wheels.

I have been looking into the Domesday Inquest of 1086, and see that in Fletching, but as part of the then Sheffield (Sifelle) estate, was a water mill worth 40 pence annually, a good rent at that distant time; also, it paid to its lord, as part of the rent, 500 eels. I wonder whether this mill is the Domesday one.

It is likely, however, that the Domesday mill may refer to another site bordering Fletching Park. The meadow rising above my mill, just described, is marked on the large Ordnance map as Forge Field, and this suggests that the mill had its beginning, not as a flour mill but as a furnace, and where in the sixteenth century the thumps of tilt hammers would be heard and the deep breathings of mighty bellows. Moreover cinders exist about the mill-pond.

But its life is threatened. This commercially minded age has little use for water mills, or, either for wind mills. Flour of the kind that bakers love, and some working women, of grain grown in other lands, this can be ground swiftly and cheaply, very fine and very white, by steel rollers driven by steam, and in mills which do not look like mills, but huge factories. Every water mill and every wind mill in our land is quickly passing, and the miller, the real miller, who knows the secrets of the 'thrift' and 'mill-bill' and how to furrow a stone and stitch it, is passing with it. These things have added beauty to rural life, given skilled employment to local men and wider interest to the village, but they have the fatal drawback of not making money as quickly as does the town mill, so they must go.

Appendix 4

HAMMOND'S PATENT SWEEP GOVERNOR (Fig. 7)
On 7 May 1873 Charles Edwin Hammond took out a patent on a novel centrifugal governing mechanism designed to control the speed of a windmill. (Patent No. 1654].



Fig. 7 Jill Windmill, Clayton.

Hammond's Patent Sweep Governor showing the upper 9" diameter cone. As the speed changes the cone moves up and down the vertical shaft assisted by the compression spring, as the balls swing out guided by the two ears. The lower part shows the friction clutch mechanism, described in Appendix 4. A pulley connected to the end of the horizontal shaft on the left is chain driven to Cubitt's weight wheel. A belt from the rear of the windshaft connects to a pulley on the right hand end of the horizontal shaft in the lower right. This provides drive to the Governor, via the bevel gears.

The first of these was fitted into the cap of Jack tower mill at Clayton, and the second in the rear of the bin floor at Herstmonceux post mill in which the Hammonds had an interest. This is basically a large centrifugal governor similar in action to the type used to control the tentering of millstones. A belt from the windshaft drove a cone friction clutch system, which conveyed its action to the existing striking gear.

This could only be applied to Cubitt's patent sweep control and was intended as an additional refinement to be readily incorporated. Cubitt's method controlled the sweeps by relying on a counterweight load operating the shutters in response to a change in wind pressure via a series of levers and rods. The drawback with this was that power was lost unnecessarily when

a sudden gust of wind occurred causing the sweep speed to vary, or if the work load within the mill changed. In this latter case the miller would be required to alter the weight setting to compensate.

Hammond's governor was intended to override the Cubitt gear whenever the sweep speed varied from a predetermined norm, whatever the wind or load conditions. Two opposed iron cones were fitted to a keyed sleeve. These were, according to sweep speed, raised or lowered by centrifugal weight levers. In turn the small cones drove a larger iron cone backwards or forwards which, via a light shackle chain and pulley, immediately pulled the Cubitt's weight wheel into the "open" or "closed" shutter position. The existing weight and chain were retained, acting in a second groove in the rim of the weight wheel. This was used to provide the initial setting and controlled the mill entirely at the idle position in the governor's action. A torque limiter was provided to prevent the existing striking gear being strained as the sweep speed increased.

Mr. Hammond's unique mechanism was used in both mills for a considerable time and was in working order at Herstmonceux mill when milling by wind ceased there in 1892. The concept seems very sound as the speed at which the windmill worked was quite critical especially if, as in the case of Jack, rolling equipment was installed. The wind however, never blows to order and the sort of conditions required to keep the sweep governor usefully employed would only have occurred for limited times. Periods of near still air often prevail even on the Downs.

This Governor was renovated and installed in a working configuration by volunteers from the Jack and Jill Windmills Society. It was loaned by Mr. R. Buckmaster on the understanding that it would be returned to Herstmonceux post mill when the restoration of that mill reached an appropriate juncture.

Appendix 5

The report on the funeral of the late
Mr. C.E. Hammond
Mid Sussex Times dated August 25 1903.

"A numerous gathering at Clayton:- In the peaceful old churchyard at Clayton, quite close to the famous Downs, the internment took place of Mr. C. E. Hammond's body on Wednesday and in that beautiful August afternoon, when the earth was bright with sunshine and fair with golden corn, people from miles around gathered in the little village to finally mark their regretful sense of loss of one they had greatly respected and appreciated.

Like his windmills on the steep hill yonder, the deceased was known far beyond the confines of his own locality, and although during his lengthy residence at Clayton he has well acted in public capacities for the parish, it was chiefly his business as a miller and corn merchant which brought him into agreeable contact with so many persons, Haywards Heath Market being among the places to which he was a frequent visitor.

The deceased, who was 62 years of age, had been confined to his bed for some months past with kidney disease and he passed away on the previous Friday at his house called Mill Land.

To the small, ancient and interesting church, the coffin was carried on a bier by employees of the deceased. It was followed by a large company of mournful relatives and friends and the building was filled to overflowing.

[The mourners included many members of the Hammond family, with sons Edwin Lincoln, Charles Frederick and William Robert and daughters Annie, Norah and Mary Hammond being joined by other family members, including Henry Longley Senior from Selsfield Place. Others present at the funeral were notable people from the surrounding area.]

Impressive was the service, which was conducted by the Rev. Prebendary Shand (Rector), and the singing of 'Now the labourer's task is O'er' was accompanied on the organ by Mrs. Shand, who also played the 'Dead March' as the congregation, sombre looking, left the church.

The grave was tastefully lined with white flowers and foliage by the deceased's workmen, an act shewing regard for their departed master and as the sorrowing ones gathered round the opening, the words of the well known hymn seemed to be resounding 'Father in thy gracious keeping, leave we now thy servant sleeping'.

On the coffin, which was of polished elm, with brass fittings, was a raised plate bearing the inscription :-

Charles Edwin Hammond. Born June 11th, 1841
Died August 14th, 1903"

Exquisite floral tributes were sent by the children of the deceased, a magnificent cross being one example. Other floral tributes were sent from the many mourners who attended.

Mr. F. Wood of Ditchling was the undertaker."

ACKNOWLEDGEMENTS

The author would like to thank two cousins Mrs. Josephine Potten (nee Hammond) and Mary Hammond for all their help, and for the family photographs provided (Figs. 4 to 6 and 8). In addition, with specific regard to the family history content, credit is also due to another first cousin, the late Mrs. Betty Davis, and to Mrs. Potten's late husband Charles (Johnny), for the extensive research they undertook during the 1980s.

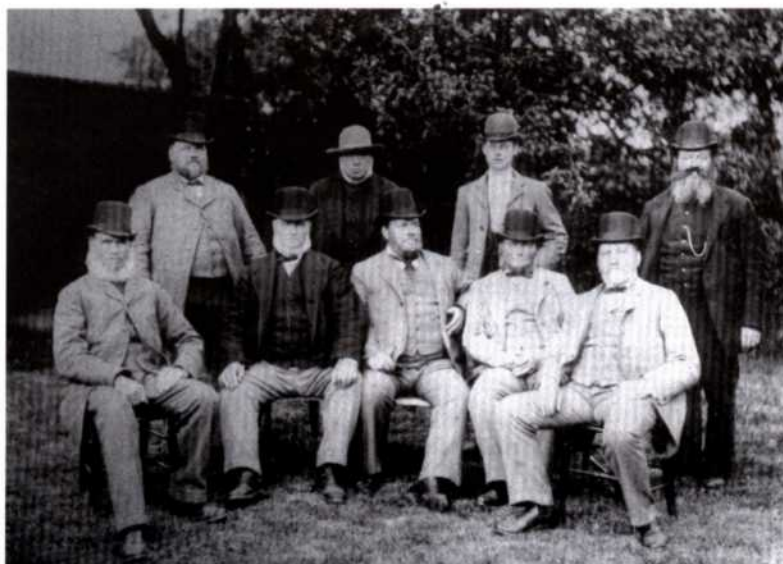


Fig. 8 The seven Hammond Brothers. An inscription on the back of the photograph states their combined age as being 404 years and this would date the photograph to June 1889. Charles Edwin is standing on the left, with Joseph standing on the right. The five remaining brothers are seated. (Photograph by courtesy of Mary Selina Hammond)

THE HISTORY OF SHOREHAM CEMENT WORKS

Ron Martin

INTRODUCTION

Located in the Adur Valley at TQ 200086, are the remains of the Shoreham Cement Works. Although mainly within the parish of Upper Beeding, successive owners have always referred to the site as "Shoreham". It was built on both sides of the A283 road at the east side of the River Adur and the 1861 Shoreham to Horsham railway line. The existing works was built between 1946 and 1952 as a *state of the art* design and was finally closed in 1991.

Lime – early uses

Prior to the introduction of Portland cement the normal method of bedding masonry was by the use of lime mortar. Lime is derived from calcium carbonate, which is normally found in the form of limestone, or in Sussex as chalk, and is heated in a kiln at a temperature of 900°C. The effect is to drive off carbon dioxide, leaving calcium oxide, which, when mixed with water, reacts violently; hence its name "quick-lime". When gauged with sand, this creates a dry hydrate and this is the way lime mortar was mixed in the massive building programmes of the Georgian period.¹ It was also realised that some limes that were derived from impure calcium carbonate produced a hydraulic lime which would set under water. The Romans had intermixed pozzolanas, derived from volcanic rocks containing silica and alumina, the ingredients of clay, to create a hydraulic lime. John Smeaton, when constructing the Eddystone Lighthouse in 1756, realised that a hydraulic lime mortar was essential and used lias lime and imported pozzolanas from Italy. Later, in 1796, James Parker manufactured the cement named after him and also called "Roman" cement, which was derived from nodules of limestone in clay beds in the Isle of Sheppey and were burnt to a temperature higher than that for lime but not high enough for vitrification.² Parker's cement was used extensively during the nineteenth century being very strong and having good adhesive properties.³

Origins of Portland Cement⁴

In 1824, Joseph Aspdin, a Wakefield bricklayer, was granted a patent, No. 5022, for Artificial Stone which he called "Portland Cement" because of its resemblance to Portland stone. His patent was imprecise about the proportions of materials and also required the limestone to be slaked before being mixed with the

clay. The temperature of burning of the mixture was specifically aimed at avoiding vitrification. His son, William, developed the manufacture and moved to the Medway area. The first cement kilns were bottle kilns similar to limekilns but with the top raised as a chimney to increase the draught and raise the temperature (Fig. 1). By the 1840s, Portland cement was on the whole a highly successful product, although its quality was variable and experiments were carried out by various manufacturers to improve the material. To incorporate the clay and chalk the materials were mixed in wash mills and the water settled out in "drying flats".⁵



Fig. 1 Aspdin's cement kiln at Northfleet

Isaac C. Johnson, with a chemical background, in 1845, further developed the scientific background to the technology. He was the manager of White's cement works in Swanscombe and carried out a series of experiments to more accurately gauge the materials. By chance, a batch of cement became overburnt and when the resulting clinker was ground to a powder it was found to be much better than the earlier cement produced by the Aspdins. This was truly the beginning of Portland cement as we know it today and the only claim that the Aspdins could make was to conceive the name. The other innovation that Johnson introduced was the invention of the chamber kiln with a horizontal drying floor supported on arched chambers at the end of a bottle kiln, in which the slurry was dried to produce a cake. These chamber kilns were built in batteries of six or more.

In 1877, Thomas Crampton was granted patent No. 2438 for rotary kilns (Fig. 2) and these were further developed, in 1885, by an American, Frederick Ransome. They consisted of long iron tubes, set at a slight angle, rotated slowly so that the slurry passed down through the tubes while the fuel was blown in from the bottom. Although, in America, rotary kilns were further developed, in Europe vertical shaft kilns were favoured, including Schneider kilns and Dietsch kilns. An unsuccessful experimental shaft kiln was also erected at Beddingham in Sussex, in 1928, using the flotation principle.⁶

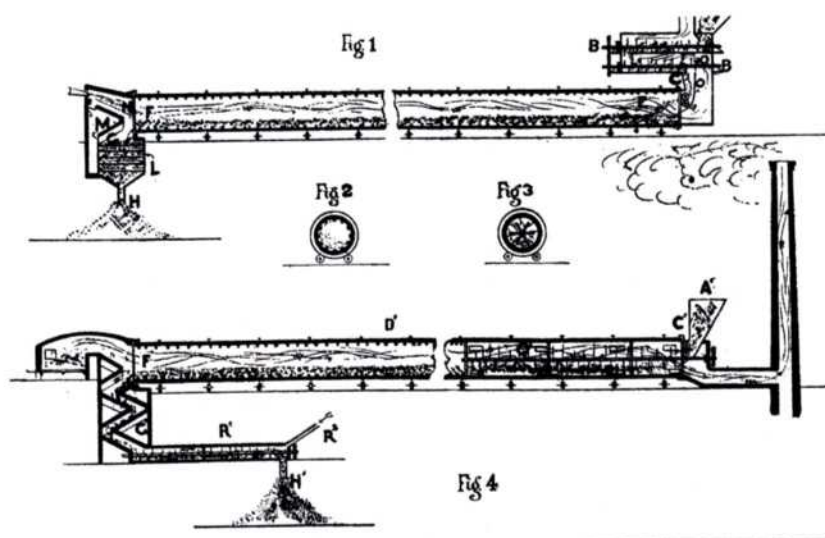


Fig. 2 Thomas Crampton's rotary kiln of 1877

Early days at Shoreham

The site at Shoreham is located in the Beeding Chalk Pit and limekilns⁷ were there, probably from early in the nineteenth century, using water to transport the materials.⁸ The Steel Bank and Lime and Cement Co. owned the site in the 1850s but there is no evidence of any cement production at this time.⁹ The first sign of manufacture at the site was on the 1872 OS map¹⁰ which showed two limekilns, one on the west side of the road and one, described as "Old Lime Kiln", on the east side of the road. In 1878, the Beeding Cement Co. was created by Richard Ballard with six Johnson chamber kilns and this works was shown on the 1898 OS map to the west side of the road.¹¹ This showed a tramway crossing the road taking the chalk from the pit but at some time between 1898 and 1902 the ground level of the pit at the east side of the road was lowered and a, still extant, tramway tunnel was built under the road. Apart from the remains of the old limekiln, there were no buildings shown on the east side of the road. In addition to the kilns the other major building on the site housed the grinding mills and packing plant. Clay was obtained from the Medway area and transported in the sailing barge *Abner*. There was no indication on the map of any rail access at this date so it must be assumed that all other materials – coal and gypsum and the final cement product – were transported by water. The output of cement was 100 tons per week.

The Sussex Portland Cement Company

In 1884, the Sussex Portland Cement Company (SPCC) was set up by A.E. Carey and they built the Newhaven Works in the parish of South Heighton at TQ 448033. The clay was obtained from a pit at Glynde to the east of Decoy Wood at TQ 468 098. This was transported to Glynde Station on an overhead telfer¹² and hence by rail to the works. SPCC acquired the Beeding Cement

Company at the close of 1897 and started to develop the Shoreham site extensively.

1902 REBUILDING¹³

Most of this work was carried out by SPCC in 1902 and the output of cement from the site increased to some 800 tons per week. The works was shown on the 1912 OS map¹⁴ and this included the erection of eight Bachelor chamber kilns, two Schneider vertical shaft kilns and two rotary kilns, 18.3 m (60 ft.) long and 1.52 m (5 ft.) diameter, manufactured by F.L. Smidth. There were some buildings, possibly chalk wash mills, on the east side of the road. Rail access had now been established with an extensive rail network all over the site and access between the two halves of the site was enhanced by the construction, in 1902, of a rail tunnel under the road parallel to and close to the tramway tunnel.¹⁵ This was built of brick 3.35 m (11 ft.) wide with a semi-circular vault over. The cement grinding mills and motor room had been extended and a new cement bagging plant erected. Also on the site was shown a hydraulic ram which seems odd as there does not appear to be any running water on the site to power the ram. The cement company also built, in 1903, Dacre Gardens: two-storey workers' houses with two terraces of 12 and one of 18 houses, with an unexplained 33 m gap between two of the terraces over which later ran an overhead power line, which was not extant in 1902. During WWII there was a reinforced concrete gun shelter erected in this gap to match the one still extant on the west side of the river.¹⁶ To the south of Dacre Gardens are two semi-detached houses, Dacre Villas, presumably for the occupation of foremen and further south still, and overlooking the site is Cliff House, the manager's house.

The other alteration made in 1902 was to abandon the supplying of clay from Glynde and to open up a clay pit at Horton at TQ 205123, some three miles upstream from the works. Clay was transported by barges towed by a steam tug.¹⁷ Some distance above Beeding Bridge at TQ 189113, a timber footbridge, which had a central pier, was rebuilt in steel by arrangement with the River Adur Trustees and paid for by SPCC.¹⁸ However, this method of transport was replaced in 1904 and the clay was then brought down to the site by Sentinel steam wagons, the clay mill being located on the east side of the road just north of the tunnel.

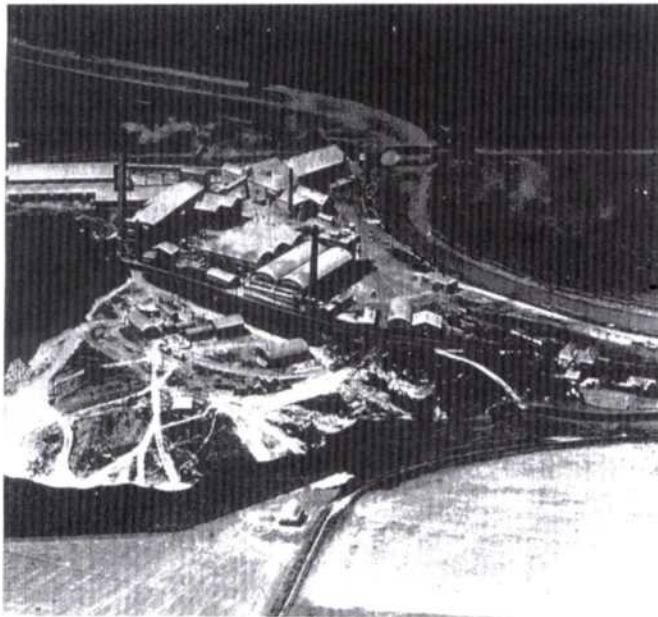


Fig. 3 View of Sussex Portland Cement Company's works at Shoreham in 1919

In 1910, a third rotary kiln 49 m (160 ft.) long and 2.39 m (7 ft. 10 in.) diameter was supplied by Krupps and in 1912 the company was taken over by British Portland Cement Manufactures, Ltd (BPCM), which later became The Associated Portland Cement Manufacturers, Ltd. (APCM) An APCM drawing¹⁹ of 1931 showed ten chamber kilns (numbered 5 - 11), the two Schneider shaft kilns and the one large rotary kiln. On the east side of the site was the complex of four wash mills, one screening mill and four mixers with the necessary motors. Adjacent to the rotary kiln were the slurry mixers, the clinker store and two cement mills. In another building were the boiler house, engine room and generator house with two tube mills and two ball mills in an adjacent building. Conveyors transported the clinker from the kilns to the mills and more conveyors carried the cement to the cement store and packing plant.²⁰ The rotary kiln was replaced in 1933 by an identical second-hand unit from another site²¹ and this was retained on the site until c.1964. The site, shown in Fig. 5, closed down during WWII and reopened in 1946.

THE 1946 REBUILDING ²²

In 1946 the decision was made by APCM to rebuild the cement works and a completely new plant was erected. This was built using the wet process, to the designs of the consulting Engineers Oscar Faber and Partners, Ltd. and Bierrum and Partners, Ltd. This system was adopted as it was considered that a more consistent product was produced. The production part of the works was all located in the chalk pit at the east side of the road and comprised a chalk crushing plant, wash mills, mixing plant, rotary kilns, coal, gypsum and clinker store, crushing mills and cement storage silos with a large workshop and store building. On the west side of the road were the office block, packing plant, railway sidings and motor workshops, the earlier tunnel under the road connecting the two parts of the site also being rebuilt in reinforced concrete (Fig. 6).

Clay supply

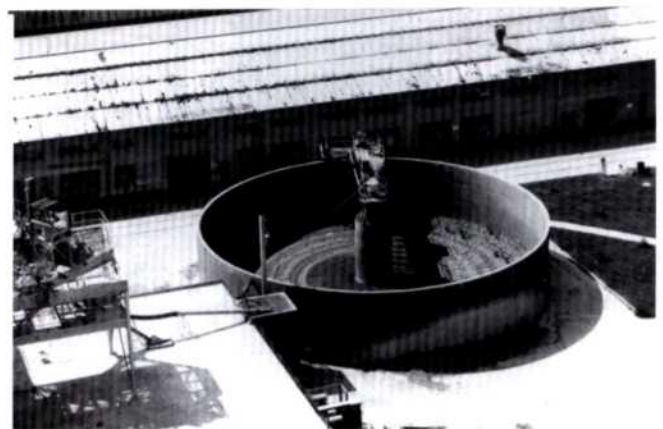


Fig. 4 Clay slurry tank – disused in 1982

At Horton, the works were rebuilt by the contractors J.L. Keir & Co. The clay was excavated using a multi-bucket excavator, loaded onto a 0.61 m (24 in.) belt conveyor and transported to the 7.62 m (25 ft.) diameter wash mill which converted the clay to a slurry with water pumped from the lake beside the clay pits, which was replenished with water pumped from the Shoreham site. The clay slurry was stored in a 15.8 m (52 ft.) diameter storage tank which agitated the slurry with rotating paddles. Three-throw reciprocating pumps pumped the slurry through two 200 mm (8 in.) diameter pipes laid underground through Upper Beeding village and into the Shoreham works to discharge into a 20 m (66 ft.) diameter concrete clay slurry tank agitated with compressed air. Periodically the pipes were flushed through to keep the pipes clear. The slurry flowed from the clay slurry tank by gravity to a breakhead tank and was then pumped to a spoon feeder for discharge into the rough mills.²³

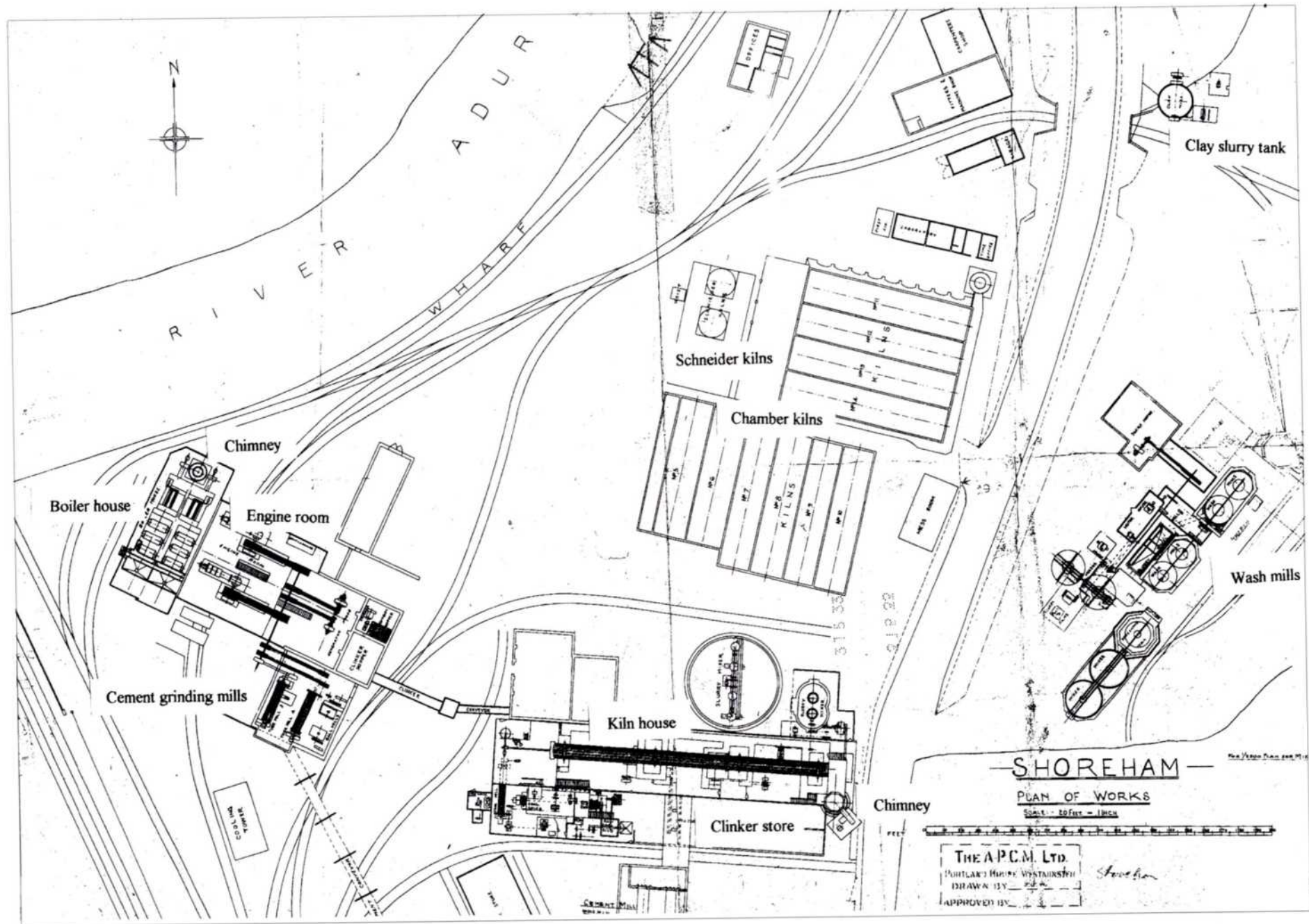


Fig. 4 Site plan at 1939

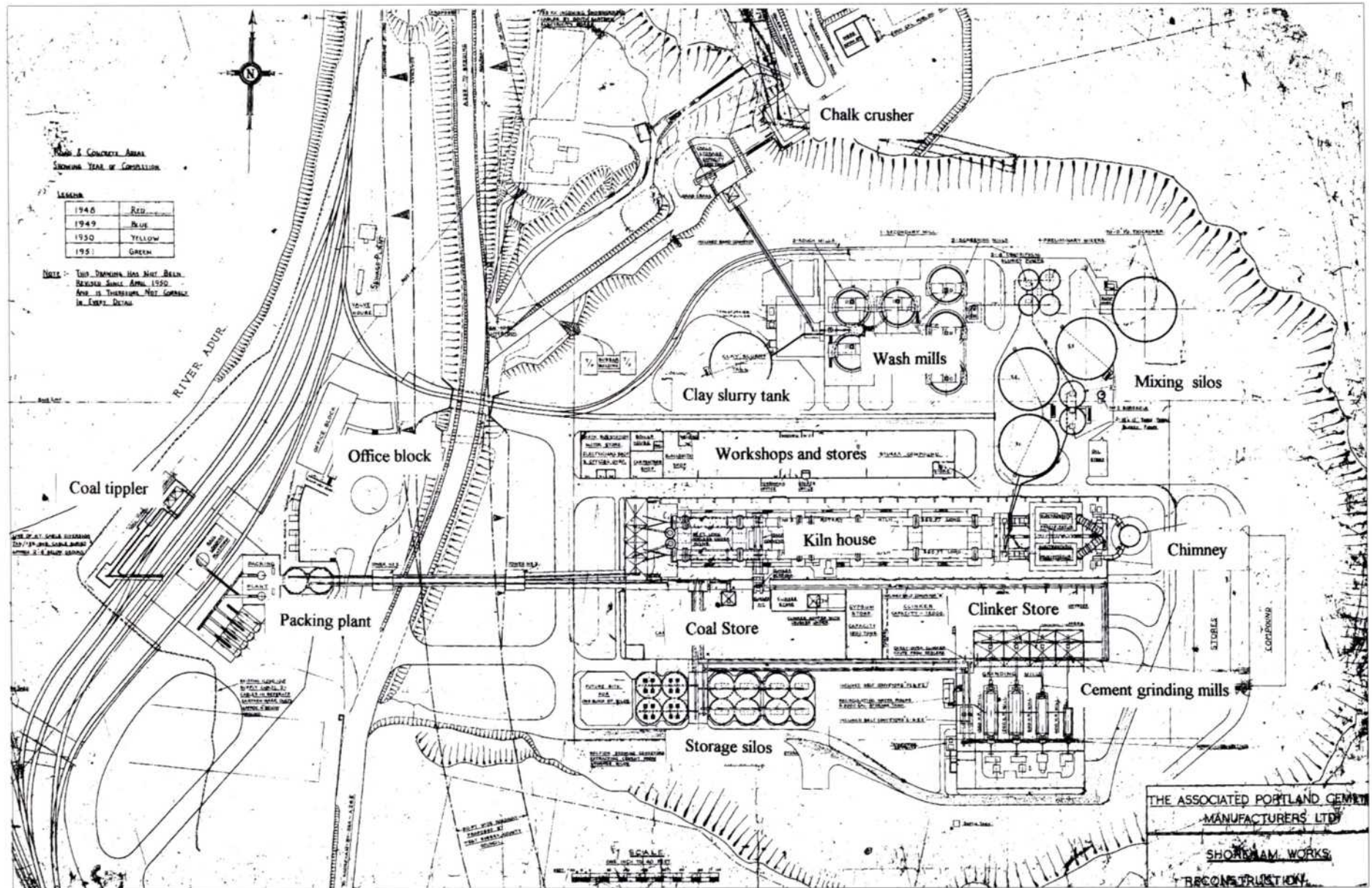


Fig. 5 Plan of rebuilt site at 1946-1951

Chalk supply

Previously the chalk was excavated as a single face, but the new system was benched, using electric-powered navvies which deposited the chalk into 9 cu.yd. dumpers. These carried the chalk to the chalk crusher house located at TQ 1999 0876 at the edge of the north side of the pit. Here the chalk was reduced by a twin-roll claw crusher to a 250 mm (10 in.) gauge and discharged down a gravity chute to a chalk stockpile.²⁴ An electric swivelling jib crane with a 5½ ton grab then transferred the chalk onto a conveyor which carried it up to the wash mills.

Wash mills (Fig. 7)

The wash mills were located at TQ 2002 0870 and comprised two rough mills (Fig. 8), one secondary mill and three screening mills, arranged in descending “levels”, each fed by gravity from the higher mill. A measured quantity of clay slurry and chalk was introduced into the rough mills. The wash mills were all 10.7 m (35 ft.) diameter reinforced concrete cylindrical tanks within which was a revolving steel structure carrying harrows revolving at 10 r.p.m. around a fixed king post supported on a concrete dumphing. The slurry was forced through vertical gratings into an annular trough. The openings in the gratings varied from slots 25 mm (1 in.) wide in the rough mills and 1.5 mm wide

in the secondary mill, with a woven wire screen in the screening mills. Flint extraction doors were located in the bottom of the rough mills, through which the flints were discharged periodically, which were then transferred to rotary washers and screened to separate out flints over 50 mm (2 in.) gauge. These were loaded into rail wagons, for despatch for use in the pottery industry. Smaller flints and grit was taken to a storage dump. Overhead hand-operated travelling cranes were provided over the rough and secondary mills for maintenance.²⁵

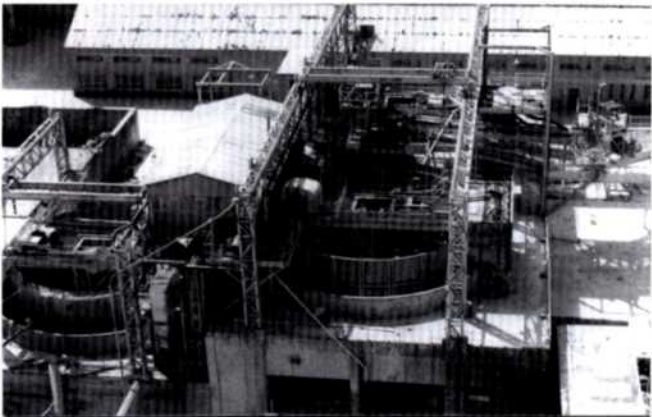


Fig. 7 Wash mills

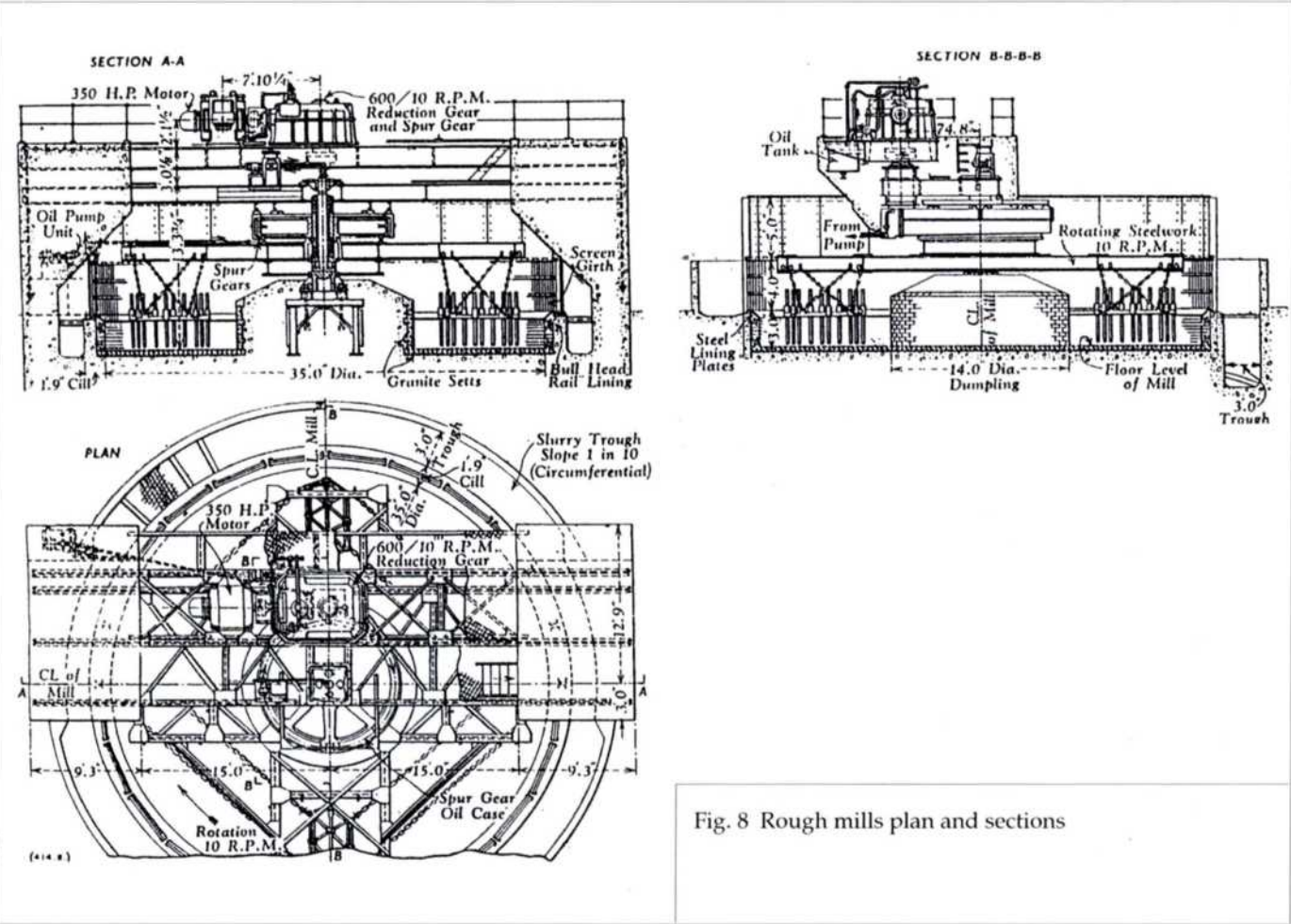


Fig. 8 Rough mills plan and sections

Mixing silos (Fig. 9)



Fig. 9 Mixing tanks

From the screening mills, the slurry was pumped from a sump into one of four reinforced concrete cylindrical preliminary mixing tanks 16.6 m (54 ft. 6 in.) high and 7.19 m (23 ft. 7 in.) in diameter at TQ 2009 0872 where the proportion of clay and chalk was carefully analysed and further blending was carried out to adjust the proportions. Still further mixing was then carried out in the final mixing tanks and the slurry was pumped up and then stored in the two 20 m (66 ft.) diameter storage tanks before being pumped up and deposited into the kilns using spoon feeders.²⁶

Coal and gypsum

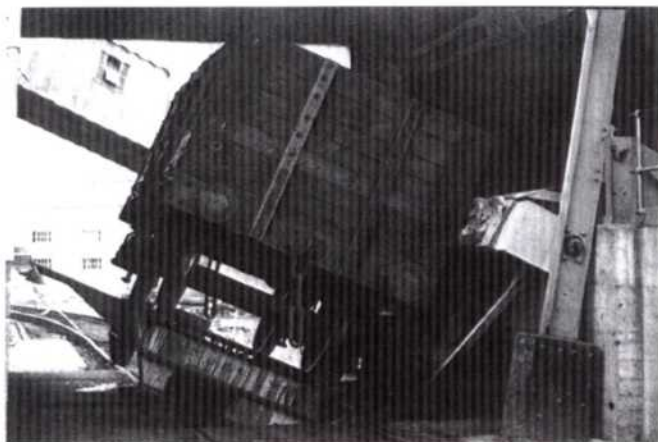


Fig. 10 Tippler for coal and gypsum – disused in 1970

The coal and gypsum were delivered to the site by rail, weighed at a weigh bridge and unloaded by a tippler (Fig. 10).²⁷ Conveyor belts carried the material over the top of the packing silos and over the main road on

a gantry. Some of the coal was taken directly to four bunkers at the top of the kiln house but the bulk of the coal and the gypsum were taken to the store which is located in the building south of the kiln house. Two overhead traveller cranes handled the material in the store building. The coal from the bunkers was ground to a fine dust in four Atritor pulverising mills and then blown into the bottom end of the kilns.²⁸

Nos. 1 and 2 rotary kilns

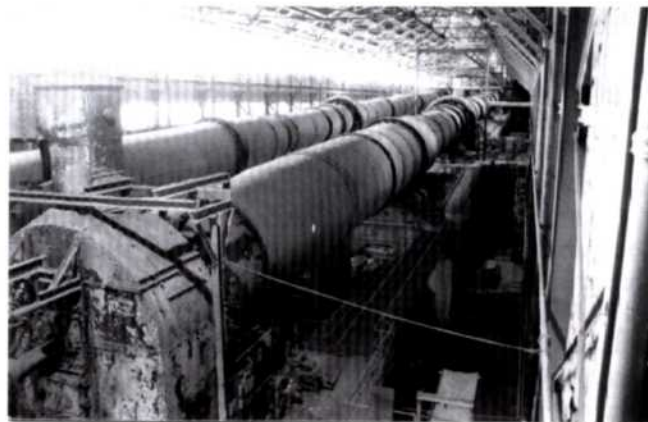


Fig. 11 Rotary kilns

The kiln house and the adjacent coal, gypsum and clinker store is located in a steel framed structure 152 m (500 ft.) long and 20.4 m (67 ft.) wide and 20 m (65 ft.) high located at TQ 2003 0863. The two kilns (Fig. 11) are in the northern part of the structure and were manufactured by Vickers Armstrong. Each is 107 m (350 ft.) long and 3 m (10 ft.) diameter set at a slope of 1 in 24 and is constructed mostly of 25 mm (1 in.) steel plate and lined with high alumina bricks. In most of the length of the kilns curtain chains acted as heat exchangers. The kilns are supported on six concrete piers, one of which supports the 150 h.p. driving motors (Fig. 12) which drove the kilns through reduction gearing to the girth gears. The rate of rotation was between 0.67 and 1.33 r.p.m. The bottom end of the kilns is encased in a kiln hood which is mounted on tracked wheels. This



Fig. 12 Rotary kiln drive motor
[Jacob Purchase]

accommodated the expansion and contraction of the kiln shell which amounts to 270 mm (10¾"), but the kiln hood was also arranged to be rolled back when access to the kilns was required for maintenance.²⁹

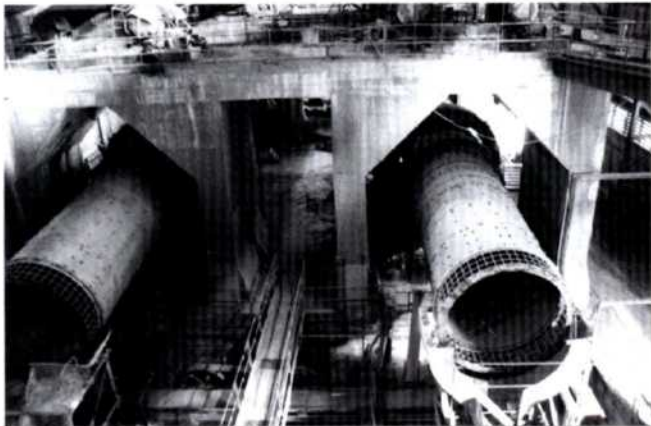


Fig. 13 Rotary coolers

The slurry flowed slowly down the kilns and achieved a maximum temperature of 1,350°C. The clinker dropped from the bottom end of the kilns into the two rotary coolers (Fig. 13) located under the kilns which are 90 ft long and 9 ft diameter and slope at 1 in 20. They are partially lined with firebrick, lifters being arranged so the clinker may be cascaded through a cold draught of air. The clinker fell out from the bottom of the coolers onto shaker conveyors which carried the clinker into hoppers located in the coal store or onto conveyor belts in the annexe. (see later) The gases from the combustion passed through electrostatic-precipitators to remove dangerous particles before passing through two centrifugal induced draught fans and being discharged up the 91.4 m (300 ft.) high chimney (Fig. 14), built of reinforced concrete and lined with brickwork.



Fig. 14 300 foot high chimney

Cement grinding mills

The annexe is a 3 m (10 ft.) wide space between the kiln house and the coal, gypsum and clinker store. The clinker and gypsum were lifted up and transported by conveyor belt and deposited into the clinker and gypsum stores. From here overhead cranes lifted the material into hoppers where weighed quantities were transferred into the cement mills. There are four grinding mills; two 1200 h.p. by Vickers Armstrong and one 800 h.p. and one 400 h.p. by Newell. The mills contain steel balls and rotated at 20.5 r.p.m being driven by electric motors in a separate room.³⁰ The cement was discharged onto a sloping conveyor system running along the outside of the store building and was stored in twelve concrete storage silos.³¹ The cement was drawn from the bottom of the silos as required and is conveyed in a tunnel under the coal store and then up sloping conveyors, across the gantry crossing the road to the two packing silos on the west side of the road (Fig. 15).



Fig. 15 West elevation of kiln house and coal store with overhead conveyors (demolished in 1995) [Jacob Purchase]

Packing plant

From the packing silos, the cement was discharged onto two screw conveyors and was then lifted by a bucket elevator for feeding the *Fluxo* packing plant, where the cement was filled into paper sacks. Conveyor belts carried the filled bags to the top of three chutes for loading onto lorries. Another conveyor belt system carried the filled bags to a turntable located between two railway lines which ran through the packing plant and the bags were hand loaded onto the trucks.³²

Other buildings

The cement works was a self sufficient organisation and there was a comprehensive range of service buildings on the site, viz.:

The 3 kV South Eastern Electricity Board sub-station and transformer compounds, located at TQ 1994 0868 was the main electrical intake for the site³³ with additional transformers for the wash mills, grinding mills, the chalk pit, the Horton clay plant and packing plant.

The workshop and store building located at TQ 2002 0865, to the north of the kiln house, contained, at its west end, the electrical transformers for the kiln house and electrical workshops, the rest of the building being occupied by mechanical workshops and stores.³⁴

The office block, located at TQ 1986 0866, a three storey reinforced concrete framed building of two wings, contained offices, drawing offices, canteen, toilet facilities and laboratories.³⁵

Motor transport workshops located at TQ 1983 0844³⁶ and vehicle washing plant.³⁷

Locomotive shed, located at TQ 1974 0856.

Miniature rifle range, located at TQ 1981 0866.

Social club building, located at TQ 1996 0870, became central shift locker facility in 1989.³⁸

A single storey despatch and timekeeper's office, located at TQ 1978 0848.³⁹

LATER DEVELOPMENTS

APCM was renamed Blue Circle Industries Limited (BCI) in the late 1970s.

The method of processing the slurry was altered in the 1980s from the wet process to the semi-wet process to improve efficiency and also other improvements were made to the site, viz.:

Filter press house and cake store (Fig. 16)⁴⁰

These two buildings were built in the 1980s and were located to the east of the kiln house. One housed the filter presses, which squeezed the water out of the slurry in two presses, reducing the slurry to a cake. This was then conveyed by 2 m wide conveyors into the cake store where the cake was ground to a size suitable for feeding into the kilns.

Primary chalk crusher⁴¹

The delivery of chalk from the primary chalk crusher by a chute onto the stockpile was altered in the 1980s and the chalk was taken out on a conveyor belt supported by a gantry before being dropped onto the stock pile. The jib crane was also replaced by movable bulldozers.



Fig. 16 East end of site with filter press house, cake store and chimney

Clay delivery

The processing plant at Horton and the pipe lines to the site were abandoned in the 1980s and all plant on the Horton site was demolished. Two of the screening mills at Shoreham were demolished and the third was modified to accept clay which was delivered to the site from Horton by lorry. The wash mills were modified to include a tank and hydro-cyclone to complete the work previously done by the screening mill.⁴²

Cement packing

The delivery of bags of cement by lorry was modified and an *Autopac* system was installed in the 1980s in a new building to the south of the packing building and connected to it by a bridge. The *Autopac* system was designed to pack the cement bags onto pallets.⁴³

Bulk delivery by road

Two plants were installed for bulk loading by lorry: one was installed in the 1960s, at the south side of the packing silos which took cement from the top of the packing silo building and after screening discharged it directly into lorries.⁴⁴ A weigh bridge was also located here. The other one was installed in the 1980s between the main silos and the coal store for the delivery of Ferrocrete.⁴⁵

Coal and gypsum delivery

The tippler system for delivery of coal and gypsum by rail was abandoned, although for a time this were modified to take road deliveries. The coal and gypsum stores were altered and deliveries were then made directly into the stores by lorries.⁴⁶

Coal crushers

The four *Atritor* coal crushers were replaced by two vertical spindle roller mills, with separate forced draught fans.⁴⁷

No. 3 rotary kiln

The last surviving rotary kiln, then known as No.3 kiln on the west side of the site was used during the 1950s

for experimentation with the semi-west process prior to its introduction in the main plant and there were also several new buildings and equipment and a new steel chimney erected.⁴⁸ All the production plant on the west side of the site were demolished in c.1964.

THE FINAL PHASE

Production at the site ceased in 1991 and since then the west side of the site has been used for storage and for the repair of motor vehicles. The gantry crossing the road was demolished in 1995. Various planning applications have been made to develop the site but as yet none have been approved. In December 2003, the wash mills and mixing silos were demolished.

ACKNOWLEDGEMENTS

I am indebted to Messrs. Hargreaves for permission to visit the site and to Ian Dewar, who was the Mechanical Services' Manager for the last ten years of the production of cement on the site, for his invaluable help and advice in preparing this article. I would also like to thank Mrs. Pat Nightingale, the archivist of the Beeding and Bramber Local History Society and Chris Todd, the Curator of the Steyning Museum for their help.

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47. Ian Dewar, personal observations
48. There are APCM drawings of work carried in the 1950s on the west side of the site, too numerous to detail.

(Note all original drawings are currently in the possession of the author and will eventually be deposited at the West Sussex Record Office)

COLIN PULLINGER'S REGISTERED DESIGNS

David Drummond

Some ten years ago I wrote about Colin Pullinger of Selsey and two of his mouse trap designs, his unsuccessful Automaton Mouse Trap and his commercially successful Perpetual Mouse Trap¹. In this article I wrote "A point should be made at this stage about the word 'Registered'. There is no evidence that Colin Pullinger registered either of his mouse traps, or for that matter any of his other inventions, as patents or designs. It seems likely that his wholesaler inserted the word in his advertisements as a ploy to deter potential competitors from copying the design. In this as we shall see later he seems to have been largely unsuccessful". Quite recently however my attention has been drawn by Stephen van Dulken to the appearance of Colin Pullinger's name in a list held in the British Library² of registered non-ornamental designs. Further research has revealed that not only did Colin Pullinger register his two mouse trap designs, but also a few others. Thus the purpose of the present article is partly to eat humble pie and to indicate the nature of Colin's registered designs, but perhaps most importantly first of all to reveal the existence of an important body of unpublished information that may be largely unknown to other amateur would-be historians of inventions.

REGISTERED DESIGNS

The Designs Office was originally set up to administer the Designs Act of 1787 that allowed designers to register and thus protect their designs of patterns for fabrics. A further Act in 1839 extended the protection of designs to non-fabrics, including models and engravings and to the shape or configuration of any article of manufacture. Thus far the legislation applied only to ornamental designs, but an Act of 1843 (6 & 7 Victoriae Cap. 6) enabled useful or non-ornamental designs of any article of manufacture also to be registered. To identify these designs the Designs Office introduced a new series of numbers that started from No. 1 on September 1, 1843 and continued to No. 6740 on June 30, 1884. It is within this series that all of Colin Pullinger's Registered Designs occur. In 1875 the Designs Office was transferred from the Board of Trade to the Commissioners of Patents and a new Act of 1883 introduced a new classification system and a single numerical sequence.

Each of the 6740 useful or non-ornamental Registered Designs is in effect nothing more than a simplified form of patent composed of a title, one or more figures and a brief text concerned mainly with clarifying the nature of the figures. To further illustrate their nature I have provided in full Colin Pullinger's Registered Design No. 4004 of 1857 (Fig. 1), but it departs from the original in that the text is printed and not hand written and the figure and the Designs Office stamp have been redrawn. These Registered Designs were never published, but can be viewed at the National Archives at Kew.³

COLIN PULLINGER'S REGISTERED USEFUL DESIGNS

Colin Pullinger registered six of his inventions as useful designs. The number and date of registration was stamped on each document by the Designs Office (as in Fig. 1). I chose to present his design No. 4004 in Figure 1 as an example of what a registered design looked like because it was entirely different from his other designs, two of which (Nos. 4158 and 4373) have already been described and figured elsewhere¹ and it is almost certainly the design for 'A Rat Trap on a peculiar Construction' that he took care to emphasise on his Trade Card. Furthermore, while I do not know of any surviving examples of this trap, it certainly looks like a clever design that would surely work, especially if his elastic substance that draws the two halves of the sprung trap together was replaced by two strong springs.

The titles of two other designs (Nos. 3717 and 4158) seemed to indicate that they could be used to catch rats, but both were fairly complex arrangements of see-saws and one-way doors and would have turned out to be very large expensive arrangements to be used as rat traps. In fact only the second was made and advertised as a mouse trap, but was rapidly replaced by Colin Pullinger's fourth design (No. 4373) that was manufactured as his Perpetual Mouse Trap and turned out to be a great commercial success. His two last registered designs were variations on the same theme but seem not to have been made. In contrast he continued to make various other changes to his successful design that he effectively incorporated into its manufacture without concerning himself with registering them.

Copies of all six of Colin Pullinger's Registered Designs have been lodged in the West Sussex Public Record Office in Chichester and are listed below in numerical and chronological order.

No. 3717 May 15, 1855
Design for a Self-setting Trap for catching rats and mice.

No. 4004 July 8, 1857
Design for a Trap for Rats, Birds, &c.

No. 4158 March 16, 1859
Design for an Automaton Mouse and Rat Trap.

No. 4373 May 25, 1861
Design for a Perpetual Vermin Trap

No. 4603 December 7, 1863
Design for an Improved Vermin Trap.

No. 4764 January 13, 1866
Design for a Perpetual Mouse Trap.

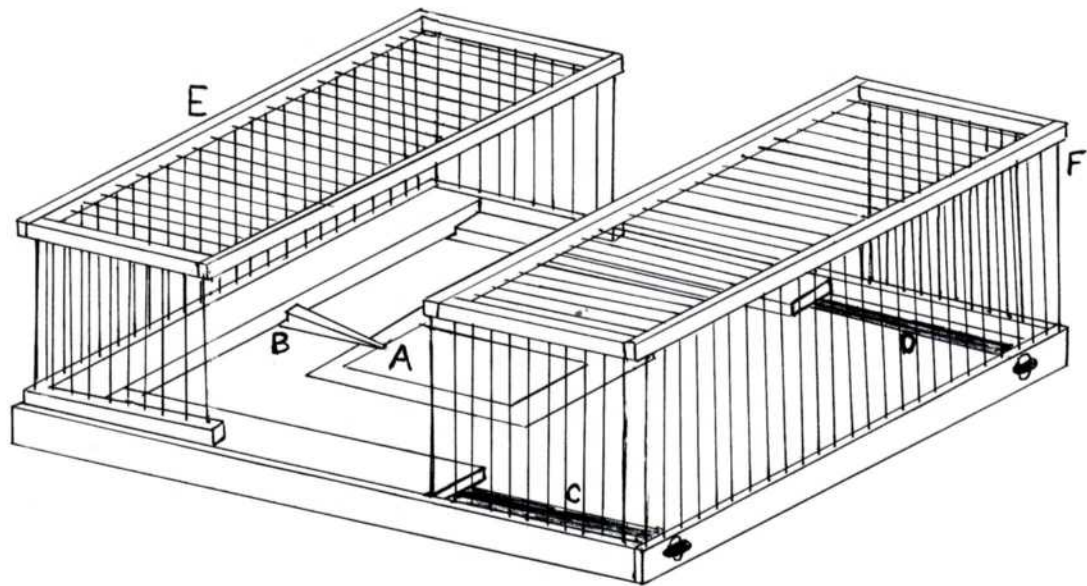
ACKNOWLEDGMENTS

I am indebted to Stephen van Dulken, Curator of the Patents Information Service of the British Library, not only for drawing my attention to the existence of Colin Pullinger's Registered Useful Designs, but also for providing me with general information about the history of such designs.

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3. The National Archives, Kew, Richmond, Surrey, TW9 4DU, holds the Representations and Registers of Designs from 1839-1964 and its 5-page guide to readers warns that these documents are often very large, unwieldy and very dusty and that they have fairly complicated reference systems.

Design for a Trap for Rats, Birds, &c.
Registered by Colin Pullinger of Selsey in the County of Sussex



The Purpose of Utility to which the shape or configuration has reference is to make a Trap which shall be easily thrown and not present any obstruction to the view of the Animal or Bird passing into it.

Description. The design is drawn to a geometrical scale and shews a perspective view of the trap when set. The Bait is placed upon the stage **A**, which is in connection with the catch **B**, which catch prevents the trap closing from the effects of the contraction of the elastic substance **CD**, while the stage **A** remains in an elevated position or level with the floor of the trap; but when any pressure or weight is applied to the stage **A**, it sinks, and liberates the catch **B**, and the moveable portion **E** of the trap, which is instantly drawn up to the fixed portion **F** and effectually closes the trap.

The Novelty for which protection is claimed consists in the general configuration resulting from the shape and disposition of all the various parts represented in the drawing.



Fig.1 Colin Pullinger's Registered Useful Design No. 4004 of July 8, 1857.

BALCOMBE ROAD FORGE, CRAWLEY

Ron Martin

The forge was located on the east side of Balcombe Road, Crawley at TQ 2979 3675 and was an L-shaped building, the short leg being at the rear of the site, orientated north to south, and this has been referred to this as the "original forge" with the more recent extension running east to west toward the road.

History

The forge was probably located on the site of an earlier structure of unknown use.

The short leg of the building was the site of the forge built in 1827 by John Alcorn according to the date stone. At the same time the adjacent house was built, where there was also a similarly dated stone.¹

The extension was built sometime after 1916 as sale particulars of that date specifically refer to "a rectangular building containing two hearths"², so at that date the extension had not yet been built.

The Alcorns married into the Steeles and the forge was occupied by various members of both these families. The Frank's family bought it in the early 1970s³ and operated it as a wheelwright's shop and latterly as a general blacksmith, diversifying into the manufacture of other products in recent years. John Franks moved to new premises in 2004 and the building was later demolished.

Description of original Forge Building

The original forge building was 8 x 4.9 m. (26'3 x 16'1"). The east and north walls were of massive sandstone rubble and the south and west walls were of coursed sandstone rubble with an average course height of 200 mm (8"). The face of the stonework was neatly dressed with joints of about 15 mm (½"), backed up with brickwork. Part of the west wall adjoining the later extension had been demolished.

In the east wall there were two recently inserted standard steel casements recessed internally. In the north, south and west walls were timber casements. The one in the south wall had a cambered arch over with the keystone higher than the voussoirs and massive skew-back stones backed up with a breeze concrete lintel. The window in the west wall had a transom and a top opening light and was divided into small panes. In the south wall was a single door

opening with sandstone lintel, which was cut into the skew-back of the window.

There was a forge hearth with flue and chimney stack. There was also evidence of a second hearth as the roof members had been trimmed around a demolished stack.

There was a flue in the east side between the two windows where there was probably, originally, some form of heating stove.

The roof was gabled at the south end and hipped at the north end. The 150 x 175 mm (6" x 7") ties and 175 x 125 mm (7" x 5") wall plates were probably original and the 50 x 100 mm (2" x 4") softwood rafters and 75 x 100 mm (3" x 4") softwood purlins and struts were of later construction. The north and west sides of the roof were covered with clay plain tiles but the east side had been covered recently with concrete interlocking tiles. There was originally a panel of glass tiles in the west slope, but these had been replaced with clay tiles.⁴ There were clay half-round tiles to the hip and ridge. The eaves were projecting with fascias and the gable end had timber barge boards, the ends of the plates and purlins projecting through the wall.

The floor of the north part of the forge was laid with brick-on-edge paving and the south part was concrete, apparently overlying stone flags.

Description of West Extension

The west extension was 4.9 x 10.6 m (16'1" x 34'9"), gabled at the west end. It was divided into two rooms by a 215 mm (9") brick wall, the western one been used, latterly, as a showroom.

The north wall was hollow, 280 mm (11") thick of brick, faced externally in local facing bricks in stretcher bond.

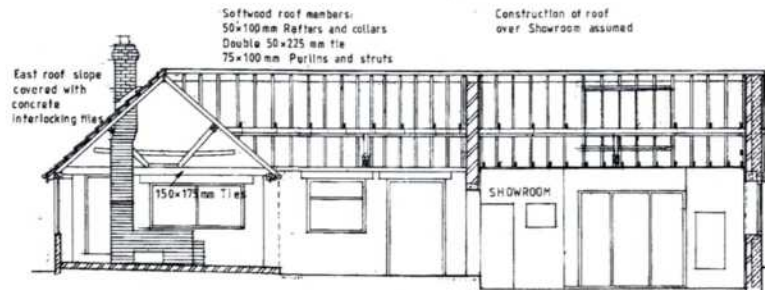
The south and west sides had walls of coursed sandstone rubble of similar appearance to that of the original forge building but with an average course height of 225 mm (9"). Where this met the stone work of the original forge, it did not course and bond. The stonework was backed up with brickwork.

In the south and west walls there were timber casements. The one in the south wall was identical to the one in the west side of the original forge building with a breeze concrete lintel over. The one in the west wall had a cambered stone arch over of identical appearance to that in the south end of the original forge building.

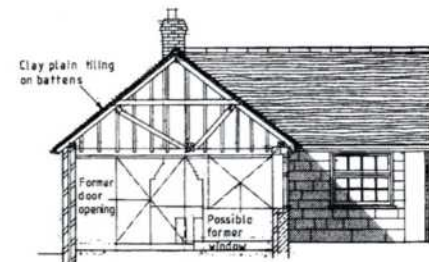
There was one original single door in the south side with stable doors hung on tee hinges, with a breeze concrete lintel over.



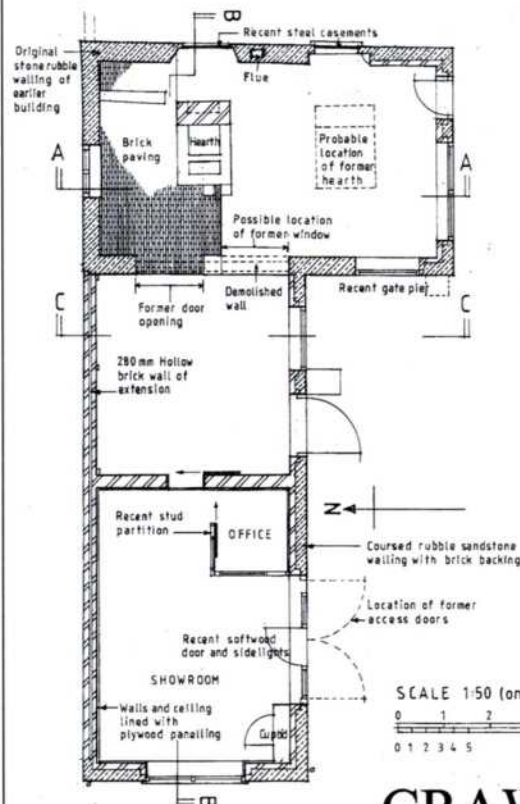
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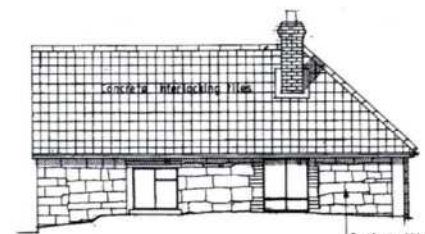
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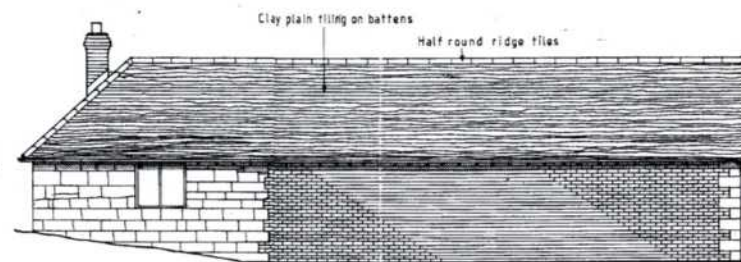
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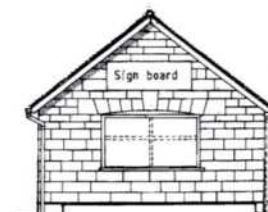
SOUTH ELEVATION



EAST ELEVATION



NORTH ELEVATION



WEST ELEVATION

SCALE 1:50 (on A1 sheet)

0 1 2 3 4 5 6 Metres

0 1 2 3 4 5 10 15 20 Feet

CRAWLEY BALCOMBE ROAD FORGE

Drawn by © R.G.Martin
June 2004

The original double doors in the west end the south wall had been replaced by a glazed softwood door with two sidelights, although the original door frame was still extant.

The roof was of softwood with 50 x 100 mm (2" x 4") rafters and collars to every other rafter, 75 x 100 mm (3" x 4") purlins and struts and double 50 x 225 mm (2" x 9") ties. The roof was covered with clay plain tiles with half round ridge tiles. The eaves were projecting with a fascia along the south side and the gable end had timber barge boards.

There was a timber skylight in the south slope of the roof over the showroom which had been boarded over.

The walls of the showroom had been lined with decorative plywood panelling on battens and the ceiling was also covered with similar material. An office had been constructed in the south east corner with studding and had two borrowed lights and one opening with a sliding door.

Conclusion

The forge that John Alcorn built in 1827, probably on the site of an earlier structure, consisted of a rectangular building with a double door and two

windows in the west side and a single door in the south side. The forge had two hearths.⁵ At the same time he built the adjoining house.⁶

Some time later, and certainly after 1916, the west extension was built and the wall between the two was mostly demolished. One of the windows from the west side was probably relocated in the south side of the new wall. At the same time a new window was inserted in the south end of the original forge building to match the new window in the west end of the new extension. The extension had one double and one single door in the south wall. It is strange that the stonework of the two wings although similar, has different course heights.

The roofs had been largely rebuilt, although it would seem that the roof over the extension was not of the same date as that over the original forge building.

REFERENCES

1. Doreen Franks, personal comment.
2. Sale particulars (1916) for Montefiore estate for sale of Worth Park estate (Crawley Library).
3. Doreen Franks, personal comment.
4. Shown on a photograph at Crawley Museum, dated c.1920.
5. Sale catalogue (1916)
6. Doreen Franks, personal comment.

H. A. WALLER & SONS of WHITECROSS STREET, BRIGHTON

In *Sussex Industrial History* 33 (2003) appeared an article on the history of H.A. Waller & Sons which contained an illustration (Fig. 7) of a petrol-driven drill produced for British Railways. This was stated to be a product of H.A. Waller. A member, Michael M. Chapman, has supplied additional information and a correction. He was apprenticed to an Eastbourne company Howard Engineering of Fort Road and remembers this firm producing "the power unit, the saw, the flexigrinder and the drill and coach screw driving attachment shown in the photograph". He also names the two people shown in the photograph as Ray West (on the left) and the department head Bert Keys (right). He recalls that "hundreds of these twin cylinder horizontally opposed two strokes were manufactured in the late 1940s and 1950s not only for British but for overseas railways systems". He thinks that the photograph was taken "at the sidings which included the Engine Sheds at Eastbourne".

John Redfern, who wrote the Waller article took up the points raised with John Waller who supplied much of the material. John Waller recalls that only the petrol tanks were produced by H.A. Waller & Sons for

Howard Engineering. As a result of this investigation and the contacts made, John Redfern hopes at a later date to write a full article on the history and products of Howard Engineering.



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