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Sussex Building Materials
Lime Burning at Amberley
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Malting in East Sussex
Turnpike Survey

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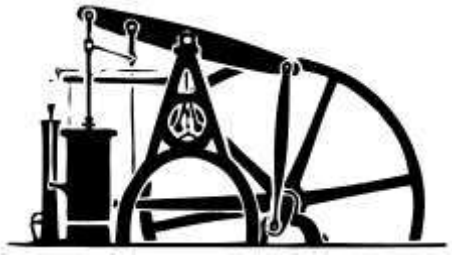
SUSSEX INDUSTRIAL HISTORY



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Cover illustration— The De Witt kilns at Amberley Museum (photograph by Alan Durden)

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HEARTH AND HOME:
Sources of Sussex Building Materials

Geoffrey Mead

Each year since 1970, SIAS members have received Sussex Industrial History (SIH), our annual publication; we all enjoy the articles, either because we know the topic or because we can learn from the erudite submissions and expand our knowledge of industrial history. But how many of us shelve or archive our copy and then rarely dip back into the past editions? I am thus guilty! With this article I worked my way through my SIH material from 1970 to the present and as I expected I found how much fine material that SIAS has accrued over the past decades. The SIAS Newsletters likewise contain a great many smaller and very interesting articles on many aspects of the building materials of the county, but to record all these would be a major task, so I have limited research to SIH. I have endeavoured to reference the appropriate SIH sources on local building materials as well as including some non-SIAS publications, of which recent publications on the county building stones have been a most useful and welcome addition to the canon.[1]

Sussex is blessed with a wealth of building materials largely originated from its varied geological underpinnings. These locally sourced materials have led to a set of distinctive regional styles of building usually referred to as 'vernacular'; a term often misused as meaning 'old' when it correctly means 'of that locality'. The geology of Sussex, in particular of the Weald, has created a landscape of stiff clays and steep sandstone slopes which made pre-20th century travel very difficult. Building materials are ubiquitous and there are no geological areas without housing of some style or material; added to which must be the consideration that building materials are bulky, not easy to transport and have low value, certainly before processing to a usable product. These factors have ensured Sussex has a distinctive regional pattern to its vernacular buildings, a pattern directly linked to its geology, with some form of variation where ease of communication, by sea or river, could give a wider or indeed an international element to the vernacular norm. All of the vernacular building materials are sourced from the sedimentary rocks which are the staple landscape forms of South East England: the Wealden rocks originating from fluvial, i.e., river-sourced deposits, with the Greensand, Downland and West Sussex Coastal Plain deposits being of marine origin. Across much of the West Sussex Coastal Plain the landscape of solid geology is masked with a sheet of wind-blown glacial debris-loess, or, as it is termed in the South of England, brickearth.[2]

Fig. 1 Timber hauling, Hawkhurst, Kent, 1920 (*from 'The Land' by Vita Sackville-West, 1926*)

The oldest rocks in South East England are the Purbeck Beds which form a small area in NE Sussex around Mountfield and Brightling. The Purbeck is a sequence of limestones and clays with beds of gypsum near the base; the limestone has been used locally for centuries for building and burnt for agricultural lime. In 1808 the Rev Arthur Young noted that the limestone mine and works in Dallington Forest achieved for the Earl of Ashburnham the distinction of being '*the*

greatest lime-burner in all the kingdom'. The main economic value is in the gypsum which is the principal component of plasterboard and wall plasters; this useful material was an accidental discovery by the Brighton geologist Henry Willett, who had sunk a shaft searching for coal! The Sub-Wealden Gypsum Company was formed in 1876 in one of the three areas in the UK mining gypsum, the other two being near Newcastle and in Nottinghamshire. The mines around Mountfield still produce the raw material, one of our few primary extractive industries to survive into the 21st century, although plasterboard production has now moved to the site in Nottinghamshire.

Older OS maps showed the rail lines that conveyed the material out of the mine area and the conveyor system that clanked through the Wealden forests around Darwell Reservoir. An article in Sussex Daily News in 1903 notes that *'this industry is carried on in a quiet and unostentatious way free from the inquisitive eyes of the public.'*[3] Lying above these deposits are the Ashdown Beds (formerly termed the Hastings Beds) a sequence of hard sandstones and silty sands with seams of clay interbedded. The sandstones make an excellent building material, forming what geologists term 'massive bedding', in that it can be cut cleanly along the bedding planes to form substantial blocks. Many fine examples can be seen across the High Weald as the Ashdown Beds extend from near Balcombe in Mid-Sussex across to the Fairlight cliffs north of Hastings. The main body is familiar as Ashdown Forest with long ridges running off eastwards in the Heathfield and Battle area. The subordinate beds within the Ashdown form less cohesive strata and produce more of a rubbly sandstone, often used in garden walls and outhouses. Clay seams within the Ashdown Beds were the source of material for a range of Wealden brickworks, the most famous, and the final wood-fired kiln in the county, being at Ashburnham.[4]

The succeeding strata is the Wadhurst Clay; this is a discontinuous bed and lies on the margins of the Ashdown Beds in several large and small deposits, split up over millions of years of crustal deformation and faulting. As with all clays its surface is often obscured by extensive spreads of timber, of which more later. Within the Wadhurst Clay, near the junction with the underlying Ashdown Beds are the iron ore nodules which were the raw material for our former 2,000 years of an iron industry; it is this iron which colours the bricks and tiles made from Wadhurst Clay into deep rich reds. It is no surprise that the High Weald town of Wadhurst displays a host of these products in its vernacular buildings. The timber noted previously is as described by Daniel Defoe in 1724*: "prodigious, as well in quantity as in bigness"*.[5] Sussex is blessed with a multitude of trees, indeed its number of native hardwoods is the greatest in the British Isles and this wealth of timber can be seen in use across the county, either internally for the massive roof timbers needed to support Horsham Stone slabs or structurally in the Wealden hall houses; they are also the source for the internal lathes, wall panels, flooring boards and the external split shingles. Much work has been done recording these distinctive Wealden structures over many years and a large body of published work is available for study.[6]

The final High Weald rock deposit to be considered is the complex Tunbridge Wells Sandstone (TWS)

Fig. 2 St Anthony's House, Rye - timbering (*Author*)

formation; this is split into Upper and Lower Tunbridge Wells Sandstone with the Grinstead Clay separating the two beds and that deposit having a sandstone bed, the Cuckfield Stone, within it. In the west, from Horsham across to the A23, the TWS forms a generally poor quality agricultural soil, but with some outcrops of workable stone, however, near the eponymous Tunbridge Wells in the area of Eridge are more substantial deposits forming significant cliffs. Disused quarries lie across the High Weald, but there is a working quarry today at Philpotts, West Hoathly. The stone can be seen in buildings throughout the area with a good example at Wakehurst Place. A former quarry near Cuckfield yielded the first British discoveries of the Iguanodon in the early 19th century, although there is debate about whether it was Doctor Gideon Mantell or Mrs Mary Mantell who actually found the remains! It is the TWS exposed at the coast which was the White Rock that gave its name to an area of Hastings.

Surrounding the sandstones of the High Weald is the belt of Weald Clay, forming a horseshoe surrounding the High Weald from Romney Marshes westwards almost to the Hampshire border, then eastwards to sea level again at Pevensey Levels. This is a very large deposit, with Cobbett in the 1820s describing it as '*the bottomless clay'* and noting *'this Weald is a bed of clay, in which nothing grows well but oak trees*'. This is the source of a very large number of brickfields turning out all manner of brick types as well as roof and cladding tiles and drainage pipes, but also decorative finials and ridge terracotta work where the Wealden 'Red Marker' clay could be exploited.[7] The Stanmer House accounts held in the archive at The Keep, Falmer, reveal various aspects of the early 18th century brick trade, both production areas and carriers costs. A major driver for coastal brick production in the 18th and early 19th centuries was the construction of the chain of Martello towers, many of which survive particularly along the Pevensey Bay shoreline.[8] Brickmaking here was invariably in wood-fired kilns, with Ashburnham using wood as its fuel until 1968; but brickfields near the Channel coast could utilise coal brought from the Tyne.

The Weald Clay is not a uniform body of clay but contains subordinate beds of sandstones and limestones which are found in much larger deposits in West Sussex, all of which could be used in local buildings. The most recognisable of these deposits are the Horsham Stone roofs seen on many older Sussex buildings, the Priest House at West Hoathly, the church at Thakeham or in a grand property as at Firle Place. The other readily identifiable stone within the Weald Clay is the bed of freshwater gastropods which form the Paludina limestone, sometimes referred to as Winklestone or Sussex Marble; not marble at all, but when the blocks of stone are cut and polished they take on a resemblance to marble, although the sedimentary Paludina is far younger than true metamorphic marble. The church at Warminghurst, West Sussex, is largely built in Paludina with some clearly visible 'winkles' in the blocks at the church doorway. Also in West Sussex at St. Mary's Church, Billingshurst, part of the church path is unpolished Paludina, the roughness of the stone creating non-slip flooring. Paludina has been noted in stable yards, where on frosty mornings it allowed slip-free surfaces for the horse teams. By far the greatest quantity of Paludina would have been burnt for both agricultural and building lime. SIH 2, published in 1971, contained an article by Margaret Holt, a distinguished vernacular buildings scholar; this gave details of a cluster of sites in NW Sussex around the Northchapel area.[9]

Fig. 3 Cox's brickyard, Plumpton, c.1900—Weald Clay (*Author's collection*)

The Weald Clay has as its southern boundary the complex sequence of deposits collectively known as the Lower Greensand (LGS). In Sussex east of Steyning, the LGS is thin and low; forming a low ridge in the landscape, but in the western part of the LGS the ridge widens and gains considerable height. It is west of Steyning that individual beds within the LGS can be identified and all

provide building materials. The lowest part of the LGS is the Atherfield Clay and this was utilised in brickmaking; above this the Hythe Beds provide hard deposits of good building stone with examples seen to good advantage in West Chiltington. Parts of the Hythe Beds contain silica rich stone-chert, which is very tough and makes the bases for road making in the area; Crawley's New Town roads in the late 1940s were floored with material from Hythe Beds at Bognor Common near Fittleworth. Above the Hythe Beds is a soft clay-rich sandstone—the Sandgate Beds, agriculturally rich, but too soft for building. Within the Sandgate are 'lenses' of a hard reddish-brown deposit, the Bargate Beds; this, when used in buildings, has the appearance of broken ginger-nut biscuits. The final LGS deposit is the Folkestone Sand, a soft, largely pure sand, ideal for construction mortar; Midhurst White bricks were made using a combination of chalk and Folkestone sands.[10] Within this bed are irregular seams of an iron rich deposit-Carstone. Hard and difficult to square-cut, it is used as garden walling and outhouses; at Warminghurst church it fills a blocked doorway. Geologically above the LGS is the seam of Gault Clay which encircles the Weald in an extensive horseshoe from Folkestone to the Hampshire border and east to the Langney Levels near Eastbourne. This blue-grey clay was extensively used in brickmaking with yards along the deposit, such as the small field at Elstead near Midhurst adjacent to the former railway line.

Similar to the east-west disparity of the LGS the Upper Greensand (UGS) is mainly a West Sussex deposit with only one area really visible in East Sussex, on the shoreline below Beachy Head at Head Ledge. This is a form of sandy chalk and not related to the LGS, although named in the 19th century when it was believed to be a similar deposit. The UGS provides a pale, firm building material which has been used in Eastbourne Old Town, at Michelham Priory and Amberley Castle. There are more extensive quarries at Reigate, Surrey and the workings at Quarry Hill, Reigate are named from this rock. 'Rygate' (*sic*) Stone was brought from Godstone to form part of Stanmer House in the 1720s. This rock is often referred to as 'malmstone' or 'hearthstone' in old accounts.[11]

Chalk can be used in building but only from the band often termed 'chalk rock', which in Sussex is thin and not really suitable for exterior construction, although houses at South Harting do contain the rock sometimes referred to as 'clunch', a term used more extensively in East Anglia. The chalk itself, principally the clay-rich Lower or Sussex Grey Chalk, is burnt in kilns to produce building lime for mortars and washes and is the main component in cement manufacture. The quarries and pits along the scarp slope of the Downs such as at Newtimber and Duncton, W. Sussex, bear witness to that process, as do the former cement works in the Arun, Adur and Ouse valleys.[12] By far the most important component of the chalk is the pure silica deposit, flint, found in the Upper or Sussex White Chalk. This has been used extensively on structures grand and small as an external material and internally, as in Brighton, where it is the main component of 'bungaroosh'. Flint can be seen in construction in a variety of forms: left whole and with its external coating or cortex it creates a pale appearance; split in two the dark faces are exposed and used as 'snapped' flint. When the split face is cut square it is known as 'knapped', an expensive and complex operation, and the knapped material is used on prestigious buildings as a facing material with fine examples in Lewes High Street. Many flint walls have fragments of broken flint

Fig. 4 House in grey-faced brick, West Street, Chichester (*Author*)

inserted into the mortar around the larger flint material. This is galletting, and served a number of purposes; done well it gives the appearance of each large flint having a 'crown' and is very decorative. It also serves the purpose of lessening the area of mortar susceptible to weathering, especially from the salt air along the coast, the mortar in flint walling being the weakest part of the structure. From an economic and aesthetic point of view it works well and galletting uses up the fragments creating in snapping and knapping.[13]

The gently angled dip-slope of the South Downs has younger deposits on its lower slopes, generally in the western part of the Downland. Running west from the Brighton area is a sequence of beds, mainly clays and sands, often with overlying gravel spreads and wind-blown glacial debris-loess. The London Clay is the main component and provides material for a number of brickyards such as those found at Binsted near Arundel. The clays have a cover of extensive woodlands which provided the fuel source for the clamps and kilns. The loess which is a Grade One agricultural soil is also a good brickmaking material, hence its local name of 'brickearth' and the resultant product, low on iron deposits, is a honey coloured brick, named 'buffs' in Sussex. Good examples exist along the West Sussex Coastal Plain, from cottages at Bosham to the grandees' homes at Regency Square, Brighton. The brickearths are the source of one particular roofing material—wheat and barley stems, used as thatch in this principally arable area. [14]

Overlying much of the Coastal Plain are long spreads and tongues of frost-shattered flint gravels, 'shravey' in West Sussex and these are readily accessible materials for buildings and road mending across the area. The shoreline fringing the Coastal Plain is the source of eroded and weathered flints, the pebbles or cobbles of the Channel littoral. These were collected, usually against manorial rights, for use as a building material, but employed in a different style to the Downland flints. Coastal flints have been lying out on Channel sands, clays and chalk deposits before storm waves and currents drive them ashore to form the bulk of the county beaches. The different Channel deposits affect the flints, with the clays and sands staining the flints with iron deposits, the 'brown' flints and the chalks creating a calcium rich 'rind' to 'blue' flints. Local builders seem to have preferred the blues, possible because wave activity drives the largest pebbles to the more accessible top of the beach and these larger stones are invariably the blue variety. Builders are often seen as traditionalists and may continue using

Fig. 5 Collecting flints on Shoreham Beach, c.1910 (*Author's collection)*

Fig. 6 Regency Square, Brighton—brickearth bricks (*Author*)

blue flints as that is what their predecessors have always done; they run the lines of boulders, all of a similar size, in carefully aligned rows. Flint, strong as it is, cannot be used to form straight lines in the structure of buildings, so stone inland and brick on the coast forms edges to windows, doors and buildings quoins. The Stanmer House accounts provide an insight into the materials used in the development of that grand Downland estate with one particular surprise — sea sand. A considerable amount of fine and coarse sand was dug on Brighton beach and the accounts show sand used at Stanmer and the cost of carriage, such as that by Ambrose Smith to the Stanmer site as £11 10s 0d. '*for 92 cart loads*'. Another carrier was Humphrey Payne who was paid £62 15s 0d for moving 502 cart loads over the period 1722-1724. It is sobering to note the date of collection for several consignments as November 1722, sand dug on a wintry Brighton beach, all before the protection of Wellington boots. The other source of sand was 'Red Pitt (*sic*) sand' dug nearby at Falmer where they were exploiting the Lambeth Series of sand pockets overlying the chalk.[15]

Two articles in SIH 12 relate to the brickmaking activities around Piddinghoe in the lower Ouse valley, one article by Osbourne on the Baker family of brickmakers and the other on Ted O'Shea's work on the kiln restoration. Osbourne refers to *'clay pits south of the village'* but the British Geological Survey sheet 319/344 shows no clay at that spot and 'clay' may here be alluvial deposits as it is adjacent to the Ouse.[16]

The Sussex coastline with its accessible beaches, as at Brighton and Hastings, its river mouths at Rye, Newhaven, Shoreham and Littlehampton plus its creek system around Chichester Harbour, was well suited to maritime trade, and building materials could be moved along the coast and river valleys. But this coastline also enabled imports to be introduced into the county, both from the UK and abroad. The association that the Sussex coast has with Northern France goes back to beyond the Roman conquest and imports of Caen Stone from Normandy quarries were frequent cargoes. Shoreham Museum at The Marlipins exhibits a chequerboard frontage of cut flint in panels alternated with Caen Stone blocks; these blocks are of a particular size suitable for export and are

relatively small, enabling ease of loading and unloading from the transport. Similarly sized blocks of Caen Stone can be seen on the exterior of Firle Place; these originated from the dissolution of Lewes priory in the 16th century and were acquired by Sir John Gage when High Sherriff of Sussex and responsible for the demolition of the Priory.[17]

The recycling of materials noted at Firle can also be seen at Stanmer where extensive rebuilding took place in the 1720s; however, these were not foreign imported materials but Wealden sandstones, probably from the Tunbridge Wells Sandstone, originally used to build the house at Kenwards in Lindfield. Lindfield is part of the Manor of Stanmer, being its Wealden outlier, and when the Pelhams bought the manor in the early 18th century they had Kenwards demolished, the stone barged down the Ouse to Lewes when it was taken overland to Stanmer to be used in the rebuilding of the house there. The Stanmer accounts note large quantities of such stone, one example from very many carriers being *'Richard Mitchel for the carriage of 16 loads of sandstones from Lindfield to Stanmer at 18s per load £14 8s 0d.'* [18]

On more modest budgets than that employed at Stanmer and Firle, recycling also occurred with damaged fishing boats used in coastal communities as storage units, a possible origin of the present day net-shops in Hastings Old Town; 19th century photographs show similar usage on Brighton beach and upturned boats were used as housing and noted by Charles Dickens in David Copperfield, who had Peggoty's fisher-folk family living in such a dwelling on Yarmouth beach.[19]

Along the coast of Sussex there are large areas of alluvial rich lowlands as at Chichester and Pagham Harbours, Pevensey and Pett Levels, criss-crossed with channels, creeks, dykes and ditches lined with reed beds, an alternative source of thatching to the arable material.

Sussex, with its rich variety of geology and the consequent landscapes, with their raw materials of rock and vegetation cover, has as varied a set of building materials as could be found anywhere within these islands. The heritage images of the county, whether thatch and timbering in the rural spots or the brick and tile of the urban centres are all reflections of the geological pattern that dictated materials and styles in the vernacular tradition until the mass transport changes of the 19th and 20th centuries started the loss of regional identity. In Sussex we are blessed in having a rich legacy, where much has survived into the 21st century.

Fig.7 Firle Place, East Sussex, constructed of Caen stone and Horsham stone (*Author*)

Fig.8 Thatched cottage in East Wittering, West Sussex (*Author*)

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LIME BURNING AT AMBERLEY
The Story of the Pepper Family

Roger Kevern

Amberley nestles by the side of the River Arun in the Sussex Downs where the ground structure is chalk. Quicklime can be produced by burning chalk in a kiln and it is an essential raw material for building with brick and stone. The chalk was deposited at Amberley about 100 million years ago when the whole of the UK was under up to 300 metres of water. Deposits of dead sea creature shells or skeletal bones formed a layer of chalk on the sea bed, which at Amberley is about 60 metres thick.[1]

The earliest evidence of lime burning near to Amberley is 3.5 miles away at Bignor where there is evidence of a Roman kiln close to the Roman villa; this was discovered halfway up Bignor Hill in 1975[2]. There is evidence for many Roman kilns in Sussex and it is believed that from then until the 18th century lime burning did take place close to Amberley, but on a very small scale and was centred at sites of churches, castles and farms. When records began in the censuses of 1841 and 1851 six people had workings for lime burning at Amberley, although the earliest evidence of lime working actually at Amberley is found in the will of the Bishop of Chichester in 1382:

> *"……likewise, I leave, on behalf of works of stone and wood in the manors of Amberle and Aldyngborne, begun and arranged by me, fifty marks, on condition that my successor, ….. shall freely permit my executors to have my stones at Lyddesgate and Amberle,…. To dig chalk and burn it, with the Bishop's wood in the chace of Houghton and Scaffeld; also have sufficient for the same work in the aforesaid chace, together with the Bishop's barges of the Huche for the carriage of the foregoing…"*

This Bishop was William Reade, Bishop of Chichester from 1369 until 1385 when he died in office. He lived in the Old Manor House at Amberley, which he converted into Amberley Castle with addition of the walls around the house. The castle was originally built along with the church and Chichester Cathedral by Bishop Ralph Luffa who became Bishop in 1091. This castle was only a fortified manor house but Bishop Reade thought that he needed more protection, so King Richard II granted him a licence to build the castle walls.[4]

The Inclosure (or Enclosure) Acts were a series of Acts of Parliament enacted between 1604 and 1914 that allowed enclosure of open fields and common

Fig.1 Amberley from Bignor Hill

The Last 370 years							
1650	1700	1750	1800	1850	1900	1950	2000
1666		1773	1802	1863	1900	1967	
The Great Fire of London		Inclosure or Enclosure Act	Lord Egremont gains more land for canal access	Railway came to Amberley	24 Kilns at Amberley	Lime production ceases at Amberley	
Charles II Rebuilding of London Act			1824	1874	1904 - 1911		
		Canals	Aspdin patent given for Portland Cement	Peppers arrive at Amberley	De Witt kilns at Amberley		
			1840		1937	1979	
		Industrial Chemistry began	Kiln at High Titton		Government subsidy introduced for lime production	Amberley Lime Pits Museum opens	
		1786	1845				
		Lord Egremont owns the Balcombe pit	Inclosure Act				

Fig.2 Timeline

land in England and Wales, creating property rights to land that was previously held in common. During this period over 5,200 individual Inclosure Acts were passed covering 6.8 million acres. During this time there was the Great Fire of London in 1666. This demonstrated how quickly and devastatingly fire could spread through timber buildings. The horror was so great that King Charles II enacted the Rebuilding of London Act 1666[5]. All of this rebuilding required the use of brick or stone, where the outer structures would be non-combustible, and lime was needed to fix these bricks and stones. Other cities soon followed on and lime was in more demand. The Inclosure Act of 1845 was particularly important as it led on to many large houses being built in the South of England by wealthy businessmen who lived in the North. By 1874 more and more lime was needed and there were clear opportunities for commercial scale production. In the 18th century canals were being cut, allowing more movement of heavy goods, resulting in easier supply of coal for kilns and distribution of finished lime; industrial chemistry was beginning and again lime was a significant starting material.

In 1786 George O'Brien, 3rd Earl of Egremont, started producing chalk and lime at the Balcombe pit at Houghton Bridge and he already owned the barge wharf. In 1802 he succeeded in leasing land to the north from James Lucas on a 21-year lease. In 1837 the Earl died and his estate passed to his eldest son, Colonel George Wyndham, but not his earldom as George was illegitimate. In 1859, George became Lord Leconfield.[1] Most of the Balcombe pit lies under the museum car park.

Various records tell us that in:

1835 James Cooper had workings at Amberley.

1846/7 William Smart had the Barn Yard pit there.

1847 Henry Humphrey had workings just north of High Titten. William Warren was working for George Wyndham at his workings.

1851 Richard Lee took over the Balcombe pit.

1874 John Pepper and his son Thomas Cunningham Pepper had taken over much of the site.

Fig.3 Thomas Cunningham Pepper (1845-1916)
(Picture courtesy of Amberley Museum)

John Pepper was born in Battle in 1811. He moved to Littlehampton sometime in 1841 when he had married Edith Cunningham. She was a daughter of Thomas Cunningham, with whom he was in partnership as a ship owner. It is recorded that in 1852 John and Thomas owned a Brig (two-masted square-rigged ship), the *Dido*. The *Dido* was later converted to a Brigantine Rig (two-masted square-rigged foremasted ship), the *Edith Pepper*. John is also thought to have bought another Brig of 350 tons in 1865.

By 1862 John Pepper had moved from Littlehampton to Wick Street, Wick, Lyminster where he was a farmer and brickmaker. Many houses in the area were built of his bricks, so much so that the area became known as Pepperville. The company emblem was a builder's trowel; this emblem could be seen on the door knockers of these houses.[3]

By 1874 John Pepper and his son Thomas Cunningham Pepper had moved to Amberley and taken over the lime workings of the late James Cooper as settlement of a debt. Their businesses now included ships for canal and river transportation of heavy goods, a brickworks, chalk pits and lime kilns. Thomas Cunningham Pepper moved from Rose Cottage in Amberley Village to a brand new house, Quarry House, in 1874.[3]

Soon after 1900, two sons of Thomas Cunningham Pepper, Thomas John Cunningham Pepper and Frank Montague Pepper, joined the business and became partners on 13 June 1908.[3] In 1904 a Belgian potter called Hyppolite De Witt was commissioned to build a new block of kilns; these would be of his patented down-draught design. This design was

Fig.4 De Witt kilns at Amberley

closely based on the successful design of Hoffmann, whose kilns were used widely in Europe but not much in the UK or USA.[6] The idea behind these kilns was to increase efficiency and production by using the hot flue gases from burning a kiln of lime to preheat the next kiln of lime ready to be burnt. The drawings for these kilns were produced by another Belgian, E. Lingard; there were 18 chambers linked together by ducting and also linked via the ducting to a stack. The design depended on hot fumes travelling down from the firing furnace to the next furnace in line along underground passages. It is well known that hot air rises as it is less dense than cold air, so for this design to work it would need a strong draught to overcome the effects of gravity. In the Hoffmann design such a draught was provided by a very tall, narrow central stack. The De Witt kilns had a low broad square stack which would not have delivered enough draught. The design had failed and, by 1911, 16 of the chambers had been replaced by four bottle kilns. The nearest successful Hoffmann kilns were those operated by the Bonham-Carter family at Buriton, only 20 miles away from Amberley.

The bottle kilns built to replace the De Witt kilns, and those built to replace kilns 5 and 6 in the overflow carpark, were 'continuous' kilns, in that they could allow non-stop operation, and in peak production years the kilns would work in three 8-hour shifts. They would consume 14 tons of chalk per shift and produce 6 tons of lime per shift. Alternating layers of coal and chalk would be added to the top of the kiln and burnt lime would be collected continuously from the kiln base. Each kiln had its own limeburner per shift and the site employed about 100 people.[3] In 1920 the pay was between 27s 6d (£1.375) per week and 32s and 6d (£1.625) per week.[4] The day shift started with a bell being sounded at 7 am and would end at 5pm with a break for lunch.[9]

We can find details of the Pepper product range from their letter headings. The range appeared to be: grey and white limes, Portland cement, plaster, Sirapite*, bricks, sanitary pipes and fittings, chimney pots, fire bricks, tiles and chalk. For this article we will concentrate on the lime products.

* Sirapite: an artificial plaster based on burnt gypsum – calcium sulphate – with other ingredients such as salt, soda, alum or borax to modify the rate of setting[7]

Grey lime

This would have come from the chalk from the Grey Pit. This pit is the site of the main museum today and houses the railway museum, the Milne museum and the Connected Earth Centre. This chalk had a higher clay content which made it harder, in fact the chalk from the lowest level was sold as building stone and examples can be found in the crypt of Lancing College and in the Roman Catholic church in Arundel.[3] The lime from burning this chalk would be a Naturally Hydraulic Lime (NHL). Their classification and hydraulicity could be determined by their Hydraulic Index.

The Hydraulicity or Hydraulic Index indicates its setting ability under water:

$$\textbf{Hydraulic Index} = \frac{\%\ \text{Silica} + \%\ \text{Alumina}}{\%\ \text{Calcium Oxide}}$$

The Lime was then classified as:

Feebly Hydraulic Limes:
Class C1; Hydraulic Index 0.1 to 0.2

Good or Eminently Hydraulic Limes:
Class C3; Hydraulic Index 0.2 to 0.4

Hydraulic limes were used externally where resistance to water and weathering was required; the higher the index, the harder the mortar.

White lime

White chalk produces an ordinary lime.

Rich or Fat lime:
Class A; Hydraulic Index < 0.1

Ordinary Limes

These limes were used to make lime putty, lime washes, and were used internally for plasters. They set by a process of carbonation and gave the maximum flexibility to their mortars and plasters.

Portland cement

Portland Cement and Naturally Hydraulic Limes have Hydraulic Indices of 0.4 to >1.5.

Kiln 4 (at High Titton), kiln 5 (in overflow car park) and 7 (in the wood yard and craft centre of the museum) were all flare kilns with small draw-holes which would allow kiln temperatures in excess of 1,000° C which are needed for the manufacture of Portland Cement.[6]

Fig.5 The newly-constructed hydrator at Amberley in 1938
(Picture courtesy of Amberley Museum)

Chalk

Chalk, "Caldrox" (Blues – overcooked lime and Bucks – undercooked lime) was sold direct to farmers to put on the land.

Lime production at Amberley under the Peppers appeared to go from strength to strength and agricultural lime production had a boost from the introduction of a government subsidy in 1937. This particularly increased the sales of Caldrox, and a hydrator was built at the Grey Pit in 1938. Hydraulic limes were more safely supplied in hydrated form. Hydrated lime is lime that has taken in just sufficient water to convert the calcium oxide to calcium hydroxide; this dry powder could then be safely stored in sacks or bags. Before the hydrator, this process had to be carried out as a batch process in tanks. A crushing plant was built in 1950 again at the Grey Pit; this was used to crush the large lumps of chalk (about 4 ft across) to pieces 2 – 6 inches across.

Thomas Cunningham Pepper died on June 9th 1916. Two of his sons, Thomas John Cunningham Pepper and Frank Montague Pepper, joined the business in 1908 and took over in 1912. Another son, Arthur Reed Pepper was not in the business, but his two sons, Patrick Haber Pepper and Thomas Roy Pepper, both went into the businesss. Thomas ran the business from 1963 until 1967.

Up until the 1950s traditional lime mortars were still in considerable use, but by the 1960s modern materials of Portland Cements and gypsum plasters became cheaper with mass production and ease of use. In 1964 the government Agricultural Lime Scheme subsidy expired[8]. The business ceased trading and lime production ended in 1967.

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A HISTORY OF WEST BLATCHINGTON MILL

Peter Hill

By 1802, when Wm Hodson took on the tenancy of the property of the Earl of Abergavenny in the parish of West Blatchington, known as '*Blatchington Court Farm*', it had grown to 700 acres. By the time of the Defence Schedule of 1805 it was recorded that there were 1607 head of sheep at West Blatchington and that Hodson employed two shepherds, a blacksmith, and 11 farm labourers. He obviously felt there was a need to provide flour for both his own family and the families of the workforce, plus animal feed, and so he had the mill built circa 1820. An already extant brick and flint tower (surveyed by Ron Martin and estimated to have been built mid-18th century) made the ideal base on which to construct the wooden tower, but unfortunately there is no record of who built it and exactly when. What is certain is that she was not built by a millwright but most probably by a shipwright who used many substantial timbers from a ship wrecked on the nearby coast. Six-sided rather than the conventional eight, the tower has three floors, i.e. the stone, bin and dust floors, and is surmounted by the cap which carries the windshaft, brake wheel, four sweeps and the fan tackle to keep the latter into the eye of the wind. Internally there is much use of cast iron, which regrettably has no casting marks. Interestingly, the mill powered not only two pairs of stones but also a winnower, a threshing machine, an oat crusher and a chaff cutter, all via an auxiliary drive. By the time the mill was built the north and west barn had been added to the existing tower.

Fig.1. William Hodson (1778-1857), tenant farmer at Blatchington Court Farm (*Courtesy Sheila Hodson*)

The earliest pictorial record of the mill is a painting by John Constable made on 5th November 1825 showing her with a beehive cap, common sweeps and a handrail around the reefing stage. All these features were to change but there is no record of exactly when. There is a period between 1829, when a survey of the parish carried out for the Marquis, made no mention of the mill until 1833 when she is next recorded. The "*Victorian History of the Counties of England*" states that that was the date of construction as does D. Harrison in "*Along the South Downs*". My own thoughts are that during that time she was tail-winded causing the cap and sweeps to fall and damage the reefing stage resulting in a partial rebuild with a new cap, patent sweeps and no handrail around the staging. Recently I purchased an unattributed and undated watercolour of the mill circa 1830; I feel this should probably be 1828/9 as all the features that Constable showed are in this painting too.

In a recording of a severe thunderstorm on the night of Sun/Mon 4/5 February, the Brighton Gazette on Thursday 8 February 1866 states:

> "*the old wind corn mill at West Blatchington belonging to Messrs Hodson, was struck by the electric fluid which materially injured one of the whips, passing down one side of the mill removing the sheathing, injuring the tower and making its exit through the thick wall of the tower into a barn.*"

During the great snow storm of 1881, snow built up on the cap to such an extent that the fantail, which kept the sweeps into the prevailing wind, was so impeded that the then miller, Wm Strudwick, had to climb out and clear it to prevent serious damage occurring.

The next recording of a catastrophe at the mill was in 1897 when a severe storm destroyed two of the sweeps. This heralded the end of her working life although the farm continued to flourish.

Fig. 2. The morning after the fire on 3 May 1936 (*Photo R E Guppy*)

Two further incidents are recorded, the first being in December 1934 when the fantail which had been chained up, broke loose during a gale and the cap began rotating. A farm worker climbed up through the tower and onto the fan staging where he managed to stop the movement with an iron bar. After this the fan blades were removed and the sweeps have faced due south ever since. Then on Sunday 3 May 1936 two wagons of straw on the south side of the mill were set alight, probably by two lads having a cigarette and tossing the lighted match or butt into the straw. Fortunately the local fire brigade managed to get the fire under control and the wind blowing directly from the north east, fanned the flames away from the actual mill so that only the long south barn and its contents was lost.

By now the tenancy had passed from William Hodson to his sons John and George (a sleeping partner), then to a John Brown and finally to Arthur Paul.

Holmes Avenue at this time (named after Samuel Holmes who owned Gibbet Farm located between Elm Drive and Old Shoreham Road) only came as far north as roughly the junction with today's Nevill Avenue. Wishing to extend this northward, on 27 September 1937 Hove Corporation purchased the mill and five acres of surrounding land for £3,400, with the intention of replacing the well-worn elm tree-lined track to the mill with the continuation of the Avenue. Conditions of the sale included the proviso that the mill be restored and the adjacent land be kept as a public open space.

During 1938 the old north barn was demolished as it was considered to be unsafe, the tower of the mill was re-clad in untreated cedar wood and the staging repaired. Internally the wormed and well-worn floorboards and steps were replaced.

Fig. 3. Elm tree-lined track to mill in the 1930s, later the top half of Holmes Avenue (*Author's collection*)

Fig. 4. Demolition of the old north barn in 1938, clearly showing tall flint & brick tower predating mill by 75 years (*Author's collection*)

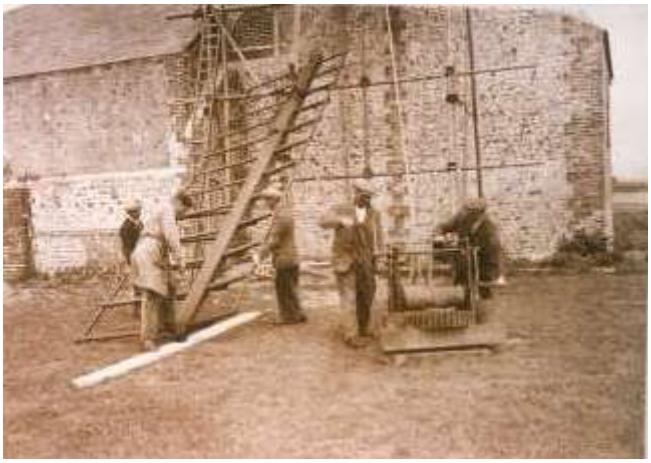

Fig. 5. Neves millwrights from Heathfield erecting new dummy sweeps in 1939 (*Frank Gregory*)

By September 1939 a full set of dummy sweeps had been constructed and mounted by Neves of Heathfield and the mill looked resplendent once more. However, WWII had been declared and the front door was hidden behind a wall of sandbags as the mill had been designated as an A.R.P. post and with the fan stage approximately 50 feet up, it made an ideal lookout.

During the post-war years the mill was used primarily as a store for Council equipment, etc., but maintained in good condition. Another severe gale in May 1966 resulted in all four sweeps being removed and, following extensive renovation work by E. Hole and Sons, these were replaced in October 1967.

Fig. 6. ARP wardens at the mill - note sandbags by the door and kerb stones painted alternately black and white, September 1939 (*C Horlock collection*)

In 1977 Michael Ray, Borough Planning Officer and his associates Keith Wood and Jeff Collard in Hove Borough Council Planning dept. placed an article in the Brighton & Hove Gazette suggesting that the mill should be opened to the public but before that could happen much cleaning down and painting would be necessary. During the next two years many groups and individuals spent their spare time doing just that, until on 14 July 1979, following a successful application to the Secretary of State for the Environment, she was opened to the public for the first time. Lighting and power had been installed as had fire extinguishers and smoke detectors. By mid-August there had been over 1200 visitors on Sunday afternoons. However, a survey of the mill revealed much additional restoration work would be required in the foreseeable future, with the prime object being the replacement of the timber stocks on which the four sweeps were mounted, as they were showing signs of significant rot. It was decided that, with the traditional long-leaf pitch pine being unavailable, they would be replaced in steel. By August 1980 these were delivered to site ready for painting and then lifted into position. Remedial work had been carried out on the timbers of the tower and new beams, on which it sat on top of the brick and flint tower, had been replaced. Whilst all this was going on the sweeps had been stored under the King Alfred and the volunteers had spent the winter months in replacing rotted timbers but during a particularly severe storm a temporary wall collapsed and completely smashed one of them! The insurance paid for the replacement.

Fig. 7. Painting new steel stocks, 25 Aug 1980 (*Brighton & Hove Gazette*)

Fig. 8. Restored cap being replaced in 1983 (*Author's collection*)

Fortunately thanks to major structural repair works during 1986/7 the mill was able to withstand the ferocity of nature once again when the October 1987 storm struck. The sweeps broke against the brake band and quartered to the southeast, but jammed against the reefing stage. The sack hoist mechanism on the dust floor was badly damaged but once again the volunteers were able to rectify this and the mill was soon back to her former self.

For ten years petitions were put forward to the Council to reconstruct either the north or south barn and in 1991 the foundations were put down on the footprint of the old north barn that had been demolished in 1938.

Gradually over the years, thanks to Frank Gregory, our mentor and leading authority on mills, many mill-related machines and artefacts were acquired or donated for exhibit. These included a winnower from Westbourne; a pair of Derbyshire Peak millstones from Winchelsea windmill, courtesy of the National Trust; a wire dressing machine and smutter from Park Mill at Batemans; a scale model of Shipley smock mill and a hursting from Weald & Downland Open Air Museum. Other acquisitions included a beautiful scale model of Nutley post mill; a display case containing a scale model of High Salvington post mill and a diorama of the Jack & Jill mills on Clayton Hill, all constructed perfectly to scale in matchsticks; two French Burr stones, one from the Kemptown Flour Mills and one from Burwell reservoir; the upright shaft of a horse gin; a jog scry; a threshing machine and a chaff cutter; and, latterly, a Eureka Grain Scourer. A manual sack hoist from a farm near Exceat was installed on the loading floor.

When the Portslade forge closed we acquired a display panel showing a Pyecombe crook and musket barrel from which George Mitchell, blacksmith at Pyecombe forge, fashioned them. Items of agricultural interest were acquired, in return for a suitable donation, from a small museum that was closing in Playden. The volunteers have spent countless hours constructing reception and sales counters, and display panels on both the first and loading floor. New spouts and meal bins were built on the spout floor; having re-located the stairs up to the bin floor, the stone floor was reinforced as we opened it up to install the runner stone of a pair of Derbyshire Peak stones. New stone casing and stone furniture was built, and a dummy stone set-up installed in one of the casings, which operates by battery power to demonstrate the grinding process. Grain bins were built and installed. Floor by floor, each level of the mill has been restored to 'as was' during her working life. Also, having the space available, we have managed to display many additional mill items including a section of sweep to demonstrate the spring sail mechanism, sack scales, stone dressing tools, etc. On the ground floor, thanks to the variety of exhibits, the chronology of milling can be demonstrated using the rotary stone quern: horse power, water power and wind power. Then on the spout floor a sectional model visually explains the full workings of the mill.

That is some of the work the volunteers have carried out, but our 'owners' have also played a tremendous part in preserving the fabric and integrity of the buildings. I say "our owners" because in fact there have been three who have been responsible for the mill. Initially it was Hove Corporation that purchased her in 1937 and was instrumental for the first restoration with re-cladding the wooden tower and installing a new set of dummy sweeps. Later when Hove Council had taken over, under their auspices there was always an annual budget allocated for work that we requested or suggested. Projects included the restoration of the cap, new steel stocks, re-cladding of the tower in Western Red cedar and associated reinforcement of the cant posts on which she is built, new sweeps, internal lighting on all levels, a beautiful new English oak front door, a toilet with disabled facilities, floodlights and most importantly, in 1997, the construction of the wonderful north barn which we then equipped and furnished.

It was after this that our new owner—Brighton & Hove City Council—took over, who again has financed essential work when necessary, not least of all installing a modern fire alarm system; and of course they shared the cost of the recent repainting and restoration work. This latest work has seen the culmination of 42 years of renovation and restoration, ensuring that the mill will be preserved as a monument to our milling heritage for future generations to enjoy.

SINGLETON: THE STATION FOR PRINCES AND PUNTERS

Alan H J Green

Fig 1. The tree-lined approach to Singleton Station – a station designed to impress its users (*Author's collection*)

Introduction

Singleton was, without a shadow of doubt, the most unnecessarily extravagant station on the London Brighton and South Coast Railway. Ironically it was on a line that the company was reluctant to build, and constructed at a time when they were strapped for cash. Not only that, its extensive facilities were to come to life for just one week in the year.

In the beginning

The Chichester and Midhurst Railway (C&MR) was authorised by parliament in 1864,[1] giving the eponymous company the necessary powers to build a line linking the two market towns. As was so often the case with privately promoted railways at this time, the company and its powers were expected to be absorbed by the adjoining main line railway who would operate the line. Works started but were quickly abandoned by the C&MR Company and the powers allowed to lapse. Interest in the project was revived in 1873 and the works were re authorised in 1876,[2] this time with the powers and the assets transferred to the LB&SCR who were left to complete the line.

The twelve-mile line, whilst it would link two market towns and give Midhurst a direct route to the coast, would pass through only sparsely

Fig 2 Sketch map of the railway lines around Midhurst (*Author*)

populated country and have to climb over the South Downs and cross its ridge with the aid of only a wind gap rather than a valley. On the face of it an expensive line to build and with little potential for a return. The line was to cost £25,000 per mile rather than the usual £12-15,000,[3] so one can appreciate the directors' reticence. One glimmer of hope for the Board, perhaps, was the fact that the line would pass relatively close to Goodwood Racecourse.

Glorious Goodwood

Racing at Goodwood was begun in 1802 by the 3rd Duke of Richmond and the present Goodwood Racecourse was laid out on the top of the Downs by the 5th Duke in 1829.[4] It quickly established itself as the most fashionable place to enjoy the "Sport of Kings"; indeed royalty and aristocracy flocked there along with *hoi polloi* to see and be seen. Strangely though, the races were only staged once a year, over a week in late July, a situation which would pertain until the late 20th century. That week was known as "Glorious Goodwood".

The nearest existing stations to Goodwood were Chichester (4 Miles) and Drayton (3½ miles), both requiring costly carriage rides for the punters. Competing horses would have to be ridden from either of those stations to the stables at Goodwood. A station at Singleton could, perhaps, improve the lot of everyone.

The Chichester and Midhurst Line

The new line was engineered by Frederick Banister, the LB&SCR's Chief Engineer, and the buildings at the three intermediate stations, and the rebuilt Midhurst, were designed by T H Myres of Preston, whose work was featured at no fewer than 18 new stations in Sussex between 1880 and 1884.[5] Myres' designs were elaborate to say the least and would have contributed considerably to the high cost per mile – again an odd choice for a line that the impecunious company did not want. The hilly terrain meant that the line, which was single track throughout, was heavily engineered with three tunnels and considerable earthworks. The greatest concentration of expenditure though was to be on the new station at Singleton.

In the OS extract (Fig 4) it can be seen how busy are the contours around Singleton, and they naturally dictated the route of the line - which is on an

Fig 3. An Edwardian postcard view of the picturesque Goodwood Racecourse (*Author's collection*)

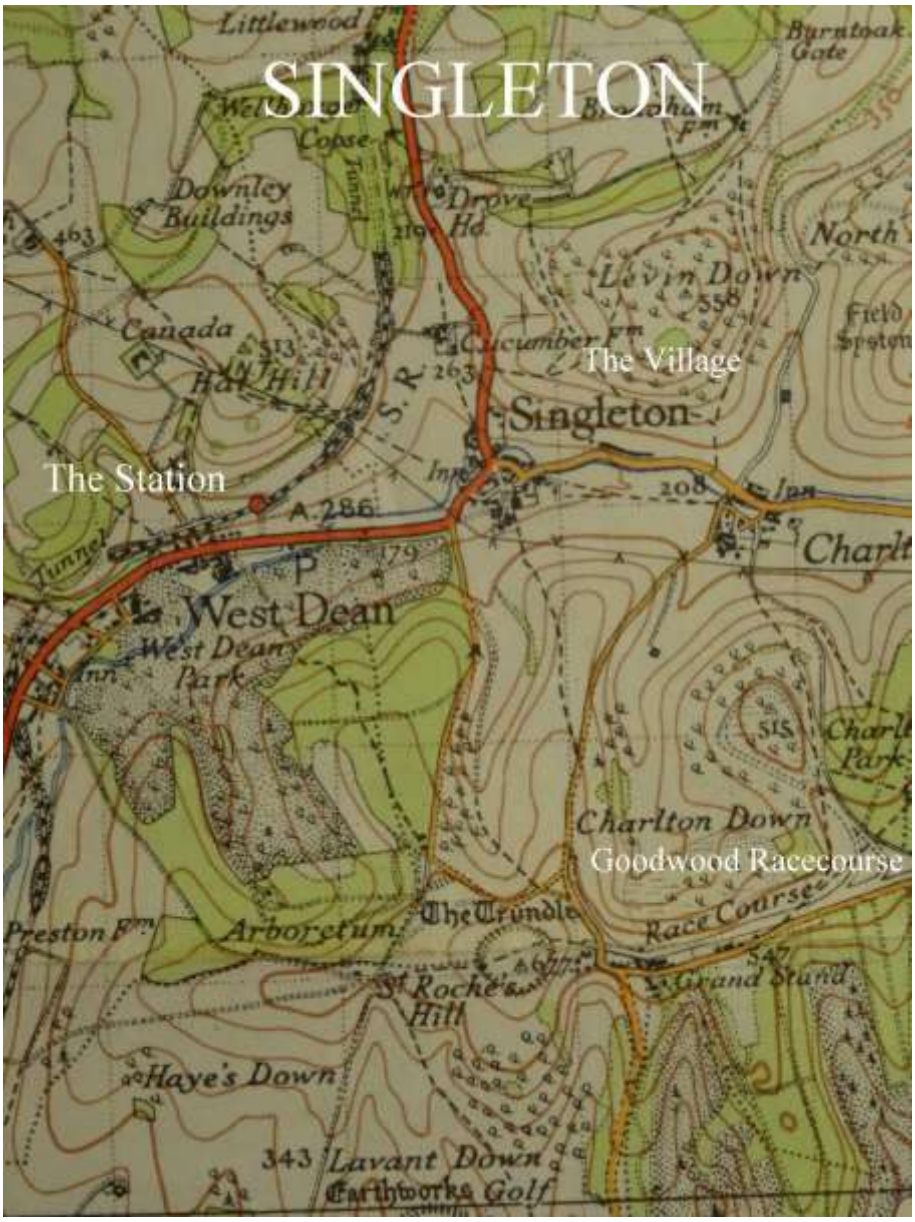

Fig 4. An extract from the One Inch Ordnance Survey shewing Singleton station and its relationship with Goodwood Racecourse and the eponymous village

approximately east-west alignment at this point - and the siting of the new station. Although intended for Goodwood it was not particularly convenient, being some two and a half uphill miles from the course. It was not very convenient for Singleton either come to that but, to be fair, the drawings do shew it was intended to be called *West Dean*, which would have been more honest.[6] The other stations, Lavant and Cocking, were also some distance from the villages with the same names. The line opened on 11 July 1881.

Frederick Banister was obviously impressed with his work as on completion he commissioned an album of photographs entitled *Views of Works on the Chichester and Midhurst Railway* which he signed *Fred D Banister M Inst CE | Engineer | 1881* It is in West Sussex Record Office.[7]

An over-abundance of infrastructure

The new station was in the parish of West Dean and built into the southern slope of Hat Hill, which resulted in the platforms being elevated above the station buildings and linked to the latter by a subway. The station site was a long one, it being over 5/8 of a mile from the buffer stops of the country-end carriage siding to those of the carriage sidings at the London end. The station was approached from the south on a rising 1 in 75 gradient from West Dean tunnel which flattened out to 1 in 264 within the platforms before rising again at 1 in 75 towards Cocking.[8] Little wonder then that the Inspecting Officer insisted on catch points being provided at the country end of the station to prevent any runaway vehicles from embarking on an unescorted journey to Chichester as it was downhill all the way.

Fig 5. The country-end approach to Singleton taken from Banister's album. To the left is the buffer stop to the down carriage siding, and in the background is the portal of West Dean tunnel whence the line rises at 1 in 75. The picture, taken on completion of the line in 1881, shews how raw the earthworks appeared when new. (*WSRO*)

Fig 7. The assembled station staff pose beside the running-in board on the down island in Southern Railway days. Singleton North box can be seen behind them. The lengthy spells between trains would have given the photographer ample time to pose his picture. (*Author's collection*)

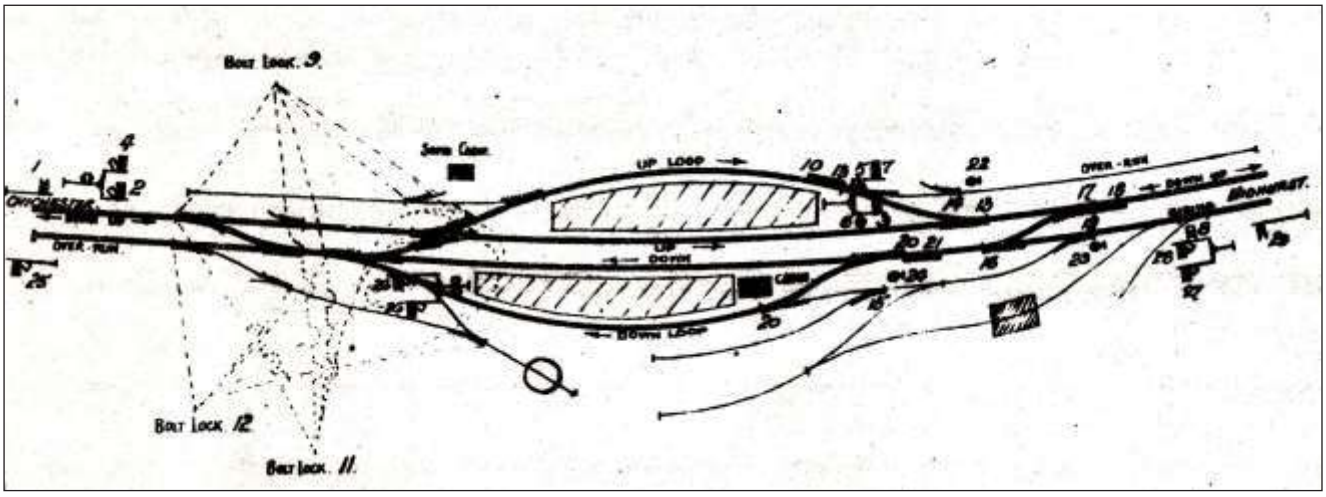

Fig 6. Signal diagram for Singleton North box which shews the layout of the whole station. The complex slotting arrangements with the south box are indicated at the bottom. (*Author's collection*)

Board of Trade regulations at the time limited the distance between facing points and the controlling locking frame, and this dictated that two signal boxes had to be provided to control where the single line opened out to four tracks at each end of the station. Both boxes were to Myres' distinctive design, the north box being situated in the wide-way off the end of the down platforms and the south box on the upside of the line beyond the end of the up platforms. Only the north box, which contained 28 levers, was a block post, the 26-lever south box only having the status of a ground frame. The signals of both were slotted with each other – i.e. they had to be released from both boxes before they could be pulled off. The single line staff instruments were both in north box.

On a normal day only the north box was manned, but as both were needed to signal trains through the station the one poor signalman had to operate both. A former signalman, Gordon Allaston, recalled that seventeen pulls were required to signal an up train; he having to walk to the south box to 'set the road' then return to the north to pull off the signals and then do the whole thing in reverse prior to accepting the down train.[9] Not to be envied on a wet winter's day! During Goodwood Week however there was no time for such perambulations so relief signalmen were drafted in in order that both boxes could be manned.

The four tracks served two 10-coach island platforms, with the up and down loops normally being used only during the races. There were

Fig 8. Another view from Banister's album looking south. The Myres goods shed with its exuberant pargetting is on the left, and the horse docks are beyond it. In the background the north box can be seen and beyond that the platform canopies. Note how the sleepers are covered with ballast, something that – incredibly – was deemed acceptable in those days. (*WSRO*)

Fig 9. The frontage of the station in 1881 from Banister's album in which the level difference can be appreciated. The concrete retaining wall can be seen behind the buildings, above which are the platform canopies. Note that here the characteristic Myres mock timbering is still in evidence, but by the time of the photograph in Fig 1 it had been tiled over to combat penetrating damp. The veranda to the left of the buildings sheltered the walkway to the subway. (*WSRO*)

lengthy sidings which were used to accommodate empty stock on race days: one at the country end of 317 yards and two at the London end, 415 yards each, which were on either side of the running line and extended round to the first overbridge. By my calculations they would accommodate 43 bogie coaches. On the signal diagram they are indicated as 'over run' as they also acted as traps for the loop lines. At the country end of the station, on the down side, a 45 foot turntable was provided. The largest locomotives it could take were the B2/B4 class 4-4-0s,[10] but it was taken out of use sometime in the 1920s, after which all engines had to run light to Chichester and back to turn, adding further moves to this normally quiet backwater*.

At the London end of the station sidings were provided on the downside of the line serving two 36-yard-long horse docks and a goods shed, the latter being to Myres' usual design. Road access to the goods and equine facilities was afforded by a ramp up from the station forecourt.

* Paul Clark states that it was removed around 1920, however it was still listed in the LBSCR 1922 General Appendix but omitted from Southern Railway appendices (see also Fig 14).

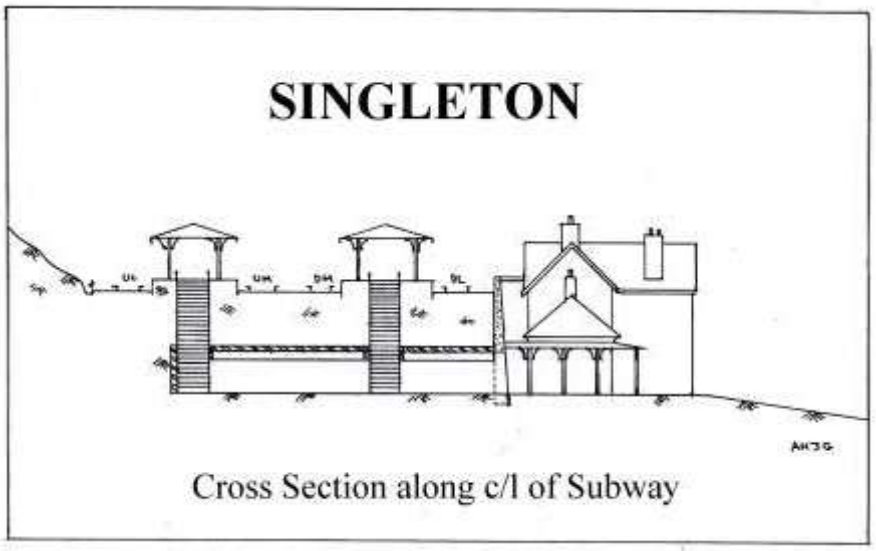

Fig 10. A cross-section through the station shewing how the difficult sloping site was accommodated by a massive retaining wall. The station buildings were linked to the platforms by a subway. (*Author*)

Fig 11. The entrance to the subway seen in 1981. Most of the render has fallen off the retaining wall revealing the rough mass concrete behind it. (*Author*)

A large water tower was built into the side of the embankment on the downside of the line at the country end serving three water cranes, one at the far end of each island and one at the turntable. Water was pumped up by steam from a deep well and on race days the pump engine would be in steam all day in order to keep the visiting locomotives in water.

A station fit for Royalty - as well as Racegoers

The station lay well back from the Midhurst road and was approached by a tree-lined drive rather in the manner of a country house, which only added to the Singleton Station ambience.

The considerable level difference between the track and the ground floor of the station building was accommodated by a massive retaining wall which flanked the building on three sides, but this was built, not of the conventional brick, but mass concrete, an early revival of this Roman construction technique. It is not the sort of concrete we would recognise today though; the aggregate size was huge with fist-sized— and bigger— lumps of flint set in a lime and sand matrix. The resultant rough surface and pour marks were disguised with a smooth render.

The station buildings were a variation on Myres' standard design with a large two-storey stationmaster's house, 'L'-shaped in plan, adjoining a single-storey section housing the booking hall and ladies' lavatories. All were adorned with his *leitmotifs* of

Fig 12. A platform-level view looking towards Midhurst in 1881, again from Banister's album. To the right the roof of the station master's house can be seen projecting above the parapet of the retaining wall. The up platform running-in board is of the early painted variety and the goods shed can be made out in the far distance. Hat Hill rises steeply away to the north. (WSRO)

stained glass, pargetting and mock timbering. A canopy along the front of the building provided a covered way leading to the entrance of the subway, whence steps took passengers to platform level. Adjacent to the subway entrance was what must have been the largest gents' lavatory on the system after Victoria. Very necessary as on the Brighton's non-corridor trains very few third class passengers had access to lavatories so they arrived cross-legged in urgent need of relief. Similarly, at the end of the day, having imbibed greatly at the races, they needed to prepare themselves for the long journey home. Heavy drinking was an occupational hazard at Goodwood Races – and still is.

At platform level both islands had full-width canopies and spacious waiting rooms, that on the down including a magnificently-appointed refreshment room 25 feet long with a counter displaying tempting arrays of the Catering Department's finest creations together with a bar and beer engines, all to fortify racegoers for their steep ascent to the course. As it was only open for the races staff and supplies had to be brought in specially during Goodwood Week.

However inconvenient its location *vis a vis* both Goodwood and Singleton, it cannot be denied that the station provided every comfort and a high degree of opulence. What a pity that for 51 weeks of the year most of its facilities lay unused.

Train services

At Midhurst the line from Chichester made an end-on junction with that from Pulborough and the two lines were operated as one with most trains from Chichester working through to Pulborough or beyond. Passenger trains could only cross at Midhurst or Singleton. The orientation of the junctions at Pulborough and Chichester* meant that trains from London could run through to Singleton via either Midhurst or Chichester and thus approach the station from opposite directions. Routeing via Chichester would have been a useful facility on race days to relieve congestion on the single line sections.

At the opening there were four passenger trains a day each way serving Singleton on weekdays and two on Sundays. In 1895 there were six down and seven up trains plus two each way on Sundays. By 1912 an extra down train had been provided at 1523 from Singleton to Chichester on Wednesdays, which was market day in Chichester. This was an unbalanced working and the coaches to form it worked down from Midhurst on the afternoon goods train whose wagons were shunted into the sidings at Singleton before the train continued as a passenger one.[11] At this time the number of Sunday trains increased to three each way, but the Sunday service was withdrawn at the outbreak of WWI and never reinstated. However, the weekday service in 1914 was increased to seven a day each way plus the Wednesday afternoon market train. Curiously, even with seven trains a day only one crossing move took place at Singleton, namely between 0857 and 0905, so, for 51 weeks of the year even the basic layout was heavily under-utilised. After the War the passenger service reduced to five each way. Goods workings in 1914 were complicated, and varied according to the day of the week with some serving only Singleton.[12]

Of the few pictures that exist of passenger trains on the Chichester-Midhurst service most are taken in SR days and shew D1class 0-4-2 tanks with a push-pull set. I would dearly like to get my hands on a special traffic notice for Goodwood Week to see just how many specials did run and how they were handled at Singleton, but my quest for such have failed dismally. If anybody out there has one such I would be delighted to hear from them!

One place for which Singleton *was* convenient was West Dean House. Once the seat of Lord Selsey it was acquired in 1891 by William James, a wealthy magnate who befriended royalty and entertained them there. The Prince of Wales, later King Edward VII, first stayed there in 1896 and usually arrived at Singleton by the royal train.[13] Royal visits always attract press attention and the *West Sussex Gazette*

* At Chichester the Midhurst line started within station limits, controlled from the west box, and ran as an independent single line alongside the main line before diverging at Fishbourne. Access to the line was gained at Chichester via cross overs. It was not until 1953 that a physical junction was installed at Fishbourne.

Fig 13. The LB&SCR royal train at Singleton, on a rather misty day, headed by class B4 4-4-0 No 60 *Kimberley*, having brought the Prince of Wales/King Edward VII from London. The train is standing 'wrong road', to facilitate the departure through the goods yard as mentioned in the text. Note the original painted running-in boards have been replaced by ones using cast iron letters. (*Author's collection*)

Fig 14. As so few pictures of trains on the line exist, even ones of poor quality are welcome. In this view of Singleton, taken in SR days but before the 1933 rationalisation, we see two trains on a race day. In the down loop is a race rain headed by a C2X class 0-6-0, and in the down main is what must be a service train headed by a D1 0-4-2T. The race train obviously arrived first, as witnessed by the absence of punters who would be making their way to the course. After the D1 has left for Chichester the C2X will shunt its stock. To the right of the picture vans can be seen standing on the former turntable road, confirming that the turntable was no more, so the C2X will have to run light to Chichester to turn before returning to London. Both trains display the Pulborough-Midhurst-Chichester headcode. (*Unknown photographer*)

duly reported the arrival of Edward VII at Singleton on 24 November 1904. It records that the drive had been "carefully swept" and that only railway officials were allowed on the platforms. It then goes on to say that "the King left the station by his usual route through the goods yard in a motor brougham". Leaving via the goods yard might sound a tad undignified, but apparently, to avoid HM having to descend the subway steps, a temporary bridge was always erected between the down loop platform and the horse dock, which the royal party crossed to join their motorcade and depart down the goods ramp.[14] Presumably the whole process repeated when he went back.

Royalty had traditionally stayed at Goodwood House for the races but, following a tiff with the 7th Duke of Richmond in 1899, the Prince of Wales transferred his patronage to West Dean and this continued throughout his reign as King Edward VII, his entourage always arriving at Singleton.[15] When George V came to the throne in 1910 regal relationships with Goodwood House were restored and the royal train now travelled to Drayton rather than Singleton at the start of race week.[16]

Retrenchment

Throughout the 1930s the Southern Railway was carrying out reviews of its less remunerative services and there were many casualties. As part of this review, negotiations took place in 1930 between Southdown Motor Services and the Southern Railway into ways of co-operating on certain routes in Sussex, which resulted in the Southern acquiring about a third of the bus company's shares.[17] It should come as no great surprise that Chichester to Midhurst should come under scrutiny as its passenger numbers, never magnificent, were fast declining.

In 1924 Southdown had introduced bus services from Chichester over the Midhurst road, namely Service 38 which ran to Singleton and then headed east to East Dean and Service 39/40 which also served Singleton but headed on north to Midhurst. Between them they gave Singleton a weekday service of 13 buses a day each way to Chichester and nine to Midhurst. The journey time from Chichester to Midhurst was 64 minutes against the train's 31, and Chichester to Singleton 28 minutes against 16 by train.[18] Although considerably slower, the bus service was much more frequent and had the distinct advantage of passing through the centres of the villages that the railway purported to serve and, when it got to Midhurst, dropped its passengers in North Street instead of three-quarters of a mile

away. By 1932 the bus service had improved with journey times from Chichester to Midhurst on Service 59 reduced to 52 minutes and making 17 journeys each way on a weekday all serving Singleton.[19] Service 58 to East Dean added a further five journeys from Singleton to and from Chichester. Vehicles had also much improved with the new Leyland Titans on pneumatic tyres giving a more comfortable ride than the solid tyred Tilling Stevens had done. It was difficult for the railway to compete with that – why walk a mile from the village to the station of the same name to catch an infrequent train when the bus passed your door? Understandably most transferred to the bus leaving schoolboys travelling to Midhurst Grammar or Chichester High School for Boys the principal users of Singleton station.

At first economies were affected. In 1932 booking offices on the line closed and tickets were sold on the train by the guard.[20] The following year all signalling was removed from intermediate stations and the line was operated as one long staff section from Chichester West box to Midhurst, the yards being worked by ground frames released by the train staff. Poor Singleton bore the brunt of the rationalisation; as well as losing both signal boxes, the up platforms were taken out of use and their tracks lifted so trains in both directions had to use the down main. The down loop remained but only for run-round purposes.[21] An intermediate staff post was provided at Singleton which enabled a freight train to be recessed in order to let a passenger train past, but as it was no longer possible to cross passenger trains the timetable was adjusted so that all trains now crossed at Midhurst.[22] Most significantly, this spelt the end of the race traffic; Singleton's Glory Days were over. As Drayton had also succumbed to the Southern's economies, closing in 1930, the only station for Goodwood was now Chichester. You could still book through to Goodwood Races but the last part of the journey was by a special Southdown coach which took you straight to the course. Arguably though this was much better than having to toil up Racecourse Hill from Singleton!

Fig 15. A Southern Railway ticket for tote staff to travel to Goodwood Races using a Southdown coach from Chichester to the course. (*Author's collection*)

Sadly, these economies failed to satisfy the company's bean counters and passenger services between Chichester and Midhurst were withdrawn on 8 July 1935, only 54 years, almost to the day, since the line opened.[23] Under the spirit of co-operation with Southdown the latter provided the only service to Singleton from now on, a sensible acknowledgment that this was a route which, for logistical reasons, was better served by bus. Singleton now had 22 bus services to Chichester as opposed to five trains: the line the LB&SCR directors did not want was not wanted by the travelling public either.

Freight Only

Goods traffic had always been the mainstay of the line and this continued after the passenger services had ceased. Singleton was particularly busy in this respect handling much timber from the sawmills at Charlton as well as milk, animals and agricultural produce outwards and (mostly) coal inwards.

Fig 16 A brass milk churn plate bearing the legend 'Return empty to Stay Singleton SR' Reginald Stay kept Cucumber Farm north of Singleton which is marked on the OS map in Fig 4 above. (*Author's collection*).

In 1948 the principal freight train of the day in the up direction left Chichester Yard at 0945 and arrived at Singleton at 1055 having played at Lavant for 48 minutes en route. It had a leisurely hour at Singleton before setting off for Cocking. The traffic was such that additional 'Q' (runs when required) workings were available at 1045 and 1400. In the down direction there was only a 'Q' working which arrived at Singleton at 1643 and left for Chichester at 1715. As such most of the traffic was in the up direction.[24] By 1951 traffic had obviously fallen off as there was only one train a day which left Chichester at 0930 arriving at Singleton at

Fig 17. The sorry scene of dereliction at Singleton after freight services had ceased and the demolition men were awaited. This is the down island platform looking towards Chichester with the water tower visible in the middle distance. Most of the glass has gone from the canopy and several of the valance boards have dropped out giving a gap-toothed appearance. Hardly fit for royalty now. (*Author's collection*)

1027 and leaving after only 23 minutes. The train ran through to Horsham.[25] As there were no longer any down workings all the train staffs piled up at Midhurst, and once a fortnight or so the S&T lineman had to go to Midhurst, release the staffs from the instrument and take them back to Chichester West box on his motorbike.[26]

The End

Through-working came to an abrupt end on 19 November 1951. During a storm the previous night a culvert on the sharp curve approaching Midhurst got washed away, as the crew of the daily freight discovered when their C2X, No 32522, plunged into the raging torrent.[27] Although the engine was eventually recovered and returned to service, the line did not. The freight service was cut back from Chichester to Cocking and then, in August 1953, to Lavant. Singleton's 72-year railway history had ended.

In 1955 the remaining track was lifted and all the platform level buildings demolished. The water tower lost its tank but the main structure – mercifully – survived. A scrap merchant took over the goods shed and the track bed became home to derelict army vehicles in the course of being dismantled. The station buildings survived though and in the 70s and 80s served as the winery of the Chilsdown Vineyard, processing the grapes grown on the sunny slopes of Hat Hill above the station.

Envoi

I first set eyes on Singleton station at the tender age of 11 when I cycled up the approach road whilst exploring the line with a school friend. We realised that here was something rather special, but at track level our wonderment quickly turned to fear when one of the scrap merchant's Alsatians appeared from the goods shed baring its teeth. We fled. Subsequent viewings were made from the field above, behind the safety of the fence.

Something of the spirit of Singleton is to be gained on the Bluebell Railway at Horsted Keynes. This, another large Myres station, has two island platforms linked by a subway, with one having a refreshment room with a bar and beer engines and, on event days, large crowds, albeit the latter are gricers rather than punters!

Following a Society visit to Singleton station in 2008, SIAS were successful in getting the goods shed

listed, this being important as it was the last remaining Myres specimen.[28] Then, out of the blue, in 2018 we were consulted about Historic England's proposal to list the remaining structures – the station buildings, the gents' lavatory and the water tower; needless to say we were vigorous in our support. Listing (GII) was confirmed on 27 March 2019[29] which will hopefully prevent their eradication by some future developer thus destroying this reminder of the Brighton Company's lack of prudence. At the time of writing work is in progress to convert the station building into two separate dwellings (the approved planning drawings shew that this will be sensitive to the character of the building) and the platforms have been cleared of the forest that had engulfed them: a new era is dawning on the slopes of Hat Hill.

Fig.18. The interior of the water tower in 2008. The tank had been removed leaving the building open to the sky, but the substantial cast iron beams were left in situ to brace the lofty structure. (*Author*)

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MALTING IN EAST SUSSEX

Peter Holtham

Malt is the brewer's main raw material. In Sussex most malting was carried out by the larger brewers for their own use. In the 18th century there was a considerable export trade in malt, Chichester being the largest production area. There were, however, a few maltsters who sold to the local general trade where their customers were mainly small publican brewers together with some private brewers. Quite considerable quantities of malt were wanted, mostly in small lots. Malting, however, takes up more space than brewing, and it was generally found more convenient to buy in small lots than make it at home. It was the business of the "maltster for sale" to supply this need. His business was seldom a large one, and was originally often in the hands of the farmers who grew the barley. Many farmers malted their own barley and that of neighbours, the business being carried out in combination with milling, baking, corn-dealing and other rural occupations. Some maltsters who were listed thus in trade directories were probably only dealers.

Ideally brewers preferred to have their maltings adjacent to the brewery, although often this was not possible due to the larger area of land required. Barley is 25% heavier than malt, and therefore more difficult to transport, so many malthouses were situated close to the barley fields where the maltster could watch the barley crop ripen and provide winter employment for farm labourers, as the malting season ran from October to about March to avoid the higher summer temperatures. If properly manufactured, a bushel—which is a dry volume of eight gallons—weighs 42 lbs (a bushel of barley weighs about 56 lbs).

Essentially, malting consists of the wetting and germination of barley, a process that in principle has changed little through the 18th and 19th century. One reason for this was the tax. Malt had been taxed continuously since 1711, and from 1830 to 1880 together with a small duty on hops, it was in effect the only duty on beer. The maltster was subject to quite tight controls by the Excise. Prior to the re-introduction of the beer duty, the duty on malt had in the previous 80 years varied between 2s 5d and 3s 8½d per bushel, although this was increased temporarily to 4s to pay for the Crimean War; it was abolished by Mr Gladstone in 1880. By entering into a security bond with the Excise the maltster was able to delay payment of this duty often until after he had sold it. It was, as the Allen brothers of Horsham discovered, quite an easy tax to evade, although there were severe penalties imposed on maltsters who contravened the regulations. There were in fact 101 possible penalties for quite trivial offences designed to aid detection but by 1849 these had been reduced to 32. It was an important tax to the Government, yielding as much as 8½% of gross revenue, which amounted to £4,845,948 in 1839.

Before he commenced to malt, the maltster would clean the barley of grit and foreign matter; the barley was then "steeped" by placing it in a cistern of water at about 55°F to allow the seed to swell and absorb moisture. The time spent in the steep varied according to the weather and the type of barley. When the malt duty was in force the minimum time allowed was 40 hours, although many maltsters preferred to take longer. The water was changed every 12 hours.

Malthouses were described by the capacity of their cistern, which usually varied from the smallest of four quarters (that is 32 bushels) to ones of over 80 quarters. A malthouse of up to 15 quarters capacity was a 'one man malting'; a 45-quarter house was reckoned to need three men. It was calculated that men worked at the rate of 15 quarters per week, but with some labour-saving machinery up to 25 quarters could be handled. The larger the cistern, the greater was the floor area needed to germinate the grain. This was achieved by building more floors, although houses built prior to 1830 tended to be single-floored.

On completion of steeping the grain consists of approximately 45% moisture and has absorbed oxygen, and extraneous matters have been removed. The starch has been mixed with the water enabling the enzyme diastase to commence modification on the germination floor. There are two types of diastase, one being responsible for converting the barley starch into more soluble malt starch, and the other being responsible for the further conversion of the malt starch into malt sugar or maltose. Whereas the former acts on the malting floors, the latter acts mainly in the brewer's mash tun although also to a certain extent on the malting floor where it forms soluble sugars.

The cistern was drained and the contents emptied onto the working floor in a pile three to four feet deep. When the malt duty was in force this was a distinct process known as "couching", and the Excise Officer who had already measured the volume of barley in

the cistern assessed the volume in the "couch frame" — a regular-shaped boarded area not more than 30 inches deep. This was done by measuring the width, breadth and depth of the carefully levelled grain, which the law required to be held for 26 hours to enable the officer to do so. No artificial compression was allowed, but there were many tricks of the trade such as "treading the couch", a popular but nefarious practice designed to reduce the duty. There were dire pains and penalties for those detected doing it, and it was sometimes the custom to station a small child in some hiding place from which he could give warning of the approach of the law in time for the culprit to get away from the couch and obliterate any sign of his crime. Skilled workers who could legitimately "throw heavy" were greatly sought after and received good wages for their art. After the repeal of the malt duty, couching lost much of its ritual importance and the couch frames disappeared.

The object of couching was to allow the grain to start germination and raise the temperature to about 60°F before it was thinned out on the floor at depths varying from 3 to 12 inches. Here rootlets begin to appear and the grain was worked and turned regularly with wooden forks and more recently by a mechanical plough. The temperature of the "pieces" which should not exceed 60°F was regulated by altering the depth and opening and shutting the windows. The time spent on the floor varied from 8 to 15 days depending on the type of barley, the weather, and the type of malt required.

When the maltster considered that the grain had germinated sufficiently it was piled high on the floor—a process known as "withering" which reduced aeration and increased the temperature.

The grain was now ready for drying in the kiln where germination was arrested by the hot air that passes up through the perforated floor from the fires beneath. The grain was first dried then cured, reducing the moisture content to 2%, the curing temperature being varied according to the type of malt required—the higher the temperature the lower the diastatic content and the darker the colour. The total process took from three to five days. Owing to the danger of arsenic being present in certain fuels, and following a scare at the end of the last century, only the best anthracite was used. The malt was finally bagged up ready for despatch to the customers.

Malting in Sussex finished in the 1960s but scattered throughout the county are many buildings still known as "The Maltings" or "The Malthouse" and the sites of many more are recorded by a present day "Malthouse Cottage". Because of their sturdy structure many have survived as village halls, clubs, cinemas and storehouses. They are easily recognised by the rows of small shuttered windows (for ventilation rather than light) often now bricked up, and one, two and occasionally three low floors (sometimes no more than 6' 6" high). The lowest floor was usually lower than the ground level to reduce temperatures and allow malting to be extended into the warmer months. In the roof were possibly more storage floors. One or more kilns with conical flues and cowls complete the identification.

Explanations of the text

Since directories are not 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. (B) means brewer, (B & M) means brewer and maltster, "VR" means visible remains.

ALFRISTON

"The George Inn", High Street

-1839+ Woodhams, John (brewer & maltster)
-1845+ Woodhams, Thomas (maltster)

BRIGHTON

(These entries are listed by streets arranged alphabetically)

The Black Lion Brewery malthouse
26, 22, 18, Black Lion Street

1744+/1770+ Hicks, William
1770+/1823 Chapman, William
-1828+ Buckman, John
-1834+ Chandler, Eliza
-1844+ Occupier not stated, owned by Chandler, E
-1850+ (Davis, Benjamin)
-1852+ (Longhurst, Henry B?)
-1854+ Hales John, Hinde & Fellows, Frederick
-1856+ Tombs & Hale.
-1859/61+ Hale & Fellows
-1863/74 Hale & Oxenham
1875/77 Hale & Baily
1878/87+ Chapman & Co.,.
1888 malting tfd to Conway Street, Hove

52, Carlton Row

-1874+ Tourle, James
1881/85 Chapman & Co.
1886 Ellis, R.T. & Co. (probably a tenant)
1888/90 Chapman

40, Cheltenham Place

-1864/1906 Ashby & Co.
1906/13 North Street Brewery
1913 closed— put to other uses
1994 demolished

86, Church Street

1850/86+ Vallance, Catt & Co.
(1894 became a Electricity Generating Station demolished 1895)

George Street, Eagle Brewery and Malthouse

1850/52 Whichelo, John
-1854 Horn, Henry
1854 Griffith, Charles
1855 brewery & malthouse empty

Hereford Street, The Rock Brewery

1873/1900 Willett, G.W.
1901/03 Rock Brewery Brighton Ltd
1904/24+ Willett, G.W.
1925+ Rock Brewery Brighton Ltd
-1926 probably ceased as a malthouse
-1928+ Portsmouth & Brighton United Breweries Ltd and Rock Brewery Brighton Ltd
1929/30 Rock Brewery Bottling Depot
present— no trace now as covered by housing

72, London Road, The Viaduct Brewery, later The Amber Ale Brewery

VR (Malthouse was to the north of the brewery)
1871/88 Longhurst, Henry (The Amber Ale Brewery)
1888 September — Henry Longhurst died
1888/98 Henry Braddock Longhurst
1898 (pubs taken over by Abbey & Son of Brighton)
4.10.1899 R Fry & Co. Ltd mineral water manufacturers
1901 Brewery premises demolished for road widening.
1910 The former malthouse became the present Duke of York's Cinema.

18, Manchester Street

-1832/33+ Smith, John

13 then 15, Montague Place, The College Brewery, (malthouse on brewery site)

-1854+ North & Marshal
1855/71 Marshall, Charles
1872/79 Hilder & Body
1880/81 Body, J.A.
1882/94 Hodges & Ritchie
1895/1900 Willett, William & Son
1901 taken over by Rock Brewery Brighton Ltd and used as a store. Premises put to other uses until demolition in 1988.

1/3, Nelson Row

-1824+ Slater, George (from Rate Book)

89/90, North Street The North Street Brewery, Malthouse on site

-1826/33+ Chandler, Eliza
-1837/59+ Smithers, Henry & Isaacson, Thomas
-1861+ Smithers & Son
-1863 The Brighton Brewery Co.
1864/1902+ Smithers & Son
-1904/05 Smithers & Sons
1906/c13 Smithers & Sons Ltd. Malted at Cheltenham Place and at Shoreham
1920 November—brewing transferred to The Portslade Brewery

The Cannon Brewery, 16, Russell Street

(Malthouse on site)
c1848/70 Barnett, John
1871/84 Kidd, John Mills & Frederick James
1885/97 Kidd, John Mills and Hotblack, Herbert Arthur—T/A Kidd & Hotblack.
1897/1900 Hotblack, Herbert Arthur T/A Kidd & Hotblack
1900/1906 Hotblack, Frederick Mills T/A Kidd & Hotblack
1906/26 Hotblack, Frederick Mills T/A Kidd & Hotblack Ltd
1927/64 Tamplin & Sons became a beer depot
c1966 demolished

The Bedford Brewery, 18, then 28, Sillwood Street, had malthouse on site and another at 40, Cheltenham Place

1846/48+ Keeping, John
1849/50 Keeping & Cheesman
1851/2+ Cheesman, Thomas & Co.
1853+ Ashby, William Grover & Silvanus
-1856/1906 Ashby & Co.
25.6.1906 conveyed to Smithers & Sons Ltd., of the North Street Brewery. Premises became the Bedford Garage and survived until 1981

South Road, Preston Village, The Preston Brewer
(Malthouse on Brewery site)

1801 (when sold by Bartholomew? Smithers) and later:-
-1852+ Brook, James & Co.
1855+ Brook, J & C and Ingold
-1858/73 Brook, J & Ingold, W
1873/84 Brook, Joseph
-1886+ Chandler, William
-1888/95+ Brook, J & Co.
Demolished1990s

14, Warwick Street, The Rock Brewery

-1844 Occupier Henry Catt Sewell, Isaac
1854 Ocupier Griffith & Sewell as Thrupp & Co.,
1856/61+ Catt, Wm
1863/65 Willett,wm
1866/1898+ Willett,George
-1900+ Willett, Wm & Son
1901/13+ Rock Brewery Brighton Ltd
-1914+ (Stores)
1930 No trace

The Kemp Town Brewery, formerly the Bristol Brewery, 6, Seymour Street, malthouse in Sutherland Road and at Shoreham

1860s Malthouse built at corner of Sutherland Road
1900/07 Abbey & Sons (Bristol Brewery)
1907 Malthouse badly damaged by fire, but repaired
1908/20 Abbey & Sons (Kemp Town Brewery)
1921/33 The Kemp Town Brewery
1933 March/64 The Kemp Town Brewery (Brighton) Ltd
1954 Taken over by Charrington & Co Ltd
31.3.1964 last brew
c1970 demolished

The Phoenix Brewery Waterloo Street North, (office) 1/3, Richmond Terrace

1821 Brewery founded
-1867 malthouse built at 114, Southover Street,
1867/89 Tamplin, William Cloves
1889 May/1962 Tamplin & Sons Brewery Brighton Ltd
1953 Taken over by Watney Mann Ltd
13.2.1962/1969 Tamplins Brewery Ltd
1969/73 Watney Mann (London & Home Counties) Ltd Malting carried out at Lewes.
28.11.1973 Last brew
c1980 Brewery demolished but the premises were retained as a depot and the malthouse as a store until 1991 when it was demolished.

COOKSBRIDGE

Hamsey, Malthouse for *The Cooksbridge Brewery*, *(Hewin Street), ¾ mile to south on A 275*

VR
1823 brewery established
-1839/51+ Cheesman, John (brewer only)
-1855/1912 Norman, George (brewer & maltster)
1912 Telling, H.G.
7.8.1912 brewery destroyed by fire. Off-licence sold to the Southdown & East Grinstead Breweries, malthouse let to parish council for a village hall

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DITCHLING

Sandrock Brewery, North Street

-1828/61+ Rowland, Peter (maltster)
-1869/77+ Unwins, William (brewer)
-1881+ Unwins, William (brewer & maltster)
-1886+ Unwins, Willam Robert (maltster) but 1885 "Sandrock Inn" sold to Mews brewers of Portslade

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EASTBOURNE.

The South Street Brewery, 2, South Street

-1773 Rason, John (brewery)
-1780 Rason, Samuel and William (Rason, William occupied a small malthouse)
-1784/93+ Chapman, George(?)
-1802+ Hurst, George(?) (B & M)
-1811/14 Richard Buckley Stone in partnership with David Chapman (?)
-1832+ Newnham, John
-1845 Hurst Family
1845/65+ Cooper, Robert
-1869 Cooper, Bros. tfd to Junction Road

The Eastbourne Brewery, Junction Road

1869/73 Cooper Bros. Archambo and Charles (B & M)
1874 voluntary liquidation

The Star Brewery, High Street, Old Town

(Malthouse on Brewery site)
1777 Brewery established by Hurst, William
-1802/39+ Hurst, George (B & M)
-1845+ Hurst Harry
-1852+ Hurst, Alexander
-1859/86 Hurst, Alexander & Co. "Star Brewery"
1886 Became public company purchased by Colonel Cardwell
1965 t.o.b. Courage Barclay & Simmonds Ltd
1967 brewing ceased
c.1971 demolished after fire damage

The Lion (Steam) Brewery, 2, Pevensey Road
(Malthouse on Brewery site)

VR at TV 616990
1858/61 Diplock, Caleb & son—wine & spirit merchants only
-1865/69+ Diplock, Caleb & son (B & M)
-1873/81+ Diplock, Son & Pepler
1885/90 Young & Rawley
1890/1914 Young & Rawley Ltd.
1914 Bankrupt, t.o.b. Abbey & Sons of Brighton, premises became a bus depot.

Susans Malthouse, South Street/Seaside Road

-1828/39+ Fi(e)lder, Joseph

HAILSHAM

Battle Road

1839 Pagden, Peter (M & B)

Hailsham Brewery, Battle Road

A Malting block is thought have existed to the right of the present old brewery buildings
1809 Brewery founded
1839 Pagden, Peter (B) & (M)

HERSTMONCEUX

Gardner Street

-1873+ Johnson, Frederick Henry
1870/75+ Harmer, James (B & M)

The Old Brewery, Gardner Street

1839 Everest, James (B) & (M)
1845/52 Everest, Mrs Mary
Then
1862/66 Harmer, James (B) & (M)
(-1869/75+ at Windmill Hill)
1870 Aylard, Thos John (B)
1890/1911 Wright, Robert (B) &(M)

HOVE

Blatchington Road/North Place??

-1851 Vallance, John Brooker

and:-

15, Conway Street

1885/89 Chapman & Co.
1890 Keeping & Co.
1891/98 Chapman & Co
1899/1900 Chapman & Co "Black Lion Brewery"
1901/12 Rock Brewery Brighton Ltd
1913/30 Abbey Brewery
1930/57+ Portsmouth & Brighton United Breweries Ltd
-1963/65+ Brickwoods Ltd
1968 April — demolished

Hove Street site now covered by present "Connaught" pub

-1827/40+ Vallance, John Brooker (owner)
-1850+Davis, Benjamin
-1861/69+ Longhurst, Henry
-1873/77+ Tamplin, William C.
-1880 demolished, pub built

LEWES

The Bear Brewery, Bear Yard, High Street, Cliffe

(Malthouse in Foundry Lane)

VR

1838/c56 Wood, George & Alfred (B & M)
-1858/95+ traded as Monk, Edward & Sons
1888/9 T J & E Monk
1889/98 E Monk
January 1898 Taken over by Southdown & East Grinstead Breweries, brewing ceased

The Bridge Wharf Brewery 6, Cliffe High Street

Had a malthouse in what is now Malling Street in the Cliffe opposite the "Dorset Arms"
1838/55 Harvey & Son
1855/1928 John Harvey & Son
1929/present Harvey & Son (Lewes) Ltd
Malthouse demolished date uncertain probably c1904

The Castle Brewery, Castle Gate Street

VR

Had the malthouse nearby built c1852
1839/55+ Langford, Alfred (B & M)
-1856 Frederick Langford
1858 bought by Beards Brewery
1948 became a food store
1980s became E.S.R.O.

Cliff Brewery, South Malling Steam Brewery, South Malling Brewery
135, Malling Street, South Malling

1821/42 Berry, Thomas (B & M)
1842/45+ Wymark & Son
1845/49+ Berry, Henry (maltster)
-1855+ Collyer, Ralph "Cliffe Brewery"
-1858+ Goldberg, Casimir J.A.
-1861+ Gresham, Wiles & Brown "Cliffe Brewery"
1864 brewery rebuilt after a serious fire
-1865/69 Elmsley, Alexander "Cliffe Brewery",
1869/76 do. "South Malling Steam Bry"
1876/77+ Elmsley & Freeman
-1881+ Elmsley & Co.
-1886/90+ Lyell Brothers

The Southdown Brewery, Thomas Street, Cliffe

Malthouse in Daveys Lane

VR

1838 (brewery built)

1838/43 Hillman & Thomson
1843/+ Hillman, John
-1849/69+ Hillman, John & Alfred (M & B)
-1873/87 Hillman, Alfred
1888/93+ Hillman, Bernard & Harold
1893 Manning, A.G.S. & T.S.
1895/1920 Southdown & East Grinstead Breweries Ltd.
1920/24 leased to Tamplins of Brighton
27.3.1924 sold to Tamplins Ltd. of Brighton,
1963 Malting ceased, premises put to other uses

The Southover Brewery, Southover,

VR
c1780+ Brewery founded by William Verrall (lived 1721-1788)
-1784/1805+ Verrall, William (son), Verrall, John was the maltster
-1823+ Verrall, Henry & Cave, Stephen
-1828/90 Verrall, William (father & son). (B & M)
1890/97 Verrall, Francis
1897 Brewing ceased, Croydon brewery
1905 demolished

Ballards Brewery, Bell Lane, Southover

(Malthouse on Brewery site)

-1845+ Morris, Joseph {maltster}
-1848/51+ Morris, William {maltster}
-1858/69+ Morris, Mrs Ann {brewer}
-1861/69+ Morris, Benj. {maltster}
-1873+ Trower, George
1878 Brewery Rebuilt
-1877/1898 Ballard & Co.
1898/1924 Ballard & Co., Ltd (H.J. Beeman).
1924/1930 Page & Overton
1930 closed

16, Station Street

VR
c1733 built for Ashby, William
c1749+ Cooper, R.C.
23.1.1840/56 E Beards
-1863/69+ Hale & Oxeham
-1885 Ellis, Archibald
1886+ Ellis, R.T. & Co.
-1898 Owned by the Bear Brewery of Lewes

and:-

Gables Cottage, Southover

-1668/-1772 Dunke, Richard

Cliffe

-1740/45 Attree, William

Cliffe

-1731+ Palmer, Joseph

-18, High Street, Southover

-1881/1886+ Hogflesh, John

Adjacent "Swan", High Street, Southover
-1824/28+ Davey, John
-1839+ Davey, Thomas & William
-1861+ Davey, Thomas

Malling Street

-1849/61+ Mannington, Peter

opp. "Dorset Arms" Cliffe

-1793 Harben, Thomas
1793/+ Wille, George

St John Street

-1839+ Cripps, John
-1784+ Harben, Henry
-/1793 Harben, Thomas

NEWHAVEN

The Ship Brewery, 6, High Street

1791/5 Tooby, Reginald
1795/1827 Wymark, Thomas

The Tipper Ale Brewery

c1760 Tipper Ale Brewery founded by Thomas Tipper.
1785/1829 Dean, Edward
1821/29 leased to Brooker, Richard
1829/37 Brooker, Richard (B & M)
1837/58 Stone, Thomas (B & M)
1860/86 Stone, George & Towner, Robert
1886/+ Towner, Robert
-1898+ Towner Bros. (C.W., E., and H.A.)
-1902/11 Towner, Charles William
8.8.1911 taken over by Rock Brewery, Brighton

Bishopstone Tide Mills

1801+ Catt, William
-1824+ Brooker, Richard & Catt, William
-1832/58+ Vallance & Catt

NEWICK

Newick Brewery, off High Street

-1845+ Gilbert. William & James (B & M & beer retails)
-1861/71 Kenward & Capps (B & M)
1871 Gilbert, William
1881/2 Brewery rebuilt, malting may have ceased?

PEVENSEY

-1839+ Fowler, William coal merchant & maltster

PORTSLADE

The Southdown Brewery, The Portslade Brewery, High Street, malthouse to north

VR
1849 founded by John Dudney
1849/69 Dudney, John
1869/84 Dudney John & Sons
1881 Brewery expanded malthouse probably built
1884/1919 Mews, Walter & Herbert and Dudney, William T/A Dudney & Sons & Co.
1919 Business sold to Kemp Town Brewery of Brighton who sold the brewery building on to Smithers & Sons Ltd of Brighton together with some of the pubs.
1920/1929 Smithers enlarged the brewery and closed their Brighton plant..
1929 Company shares purchased by Tamplin & Sons Brewery Ltd of Brighton
21.8.1930 Brewing ceased
20.3.1931 Business conveyed to Tamplin & Son's Brewery Brighton Ltd
1938+ Premises survive having been put to a variety of other uses.

"Kings Head", Fishersgate Terrace

-1851/58+ Collins, Edward (brewer & maltster)
-1869+ Smithers, Henry (maltsters)

and:-

-1858+ Abbey, Henry at Fishersgate

RINGMER

Wellingham Brewer

-1839/66+ Durrant, Robert (B & M)
-1839/58+ Berry, Henry Ebenezer (and at Lewes)
-1861/69+ Chambers, Richard

and:-

Loughton

-1845+ Hide, William (maltster and farmer)

RYE

The Strand Brewery, The Strand

(Malthouse on Brewery site)

-1798/1824 Meryon, Lewis (died 1824) (B & M)
1824/50 Meryon, John & Holloway, William
26.6.1850 premises sold.

and:-

-1798+ Proctor, Nathaniel (maltster and corn merchant)

SEAFORD

Locations unknown:-

-1828/32+ Brooker, William (B & M)
-1765 Chambers, James (Maltster)
-1839+ Godden, Edward (Maltster & Butcher)
-1839+ Gorring, Thomas (Maltster?)

UCKFIELD

Church Street

VR
1812/28 Kenward, William (died 1828)
-1828/51+ Kenward, Edward (maltster)
-1855+ Kenward, Edward (brewer & maltster)
-1858+ Kenward, Edward (brewer at East Grinstead)
1861 widow
1862 no trace

WILMINGTON

At Milton Court Farm

-1851/55+ Ade, Charles (M)
-1861/66+ Ade, John Stephens (M)

Acknowledgements

Sources of information include:-

Steeped in Tradition by Jonathan Brown, University of Reading (1983).

The Maltster's Materials and Methods by H M Lancaster, The Institute of Brewing (London 1936).

Information supplied by Miles Jenner head brewer of Harveys Brewery.

The main source, however, has been the County and Town Trade Directories found in the various reference libraries.

Photographs have been taken by the author except for those of Kemp Town Brewery, Hove, and South Malling that are attributed to the Regency Society.

N.B. It is hoped to record the Maltsters of West Sussex in the next edition of *Sussex Industrial History.*

TURNPIKE SURVEY – DEVELOPMENT AND ADDITIONS

Brian Austen

The Sussex Industrial Archaeology Study Group was founded at an inaugural meeting in October 1967, and following offers of assistance, had identified and set up within the first year a number of survey groups with appointed co-ordinators. *Newsletter 2* listed these and one was titled "Tollhouses and Milestones" with myself as its leader. On 13 August 1968 a meeting had been held at Ardingly College which featured an illustrated lecture by J.R. Armstrong on turnpikes. A wooden toll board, originally displayed at Northchapel toll house, and then in the collection of the Haslemere Educational Museum, was on display (fig. 1). This was earmarked for the proposed Open Air Museum at Singleton. It was agreed that those with photographs and knowledge of toll houses and stones should provide such information from which a list could be compiled. By April 1969 a set of recording notes had been published and a list of 128 tollhouse/ tollgate sites, based on documentary evidence, had been prepared. In *Newsletter 5* of April 1970 information on further milestones was featured.

Apart from the *Newsletter,* a journal under the title *Sussex Industrial History* commenced in 1970/71 and this was to feature the first Field Guide in issue 5, compiled by John Hoare and John Upton, with 38 entries, 26 of tollhouses, with grid locations, and four milestones. Five of these tollhouses and milestones were illustrated. Briefly, both the publications ceased, the *History* until issue 6 dated "Winter 1973/4" and the *Newsletter* now numbered "1" and dated January 1974. Both included the changed title of the organisation, now "Sussex Industrial Archaeology Society".

In this first phase of activity field surveys were commenced. The first of these dealt with the milestones in East Sussex and was published in *SIH* 5 (1972/73). The survey and recording was carried out by Brian Austen and John Upton. As turnpike trusts were required by highway legislation to set up markers providing locations and distances to the places served, it was these roads that were first examined. In the case of the A22 to Lewes and Eastbourne, the B2026 across Ashdown Forest to

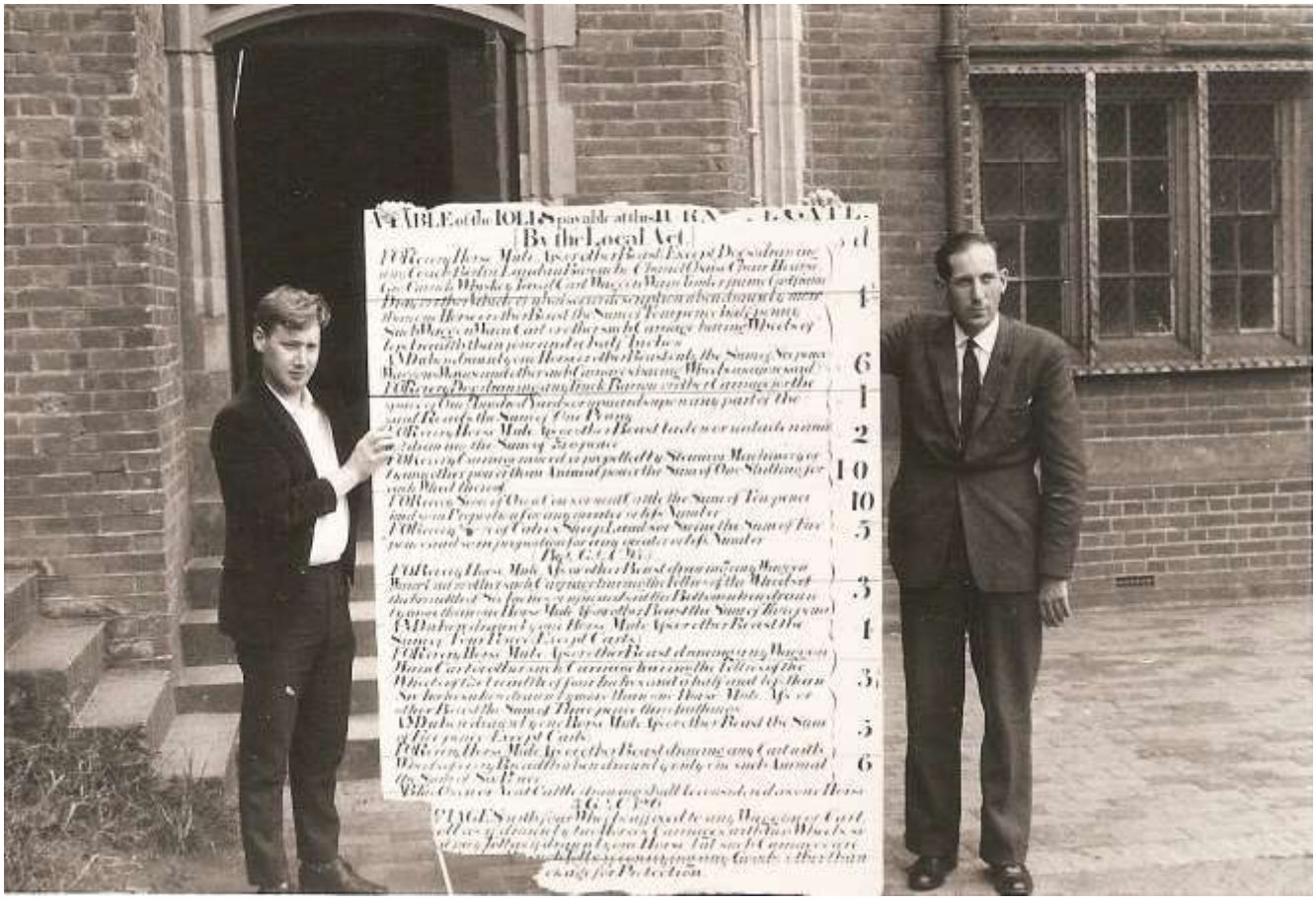

Fig. 1. Toll board from Northchapel Toll House on display at Ardingly College, 13 August 1968

Westerham and the A268 to Rye from Flimwell the majority of markers were still in place and relatively well maintained. Elsewhere, with a few isolated examples, they were missing. During World War II milestones were lifted and stored and some were never returned at the end of the war.

Milestones were set up by the turnpike trusts, and where a standard pattern was adopted, these can be found on both sides of the county borders established in 1888. Some councils were proud of the distinctive posts that they inherited and maintained them in good order, providing replacements where required. Where posts of a common design crossed county borders these were traced in our survey to the end of the turnpike and thus posts in Surrey and Kent may be found on the *SIH* listings. Cast iron plates, provided by local iron founders, proved the most durable mile indicators; often they were attached to oak supports. Milestones fabricated from locally available sandstones were the least durable, and only isolated examples were located with inscriptions often unreadable. Private milestones provided along estate roads and drives and at estate entrances were included. The growing interest in milestones resulted in attempts at private restoration, especially following the setting up of the national Milestone Society in 2001. This Society relies on the enthusiasm of local members and is strong in recording road markers in some counties and areas, but less so in Sussex. An update of the East Sussex milestone survey was published in *SIH* 7 in 1976.

From this date to 2005 little was published in the Society's Newsletter or Journal. This should not be interpreted as a period when no research was taking place. I (Brian Austen) was beavering away recording material in a number of black files that I maintained, culled from published works such as town and village histories, published maps and late eighteenth to early nineteenth century road guides, of which Patterson's *New and Accurate Description of Roads* and Cary's *A New Itinerary … of the Great Roads* proved the most worthwhile. It soon became clear however that turnpike gates were often not marked in such works. Also the survey was hindered, as the appointed head of the survey was reliant on public transport. John Blackwell and Peter Holtham had for some time dedicated their Mondays to active research together, and John suggested that we should devote time to this county-wide road survey. Starting in the western part of the county, towns that were important road hubs were identified, and used to define areas that could be selected to divide the county into suitable and related points on which to focus.

The first of these was Chichester, with Midhurst and Petworth to its north. This area had established a frequently found pattern of roads leading from the northern boundary of the county towards the coast, with less frequently used roads providing some west to east connections. As with later surveys, the County Record Offices provided the large scale local maps, and from the associated books indicating details of the property and ownership could be identified. The size of the toll houses and the exact location could be found together with the existence of side gates to control traffic joining the turnpike at this location; large scale Ordnance Survey maps also proved useful. Record Offices contained Turnpike Trust records, but few had survived; local solicitors were often clerks to the Trust and after their abolition records were destroyed as redundant, and only in a few cases entered the later established County Record Offices, and even less frequently local historical societies, with their archaeological bias.

The County Library Service started to take an interest in local history and gradually built up their collections; information was scattered and the search time-consuming. The fact that the County had been divided into two in 1888 and turnpike trusts did not recognise such modern divisions meant that material for the same area might be found in both the West and East Sussex Record Offices. Some Libraries like Chichester, Worthing and Hastings had useful local material, but all were looked at no matter how small.

With the information collected it was then possible to visit the sites of toll houses. These simple two-roomed buildings provided for the toll collectors had in the main been demolished in the late nineteenth and twentieth centuries, sometimes to improve visibility at road junctions for increased road traffic. Where they survived they had been greatly enlarged and altered; some photographic evidence had been found. Further difficulty resulted from the identification of two room farm labourers' cottages on estates, being named as toll houses, and so regarded over a number of decades. Our survey was able in a number of cases to identify such "fakes" and also to locate a number of toll houses not previously identified. Martin Snow joined the survey and greatly helped with the later articles.

Needless to say, I was given the honour of writing up the survey articles which were published in *SIH*. *T*hose resulting from our many miles on the road were:

35. 2005 "Turnpike Roads to Chichester, Petworth and Midhurst"
36. 2006 "Turnpike Roads to Arundel, Worthing and Littlehampton"
37. 2007 "Tollhouse & Milestone Survey" (New information on previous surveys)
38. 2008 "Turnpikes to Horsham"
40. 2010 "Turnpikes to Steyning, Henfield and Shoreham"
41. 2011 "Turnpikes to Brighton"
42. 2012 "Turnpikes to Lewes and Newhaven"
43. 2013 "Turnpikes of the High Weald"
45. 2015 "Turnpikes to Hailsham and Eastbourne"
46. 2016 "Turnpikes to Battle and Hastings"
47. 2017 "Turnpikes to Rye"

During the period of the publication of the survey two additional turnpikes trust articles were contributed to *SIH* which were:

37. and 38. John D. R. Townsend "The Cowfold and Henfield Turnpike Trust 1771-1877"
43. 2013 M.J. Leppard, "The Turnpike through East Grinstead"

We have also since the original publication had additional information from a number of members and this is recorded below. It has been divided into two. The information in this article refers to the Western part of the county of Sussex. An additional article for the Eastern part of the county will follow in a later issue of *SIH*. This will cover the areas to the east of the main turnpike roads extending north of Brighton towards London.

BRIDGES AND TURNPIKES

Guildford and Arundel Turnpike and Queen's Head Bridge, Pulborough *SIH* 36(2006) p13

In 1757 an Act was passed authorising a turnpike from Guildford to Arundel through Alford, Loxwood, Newbridge, Adversane, Pulborough and Coldwaltham terminating at St. Mary's Gate, Arundel (29 Geo II c60). John Mills of West Sussex County Council has provided details of petitions to parliament in 1778 (*Journals of the House of Commons* 36 p 878) regarding the turnpikes and Pulborough Old Swan Bridge which was on this line of road. The petitioners were from the parishes of Billingshurst, Kirdford, Wisborough Green, Slinfold and Rudgwick and were concerned with the terms of the renewal of the original Act on its expiry after 21 years. They were particularly concerned with the section of the road between Roundstreet Common in Wisborough Green and Codmore Hill which they claimed had not been repaired adequately, or mile stones provided in accordance with the terms of the original Act. As a result of this the road was "in the winter season very ruinous". Turnpike gates were mentioned in the original act at Roundstreet Common and Pulborough Bridge and these the petitioners claimed should not be operated with the road in its present state. Although the petition was refused, it was clear that the position was unsatisfactory and the renewal act of 1778 specified that no toll was to be taken at these two gates from 1 June until the road was properly repaired. The county bridge at Newbridge, previously of wood, was to be rebuilt in stone and was completed in 1787. The Pulborough Bridge, probably also of wood, was to receive similar attention. It was clear however that the Turnpike trustees did not have the funds to effect repair, so there was no alternative to its reversion to County control. There was fortunately an alternative solution to the problem. The Petworth Trust had taken over the road from that town to Stopham Bridge, and this existing road from Pulborough to Fittleworth Common provided a route over existing parish roads to Arundel, avoiding the persistent flooding on the bank of the River Rother, south of Pulborough. The turnpike south of Newbridge was abandoned by parliamentary act from 5 July 1799 and returned to parish control.

Norfolk Bridge tollhouse, Shoreham *SIH* 40(2010) pp 36-37

Martin Snow in *The Sussex Industrial Archaeology Society Newsletter* 165 (January 2015) pp 16-19 provides additional information on the tollhouse at the Shoreham end of the Norfolk Bridge, the only survivor of the four toll collection booths built in connection with the new bridge over the River Adur of 1833. Although considerably enlarged from its former size at the beginning of the twentieth century, it had been assumed that the structure incorporated the 1833 build. As such it was listed by Grade II* in 1972 by English Heritage and that the enlargement was part of the 1923 rebuild of the Bridge when the other three toll booths were demolished. Using photographic evidence, Martin

Fig. 2. Norfolk toll bridge, Shoreham. Alterations made in 1923 showing enlarged toll house at east end with one of the original toll booths opposite which was removed at the same time (*SAS Marlipins Museum*)

shows that the enlargement was made in two stages, the first between 1875 and 1898 and a further extension completed by 1923. The original entrance facing north on to the bridge was either moved to, or replicated at the south side of the enlarged building (fig. 2). As a result of this research English Heritage had de-listed the building by 2010 on the basis that there was insufficient of the original building remaining in situ.

TOLL HOUSES

Bines Toll House TQ 189193 *SIH* 40 (2010) p.26

Horsham and Steyning Trust 1764

This turnpike was set up in 1764 to connect Horsham with Steyning, the first section following the original A24 towards Southwater. The first toll house was at Picts Hill a short distance to the south of Horsham and Bines was the second, on the B2135 just to the south of Partridge Green. The Horsham Gate toll house survived until 1926, when it was demolished. The *SIH* article illustrated this house based on a painting c1922 by W.H. Russell. No illustration of Bines was located at the date of publication. Colin Rudllng has located an illustration from the *West Sussex Gazette* of the Bines toll house in its dilapidated state as it was in 1938. A somewhat clearer photograph stated to have been taken in November 1937 has also been located (fig. 3). It was described in the caption to the newspaper

Fig. 3. Bines toll house, 1938 (*Frank Gregory*)

illustration as being a "three bedroomed" dwelling and appears to be the original two-roomed toll house with a later extension. Like other toll houses on this Trust it is weather-boarded and possibly had a tiled roof, though it is in such a distressed condition and overgrown by foliage that this is uncertain. Fig. 3 confirms this. It follows the pattern established on this trust for their toll houses, best illustrated by the Beeding toll house now at the Weald and Downland Museum at Singleton.

Additional information about toll gates and toll houses

Turnpike roads were set up under powers contained in private parliamentary acts. Decisions to move gates and their toll houses needed to be publicly advised by advertisements in local newspapers; also by the late eighteenth century tolls were often collected by farming the gates to private persons at an agreed annual rent. The toll farmers appointed their own employees to man the gates and collect the tolls, and the farmers expected to make a profit for themselves. Advertisements were placed in local newspapers asking for tenders and these quite frequently list the gates and the amounts paid by the farmer for the previous year. Such changes needed to be discussed and approved at meetings of the trustees of the trust and recorded in the minute books of the Trust; unfortunately most of these minute books no longer survive. Local newspapers can be an additional source of information on such matters, and John Blackwell has spent time trying to locate relevant advertisements, using the on-line British Newspaper Archive extensively; the following notes are the result.

Chichester and Fernhurst Trust *SIH* 35 p 30

A notice published in *SWA* of 21 Aug 1826 stated that "the Trustees will cause to be removed the turnpike gate or toll bar from North Heath to Easebourne Pound and also cause to be erected a side bar at or near Easebourne Pound across Dodsley Lane leading to North Mill and Midhurst". North Heath was north of Easebourne and no earlier or later references to this gate are known. Easebourne pound (for stray animals) is shown on the Easebourne Tithe Award of 1847 (TD/W45) as a one-perch plot (Ref 344a) owned by The Duke of Norfolk within the grounds of the toll house site (Ref 344).

Fig. 4. Gyles Gate, Horsham and Epsom Trust (*Dorking Museum*)

Horsham and Epsom Trust *SIH* 38 p18-19

Much of this Trust was within the county of Surrey. The Dorking Museum has an image of Gyles (Giles) gate (fig. 4) probably at West Humble, Surrey TQ169519. The letting of tolls at this gate is recorded in *SWA* from 5 Oct 1812 to 1879 and in the *Petersfield Express* of 30 Sept 1879; it was probably one of the original gates on the Trust. Warnham Mill Gate was included in the toll lettings from 1866-79. All of the gates on this Trust were advertised to be let in 1866; in the previous year £1,000 was paid (*Chichester Express & West Sussex Journal* 6 Jan 1866) and in 1879 when the previous year's rent was shown as £1,726 (*Petersfield Express* 30 Sept 1879).

Horsham and Steyning Trust *SIH* 40 p26

Additional Horsham Gate

A notice in the *SWA* of 27 July 1811 stated that "the tolls that arise at the gate between Horsham and the Barracks which have never been let will be put up". These tolls together with those of the Horsham Gate were let together until 1816 and all references to this short-lived gate cease in 1819.

Crock Kiln (or Wappingthorne) Gate TQ 189144

South of Ashurst church and variously known as Crock Kiln or Wappingthorne, and even Ashurst Gate. In May 1802, the date of its establishment, stated to be three miles south of Southwater; tolls for this gate were often let with those at Bines. The toll house was on the west side of the road where a lane led west to Calcott Farm. In 1820 the toll collection for Crock Kiln and Bines were let at a combined annual rent of £100 revenue. The poor yield was no doubt the cause of this gate being discontinued. The toll house was sold by the Trust in 1860.

Crouch Hill (Henfield) and Ditchling Trust 1777

Hurst Gates and Hassocks Gate *SIH* 40 p32

The gate set up at TQ 288160 and referred to in *SIH* as Hurstpierpoint East was officially known as Tot Gate after a nearby farm, and was advertised for rent under this name in *SWA* of 2 November 1835. The gate was let in this year for £98 and in 1836 for £142. Its life was relatively short and the Trustees met on 13 August 1839 with a view to discontinuing in that year of either the Hurst West Gate or the Tot Gate, and also "The Hurst side gate leading from the town of Hurstpierpoint towards Cobbs Mill".

Hassocks Gate TQ302155

Until 1820 this gate was referred to as Clayton Gate. The imminent arrival of the London to Brighton Railway led to several meetings of the Trustees between November 1839 and August 1841, a month before the line opened ,"to discuss the repositioning of the Hassocks Gate situated on the approach to the new Hassocks Gate station". Two ideas emerged: the "re-erecting between the Brighton and Cuckfield Turnpike Road (B & C) at Stonepound, and the present site" and "taking down and re-erecting between the B & C at Stonepound and Spitalford Bridge" (Hassocks). No decision was found, but interestingly neither Hurst West Gate nor Hassocks Gate were listed when the tolls were advertised for letting subsequent to 1839. Only Blackstone, Chestham, Tot and Muddleswood Cross Gates were let in 1838 at £57, £37, £135 and £18 respectively.

Brighton and Lovell Heath Trust 1770

Preston Side Gate TQ 302065 *SIH* 41 pp 44-45

The Trustees proposed to erect a gate across Drove Lane (now Preston Drove, Brighton) leading out of the village towards the Brighton, Ditchling and Lindfield Turnpike Road (SWA 23 September 1847) and this is listed in the letting of tolls from 1848 together with Preston Gate. It was discontinued when the Preston Gate was removed to Patcham in 1855.

Tushmore Lane Gate TQ 269379 p47

The Trustees proposed to erect a gate (probably a side gate) across Tushmore Lane, Crawley *SWA* 23 September 1847). The gate is listed in notices for the letting of tolls from 1848 to 1857. A further notice in the *Brighton Gazette* of 11 March 1858 announced a decision by the Trustees to remove and discontinue the toll gates at Crawley North and Tushmore Lane; neither is recorded in subsequent toll letting notices.

Newchapel and Brighton Trust 1770 p48-51

Froggett Heath TQ 338402

This toll house is shown on a deposited plan (ESRO 88) of the New Chapel to Brighton Trust dated 1824 and named as Froggett Heath and this was located at this grid reference. Doubt has been expressed with regard to a gate named West Park as the name has not been found in notices listing gates for lease by this Trust. It would therefore seem likely that there was not a toll named as West Park and the name was used in the original article merely to

suggest its location. The other toll, named Froggett Heath in the original article, is clearly shown on the deposited plan at TQ 362423 and may simply have been referred to as Newchapel.

Wallage Gate TQ 341370 and Wallage Lane (TQ 340368)

The movement of the gate to Wallage Lane was discussed at a Trustees Meeting in November 1837. To further complicate matters a gate named Crawley Down at TQ 338381 appears in a list of tolls to let in 1865 (*Chichester Express* 14 November 1865) and is shown and named on the 1875 1:2.500 OS map with a gate across the road.

Rookery Lane TQ 333227

At the junction of the Turnpike with Rocky Lane which now is part of the A272 Haywards Heath Relief Road. The tolls are first listed for letting in 1838 (*SWA* 24 September 1838), it is shown on the Keymer tithe map. In April 1863 the Trustees decided to "remove the present side bar or gate and erect in lieu a toll house and toll gate across the road at a point where the parishes of Cuckfield and Wivelsfield join" (*Brighton Gazette* 16 April 1865). It is still shown on the 1875 1:2.500 OS map with the toll house on the west side of the junction and a gate across Rocky Lane in the same position as the tithe map.

Hill House Gate

Correction to NGR. Should be TQ 315069

Under Hill Gate

A gate using this name was listed in tolls to be let in 1863 and 1874 (*Chichester Express* 14 November 1863 and 20 October 1874) but was absent from the 1875 1.2500 OS map. Such a gate would control traffic using Underhill Lane, which extended from Westmeston to Clayton village where it connected with the London to Brighton turnpike via Cuckfield. A likely site for the gate is at Clayton TQ 327138.

Pyecombe and Hickstead Trust (1808) *SIH* 41 2011

Hickstead and Bolney Gates pp 53-55

A special meeting of the Trustees was called on 29 September 1829 to consider the propriety of moving the Hickstead Cross Gate to Bolney Cross" (*SWA* 10 Sept 1829). Although the new gate was not erected at Bolney Cross Roads by 1832, the gate appears in a notice to let for one year from 29 September and Hickstead Cross was omitted (*SWA* 23 July 1832). In November 1837 another special meeting "to consult about erecting a tollgate on the east side of the turnpike road at or near a place called Hickstead Cross Ways and across a certain highway leading from the said turnpike road there to St Johns Common" and also on the west side across a highway leading to Twineham "together with houses and other conveniences" (*SWA* 30 October 1837). In 1839 Hickstead side gates appear in a notice of tolls to be let (*Brighton Gazette* 19 September 1839). During the period from 1829 to 1834 a short-lived gate known as Cobbs Mill Side Gate TQ 270189 was included in the letting of tolls. The 1874 1:2500 OS map names Hickstead Side Gate (s) with a small building immediately to the north of the Castle Inn, on the west side of the road and south of the road to Twineham. This could be the toll house which is not shown on the 1911 OS map, supporting the statement of Mr Simmonds that it was demolished c1910.

MILESTONES

Southwater milestones

Horsham and Steyning Trust

See "Turnpikes to Steyning, Henfield and Shoreham" *SIH* 40 2010 pp 27-28 and "Feedback" in *Milestones & Waymarkers* 2012 pp 48-49.

Lionel Joseph reports in the Milestone Society publication above, that he has produced a replica 47 milestone which is displayed on the road north of Southwater and provides an illustration of the stone. The new one installed has additional lettering above the mileage number and on the reverse, to identify it as a replacement. This can be compared with the original 40 milestone shown in the *SIH* article (fig. 5). Although the two are similar in shape and size of the lettering is not an exact copy.

Fig. 5. Southwater, Horsham and Steyning Trust, original 40 milestone and replica 37 by Lionel; Joseph

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