

Newsletter

No 163 May 2008



The demise of Swallow's Tiles, Cranleigh (1860 - 2008). The drying sheds have held their last 'green' tiles.



The empty kiln after the last firing. The side barriers sent the heat upwards, to be deflected downwards through the stacks of tiles.

The last of the hand-made tiles are crated-up ready for dispatch.



Members' Talks - 4 December 2007

Traditional Brick and Tile Making -

Three short films made & presented by Neil & Pat Cryer

Two very short films were shot on a visit to a working blacksmith museum in Orkney. The first was on making a poker and the second showed the blacksmith playing a joke on the film makers.

The main film was on brick and tile making, shot at Bulmer Bricks and at Swallow's Tiles - the latter being a visit organised by Surrey Industrial History Group.

The film showed the entire process from digging the clay through to forming the bricks and tiles and firing them to produce the finished products.

This film is particularly poignant as Swallow's factory has since had to close down, having been in production since 1860. See back page for some last pictures. ☼

SIHG is a group of the Surrey Archaeological Society, Registered Charity No 272098
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Reports & Notices

Details of meetings are reported in good faith, but information may

SIHG Visits, Details & Updates at www.sihg.org.uk

Please renew your **SIHG Membership** promptly so that the Membership Secretary is not overwhelmed at the last minute! Fill in the Gift Aid Declaration and we can claim back some tax.

SIHG AGM & Conservation Award Presentation for 'The Spike'

After a brief AGM at 1400 on Saturday 12 July 2008, there will be a presentation and a talk by a representative of The Charlotteville Jubilee Trust. This will be followed by refreshments and a tour of the site.
The Spike is in Warren Road, Charlotteville, Guildford

SIHG Visit to Surrey Hills Brewery

Saturday 21 June. Visit to Surrey Hills Brewery Ltd, Old Scotland Farm, Staple Lane, Shere GU5 9TE, 01483 212812.
A small independent local brewery with award winning beers.
Minimum number of people in each party 12, maximum 25.
Cost £8 per head, to include several tastings. **MORE PARTICIPANTS NEEDED!** Names and money (cheques made payable to SIHG) please to Tony Gregory, 3 Scotlands Close, Haslemere, Surrey GU27 3AE by 14 June.

Archaeological Training Excavation at Downside Mill, Cobham

Saturday 2 to Sunday 10 August. The dig will be directed by Tony Howe of the Surrey County Archaeological Unit.
For details see www.sihg.org.uk.

WANTED! - For enjoyable duties!

Volunteers to staff the **SIHG exhibits** (Gantry Crane and Wind Pump) on '**Rustic Sunday**' 27 July, stints between 1000 and 1700 at the Rural Life Centre, Tilford.
An excellent opportunity to enjoy all the fun of the fair - bands playing, Elouise, steaming, wood workers working, engines hissing, dogs performing, and all the rest!
Please ring Tony Stevens, 01483 565375 for details and instructions if required.

Help to Run SIHG!

1. Please put forward suggestions for **new committee members**.
2. We are in urgent need of a new **Treasurer**. This post is vital and needs someone who is hard working and conscientious.
However, the post is not all that onerous as SIHG is part of the Surrey Archaeological Society and the formal accounts are presented by the parent body.

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DIARY

The 33rd series of SIHG Industrial Archaeology Lectures

alternate Tuesdays, 1930 - 2130, from 30 September 2008, University of Surrey (Lecture Theatre F).

Enquiries to programme co-ordinator, Bob Bryson, meetings@sihg.org.uk.

Prompt payment for the series means you can claim a discount

Maps at www.sihg.org.uk. Free parking is available in the evening on the main campus car park.

Single lectures at £5, payable on the night, are open to all.

Other IA Organizations - Contacts, Venues & Times

Amberley Working Museum is off the B2139 between Arundel and

Storrington, next to Amberley railway station in West Sussex. Free parking.

Crossness Engines, Belvedere Road, Abbey Wood, London SE2. £4 adults. Visits must be booked in advance, Tue or Sun, 0930 - 1530 on 020 8311 3711 (no booking by answerphone). Visits start at 1330. Public steaming days are 1030 - 1630, £5 adults; booking is not required. www.crossness.org.uk.

Greenwich Industrial History Society The Old Bakehouse, rear of Age Exchange Centre, 11 Blackheath Village, SE3 (opposite Blackheath Station) at 1930.

HIAS (Hampshire Industrial Archaeology Society): Underhill Centre,

St John's Road, Hedge End, SO30 4AF at 1945; visitors welcome, free parking.

Kempton Great Engines 1100 - 1600. Adults £6, OAPs £5, Children (to 16) free. Feltham Hill Road, Hanworth, Middlesex TW13 6XH; 01932 765328, www.kemptonsteam.org.

Kew Bridge Steam Museum, Green Dragon Lane, Brentford, Middx, TW8 0EN; open 1100, 0208568 4757, www.kbsm.org.

Lowfield Heath Windmill, Russ Hill, Charlwood. 1400 - 1700. Mike Harrison 01293 862374 or Peter James 01403 272664

Newcomen Society (London): Fellows' Room, Science Museum, Exhibition Road, London SW7 2DD at 1745.

Newcomen Society Portsmouth (Southern Branch), Room 0.27, Portland Building, University of Portsmouth, St James Street off Queen Street, Portsea, at 1830. Free parking from 1630, visitors welcome & admission free.

Rural Life Centre, Old Kilns Museum, Tilford, Farnham, GU10 2DL,

Wed - Sun, 1000 - 1700, £6, over 60s £5, children 5-16, £4, www.rural-life.org.uk.

Upminster Windmill, St Mary's Lane (on A124). 1400 - 1700. 01708 226040, www.upminsterwindmill.co.uk.

The deadline for **submitting copy** for the next Newsletter is **two months time**.
Submissions are accepted in typescript, on a disc, or by email to news@sihg.org.uk.

Anything related to IA will be considered.

Do, please send in reports / photos of holiday visits or thoughts on local, national or international Industrial Archaeology.

Priority will be given to Surrey-based or topical articles.

Contributions will be published as soon as space is available.

Readers are advised that the views of contributors are not necessarily the views of SIHG.

This edition of the Surrey Industrial Group Newsletter has been reformatted so that it is more easily read online or printed out as a PDF.

Diary entries have been curtailed to cover SIHG events only.

Other editorial matter is practically as originally published.

Many thanks to all who have sent in contributions.

Website: www.sihg.org.uk

Surrey Industrial History Group Officers

Chairman & Lectures Organiser: **Robert Bryson**, meetings@sihg.org.uk

Secretary: **Alan Thomas**, info@sihg.org.uk

Treasurer: **Robin Turier**

Membership Secretary: **David Evans**, membership@sihg.org.uk

Newsletter Editor: **Jan Spencer**, news@sihg.org.uk

Diary May

- 31 May Roman Studies Group of Surrey Archaeological Society: Aqua Britannica:
A Conference on Water in Roman Britain, Chertsey Hall, Heriot Road, Chertsey, see www.sihg.org.uk.

Diary June

- 21 Sat **SIHG**: Visit to Surrey Hills Brewery, see page 2.

Diary July

- 12 Sat **SIHG AGM & Conservation Award Presentation for The Spike**,
Warren Road, Charlotteville, Guildford. See page 2.
- 27 Sun Rural Life Centre: Rustic Sunday, including **SIHG** exhibits
Gantry Crane & Wind Pump - appeal for help page 2.

SIHG Lecture 8 – 5 February 2008

Aspects of Surrey Motoring

*by Gordon Knowles,
President Leatherhead & District
Local History Society
report by Mike Davison*

In England it was Surrey, partly because of its location between London and the coast, that found itself in the forefront of road and then motor transport development. The last turnpike in Surrey had been opened between Godalming and Dunsfold in 1836, but generally roads were not in good condition. However all that changed in 1914 when the SCC set up its own asphalt plant in Dorking - this was the first in the country. After the 1914-18 war several by-passes were built, with the Guildford by-pass being opened in 1934.

Gordon then introduced us to the life of John Henry Knight. Born in 1847, Knight, from Farnham, was one of the pioneers of motoring in Surrey. It was mainly due to him that the 'Red Flag' Act was repealed. In 1895 he deliberately flouted the law by driving up Castle Street, Farnham, exceeding 4 mph. He was fined for this, but the news got into the national press and the law was eventually changed. One of the results of this was the holding of the first London to Brighton run in 1896 - known as the Emancipation Run.

John Henry Knight was very inventive and made, among other things, a steam car, an agricultural 'digging machine' and an oil engine running on paraffin. In 1895, having seen the work of Karl Benz in Germany, he constructed a single cylinder motor tricycle, running on benzolene, with the sparking plug made from an insulator. This vehicle was later improved and the single front wheel was replaced by two, with rope transmission being replaced by leather belts. Knight is thought to be one of the first to drive a British car with an internal combustion engine on a

public road. It eventually achieved 10 mph and is now on show at Beaulieu.

Surrey had over 100 different motor manufacturers, each making just a few cars. Many of these manufacturers had started as blacksmiths or bicycle makers. Receiving special mention was Dennis Bros. of Guildford - they started by selling bikes, then moved on to making a motorised tricycle with a De Dion Bouton engine. Another product was a 10hp car that sold for 320 guineas, and before long they were turning out buses and fire-engines. Dennis occupied the Rodboro Building from 1903 to 1919, and today this is the oldest surviving purpose-built multi-storey car factory in the world.

Several other Surrey car makers were mentioned - such as the Lagonda factory in Egham and AC Cars of Thames Ditton which in 1913 produced a racing car that achieved 45mph at Brooklands. ABC Motors of Hersham made a strange contraption in 1911 - a car with a propeller at the rear. It was not successful. Slides of several "odd" cars of this period were shown.

A brief history of motor sport at Brooklands followed. The circuit was started by the Hon. Hugh Fortescue Locke King, an early motoring enthusiast, as was his wife Dame Ethel. Many records were set at Brooklands, and it was the home of the world speed record up until WWI. Later, some cars were fitted with aero engines. Many famous names are still associated with the circuit - such as Malcolm Campbell in his Bugatti, Parry Thomas (sadly killed in his car) and John Cobb's Napier Railton - in which in 1935 he set an unbeaten lap record of 143 mph. Today this fine car is on display in the Brooklands Museum.

Well illustrated with a large selection of slides, Gordon's lecture gave us a fascinating insight into this aspect of Surrey's industrial past. ☀

Use of the London & Brighton Railway Merstham Tunnel Surveying Observatory as an Air Route Beacon

by Paul W. Sowan
Vice-President & Librarian Croydon
Natural History & Scientific Society
Chairman Subterranea Britannica

Further to my article about the London & Brighton Railway's surveying observatory at Merstham tunnel (*SIHG Newsletter* 76, 7-9 (1993)), I have now elicited some details from the Croydon Airport Society (courtesy of PE Skinner) of the use of this structure as an Air Route Beacon.

Mr Skinner writes as follows:

To assist aerial navigation along the prescribed routes from Croydon Airport to the Continent, a number of facilities were provided. These included landing grounds, other than aerodromes, at Penshurst, Marden, and Littlestone in Kent, and a number of powerful Air Lights (air route beacons.) The beacons were situated on high ground at Tatsfield and Cranbrook, c. 1922, and much later at Merstham in 1931.

Information regarding the installation of the beacons was relayed to pilots and other interested parties by means of NOTAMs (Notices to Airmen) issued by the Air Ministry on an 'as required' basis. NOTAM No. 56/1931 was issued on 12th September 1931 concerning the installation of an Air Route Beacon at Merstham. The information it contains is mostly self-explanatory. The visibility under average conditions is given as 50 miles. The beacon rotated and emitted white light in the form of two Morse dashes (- -), signifying the letter M (Merstham) as it did so. The time

per rotation was 5.6 seconds and the time of the two Morse dashes and the associated eclipse (light out) was 2.8 seconds. Hence there were two 'Ms' per rotation.

The NOTAM was cancelled by No. 6/1933 but this is an index (tidying up) exercise listing those NOTAMS that were still current. We are not sure when the Merstham beacon was discontinued in use, but this may have been at the start of WW2. We do not know when the use of the Merstham beacon was discontinued as we have no NOTAM referring to this.

The beacons were normally supplied by the Automatic Gas Accumulator Company (AGA) and were 'automatic' as they incorporated a light sensitive cell that would activate the beacon when light levels dropped to a certain value. The 'fuel' used was provided by acetylene cylinders, presumably stored in the observatory base, so a permanent staff was unnecessary.

Notice to Airmen 56/1931 states the structure to be a 'red brick conical tower 36 ft. high' sited at an altitude of 567 feet above sea level 'immediately over the railway tunnel, 1 mile N. of Merstham, and 5½ miles S. by W. of Croydon Aerodrome.' The light was 37 feet above ground level, so right at the very top of the tower.

There remains the question of what function, if any, the tower might have had during World War II, when of course the last thing Croydon Airport needed was a light to guide incoming aeroplanes!

Might it have served as a rather draughty and lonely lookout post? Presumably the restricted space at the top of the tower was insufficient for a searchlight or an anti-aircraft gun. ☀

Recording Factory Closures

A good opportunity to record the history & to rescue traditional papers & machinery! *If you hear of a factory which is about to close, please report it to us; contacts on page 19.*

Sadly, we have to report the closure of Swallow's Tiles, Cranleigh, founded in 1860. Information about the firm and its manufacturing processes has been recorded; details will be made available in due course.

We have also visited a small octagonal pump house, which is due to be demolished, at Mickleham near Dorking.

The Origin of Redhill Aerodrome: a brief account

by Brian Buss, *Horley Local History Society*

Gatwick Aerodrome opened in August 1930 owing to two young men with energy and enthusiasm for flying. Ronald Waters and John Mockford wanted to move their young company, *Home Counties Aircraft Services Ltd* from Penshurst to an aerodrome of their own, (*Gatwick: The Evolution of an Airport, John King, 1986*). Redhill Aerodrome came four years later and four miles north of Gatwick but by just one person with probably even more passion and energy for flying, but the events that led up to it were entirely different. In fact, it could be said that if it were not for the death of another flyer it might never have come about.

He was Lt Col Henderson, who had a pilot instruction and joy-riding company in the 1920s called Henderson Aviation Bureau Ltd. In July 1930 he crashed in Kent and was killed, (*Croydon Airport 1928-1939, D Cluett 1980*). Hence his company ceased to operate and a new company was formed and registered on 6 April 1932 at Croydon Airport, called British Air Transport Ltd (BAT), (*Companies House Records 00264228*). It purchased for £3000 all the business and assets of the Henderson company and commenced instructional flying at Croydon Airport. By then airport had become extremely busy and it decided to ban all flying training after 31 August 1932. BAT, therefore, within 5 months of starting to operate, was forced to find another base to continue its business.

A few days before this date a young person in his late 20s named Geoffrey Last, returned from work on a tea plantation in Ceylon where he took his first flight as a passenger and was obviously so enthralled with his experience that he wanted to learn to fly immediately he arrived home. He had just a few lessons with BAT instructors at Croydon before the company had to move, (*The Log Books of Geoffrey Last, RAF Museum*).

In late 1929 a company called Henlys (1928) bought or leased 45 acres of land sitting atop of a ridge at New Addington, SE of Croydon for the purposes of flying training and maintenance of aircraft, but during 1930 permission was refused, (*Airfields of Britain Vol 1*). Another aviation firm, General Aircraft Co appealed against the decision but again it was dismissed, (*Godstone RC Mins Nov 1931*). However, in early September 1932, BAT moved its operations to this aerodrome, but it is not known whether it put forward another proposal or whether it purchased the land. Whatever happened, it gained permission and moved there within a few days of the Croydon Airport ban and Geoffrey Last was said to be one of the first persons to fly from this new aerodrome.

By November he had soloed and just three days before he did so he had joined the Board of BAT at the young age of 27. Just one month later he had bought his own aircraft, a DH Moth and had entered in his log book after a flight from New Addington, '**Redhill Prospecting**'. It is not known whether he had already

chosen Redhill as a suitable site for an aerodrome or how he was able to buy 190 acres when Hamme Farm at South Nutfield came up for sale, estimated to cost around £12,000, (*Surrey History Centre CC99/90/14*). In May 1933 his wife had also joined the Board of BAT and Geoffrey had become its MD. He personally applied for permission through Godstone Rural Council to use this land as an aerodrome and a Ministry license was granted in 1934 (*GRC Mins Mar 1933*).

However, during 1933 BAT moved its aircraft and business from New Addington to Gatwick Aerodrome. Various reasons were given for this, like the field was too small, planning permission for a housing estate was under consideration, etc, but there is some suggestion that BAT was once again forced to move before its own aerodrome was ready for use. Again, Geoffrey Last made the first landing at Redhill on 23 August 1934 and it became operational before the year was out.

During the following year, Redhill Flying Club came into being and Geoffrey Last became the Manager with membership number one. A clubhouse and a hangar were erected and both remain in use to this day and Hamme House was turned into a country club, (*The Aeroplane, March 22 1935*). It is not known why Geoffrey Last and his wife resigned from the BAT Board and moved to the west country around 1936, nor why he did not fly again until 1939.

He did join the ATA as a ferry pilot and became a naval test pilot during WW2 after which he flew with several airlines up to the time he retired in 1969. Geoffrey Cecil Harrison Last, to give him his full name, can be said to have identified where Redhill Aerodrome would be located, gained permission for its use and created Redhill Flying Club, almost single handed, yet nowhere is his name remembered for this. Perhaps, through what has been found by this research, this might be corrected.

It is ironic that he is remembered by most aviation historians to have piloted the last scheduled aircraft to fly out of Croydon Airport on 30 September 1959 when it was officially closed, but not for his achievements with respect to Redhill Aerodrome. His name and selection for this last flight is said to have been purely coincidental.

BAT remained the owners of the aerodrome until 1968 since when it has changed ownership several times. Little did Geoffrey Last know when he selected the site that one day it would find itself within the Green Belt. So far this has protected it from residential, industrial and aeronautical-type development, but it has not been for the want of trying by its present owners.

Brian Buss would welcome any memories, photographs etc of the early days of this aerodrome to expand his research. Please phone 01293 782231.

Brian Buss and Peter Amos worked at the Aerodrome during the 1950s and are researching its history in association with the 'Wings' museum, which is in the original hangar. ☀

SERIAC 2008

The Making of London and the South East

The conference, held at the University of East London Docklands Campus on 19 April, was chaired by Prof David Perrett, who announced that this was probably the best attended meeting of its kind ever!

The following account is based on the summaries provided by the speakers.

Keynote Lecture: Making the Metropolis. The Importance of Bazalgette & the Metropolitan Board of Works *by Dr Denis Smith*

'Few, if any, cities, nor even docks, railways, or other engineering works have originally been laid out with sufficient regard to the probable demands of the future. The thoroughfares, sewers, and water-supply, constructed for a city containing a few thousand of inhabitants, become totally inadequate to the wants of a population which has grown into millions' (Bazalgette, 8 Jan 1884). For centuries, management of such problems lay with ad hoc Commissioners, of short duration and of little influence, until the passing of the 'Act for the better Local Management of the Metropolis' in 1855. This established the MBW with Bazalgette as Chief Engineer. His team of engineers and architects undertook a prodigious programme of works including, roads, tunnels, embankments, steam ferries, and monumental works in the field of sanitary engineering.

A Lesson for IA - The King's Cross Railwaylands *by Charles Norrie (SERIAC Bursary Presentation)*

Charles believes that we cannot simply mourn for a lost industrial golden age, but must actively seek to use the tiny amount of influence given to the IA community to change the perspective of those, who see the remains of the past as dirty old objects fit only for removal creating a clean brown field site.

Henry Doulton; Sanitary Engineer & Potter *by Brian Bloice*

Doulton, son of the founder of the Doulton's Pottery Factory, built up the business from a small workshop in Lambeth to the multi-national firm it was at the end of the 19th century. He took over the business during a period of great improvement in the domestic sanitary arrangements in London and at the same time as the implementation of the London's new sewage by Bazalgette. He guided the firm through the period of great demand and competition for sanitary fixtures and fittings. Using the vast income derived from this very successful period in the pottery's life he was later able to invest it in the studios that produced the art wares the firm was, and still is renowned for.

Plotting the Progress - Exploring Industrial Development with Maps *by Roger Cline*

Insurance maps, with their constant updates, provide a detailed insight into industrial development.

Directing the Great Forces of Nature for the use and convenience of Man: The Art of the Georgian Engineers *by Alan Green*

The Georgian era saw the creation of what we would now call *transport infrastructure*: turnpike roads, canals, docks and the first railways. Such infrastructure called for some great feats of civil engineering and spawned the rapid growth of a profession in which Britain was to be the world leader. Alan will look at the lives of two great Georgian engineers, Thomas Telford and John Rennie, and their works in the SE and the birth of the Institution of Civil Engineers - the first such professional body in the world.

Taking Railways to the South from the Metropolis *by Gordon Knowles*

The first true railway opened in 1836 between Spa Road and Deptford and the earliest terminus the same year at London Bridge. Charing Cross and Cannon Street stations were opened in 1864 & 1866 and Victoria in 1860-62, Waterloo had replaced Nine Elms in 1848. As the railways expanded the battle for supremacy in Kent raged over the routes ¹to the Medway towns, to Hastings and Dover. In East Surrey the London & Brighton had battles with the London & South Western. There were two east-west routes which intruded into L & S W territory resulting in difficult operating conditions for many years. These were the Reading, Guildford & Reigate by the South Eastern, and the Horsham & Guildford Direct by the London & Brighton. Several towns in the SE were created or stimulated by the railway. Ashford in Kent was a small sleepy village and Brighton a well-known resort until the workshops brought increased employment. Redhill, originally Reigate Junction and Woking were created by the railway.

Sir William Fairbairn, Millwright & Engineer *by Brian Strong*

In the absence of the speaker, who was indisposed, David Perrett, Denis Smith & James Sutherland did a commentary to Brian's slides.

Fairbairn, a Scot, is best known as one of the many who helped drive engineering in Manchester. However from 1836 he also had a shipbuilding yard in London and machinery to his designs was installed in House Mill at Bromley-by-Bow. ☀

SIHG Lecture 5 - 20th November 2007

Loyal Servants of the East India Company

by Janet Bateson, RH7 History Group

report by Anne Lea

A trading company and the foundation of the British Empire, the East India Company controlled Britain's trade with the Spice Islands (Sumatra and Java), India and China for over 150 years.

The East India Company was founded in 1600 although the Levant Company had carried on an overland trade for many years bringing high status and exotic goods to the British market. Sea routes had been established and were dominated by the Dutch. The Levant Company continued to trade overland and the East India Company set out to break the Dutch monopoly of the lucrative spice trade.

Thomas Smith was governor of the company for the first 21 years with only a few gaps. Two hundred subscribers raised the £70,000 to fund the first voyage of four ships. Leading the expedition was James Lancaster. The cargo was textiles together with £28,000 in bullion. The voyage took 15 months and was nearly a disaster as the woollen cloth failed to find favour in the hot climate of Indonesia. Lancaster resorted to piracy to obtain more acceptable goods to barter. This was to become a familiar pattern over the years with the East India Company and their Dutch rivals always willing to make the most of any opportunity to increase their profit. There was plenty of profit to be made. In 1620 a cargo of 250,000lbs of pepper, bought for £26,041, sold in Britain for £208,000.

The first trading post in India was at Surat. Later Bombay, Madras and Bengal (based at Calcutta) formed the three presidencies, with local governors, essential as the East India Company Board was 18 months away. The company produced its own currency - Rupees. The company had very much its own way in India. China was a very different proposition. It was a very old market for exotic goods but it was not until 1685 that the ports opened to foreign trade. The tea trade grew rapidly. Over 2.5 million pounds of tea were sold for five shillings a pound, more than twice the price paid. The profit was more than the total revenue from India. Canton developed as a trading port with the monopoly held by England. Trading was limited by the weather to October to March and for the remainder of the year foreign traders were at leisure in Macau. The company recruited many Chinese sailors and initially they were frequently discharged in London, penniless and with little English. From 1814 onwards the East India Company was forced by a new Act to provide accommodation and the basic necessities.

The company grew opium in India, initially as a medicine but later it was auctioned in India and then smuggled into China, though never in company ships. The income was laundered in London or India and the silver generated paid for the Chinese trade.

Docks and shipping

Initially based at Deptford dockyard, the East India Company built its own dock at Blackwall in 1614. Each ship was expected to complete four trips, a life of about 10 years. Only about 5% were lost at sea. Each ship was the length and breadth of about four London buses. Deptford dock was surrounded by foundries, spinning sheds, rope walks, slaughterhouses etc, providing employment for 500 men. By 1806 the newly completed East India Docks could handle 250 ships at any one time. Goods were unloaded by barge onto the quay and along a specially constructed road into the 4000 warehouses where 400 clerks waited to record the details of the transactions.

Military

The ships were heavily armed in an attempt to reduce the losses to piracy. The British army stationed in India was subsidised by the company, peaking at 250,000 men, less than 45,000 were British or European. Increasingly their target was territorial gain, the company became a political power. Officer cadets to serve with the East India Company were trained at Absome (later Addiscombe) House. They were highly educated, studying engineering, military history and philosophy. Promotion was on merit. The college closed in 1861.

Civil Service

A 'writer' could earn up to £1,000 per annum. A 'supercargo' might achieve £9,000pa. It was not unusual to speak 8 languages. However, the life of a company employee could be short. Half of all the employees died in the service of the company. Between 1747 and 1756 in Bengal the death toll for staff was 74%. The company established convalescent homes on the hill stations, often treating drug or alcohol problems. This was not an altruistic act. Sick employees sent home to recover were taking up too much room on the voyages. In 1828 there were 749 sent home. This had decreased to 345 by 1830. Those sent home for mental problems including opium addiction were treated at Pembroke House in Hackney. Once home the company encouraged the family to take responsibility.

The Legacy

Two million of the company 'servants' rest in Indian graves.

The East and West India docks were amalgamated in 1883. Around Blackwall the street names reflect the history of the area. The Chinese community developed in Limehouse where the tea was originally landed. Opium was legally available in England until 1914. Lloyds of London now stands on the site of East India House. Even the language reflects the trade of the East India Company. We have gained words such as punch, meaning 5, reflecting the five ingredients in the traditional drink) shampoo (Hindi for massage, wash and rub) and juggernaut. ☼

SIHG Lecture 9 – 19 February 2008

The Sentinel Steam Waggon

by Jim Hatfield,

Chairman Sentinel Owners Club

report by Robin Turier

The Sentinel Company was established in Glasgow in 1874. It manufactured marine steam auxiliaries for ships, air compressors and mining equipment.

In 1896 an Act of Parliament eased the restrictions on steam road vehicles. Simpson steam waggons were introduced in 1899. They were light in weight and featured a vertical boiler in the cab and an underfloor, six cylinder 8.5 horsepower engine driving the rear wheels. Subsequently, the Simpson Bibby waggon was produced, featuring a four cylinder single-acting engine, flash boiler and wooden wheels.

In 1904 Sentinel made an experimental waggon and the following year brought out their first waggon catalogue. Waggons had a water tube boiler at the front of the cab, Ackerman steering and a two cylinder engine with poppet valves activated by sliding camshafts. Engines produced up to 70 brake horsepower at 70 rpm. Steel boilers were supplied by a feed pump when the engine was running, supplemented by an injector to maintain the water level when the engine was stationary.

In 1912 Sentinel built 'over type' waggons to compete with the Foden design. In these machines, the cylinders and motion are mounted on top of a horizontal boiler. Sentinel built only about twelve waggons to this design before reverting to the vertical boiler format. A drawback of this format was the heat loss from the steam pipe between the boiler and the engine. Superheating was standardised to counter this loss. Sentinel developed the design of wheels and tyres for the best results.

The company moved from Glasgow to Shrewsbury in 1917 and in 1923 the Super Sentinel was unveiled. This had a spiral tube boiler and a smaller engine with two camshafts and a maximum speed of 500 rpm. Super Sentinels were built until 1932. A lightweight version was produced in 1942.

The DG6 Sentinel was produced from 1927. This had a new engine with two camshafts, capable of 1,000 rpm. The cross water tube boiler had a grate area of four square feet and a working pressure of 230 psi. Chain drive linked the engine to the rear wheels. The maximum road speed of a DG6 was twelve mph.

In 1933 the S6 was a new venture, running on pneumatic tyres. This had a lighter weight than the DG6. The boiler was moved to the back of the cab. It had a pressure of 255 psi and showed economies in the use of fuel and water. Four-, six- and eight-wheeled versions of the S6 were available.



Until recently Sentinel Waggon, type S4, vintage 1934, was sponsored by the Hog's Back Brewery.



The Sentinel company became involved with Aber Doble, an American producer of steam cars and commercial vehicles. This led to the construction of oil-fired and coke-fired machines (coal was the normal fuel) and some waggons were built with condensers. However, these ventures bankrupted Sentinel.

In 1951 the company built a last batch of 100 waggons for export to Argentina and in 1951 built its last steam waggon. Diesel waggons were built for a time. Eventually the company was taken over by Rolls Royce, who destroyed many of the records. Sentinel steam waggons were last used for commercial service in 1970, in Sheffield.

The speaker's own waggon was originally designed to carry a concrete mixer. It is a DG6, works nr 8213, registration GF 8655, built in 1930. He showed slides of its various components. Finally, he spoke about the pleasures and challenges which members of the Sentinel Drivers Club experience in maintaining, driving and firing their waggons in the 21st century. ☀