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Hampshire Industrial Archaeology Society

Journal No. 24

(2016)



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Front cover picture:

Romsey signal box on 9th March 1980, a couple of years before closure. (Neil Kearns)
[see page 15]

Back cover pictures:

Top: Edwin and railways: on the Brecon Mountain Railway in 1987. (Tony Yoward)
[see page 4]

Middle left: Man operated treadwheel in Beverley Minster, Yorkshire. (Martin Gregory)
[see page 25]

Middle right: Twyford Waterworks, the door to the 1905 engine house with the stonework engraved for Southampton Corporation, superseding the South Hants Waterworks Co.'s inscription. (Martin Gregory, Twyford Waterworks Trust)
[see page 24]

Bottom: A mural of the locomotive 'Preston' reminds residents that they live on the terminus of the former East Southsea railway. (Ray Riley)
[see page 13]

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Hampshire Industrial Archaeology Society

(formerly Southampton University Industrial Archaeology Group)

Journal No. 24, 2016

Contents

Editorial ……..……..1
The Contributors and Acknowledgements……2
Edwin Course
Pam Moore ...……..……..……3
Decline and Fall of Urban Industrial Archaeology? The Portsmouth Case
Ray Riley ……..……...……7
Romsey Signal Box Renaissance
Howard Sprenger ..……..……..15
Southampton's Water War: a tale of Local Authority *versus* Private Company
Martin Gregory ……..…21
The Treadwheel as a source of power
Tony Yoward ……..……..…….. 25

Editorial

The first article in Issue **24** of our *Journal* pays tribute to Dr. Edwin Course who died in February at the age of 93. Edwin, in a lifetime of teaching at Southampton University, founded and guided SUIAG/HIAS in its many activities; recording, preserving and restoring. Without him, Twyford Waterworks would not exist today. He was also the founding editor of this journal, editing the first nine issues.

In subsequent articles, Ray Riley looks back on the fate of important industrial buildings in Portsmouth over the past thirty years and provides us with a checklist of what survives and what has gone. The story of the rescue of Romsey signal box (Howard Sprenger) is a success story. We wish the new working museum well in the future. The story of Southampton Corporation against the South Hants Waterworks Co. shows that conflicts over the ownership of public utilities are nothing new. The waterworks concerned, Twyford Waterworks, now owned by Southern Water, is back in private hands. We finish with a note by Tony Yoward on treadwheels which have moved from prison punishment in the past, to 'must have' equipment for health-conscious people today.

HIAS is now putting the *Journals* online in a searchable 'pdf' format so that the articles will be available to a wider audience. This online service will not include the most recent issues.

Martin Gregory
June 2016

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The Contributors

Martin Gregory
Martin Gregory is a retired schoolmaster. His interest in the history of technology goes back over fifty years. He has researched and built model steam and Stirling engines for many years, and also works on the history of the sewing machine. He has been a member of HIAS and its predecessor for over forty years, has served as Secretary and Chairman, and is the present editor of the Journal.

Pam Moore
Pamela Moore has been involved in industrial archaeology and history for more than 40 years. She has been a member of SUIAG and then HIAS, serving as SUIAG Secretary and Chairman. She is also a member of the Hampshire Mills Group and is on the Board of the Twyford Waterworks Trust. In the 1980s Pamela served on the AIA Council as their Affiliated Societies' Officer and was Convenor of the CBA's Regional IA Panel. She has written articles and a book on Industrial Archaeology in Hampshire. Currently Pamela is Secretary of the Hampshire Buildings Preservation Trust and Convenor of the Hampshire IA Network.

Ray Riley
Professor Ray Riley taught human geography at the University of Portsmouth, specialising in the regional development of Belgium and Poland, where he worked for five years after retiring, and in urban history and industrial archaeology. He served on the Council of the Association for Industrial Archaeology for eight years and has been a member of Southampton University Industrial Archaeology Group, later Hampshire Industrial Archaeology Society, since 1968. He edited the first eight volumes of the *Transactions, Naval Dockyards Society.*

Howard Sprenger
After training as a teacher at St. Luke's College, Exeter, Howard spent ten years teaching in Staffordshire and Hampshire before joining IBM as a technical author. He retired twenty six years later as a software development manager, and now teaches mathematics to adult students in Portsmouth. With his wife, he runs Kestrel Railway Books, and is the author of four railway books. He is a member of several industrial and railway societies and is the present Chairman of HIAS.

Tony Yoward
Tony Yoward grew up in Swindon and moved to Emsworth in 1952 to manage, and later own, the Pharmacy. He is now retired. He has always had an interest in Industrial Archaeology, especially canals, and has served on the AIA committee. In 1970, he moved into the converted Slipper Mill building and the interest in mills took off. He has published a 'Glossary of 3500 milling terms'. He has been Chairman of SUIAG, a member of the SPAB Mills Committee and was one of the founding trustees of the Mills Archive, a website for British Mills.

Acknowledgements

My thanks are due to all who have contributed to this edition of the *HIAS Journal*. Acknowledgements and thanks for the provision of illustrations are made as follows:

Martin Gregory, Twyford Waterworks Trust, (Figures 6, 35 to 40, 42 & back cover); Dick Hewett, (Figures 25 to 29); Neil Kearns, (Figures 22, 23, 24 & front cover); Ray Riley, (Figures 7 to 21 & back cover); Howard Sprenger, (Figures 30 to 34); HBPT/SUIAG *Journal*, (Figure 4); Tony Yoward, (Figures 1, 2, 3, 5, 41, 43 to 50 & back cover).

The authors and HIAS have made every effort to trace copyright holders of illustrations, but if we have inadvertently overlooked any, we apologise.

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Dr. Edwin Course (1922-2016)

Pam Moore

Edwin Course was born on 15 December 1922 (as he always pointed out "pre grouping"), the son of Captain Alfred Course, a Master Mariner and Cape Horner, who later became a Dockmaster and author on maritime topics. Edwin's mother was Alice, and he had one sister, Pamela, some years his junior. His grandfather had been a stationmaster…so railways were really in his blood!

Edwin grew up in Tilbury, Essex and London and attended Palmers School, Grays. During his childhood, his interest in transport developed, encouraged by his father's career, and this was to be a central focus of his life. His views were also influenced by his boyhood in the great Depression. He (just) remembered the General Strike, when his father drove buses to help break the Strike, but Edwin's indignation was reserved for the troops billeted in the Docks, who mixed their cocoa in his baby bath and scratched the surface! Years later, he revisited his childhood home at Tilbury and recognised many features of the interior. By that time it was in use by Associated British Ports.

After leaving school, Edwin worked for a time as a Specification Clerk at W. T. Henley's Telegraph works. In the Second World War, he served as a Petty Officer Radio Mechanic in the Royal Navy from 1942, primarily on Corvettes like HMS *Kingcup*, in the North Atlantic. He also participated in the Normandy landings in June 1944 and remained a member of the D Day Fellowship for many years. It has to be said that his war service was not a time he recalled with affection, both because of the privations, but also because he did not find the Navy to his taste. With his interest in classical music, his nickname was "Prof" and he was fond of quoting one of his fellow sailors as declaring that Beethoven was "bloody tripe"!

After being demobbed, Edwin undertook various day jobs, including teaching, having attended the City of Coventry Emergency Training College, whilst studying in the evening. He gained a first degree in 1953 and in 1957 a PhD from the London School of Economics. Some of the extra jobs Edwin took on brought him into contact with the greatest passion of his life – the railways. He told tales many years later of his time operating a tea trolley on Victoria Station, and how he found his attention wandering from the customers, to the trains. He could imitate some of his customers who believed he was not providing full measure and said "Fill it up, Gov, fill it up".

In 1956, Edwin's life changed dramatically when he was appointed to the staff of the University of Southampton. Here he spent the rest of his career. His subjects were Transport Studies and Industrial Archaeology, and it was at this time that Edwin started to build his remarkable slide collection, which has, very recently, been taken into the care of Historic England. As part of his role, Edwin taught evening classes all over Southern England. For this he had to learn to drive, something he never enjoyed.



Figure 1. Edwin in 'instruction' mode at Bingley 'Five Rise' locks in 1984 on a SUIAG residential week.

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Figure 2. Edwin (2nd from left, bottom row) leading a SUIAG trip to Wiltshire in 1986.

Edwin took an active part in University life, serving on many Committees and on Senate and Court. He was promoted to Senior Tutor in 1969.

In the 1960s, Edwin's evening classes in Industrial Archaeology began to gain almost cult status, and led to the establishment of the Southampton University Industrial Archaeology Group (SUIAG), the forerunner of HIAS (Hampshire IA Society). At the same time, the Department of Extra Mural Studies (later the Department of Adult Education) started to run annual weekend and week-long residential courses which Edwin directed. These "field trips" were to run for almost 40 years, and covered most of the United Kingdom. The first week-long visit was in 1965 to Bangor and North Wales, and the first weekend, in the same year, to Teignmouth and South Devon. There cannot be an area of England, Wales and Scotland which they did not cover, and two trips were made to Belgium. Literally hundreds of people went on the trips over the years, and they even attracted students from other parts of Britain and Belgium. At their peak, more than 50 would take part – as many as could fit on a coach.



Figure 3. Edwin inspecting a water hydrant in Shrewsbury in 1986.

Few people know the amount of preparation Edwin put into the field trips. He always spent substantial time in the location timing every route and visiting all the sites and accommodation. He took the trips very seriously and tried to hide any amusement when the students were more lighthearted,... for example when they changed the destination board on the coach to "Holiday Tours". He was also teased when the inevitable happened – reaching a site and finding it had been demolished since his careful preparation. It became known as an "Edwinised site" by the participants. However, despite this levity, many people learned a very great deal through these trips - some have said they changed their lives.

Meanwhile, SUIAG met monthly with audiences of well over 100. The group, under Edwin's guidance, published many booklets, a Newsletter - "*Focus*" - and a Journal, and undertook surveys of everything from breweries and brickworks in Hampshire to farmsteads. The Hampshire Farm Buildings Survey was a major enterprise, over some years, and the completed work was deposited with Hampshire County Council. Copies are still available to those interested in the topic.

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SUIAG's practical work was also pioneering, with a highlight coming in 1985 when a domestic brewhouse at Southwick was restored and a brew undertaken. Those involved cleaned and renovated the machinery and steam engine, and at the suggestion of Lord Asa Briggs, decided to tackle brewing – quite a feat. Lord Briggs came and drank the first pint and a very good party (a booze up in a brewery!) was enjoyed by all. The quandary of the brewhouse's future (its machinery was too delicate to use again) was solved by a microbrewery , working from another site, taking it on as their retail outlet, This has been ideal as people can visit the little museum area and the tenants keep it clean and dry. When SUIAG brewed, one role taken by Edwin was negotiation with Customs and Excise…a delicate task!



Figure 4. The Southwick Brewery restoration crew, 1985. Edwin is standing second from right.

A number of offshoot groups developed from SUIAG to follow specific projects and enthusiasms, caring for trams, mills and other artefacts.

Edwin continued to work at the University, not just in Adult Education but also in the Departments of Archaeology, Civil Engineering and Mechanical Engineering. He had been active in IA at Regional level through the Council for British Archaeology, and nationally, through the Association for Industrial Archaeology, and transport related bodies like the Railway and Canal Historical Society. He also served on the Hampshire Archaeological Committee. He maintained an interest in local transport related societies, such as the Society for Nautical Research (South), the Southern Counties Railway Society and the Gosport Railway Society. He was also a Fellow of the Chartered Institute of Transport and for many years active in the OTTS (Organisation of Teachers in Transport Studies) and the TSSA (Transport Salaried Staff Association). Edwin was also a member of the British Association for the Advancement of Science.

Another role for Edwin was with the Wakeford Memorial Lecture series, hosted in Southampton to celebrate the work of Captain "Whalley" Wakeford. Initially, Captain Wakeford was still alive and would attend and ask penetrating questions. Speakers were varied and included Michael, now Lord Heseltine, Sir Edward DuCann and Neil, now Lord Kinnock. Edwin was Convener for many years and the lectures were attended by many hundreds of people.



Figure 5. A trip to North Wales in 1988. What was Edwin photographing here?

However, Edwin's interests were wider than IA and transport. He served as President of the Hampshire

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Field Club and Archaeological Society, and as Editor of the Portsmouth Papers. He also wrote numerous articles and a number of books, and was involved in media work – TV, radio, and films. For several years he was Programme Director of Southampton Hospital Radio. His books included three volumes of the "Railways of Southern England", "Railways Then and Now", "London Railways" and "The Changing Railway Scene in Hampshire" (with Pam Moore). He edited the Minutes of the Reading, Guildford and Reigate Railway, and was also the author of "The Itchen Navigation".



Figure 6. Edwin talking with Charlie Gunson, one of the last Superintendents of Twyford Waterworks.

Among the projects which featured large in Edwin's life was the restoration of the Edwardian Water Pumping Station at Twyford. Edwin's efforts resulted in its being Scheduled, a remarkable achievement. Had this not happened it is very likely that the pumping station and its associated buildings would all have been demolished. At the time of his death he was President of the Twyford Waterworks Trust.

Until recent years, when ill health prevented him doing so, Edwin continued to be active, lecturing and writing long into his retirement. He found great personal happiness with his wife, Catherine, and his children from his previous marriages – Martin, Rosalind and Magnus. He had four grandchildren. Outside his passions for IA and transport, his principal interest was music – he was an avid fan of Mozart's works. After many years of declining health, he passed away on 16th February 2016 at the age of 93.

Edwin will be remembered in many ways, including at Bursledon brickworks, where his library will be housed in the Hampshire Industrial Heritage Centre, as The Edwin Course Collection. He was a remarkable man who lived a full and productive life and whose dedication to spreading his amazing knowledge enriched many people's lives.

Thanks to Tony Yoward for Figures 1, 2, 3 & 5.

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Decline and Fall of Urban Industrial Archaeology? The Portsmouth Case

Ray Riley

Benjamin Franklin is alleged to have remarked that only two things are certain – taxes and death. Judging from the substantial changes that have been witnessed in the industrial archaeology of Portsmouth in the last three decades, it is justifiable to add the demise of older industrial structures in towns to Franklin's comment. The 1970s and 1980s still saw some remaining buildings and practices dating from the nineteenth century, but the march of economic progress has been such that what was once profitable no longer obtains. Granted, the thrust of industrial archaeology is concerned with the past, but surely there is mileage in the examination of recent changes, a good many negative, in older artefacts.

In order to follow this proposition, the fortunes of sites in Portsmouth itself appearing in the 1987 publication *The Industrial Archaeology of the Portsmouth Region* [1] are investigated. Since there is considerable variation in events, to achieve precision a number of groupings is employed: firstly, those sites retaining their 1987 function; secondly, those sites changing their 1987 function; thirdly, sites which are disused; fourthly, sites which have been demolished. No attempt is made to describe the characteristics of the sites, rather the article is simply an inventory as a basis for discussion.

Sites Retaining Their 1987 Function

1. Southsea Castle lighthouse, 1822.
2. South Parade pier, 1879, 1908. The last few decades have seen some changes in ownership, each carrying out modifications. At the moment (2016) it is closed and partly enveloped in scaffolding.
3. Portsmouth Canal lock, Eastney, 1822. Some brickwork deterioration has occurred and a few capstones have disappeared. The canal has not been in operation for nearly two centuries, but is retained by the City Council. The nearby beam engine house continues as a private residence.
4. A short section of the Portsmouth Canal brick wall remains in Canal Walk adjacent to Portsmouth and Southsea station.
5. A fine milestone remains outside the *Red Lion*, Cosham, on the former turnpike to Petersfield, 1711. That at Mile End has been relocated near the *Market House Tavern* to make way for the dual carriageway at the end of the M275. The milestone at Hilsea is now on the pavement opposite the *Coach and Horses*.

6 The Victorian post box: Portsmouth's only example, has been moved from one spot in High Street to another in the same road to act as a bollard closing off Highbury Street from High Street.

7 Portsmouth and Southsea station, 1847, 1866. Modification of the High Level platform canopy took place in 1988.

8 Portsmouth Harbour station, 1876, 1936.



Figure 7. Portsmouth's last to be built corset factory became one of the first to be switched to residences, now termed Frensham Court. Its proximity to Fratton Park football ground has not apparently deterred purchasers.



Figure 8. Its current use as a supermarket has not disfigured the former Marina corset factory.

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9 Fratton Station, 1885. The wall mounted post box has been removed, as has the cover above the walkway over the tracks to Goldsmith Avenue.
10 Cosham station, 1848, 1866.
11 Sections of tram track in Broad Street, Old Portsmouth, and in Rugby Road, Fratton.
12 Watt beam engine house, 1877, and gas engine house, 1904, sewage pumping station museum, Henderson Road, Eastney. The gas engine house is no longer open to the public. The beam engine house boasts a number of related artefacts displayed on the floor above the boilers; one engine is steamed monthly, the other is operated by an electric motor. The site is run by the City Council.
13 Sewage holding tanks, Eastney, 1887.
14 Magazine built 1810-12 at Tipner. It has been reroofed, and is still used as a store in the metal scrapyard where it is located. A listed building.
15 Water filtration beds, Farlington, 1909, 1924, 1982.
16 Corset factory, St Mary's Road, Kingston, 1904. Garment production ceased in the 1950s, the structure becoming a flatted factory with a variety of ever changing uses.



Figure 9. A remarkable survival; the tram shelter now a coffee shop in the middle of Gunwharf Quays.



Figure 10. It is difficult to tell that the wing of the Vulcan store in Gunwharf, on the left, is a rebuild of the original, so similar is it to the surviving wings on the right and centre.

17 Engineering workshop, White Hart Road, Camber. A small property once undertaking a variety of work, now specialising in boat equipment.
18 Block mills, Dockyard, 1801-6. Arguably the most famous of the Dockyard buildings, once housing Marc Brunel's revolutionary pulley block-making machinery. Empty since the 1970s, it remains so; the debate regarding its future continues desultorily. A listed building.
19 No.1 dock, Dockyard, 1801. As part of the construction of a longer quay abutting the Harbour, the gates of the dock have been replaced by permanent walling, thus marooning within it the refurbished 1917 monitor, M33, now open to the public. A listed structure.
20 No.2 dock, Dockyard, 1802. HMS *Victory* in situ. A listed structure.
21 No.3 dock, Dockyard, 1803. Home to the remains of the *Mary Rose* since 1982. A new exhibition centre was constructed over the dock in 2014. A listed structure.
22 No.4 dock, Dockyard, 1772, 1859. A listed structure.
23 No.5 dock, Dockyard, 1698, 1769, 1906. A listed structure.
24 No.6 dock, Dockyard, 1698, 1777. A listed structure.
25 No.5 boathouse, Dockyard, 1882. Contains artefacts from the *Mary Rose*, raised in 1982.
26 Chain test house, Dockyard, 1845. Its listing ensures its life, but it is empty.
27 Ropehouse, Dockyard, 1770, 1776. Now a store. A listed building.
28 Hatchelling house, Dockyard, 1771. A listed building.
29 No.15 storehouse, Dockyard, 1771. A listed building.
30 No.16 storehouse, Dockyard, 1771. A listed building.
31 No.17 storehouse, Dockyard, 1782. A listed building.
32 South office block, Dockyard, 1786. A group of listed buildings.
33 No.8 dock, Dockyard, 1850. A listed structure.
34 No.11 dock, Dockyard, 1863. A listed structure.
35 No.12 dock, Dockyard, 1876, 1903.

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36 No.13 dock, Dockyard, 1876, 1905. In 2010 BAE constructed a cover over the entire dock to facilitate the building of part of an aircraft carrier.
37 No.14 dock, Dockyard, 1896, 1914.
38 No.15 dock, Dockyard, 1896, 1907.
39 C lock, Dockyard, 1914.
40 D lock, Dockyard, 1914.
41 North pumping station, Dockyard, 1913. A listed building.
42 Pay office, Dockyard, 1798. No longer concerned with pay, but still offices. A listed building.
43 Water tower, Dockyard, 1843. The water tank has long since been removed, the supporting piers enclosed with cladding, the resulting space being used for storage. A listed structure.

Sites Changing Their 1987 Function

1. Corset factory, Goldsmith Avenue, Fratton, 1922. Converted to eight residential apartments. (Figure 7).
2. Corset factory, Highland Road, Eastney, 1897. Converted to a Cooperative supermarket. (Figure 8).
3. Tram shelter, Cosham. A remarkably lengthy cast iron, glazed, decorative structure, originally in Guildhall Square, where it was repositioned in 1926, then moved to Cosham, later to Gunwharf Quays, where it has become a tolerably up-market coffee shop. A really commendable re-use. (Figure 9).
4. Tannery, Copnor. Converted to a garage undertaking vehicle repairs.
5. Vulcan store, Gunwharf, 1814. The north wing was badly damaged in World War II and subsequently demolished. The entire site, latterly HMS *Vernon*, was sold off to Berkeley property developer in the late 1990s, and the north wing rebuilt, faithfully replicating the architecture of the existing south wing, the ground floor becoming a restaurant. The ground floor of the south wing is home to an art gallery. The first and second floors now contain 15 residential properties. A listed building. (Figure 10).
6. Royal Marines Infirmary, Gunwharf, 1808. Converted into six residential properties. A listed building. (Figure 11).
7. No.11 storehouse, Dockyard, 1763. The entire building now houses offices, conference room and lift, used by the Naval Museum. A listed building.
8. No.10 storehouse, Dockyard, 1776. An impressive re-enactment of the battle of Trafalgar takes up much of the ground floor. A cupola and clock have been added on the roof replacing those damaged. A listed building.
9. No.9 storehouse, Dockyard, 1782. The ground floor is home to a large antiques shop. A listed building.
10. No.24 storehouse/workshop, Dockyard, 1789. An enormous collection of Admiralty documents has been deposited here. A listed building.
11. No.6 boathouse, Dockyard, 1844. The ground floor has been converted by the new owner – Portsmouth Naval Base Property Trust – to an activity centre for tourists, including a café. The second



Figure 11. The former military infirmary in Gunwharf is a good example of how a listed building can be successfully reused, in this case as apartments.



Figure 12. An incongruous mound in an otherwise flat landscape hides the Fort Cumberland wartime emergency sewage pumping station.

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floor comprises offices and an art house cinema, partly supported by the City Council. An external lift has been added on the south side. A listed building.

12. No.2 ship shop, Dockyard, 1848. Built for the requirements of the steam navy. Workshop functions have been replaced by a variety of office activities. A listed building.
13. Iron and brass foundry, Dockyard, 1848. Relegated for use as a store by BAE. A listed building.
14. Smithery, Dockyard, 1852. This huge workshop lost its function in 1984, some of its space being used as a squash court. A listed building.
15. Iron foundry, Dockyard, 1854. No longer a foundry; partly leased to BAE as offices. A listed building.
16. No.1 ship shop, Dockyard, 1867. Now used as a store by BAE. A listed building. The adjacent hydraulic accumulator tower of the same date and architecture, has been demolished, probably because it was never listed.
17. No.1 pump house, Dockyard, 1878. All the equipment has been stripped out; its new use has to be determined. A listed building.
18. No.7 boathouse, Dockyard, 1875. A single storey building, the large part of which is a restaurant. There is a shop at the entrance. Beyond is the curiously entitled Dockyard Apprentice Museum, exhibiting artefacts employed in the construction of wooden vessels. Much more importantly there are four of Marc Brunel's pulley block-making machines, the first example of metal mass production machine tools which, as such, deserve much greater prominence than they receive. A listed building.
19. Gun mounting shop, Dockyard, 1886. Partly in use as a workshop by BAE.
20. Torpedo store, Dockyard, 1886. At the moment empty. A listed building.
21. No.12 store, Dockyard, c.1880. The building has been converted to hold the Admiralty library.
22. The factory, Dockyard, 1905. The largest building in the yard constructed as part of rearmament; it ceased work in 1984. Now a BAE store. A listed building.
23. Steel foundry, Dockyard, 1925. The electric arc furnaces have been removed. Now a BAE store.



Figure 13. The dismal appearance of Treadgold's shop suggests that the prognosis is not promising, especially in the prevailing view of museums.

Sites Disused

1. Signal box, Portsmouth Harbour Station, 1946. The box bears the unmistakable characteristics of inter-war and immediate post-war styling.
2. Fort Cumberland sewage pumping station, Eastney, 1942. Built as an emergency in case the main pumping station was bombed, the site took the form of a concrete bunker partly below ground level. This has been grassed over, the entrance is invisible and the somewhat incongruous mound is used as a children's play park. (Figure 12).
3. Sewage booster pumping station, Copnor, 1909. The building remains, surrounded by iron fencing.
4. Treadgold's foundry and shop, Bishop Street, Portsea, 1809. Closed 1988. A remarkable survival of Dickensian images whose attributes were sufficient for it to be supported by Hampshire County Council, at least for a time. There have been plans



Figure 14. The apartments on the left now grace the site of the Vosper shipyard and slip.

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for housing to be incorporated within, but these have proved abortive. The future of the site is uncertain. (Figure 13).

5. Royal railway shelter, Dockyard, 1893. This decorative structure was erected to shield dignitaries from the weather when landing from and boarding ships at south railway jetty. However, it interfered with new quayage construction; since it is a listed building it could not be destroyed and was simply relocated to the adjacent Camber a few yards away, leaving it without any function at all.
6. Storehouse No. 25, Dockyard, 1786. Since its location in the old yard and its nature render it of little use to BAE, it lies disused. A listed building.
7. Painters' shop, Dockyard, 1896. A listed building, but surplus to BAE's requirements.
8. Gas meter, Frederick's Battery, Dockyard, 1886. The meter lives on within the august stonework, itself listed, hardly worth removal for scrap.



Figure 15. There can't be many harbours, anywhere, boasting a wall so lavishly and precisely dated. The Camber bastion performed this function for three centuries.

Sites Demolished Since 1987

1. Slumberland mattress factory, High Street, Old Portsmouth. Five residential properties have been built on the site.
2. Brickwood, later Whitbread bottling works, St. Nicholas Street, Old Portsmouth, 1912. Some 35 houses are now in place.
3. Vosper shipbuilding yard and slip, Camber, 1844. World famous for its fast motor torpedo boats, Vosper merged with Thornycroft and closed in 1987, operations being shifted to a covered yard at Portchester, leaving the Camber site to become, in 1995-7, the scene of 64 houses and apartments, collectively known as King James Quay. (Figure 14).
4. The housing construction on the Vosper site involved the demolition of the Camber bastion, part of the Old Portsmouth fortifications, abutting on the Camber. With remarkable foresight the concrete plaque bearing the monogram "JR 1687" has been saved and adorns a small building adjacent to the estate. (Figure 15).
5. Power station, Old Portsmouth, much modified since 1894. The station was closed in 1977 and demolished in the early 1980s, to be replaced by 90 houses and apartments. A section of land abutting the Camber is a public car park.



Figure 16. The Camber dock now lies beneath the Isle of Wight ferry vehicle park.



Figure 17. The Ben Ainsley Racing yacht building structure in the Camber may have a marine function, but it nevertheless strikes a discordant note.

6. Camber dock, 1862. With the disappearance of the power station the *raison d'etre* for the dock, which had been used to receive colliers supplying fuel, was removed. The Council took the decision to fill in the dock and use the space as a vehicle park for the Isle of Wight ferries, whose terminal was relocated from Broad Street in the Camber. (Figure 16).
7. Warehousing, south side of the Outer Camber. Much of this was latterly used by the locally based fishing fleet, but in 2014 Sir Ben Ainsley persuaded the Council to demolish the warehousing to allow

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him to replace it with a structure in which to make a yacht which he hopes is capable of winning the Americas Cup. (Figure 17).

8. Cash foundry, Aylward Street, Portsea, c.1860. Responsible for thousands of Portsmouth drainage grids, lamp posts and covers for gas, water and electricity utilities, the firm went under in 1972 when faced with competition from bigger operators. There are now fourteen apartments on the site.
9. Brickwood, later Whitbread, brewery, Admiralty Road, Portsea. Brewing on this large site ended in 1983. After demolition it became a car park and then in 2004-7 a substantial residential scheme made its appearance. There are 566 apartments including those in an imposing tower, oval in plan. This development is the largest to have been put up in Portsmouth on a former industrial site. It is thus in the van of the process involving the removal of industry from old established urban centres in favour of housing. Since social housing is almost absent in these new structures in Portsmouth, the term gentrification is relevant. (Figure 18).
10. Railway signal box on the embankment to Harbour station, Park Road, Portsea. Built to control the turntable outside the Harbour station. Unusual in being very small and of brick, it was disused for many years after closure in 1936 before demolition.
11. Naval barracks railway station adjacent to Unicorn Road, Landport, 1903. With the construction of the naval barracks, HMS *Nelson*, whose eastern margin abutted the single track to the dockyard from Portsmouth and Southsea station, the opportunity was taken to build a short platform. This has been removed and the track lifted. (Figure 19).
12. Railway signalman's hut, Edinburgh Road, Landport. A small brick structure for the convenience of the railwayman operating the manual slotted semaphore signal at the level crossing of the line to the dockyard over Edinburgh Road. In its place is shrubbery alongside a pedestrian walkway where the track once ran.
13. Young's Victory brewery, Thomas Street, Landport, 1830. Closed in 1959, it was then used by a number of small firms before demolition when the site became a small part of Morrison's supermarket.
14. W. H Sperring, Albion Iron Works, Clarendon Street, Landport, 1854. The principal local competitor with Cash, closing for the same reason. The site is occupied by six council houses.



Figure 18. The residential tower block on the Brickwood brewery site, part of the Admiralty Quarter.



Figure 19. At the Unicorn gate of the Dockyard, on the left is the former railway line and barracks station; in the centre is the roof over No.13 dock.



Figure 20. Bland modern factories replace the Hilsea gasholders.

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15. Clocking-in gate for the Dockyard. An everyday facility and therefore easily overlooked. In its place at the Victory gate is a visitor centre and coffee shop.
16. Nos 7 and 10 docks, Dockyard, respectively 1849 and 1858. Built end to end allowing them to be used as one long dock to hold HMS *Warrior* and ships of the steam navy, these docks have been filled in, the space being used as a roadway.



Figure 21. The Southdown bus depot has disappeared beneath this pile, appropriately named 'Southdown View'.

17. Gas holder, Rudmore, 1872. Once transmission mains were used for storage at high pressure, holders became superfluous. The site of this holder is now part of the car park at the International Ferry Port.
18. Gas holders, Hilsea, 1904. These two holders were retained for some time after the gasworks itself closed in 1968. In their place are bland modern factories on an industrial estate. (Figure 20).
19. Terminus of the Southsea railway, Granada Road, Southsea, 1885. After the line closed in 1914, the station building survived for many years as a motor car garage carrying out repair work. The site, including forecourt, is now home to 30 semi-detached houses. The wall separating the station from Victorian housing is appropriately decorated by a half life-sized painting of an 0-6-0 tank engine that once worked on the line. (Back cover).
20. Corporation bus depot, Eastney Road, Eastney, 1932. Closure was followed by conversion in 1990 to 28 houses and apartments.
21. Southdown bus depot, London Road, Hilsea, 1930s. Empty for many years after deregulation, but demolished in 2014 to make way for 75 apartments. (Figure 21).
22. Corset factory, Binsteed Road, Fratton, 1899. This small workplace, employing six machinists, located behind Voller's clothing shop in Kingston Road, was the last of Portsmouth's once many corset manufacturers. After closure of the shop and workshop, six houses were put up on the site.
23. McKinley engineering works, Mile End. The owner's children expressed no interest in following in their father's footsteps, resulting in closure. The site is now part of the Albert Johnson container port.

Discussion

It all depends what is meant by decline, as Prof. Joad of The Brains Trust would have said. Judging by the reduction in numbers attending the monthly meetings of the Hampshire Industrial Archaeology Society over the last few decades, coupled with the patent elderly age bias, it can certainly be argued that actual interest in the subject is declining. Doubtless the same trend obtains elsewhere. From a different perspective, that is the change in the number of sites, the de-industrialisation process has ensured that since the 1960s there has been a decline in the number remaining. Thus in the case of Portsmouth, some 23 sites logged in 1987 have been demolished and 8 lie disused, representing almost a one third fall from a total of 97. This, surely, is decline.

It will have been apparent that the Dockyard weighs heavily in the industrial archaeology of the city; 25 of the 43 sites retaining their function are found in the Yard. Moreover, 16 of the 23 sites which changed their function, and four of the eight disused sites, are also located in the Dockyard. All but eight of these 45 are listed structures, suggesting that some might have been declared redundant with regard to the needs of the modern navy and demolition might have resulted had they not been so protected. In a sense, therefore, the speed of decline has been reduced by listing. Arguably, Portsmouth's good fortune is unlikely to apply to the majority of other places.

Decline is one thing, but fall is terminal. The question to be put is whether artefacts of industrial archaeology will at some stage disappear from the urban scene, leaving only copious records and some museum pieces. From the evidence presented it would certainly seem that the contraction of sites outside the dockyard is an

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unstoppable trend. Fortunately there are several reasons why this eventuality is unlikely to occur. Firstly, some buildings may have changed their function, but retain their external characteristics. Secondly, some sites not directly concerned with manufacture, such as railway stations and street furniture may be able to escape the clutches of economic forces and survive. Thirdly, manufacturing is still taking place, but almost always in anonymous buildings enclosing increasingly sophisticated processes, with the consequence that such activities in place since World War II have largely failed to attract the attention of industrial archaeologists.[2] Readjustment of focus will be testing, but it will ensure that the discipline will continue. And finally, there is always the listing system to ensure the survival of outstanding examples of industrial archaeology.

However, lest the latter be regarded as a panacea, it should be said that only two of the remaining Portsmouth sites outside the Dockyard and Gunwharf are listed structures.

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2. R. C. Riley, "The notions of production and consumption in industrial archaeology: towards a research agenda", *Industrial Archaeology Review*, **27**(1), 2005, 41-7.

Acknowledgements

I would like to thank Tim Allison and Sandra Winterbotham for their assistance in all the leg work involved in checking the sites mentioned in this article.

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Romsey Signal Box Renaissance

Howard Sprenger

Introduction

Sunday 6th September 2015 saw the reopening of Romsey Signal Box to the public after a period of closure due to the redevelopment of the surrounding land. This article celebrates this significant occasion, and summarises the history of the box up to this point. With a regular programme of open days throughout the year, a visit to the Romsey Signal Box Working Museum is thoroughly recommended.



Figure 22. 33107 hauls a diverted Waterloo-Weymouth train past Romsey signal box on 10th October 1982. The proximity to the station is clear from this view, but nowadays trees obscure the view. (Neil Kearns)

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Early History

Romsey originally opened as a station on the Salisbury branch of the London & Southampton Railway. One of the first of the branches to be built from this line, it opened to goods traffic on 27th January 1847 and to passengers on 1st March 1847. On 6th March 1865, it became a junction when the "Sprat and Winkle" line opened from Southampton to Andover, and a signal box was built with an 18-lever frame to control the double-track Eastleigh to Salisbury line and the single-track line to Southampton via Redbridge. It is possible that some of the current box dates back to this time, but it is known that the original one was completely of wooden construction with the base being changed to a brick one some years later.



Figure 23. Looking from the station towards the box, this view shows Romsey's up starting signals on 2nd February 1975. (Neil Kearns)

The Redbridge line was doubled in 1884/5, and a new 18-lever frame was installed at this time, later to be extended by seven more levers between the wars. To accommodate the larger frame, the box was extended with a flat-roofed section cantilevered outside the brick base towards the station. Changes continued to be made to the box and, even as recently as the 1960s, the entrance door was moved to give more room inside.

Meanwhile, additional sidings were being added, and by 1944 (largely due to the Second World War), the track layout had reached its zenith. Things remained this way for just 15 years, when the closure of Wills Siding on 2nd August 1959 triggered the inexorable decline of the railways in the Romsey area. Passenger



Figure 24. A view of the box on 9th March 1980, a couple of years before closure. (Neil Kearns)



Figure 25. The removal of the signal box on the night of 26th/27th June 1983. (Dick Hewett)

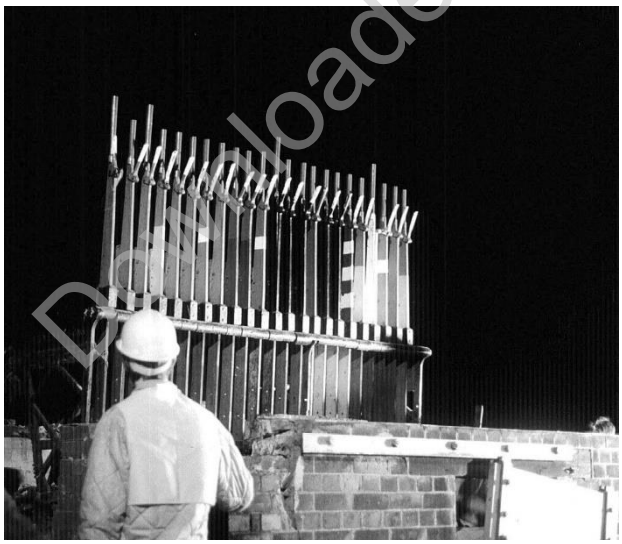


Figure 26. The removal of the signal lever frame on the night of 26th/27th June 1983. (Dick Hewett)

services to Eastleigh via Chandlers Ford ceased on 5th May 1969, and Romsey goods yard closed on 20th July 1970. Now needing only to serve freight, the Chandlers Ford line was singled by 1st May 1972, and a parallel programme of replacing semaphore signals with colour lights, and motorising the points, took place at the same time.

This contraction of facilities resulted in a shortening of the frame to 23 levers (towards the end of 1976), and as the points and signals were electrified, the tops of the relevant levers were shortened by several inches to remind the signalmen that rather less force was needed to move them than had previously been the case.

Closure and Rescue

Alongside the changes being made at Romsey, plans were in hand for the functions of all the signal boxes in the area to be taken over by a new panel box at Eastleigh, and once the points and signals had been electrified, the need for them to be controlled locally disappeared. So, after 117 years of continuous service, Romsey signal box closed on 17th October 1982, and its demolition was timetabled to take place shortly afterwards.

British Rail decided that the best way to gain access to the redundant box was by way of Romsey County Infants School, whose grounds ran up to the embankment on which the box sat. When Eric Romaine from BR approached the headteacher, Mrs Audrey Gebbie, for permission to bring cranes and a demolition team across the school playing fields, she had an idea…

She saw that the box could provide an excellent teaching resource, and that a piece of Romsey history could be retained very close to its original site for future generations to enjoy. She had no great interest in railways *per se*, but recognised that she was in a unique position to offer a new home for the box if sufficient money could be raised to re-erect it in the school grounds. She therefore contacted the Romsey & District Buildings Preservation Trust who, in turn, agreed to pay BR a nominal £10 for the box and an additional £1,000 to pay the costs of removal.

On the night of Sunday 26th June 1983, the wooden top-half of the box (weighing about a ton) and the lever frame (weighing over 3 tons) were lifted over the tracks and onto the school's land on the other side of the embankment. The original brick base was left behind, as a new one would be built as soon as negotiations had been completed to purchase the piece of land at the foot of the embankment. This duly took place, thanks to some funding from Hampshire County Council, and the lever frame was craned onto the new base in April 1987, closely followed by the wooden upper floor.

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Preservation

The subsequent rebuilding and fitting out of the box was achieved entirely by volunteer effort and with the generosity of local firms. A support group, the Friends of Romsey Signal Box, was formed to undertake not just the restoration of the box to its former glory, but also to create a suitable environment in which to site the box – one where the full story of mechanical signalling could be told. British Rail contributed some trackwork to sit outside the box together with other equipment and some labour, Foster Yeoman donated 100 tons of ballast for the trackwork, and Southern Electric connected the box to the mains. Other equipment and materials were provided by local firms either free or at a reduced price.

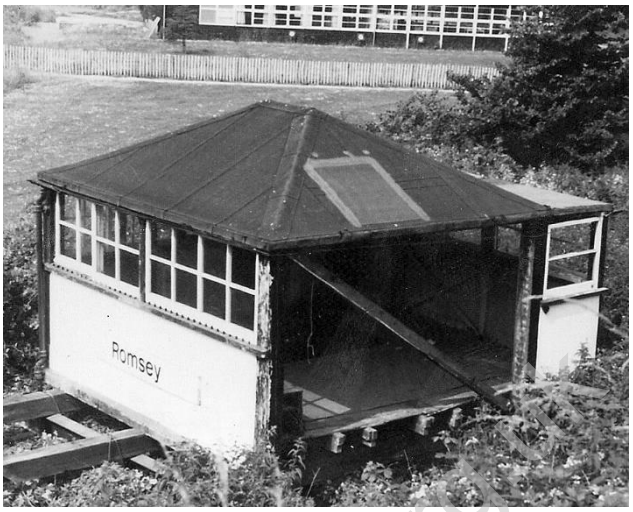


Figure 27. The top half of the box as initially deposited in the grounds of Romsey County Infants School. (Dick Hewett)

The initial stage of the project was to connect a demonstration set of points and the first signal to the lever frame, and this was achieved on 26th June 1991 – exactly eight years to the day from the removal of the box to its new home. Over the following months and years, more signals were connected up, so that a complete simulation of the working of the box could be performed for visitors. The completion of this stage of the project took place exactly ten years after closure on 17th October 1992.

Steady development of the site continued, with additional buildings and facilities being added for the benefit of visitors, but falling school numbers in the Romsey area resulted in a review of provision at Primary level. The upshot of this was the proposed closure of the Infants School, and redevelopment of the site for housing. This threw the project into a state of some confusion, as all plans had been based on the continued existence of the school, and the considerable stability that it gave to the whole project.

The school duly closed on 31st August 2006, and the Friends of Romsey Signal Box held their collective breaths while the future of the site was debated. Initial thoughts even stretched to the possibility that redevelopment for housing might require the box to be moved again, but at least there was the knowledge that the land on which the box stood was protected.



Figure 28. The top half of the box is lowered over the lever frame onto its new brick-built base in April 1987. (Dick Hewett)

As events progressed, however, it became clear that the housing development and the project could exist side-by-side, and in December 2013, the box opened to the public for the last time (apart from a couple of special events) while the development work took place.

Second Closure and Renaissance

For just over 18 months, "The Friends" took advantage of the closure to significantly improve facilities at the site, and in this they received generous support from the Heritage Lottery Fund, Test Valley Borough Council, Hampshire County Council, Romsey & District Buildings Preservation Trust, and the developers, Croudace Ltd, who were very keen to establish a sound working relationship with the Romsey Signal Box Project.

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Figure 29. Celebrating the first connections to be made on 26th June 1991. In addition to volunteers and representatives from local companies, the headteacher of Romsey Infants, Audrey Gebbie, sits in the middle of the front row with two gentlemen who were instrumental in bringing her idea to fruition – Dick Hewett on the left and Ted Mason of Hampshire County Council on the right. (Dick Hewett)

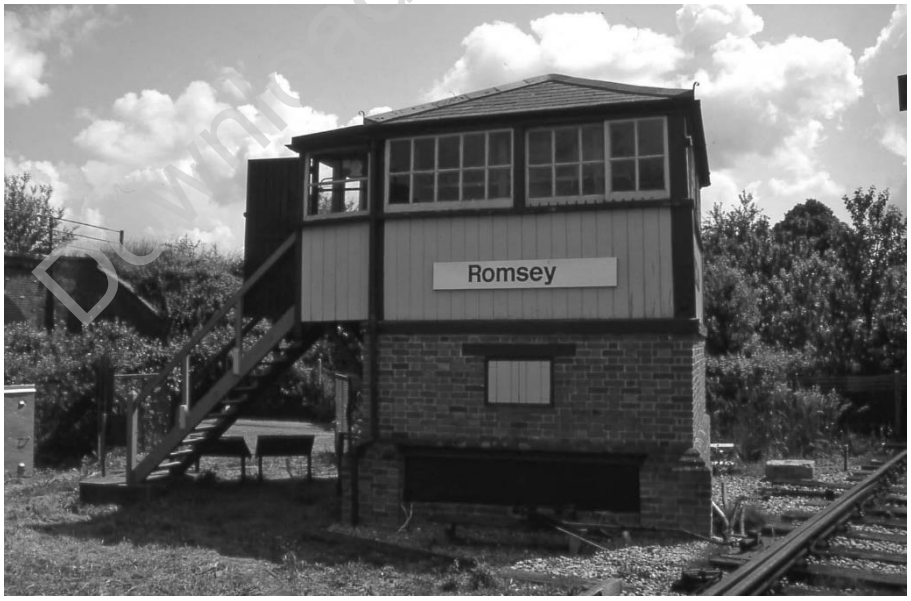


Figure 30. Romsey signal box during the first period of its preservation, 6th June 1999. (Author)

Any uncertainty about the future of the site was quickly banished, and the redevelopment came to be seen as a golden opportunity to elevate the project into one of the foremost sites for the interpretation of the development of railways in the country. The absence of visitors has allowed the box to be repainted and the ancillary buildings on the site to be developed as a first-rate visitors' centre with additional exhibits available to be viewed under cover, and light refreshments to be served. Where it is not possible for someone with a disability to

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climb the steps up to the operating floor of the box, CCTV enables demonstrations to be watched from the Buffer Stop Café, and all other parts of the site are "wheelchair-friendly".

There is also a strong "community feeling" amongst the new residents of the old school site, which the project (now renamed Romsey Signal Box Working Museum) has fostered by offering free entrance to the museum. One new neighbour has become involved to the extent that they have designed a new "flyer" for the museum, and continues to provide graphic design support for much else besides.



Figure 31. The second re-opening on 6th September 2015 by (left to right) Councillor Dorothy Baverstock (Romsey Town Mayor), Helen Jackson (Heritage Lottery Fund) and Councillor Iris Anderson (Mayor of Test Valley). (Author)

And so, all the hard work since the museum's enforced, but temporary, closure came to a climax when it was re-opened for a second time on the 6th September 2015 – a gloriously sunny day that repaid the huge amount of effort that had taken place over the previous two years, and indeed, the 30 years before that. The intention henceforth is to open on two days a month (first Sunday and third Saturday) rather than one as before, and there will be additional open days in connection with other events taking place in the Romsey area. Complete details of opening times, together with information about how to get to the box, parking, etc, are available on the museum's website: www.romseysignalbox.org.uk.



Figure 32. A view of part of the site on opening day. (Author)



Figure 33. The superb standard of restoration can be seen in this photograph of the lever frame taken on the opening day. (Author)



Figure 34. Also taken on opening day, the full range of exhibits can be appreciated in this view from the box. (Author)

Acknowledgements
Thanks to Dick Hewett (President and Treasurer of the Friends of Romsey Signal Box) for his enthusiasm, dedication and historic photographs and also to Neil Kearns (Membership Secretary of the Friends) for the use of his photographs.

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Southampton's Water War: A tale of Local Authority *versus* Private Company

Martin Gregory

One of the great benefits given to us by our great Victorian engineers was domestic supplies of clean drinking water. Whilst the disposal of sewage or foul water was almost always the responsibility of the Local Authority, the provision of clean water was split between private companies and Local Authorities. In the Itchen and Test valleys, water was supplied to residents in the Borough of Southampton by the Corporation while the Winchester Water & Gas Co. supplied the City of Winchester, and the surrounding towns and villages were supplied by the South Hants Waterworks Co. (SHWC).

The Corporation of Southampton had supplied the inhabitants of the Borough for centuries. Their Act of Parliament of 1885 defined the limits of their supply as "the Town and County of the Town of Southampton" from their (then new) wells and pumping station at Otterbourne.

The South Hants Waterworks Co. was incorporated by the South Hants Water Act of 1876 to supply the parishes of Timsbury, Michelmersh, Romsey, Nursling, Eling, Millbrook and Stoneham from their wells and pumping station at Timsbury. This area comprised mostly the lower Test valley. The SHWC was an ambitious company and wished to expand its area of supply to make use of the excellent quality of the water from wells in the Hampshire chalk. In further Acts of 1878 and 1894 it got parliamentary permission to extend its area of supply to, firstly, North Baddesley, Chilworth, Hound, St. Mary Extra, Bursledon, Botley, Hamble, Otterbourne and Bishopstoke and, secondly, to Hursley, Compton, Twyford, Bishops Waltham, Durley, Titchfield and, later, Dibden, Fawley, Exbury and Lyndhurst. This increased area included the lower Itchen valley and into the New Forest.

The area supplied now exceeded that which could be supplied from the existing Timsbury plant and led the SHWC to extend Timsbury (the 1897 engine by Bryan Donkin and its new well) and to build the Twyford waterworks in the Itchen valley under the permissions of their 1894 Act. The 'new' wells at Twyford proved to be a more abundant source than Timsbury and became the Company's main source of water.

A look at the map shows that, as the nineteenth century drew to a close, the old Borough of Southampton was almost surrounded by areas supplied by the SHWC. The Corporation, by the Southampton Order of 1895,

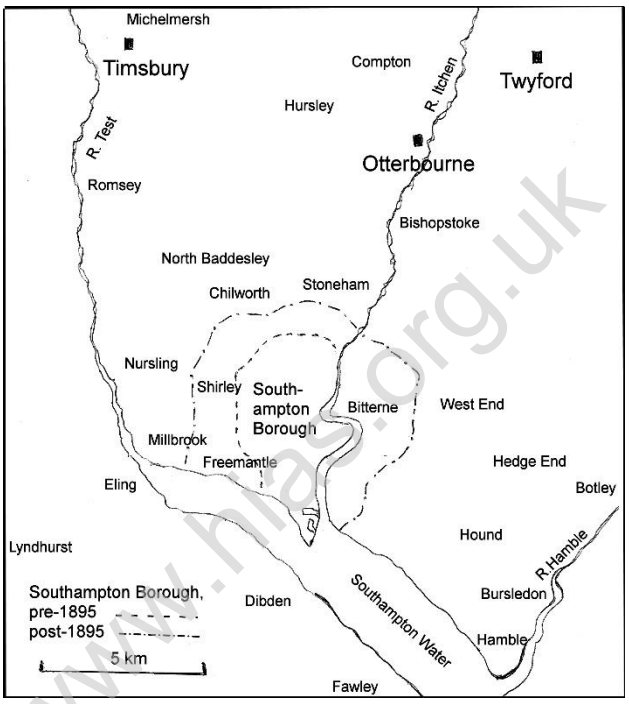


Figure 35. Map of SHWC supply area around 1900 using the place names given in the text.

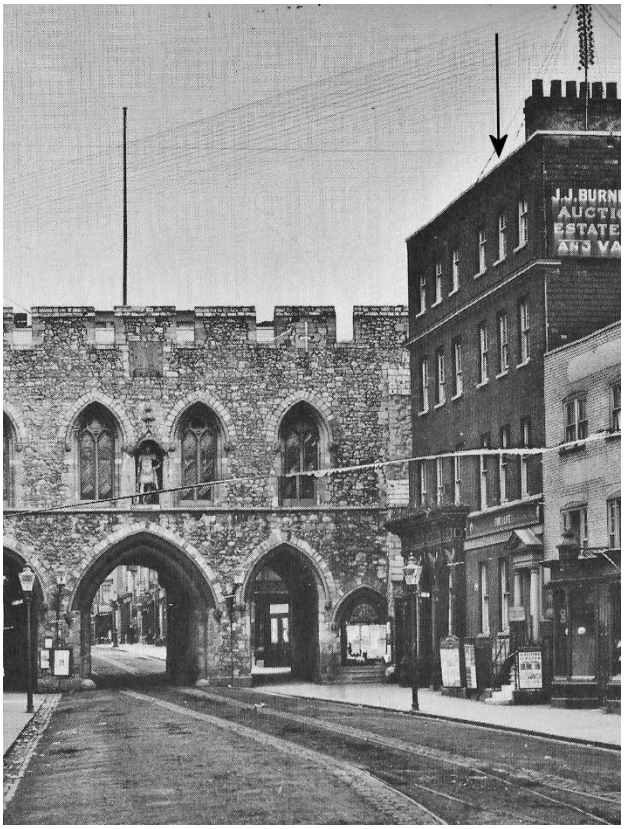


Figure 36. The Offices (arrowed) of the South Hants Waterworks Co. at 2 High Street, Southampton

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enlarged the boundaries of the Borough to include the urban districts of Shirley and Freemantle, together with Millbrook, Bitterne and South Stoneham. Thus, some Southampton ratepayers found themselves supplied with water by the SHWC. Prior to April 1st 1896 the costs of the water supply in the Borough had been defrayed from the general rate but, on this date, a 'water rate' of 10 pence (4 p) in the pound was introduced for Corporation ratepayers. The SHWC levied charges in a different way: 6% on the "gross rateable value" of the house, such a rate to include the first WC, the second to be paid for at a rate of 10/- (50 p) p.a. and the rate for a bath to be 10/- (50 p) p.a. The SHWC employed Inspectors to visit premises and check the installation of WCs and baths. It would seem that the Company's charges worked out practically double those of the Corporation. Not unreasonably, the Corporation felt that such a disparity between charges for residents in the same town was iniquitous. In 1896, the Waterworks Engineer (W. R. Matthews) reported in detail on the advantages of the Corporation taking over part or all of the SHWC undertaking.

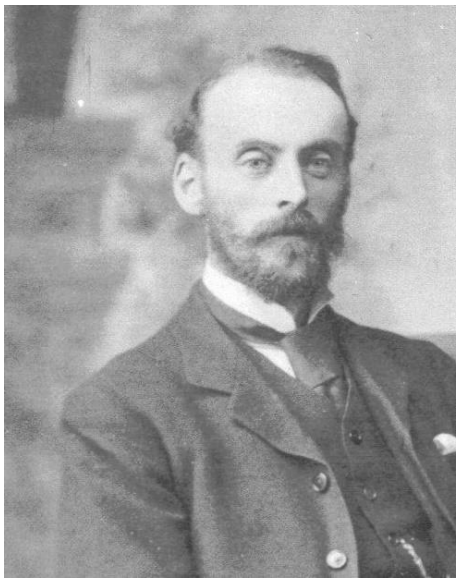


Figure 37. W. R. Matthews when Waterworks Engineer to Southampton Corporation



Figure 38. William Erasmus Darwin, Chairman of SHWC at the turn of the century

Matters came to a head in 1899, just as Twyford waterworks was being built. Both the Corporation and the SHWC had Bills before Parliament. The Corporation had fired the first salvo in 1897 when they promoted a Bill in the House of Lords for the purchase of the whole SHWC undertaking. The SHWC opposed the Bill on the grounds that the ratepayers had been misinformed as to the true effects of the Bill. Their Lordships accepted that there was no intent to mislead but, nevertheless, upheld the objection so the Bill failed. The Corporation returned in 1899 with a Bill to "compulsory purchase that part of the SHWC undertaking which is situate within the Borough". The SHWC objected on the grounds that there was no precedent for the compulsory purchase of **part** of a Water company undertaking. After five days of debate in a House of Commons Select Committee, the Bill was finally rejected. Meanwhile, in 1899, the SHWC promoted its own Bill to raise more capital, build a reservoir and extend its area of supply. The SHWC accepted a clause restraining both parties from new works within two miles of existing works and the Corporation withdrew its opposition. The Town Clerk even sent a conciliatory letter to the SHWC directors: "I am desired by the Parliamentary Committee to refer you ……. suggesting that a friendly conference should be held between members of the Committee and the Directors of the SHWC, with the view of an amicable arrangement being arrived at ……..". (Only a curt acknowledgement seems to survive!)

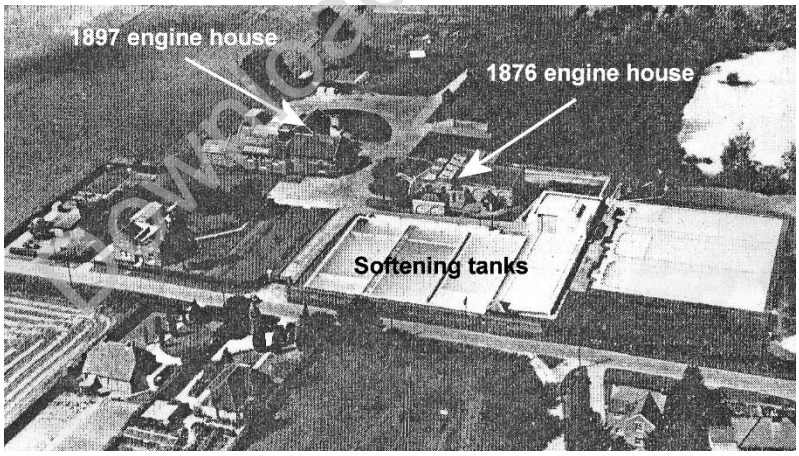


Figure 38. The three waterworks concerned: 1. Timsbury (SHWC) in 1965. The 1897 extension contained a beam engine by Bryan Donkin and two boilers.
(By 1965 all the steam plant was out of use and the chimneys had been demolished)

Sniping between the two organisations continued. As an example, the Corporation fire brigade asked for 111 new fire hydrants in the Shirley district, a district supplied by the SHWC. The

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estimate to purchase and install them was approved but the charge of 2/- (10 p) p.a. per hydrant for maintenance by the SHWC was dismissed by the Corporation.

In 1908, Mr. Matthews retired as Waterworks Engineer to the Corporation. In his final report he wrote that he thought that, "if the consumption of water increased by anything like its then rate", the Corporation would have to look for additional supplies beyond Otterbourne. Upon his retirement, Mr. Matthews moved over to succeed Baldwin Latham as the Engineer to the SHWC!

In 1910, again both the SHWC and the Corporation promoted Bills through Parliament. The SHWC Bill was to (1) confirm the construction of certain existing works, (2) authorise the construction of further works (reservoirs at West End and Hedge End), (3) extend the limits of supply and (4) raise a further £120,000 of capital on a total issued share capital of £208,550. The first point is an interesting one since it applied to Twyford: Twyford had been built under the SHWC 1894 Act using powers from section 12 of the Waterworks Clauses Act (1847). However, various cases before the Court of Appeal in 1908/9 suggested that it was doubtful whether it was within the powers of the SHWC 1894 Act to construct these works (Twyford); hence the Company's worry about legitimising them.

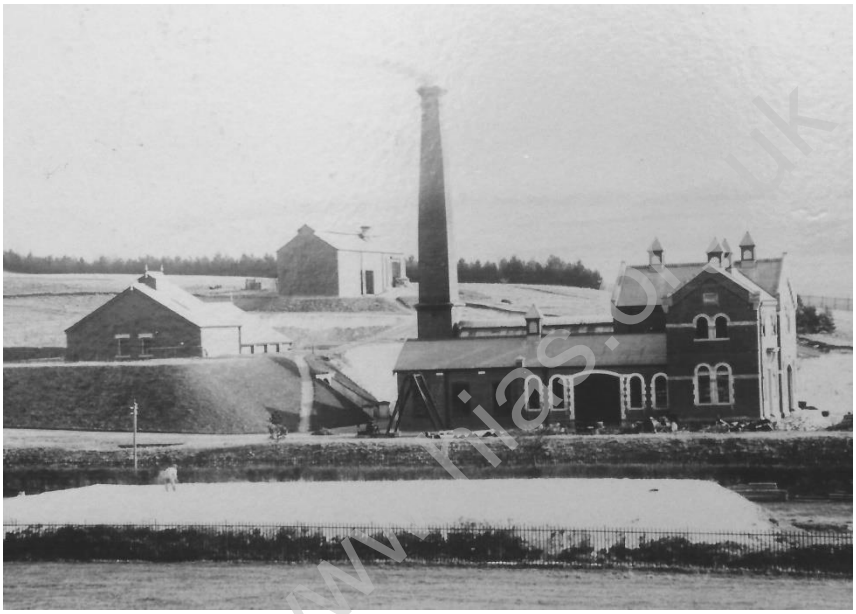


Figure 39. The three waterworks concerned: 2. Twyford (SHWC) in 1909.
The first of the triple expansion engines was installed in the taller section of the engine house at the right.
The softening plant is on the hill, centre left.

The SHWC Bill was passed by the House of Commons' Select Committee subject to a reduction in the newly authorised capital to £60,000, but the Committee refused to delay the Act by a year until the Corporation's Act was decided upon. However, they placed on record "That the Committee, realising that the Company and the Corporation are drawing from the same source of supply, think that in the general interests of the community certainly the water supply should be under the control of one authority, but do not express any opinion as to the composition of the said authority". When the Bill went to the House of Lords, a limit of 2½ million gallons (12 Ml) per day for the Twyford supply was inserted at the Corporation's request.

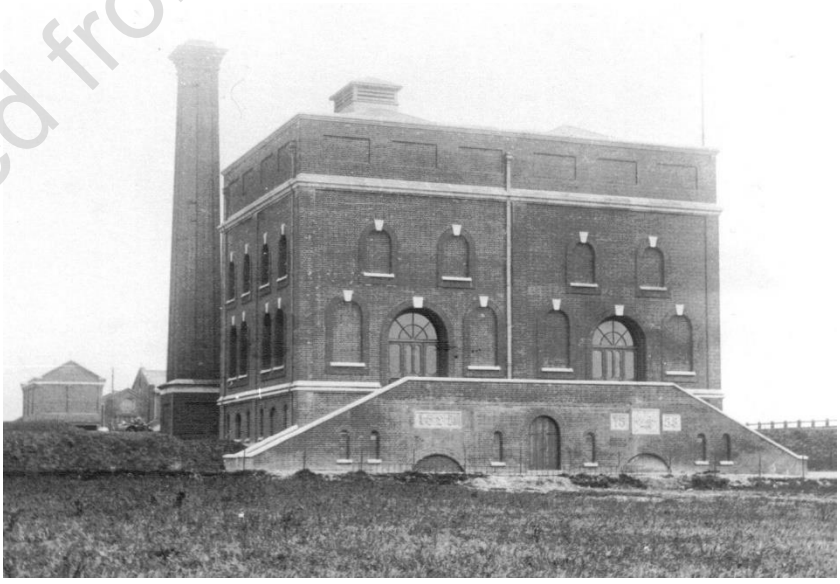


Figure 40. The three waterworks concerned: 3. Otterbourne (Southampton Corporation) c1900.
The two beam engine houses, engines A & B of 1888 on the right and engines C&D of 1895 on the left.

The Corporation's Bill came at the end of the year. It sought to purchase the whole of the SHWC on the grounds that (1) the trend of modern legislation was to place the water supply in the hands of local authorities,

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(2) the position of Southampton, where part of the Borough was supplied by the Corporation and part by a company at rates double that charged by the Corporation, was "entirely anomalous", and (3) the wells from which the SHWC obtained most of their water at Twyford were in close proximity to the Corporation's wells at Otterbourne. They also pointed out that the SHWC was asking to raise more capital for further works and were paying their maximum dividends to shareholders. They stated that they would equalise water rates throughout the Borough after the takeover.

This time the letter from the Town Clerk to the SHWC Directors was much less conciliatory. "Dear Sir," it started "I beg to inform you that the Corporation of Southampton have decided to promote a Bill in the next Session of Parliament, to enable them to amalgamate the two undertakings, whereby water is now supplied to the Borough, and for that purpose to acquire the undertaking of your Company." The Corporation, having lost previous Bills by legal objections of precedence etc, inserted, in their new Bill, "a power for any Local Authority …… to purchase at any time so much of the undertaking as is situate in their district ….." so as to help other Corporations in their predicament. The outbreak of the First World War in 1914 delayed the takeover of the SHWC until 1921.

Having agreed to the limit on Twyford's output, the SHWC wrote to the Corporation informing them that, to comply with their new Act, they would "install a Venturi meter and recorder upon the delivery main ……. such that the whole of the water being delivered must pass through it." Ever suspicious, the Corporation resolved "that the Waterworks Engineer be authorised to inspect at all reasonable hours" the meters installed at Twyford.

During the First World War there were large military camps around Twyford and the demand for water increased substantially. We find a letter in June 1918 from the SHWC to the Town Clerk notifying him that in that week the amount of water pumped at Twyford exceeded the statutory limit of 2½ million gallon per day. The letter ended: "This is due entirely to War requirements, so I have no option in the matter."

Even in wartime the response of the Corporation was not friendly. The Town Clerk pointed out that by exceeding the statutory limit in the SHWC 1910 Act "the Company have rendered themselves liable, not only to heavy penalties (£50 per day), but to an injunction in the High Court." It then asked for an assurance that it would not happen again. The SHWC response was that, "they are unable to give the assurance asked for, as it is impossible for them to place any limit upon the quantity of water which may be required for State purposes during the progress of the War." The Corporation resolved that, should it happen again, proceedings would be instituted in the High Court.

The military war ended in November 1918; the water war ended in 1921 with the takeover of the SHWC by Southampton Corporation.

Acknowledgements
The source material for this article comes from the minutes of the Southampton Corporation Water Committee.

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The Treadwheel as a Source of Power

Tony Yoward

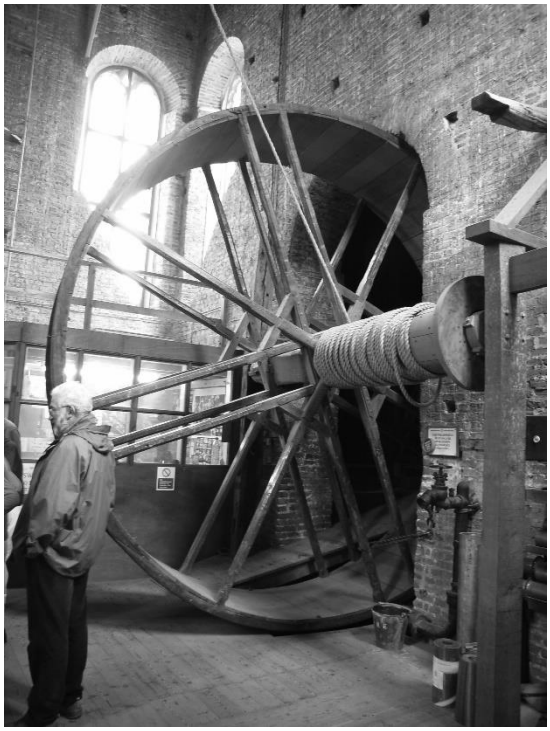


Figure 42. The treadwheel crane in Beverley Minster, Yorkshire

Treadwheels have been used for hundreds of years as a source of power; the Chinese used a simple treadwheel as a means of lifting water in the paddy fields.



Figure 41. Chinese treadwheel water lifter

In the 13th century, treadwheel cranes were used by the stone mason when building cathedrals and fortresses. They could raise the large stones to the top of the structure by walking around inside a treadwheel, with the rope wound on the shaft to increase the power of the crane. A few still remain in a number of our cathedrals. A novel use was found for the treadwheel in the 17th and 18th centuries using dog wheels to drive the spit in the kitchens of large houses and sometimes in public houses.



Figure 43. A turn-spit dog at work



Figure 44. A windmill fitted with Cubitt's 'patent sails'

William Cubitt, 1785-1861, the son of a Lincolnshire miller is usually remembered for inventing a patented system allowing windmill sails to be adjusted while the mill is still working. The miller did not have to stop the mill to adjust the sails as the shutters could be operated by a rod running inside the windshaft. William was only 22 at the time. In 1812, he became chief engineer at Ransome & Son, a Quaker ironworks in Ipswich specialising in agricultural machinery, a position he held for fourteen years. He was later knighted for being the chief engineer constructing the Crystal Palace.

While visiting a prison he saw some prisoners breaking stones or picking oakum and many just doing nothing. This gave him an idea, so using his previous knowledge as a miller he designed a treadwheel that could be used to provide power using prison labour. Cubitt's first treadwheel was installed at Bury St. Edmunds' prison. It had a diameter of about five foot (1.5 m) and was mounted in a frame, the paddles being steps at intervals of about nine inches (0.22 m). There were 24 steps, similar to 24 spokes of a large paddle wheel, with the speed limited to about 52 steps per minute (2.2 rpm). The treadwheel was designed to produce power and as a cure for idleness in prison.

John Howard, the prison reformer, proposed that prisoners could be reformed and morally improved through hard work and prayer, segregated by sex, categorised according to their level of offence and separated from other inmates in individual cells. These principles were applied to most prisons in the next fifty years and amounted to the industrialisation of prison life.

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Treadmills came into English jails following the 1779 Prison Reform Act that said that prisoners should be given labour of the hardest and most servile kind in which drudgery is chiefly required and where the work is little able to be spoilt by ignorance, neglect or obstinacy. The power generated by the treadwheel was commonly used to grind grain and pump water, although some served no purpose at all other than punishment.

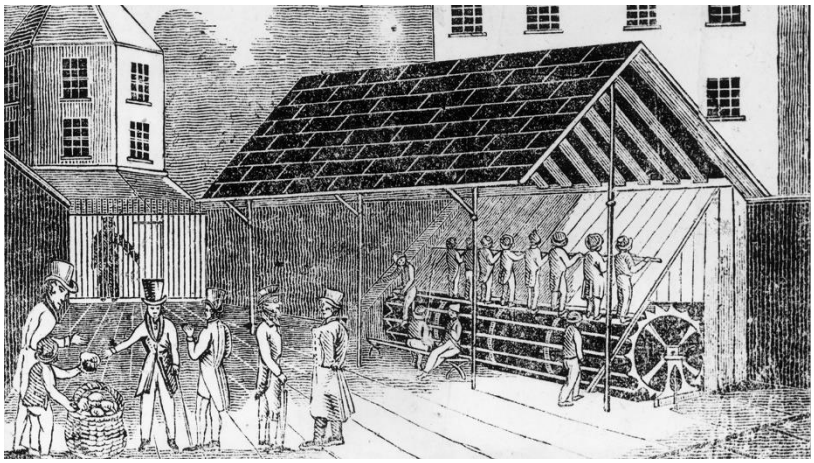


Figure 45. The treadwheel at Brixton Prison

Hard labour for the purposes of the Prison Act (1865) shall be,

1st class: treadwheel, crank or stone breaking etc.

2nd class: oakum picking, tailoring and shoemaking

Females: laundry and sewing

The ordinary prisoners were segregated from those on hard labour.

The system of discipline was very strict and the prisoners were never together, except at work, for prayers in the chapel or at school. No prisoner employed at the treadwheel was permitted to look round, speak, laugh or make any gesture or noise when on the wheel or at rest. Vertical separators were added to restrict any form of communication between prisoners so that each had to labour in isolation, repenting his crimes and purifying himself through toil.

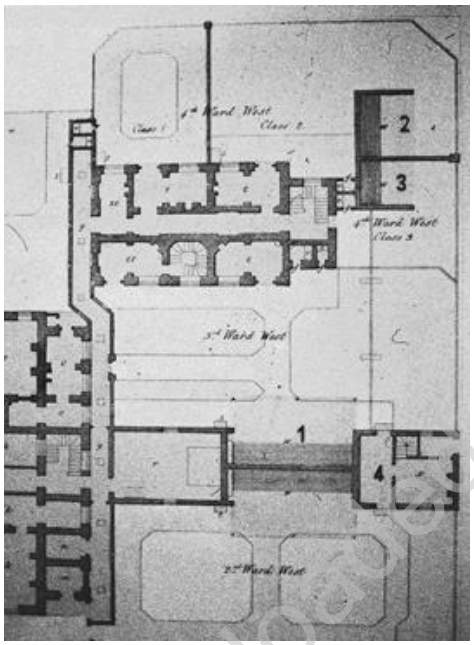


Figure 46. Dorchester Prison, showing the treadwheels 1, 2 & 3 and the milling room 4

At Dorchester a new prison was built in 1793 to the plans of the late Mr Howard, on the site of the medieval castle and at the expense of £16,179/10/6. Three treadwheels were installed, the main one was for men (**1**) and two smaller ones for females (**2**) and children (**3**). The use of female prisoners on the treadmill was discontinued in 1824 but the most abandoned of that class were given the laborious occupation of beating hemp and scrubbing the floors of the passages of the prison with freestone.

From 1815, a room (**4**) had been fitted with a mill "for making flour for use in the gaol" using the treadwheel to power the mill stones and the normal milling machinery. A miller was in charge of the milling at a salary of £4/15/4 (£4.77) a year and a millwright was employed in 1822 who charged 7/- (35p) for each journey to attend the mill for dressing the stones. The treadwheel was constructed by Stothert & Pitt of Bath at a cost of £480, and they also supplied wheels to Shepton Mallett, Taunton and Ilchester prisons. The mill was so successful that it not only provided flour for the prison but also for the hospital and the workhouse. They also tried selling the excess flour to the public, but the millers objected.

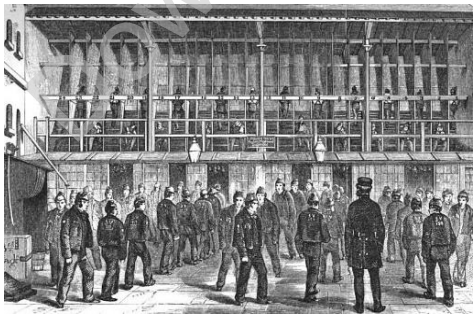


Figure 47. Treadwheel with vertical separators at Coldbath Fields

A morning in prison began when the cells were unlocked at sunrise, half an hour was allowed for making their bed and washing, then on the treadwheel till 0730 followed by prayers in the chapel, then breakfast which consisted of bread and a quart of weak beer, (made from 2½ bushels of malt and 2½ pounds of hops to the hogshead), then at 0830 they started on the treadwheel until one o'clock (1300). Prisoners on hard labour were entitled to 1½ lb of bread per day, while ordinary prisoners got 1lb. The bread had to be 24 hours old, made in the prison using flour from which no bran had been extracted.

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Hard labour prisoners were employed for 45 minutes in each hour, during the winter from sunrise till sunset and from 0600 till half past five (1730) for the rest of the year, less the time allowed for meals and for attending prayers. No work was to be done on Sunday, Christmas day, Good Friday or Ascension Day.

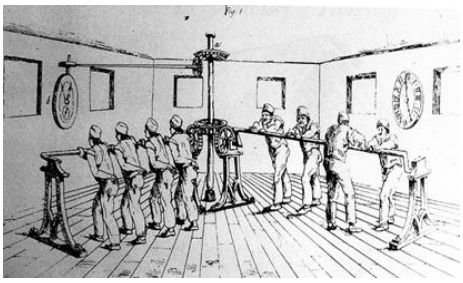


Figure 48. The Crank

One wonders what effect this had on the minds of the prisoners; spending a large portion of the day treading nowhere, enclosed on three sides by partitions and no noise except that made by the treadwheel itself. In 1820 prisoners were allowed one bath a month and only one visitor every three months, though this became more relaxed as the years went by.

Petworth prison had another hard-labour machine for men and women called the 'crank'. Thirty prisoners at a time had each to turn a handle against a resisting force - 13,200 times in a ten hour day. At several other prisons the crank also used for hard labour being turned by one hand or by two; this was said to improve their arm muscles so that they would be more suited to many jobs when they were released. It was said to be preferred to the use of the treadwheel which strengthened their leg muscles and enabled them, when released, to be able to outrun the constable.

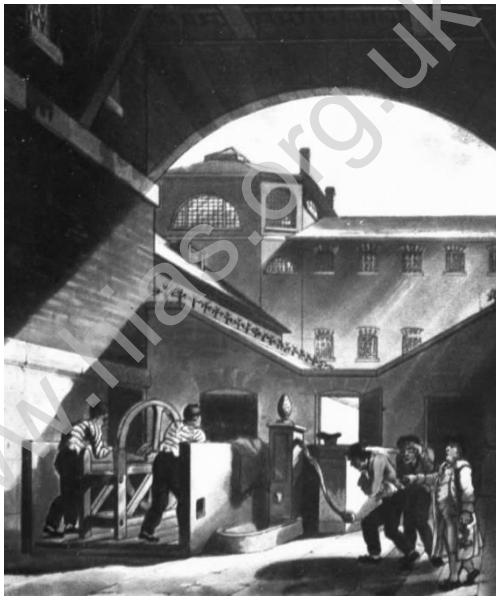


Figure 49. Another version of the Crank, this time pumping water at Coldbath Fields

Shot drill was another form of hard labour. The prisoner had to lift a heavy iron cannon-ball, bringing it up slowly to level with their chest, then carry it from one side of the prison yard to the other and stack them in a pyramid shape, 55 to a pile. This was repeated every time a pile was completed until a specified period or quota had been done. It was much favoured in the army prisons.

As an example of the severity of sentences: in 1842 at Winchester, two lads convicted of breaking gas lamps were sentenced to two months labour at the treadwheel. There was a huge increase in crime, mostly for theft, from the late 1700s as the population increased and the towns grew. Prisons became so overcrowded that hulks were used on the Thames and in Portsmouth harbour. Conditions were appalling and many died. They worked in chains in the dockyards at Woolwich and Portsmouth. In 1852, a convict prison was opened in Portsmouth, constructed to hold 1300 prisoners who were "employed upon public works for the Admiralty", usually in chain gangs. It closed in 1901. (The Portsmouth town prison was in St. Mary's Road. It opened in 1878 and was designed to hold 139 male and 34 female prisoners.)

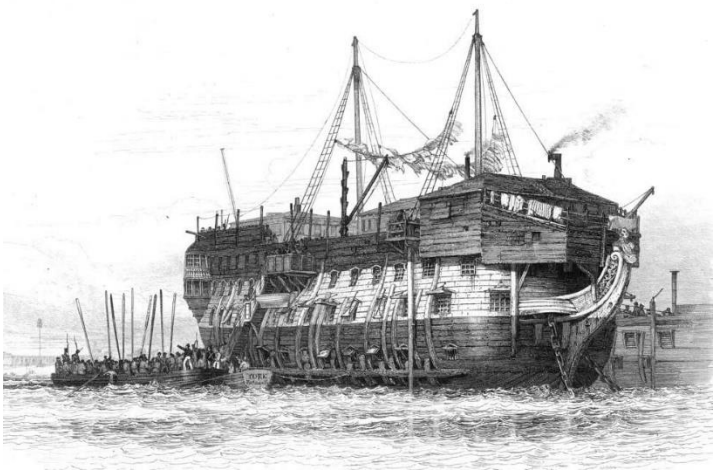


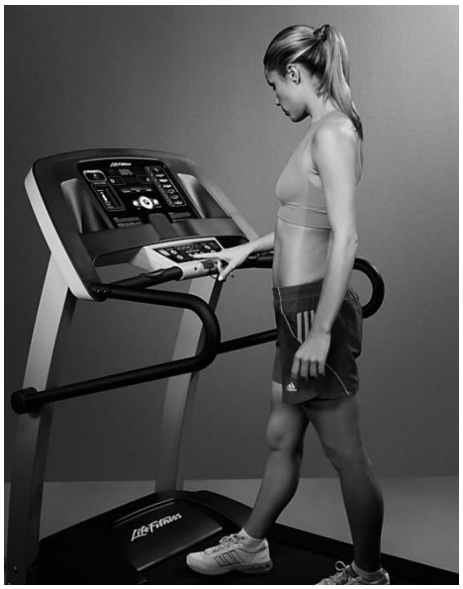
Figure 50. HMS 'York', a prison ship in Portsmouth harbour. Convicts going on board

Transportation became one answer to the problem of the overcrowded and filthy gaols. Over 50,000 were transported to America but the 1776 Declaration of Independence ended transportation there. A few years later, in 1787, the first transportation started to the Australian penal colonies which helped solve the shortage of labour there. Over 165,000 convicts were transported between 1788 and 1868. About 20% were women

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prisoners who often became servants to immigrants. The last transportation was in 1867, the practice finally being abolished in 1871.

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Today, nearly two hundred years later, treadmills are again in use in the home and at fitness centres, costing from £400 to £4,000 each. We can trace their beginnings back to early prisons and punishment but now treadmills are used for pleasure, though that can be a matter of opinion!



Walking your dog can be made less strenuous by the use of a dog-wheel, particularly useful for people who live in flats. Some of these can be motorised and be quite expensive. The same principle has been used for pet mice, hamsters and guinea pigs for many years.

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Hampshire Industrial Archaeology Society

Hampshire Industrial Archaeology Society was founded as the Southampton University Industrial Archaeology Group in the 1960s from members of the University Extra-Mural classes who wished to continue their studies in industrial archaeology. Recording has included surveys of mills, breweries, brickworks, roads and farm buildings. Restoration work is undertaken by associated groups such as the Tram 57 Project, the Hampshire Mills Group and the Twyford Waterworks Trust. In addition to the *Journal*, the Society publishes a newsletter (*Focus*) twice a year and lecture meetings are held every month throughout the year.

To join, contact the Membership Secretary:
Keith Andrews, 13 Ashley Close, Harestock, Winchester, Hampshire, SO22 6LR.











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